INFLUENCE OF EDUCATION ON MATERNITY CARE IN THE SELECTED DISTRICTS OF NEPAL

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ABSTRACT

The primary objective of the study was to assess the current status of the use of maternity care services by women aged 15-49 years in the five selected districts of Nepal. Both the quantitative and qualitative mixed research methods were used to collect and process data. Quantitative data were used for testing hypothesis formulated in this study while qualitative pieces of information were used to supplement information to highlight some of the underlying factors associated with the utilization of maternal and child health care (MCH) services. Moreover, psychometric test, inter disciplinary approach and the use of both quantitative and qualitative pieces of information were used to explore the level of attitude and perception of the pregnant women towards household head and service providers. In addition to these factors, 14 new variables were constructed under the headings of empowerment, equity, satisfaction, plan for maternity care and responsibility of mother through factors analysis.

A cross- sectional research design was adopted to carry out the study to examine linkages between formal and non-formal /informal education and utilization of maternity care services. A sample of 384 women aged 15-49 years who had at least one live birth in the last three years from Sindhupalchok, Syangja, Kathmandu, Banke and Kailali districts was randomly selected. A structured questionnaire was used to interview women in the sample. In-depth interviews were conducted with 10 eligible women from within the sample utilizing interview guidelines. Besides descriptive analysis, bivariate analysis, factor analysis and logistic regression analysis were used to interpret the data to draw conclusions and recommendations.

The findings of the study revealed that the place of residence, mother's education, recreational programs, level of income, the visit to a health facility for other medical problems, the age of mother at child birth, the number of children, awareness about the use of family planning method as well as cost coping strategy of the pregnant women have strong association with maternity care services. Education has a strong association with all seven variables and very strong net association with the use of antenatal care visits during pregnancy, the use of ANC package and the use of postnatal care services. Parenting skills transferred to the pregnant women by service providers, life-style adopted by the pregnant women, household environment properly managed by household head, satisfaction of pregnant women on pregnancy care preparation, care givers behaviors towards pregnant women, household head's willingness to monitor pregnancy status were associated with MCH services.

The study concluded that mother's education is necessary but not a sufficient condition for maternity care. Therefore, the integration of individual, household and community level efforts should be promoted to increase the use of MCH services. The study has a clear indication that program targeted to improve the education of women, income generating activities, as well as support of other family members on pregnancy and delivery care management, nearest distance of a health facility, placement of medical doctors especially outside Kathmandu Valley help to improve the use of maternity care services. The study also has recommended that a follow-up study designed to use the path analysis for analyzing effects of the distance and the intermediate factors used in the conceptual framework would be useful.

The study provides a new knowledge about how formal and non-formal/informal education has influenced the utilization of maternity care services, the changes in reproductive behaviour and the increase in the access to and utilization of available health care services.

The abstract of the thesis of *Megha Raj Dhakal for the Degree of Doctor of Philosophy in Education* was presented on October 24, 2010.

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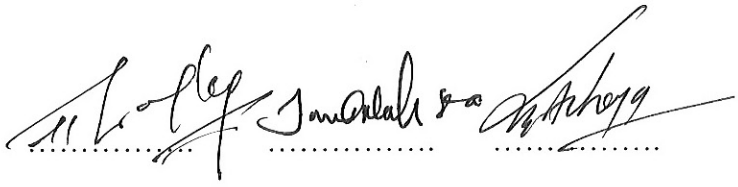

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ABBREVIATION USED IN THIS STUDY

AHW	Assistant Health Workers
AIDS	Accquired Immune Deficiency Syndrome
ANC	Antenatal Care
ANCP	Antenatal Care Package Index.
ANMS	Auxilary Nurse Midwife
AV	Alpha Value
BC	Birthing Center
BCG	Bacillus Calmette-_guerin Vaccine
CI	Confidential Interval
CTEVT	Council for Technical Education and Vocational Training
DOHS	Department of Health Services
EFA	Education for All
EMS	Education and Maternity Care Survey.
FA	Factor Analysis
GON	Government of Nepal
HIV	Human Immunodeficiency Virus
HP/HC	Health Post/Health Center
HH	Household Head
HN	Household Number
ID/DC	Institutional Delivery /Delivery Care
ICPD	International Conference Population and Development
INGO	International Non-governmental Organization

KAP	Knowledge Attitude Practice
MCHW	Maternal and Child Health Workers
FCHV	Femal Community Health Volunteer
MCP	Maternal Care Plan
MDGS	Millinium Development Goals
MOA	Ministry of Agriculture
MOHP	Ministry of Health and Population
MOLD	Ministry of Local Development
MOWSW	Ministry of Women and Social Welfare
MOY	Ministry of Youth
LBT	Life Expectancy was at Birth
N	Number
NBC	Newborn Child
Nd	Not date
NAYA	Nepal Adolscent and Yong Adult.
NDHS	Nepal Demographic Health Survey
NFH	Nepal Family Health Survey
NPAEFA	National Plan of Action,Education For All.
NHIEC	National Health Information and Education Centre.
NLSS	Nepal Living Standard Survey.
NFS	Nepal Family Health Survey.
NFS	Nepal Fertility Survey
OECD	Organization for Economic Cooperation and Development
PAHOO	Pan American Health Organization

PCA	Principal Component Analysis
PHC	Primary Health Care Center
PMS	Para-Medical Staff
PNC	Postnatal Care
PPP	Population Prespective Plan
PSU	Primary Sample Unit
RAI	Risk Assesment Index
RBI	Responsibility Base Index.
RCOG	Royal College of Obstetricians and Gynecologists
SBA	Skilled Birth Attendants
SD	Standard Deviation
SHP	Sub Health Post
SIDA	Swedish International Development Agency
SLC	School Leaving Certificates
SMP	Safe Mother hood Program
SMRHWG	Safe Motherhood and Reproductive Health Working Group ,Core Group
SP	Service providers
SBI	Satisfaction base Index.
SPSS	Special Package for Statistical Software
TBA	Traditional Birth Attendent
TEVT	Technical Education and Vocational Training
TT	Tetanus Injection
UN	United Nations
UNFPA	United Nation Fund for Population

USAID	United Nations Agency for International Development
UNICEF	United Nations, Educational , Scientific and Cultural Organization.
VDC	Village Development Committee
WB	World Bank
WEI	Women Empowerment Index.
WEI	Women Equity base Index.
WDR	World Development Report
WHO	World Health Orzanization
WHO	World Health Organization
WRA	Women in Reproductive AGE (15-49 years)

CHAPTER I

INTRODUCTION

In the morning of January 3, 2006, I read the Gorkhapatra where I found that one of the Tamang women in Nuwakot district, close to Kathmandu died due to pregnancy complications while giving the 15th birth. The event reminded my family background in which my aunt lost her life before 40 years ago, due to pregnancy complications while giving the birth to the seventh child. It raised numerous questions in my mind such as, why do such events occur day-by-day and what are the factors for such events?

An eye-opening picture appeared in the Kantipur (annex 2) showing examinees appearing in the SLC examination with their newborn babies. One of them gave birth to a child in the examination hall and another was breast-feeding while writing answers, and again this event excited me to observe the influence of education on maternity care.

The importance of education on maternity care had been recognized long ago. The education of the women was viewed as a particular instrument to promote both the macro economics and the welfare of an individual and families (Rosenzweig & Wolpin, 1994, Rosenweig, 2000, as cited by Lans & Kamdar, n.d.p.1). Moreover, literacy could affect the reproductive behavior of an individual such as, the use of contraceptives measures and available maternity care services. In addition, recent analysis suggested that "education and maternity care are two parts of the same coin (Caldwell, 1996) and can route out maternal mortality and morbidity by increasing the demand for the utilization of available health care service along with education". However, the process was not understood fully.

Some researchers such as, Jahn, Lang, Shah and Diesfield (2000); Nahar and Castell (1998);Kargbo (1992) carried out research work in this area but their work was limited only to the biological factors and paid less attention to social factors. Therefore, this study examine how mothers' formal and non-formal /informal education as well as other socio-economic factors influence the maternity care services through reproductive behavior, access to and utilization of available health care services.

Maternity care was a dependent variable and it means the benefit obtained by pregnant women from the available medical or non-medical care before, during and after delivery. The considerable components of maternity care were antenatal, delivery and postnatal care. There were seven dependent variables: (a) the number of ANC visit (b) the use of the full package of antenatal care services (c) immunized tetanus injection (d) delivered baby at a health facility (e) PNC visit (f) visit doctor and (g) BCG vaccination for newborn child within three days.

Despite these facts, there were twelve independent , seven intermediate , and 14 new variables generated (see figure 1 and Table 2 of chapter 3) .These new variables generated were observed under the five components such as, empowerment, equity, satisfaction, responsibility, and the plan for maternity care.

Sources of indicators were: (a) Maternal and Newborn Standard and Indicators Compendium developed by Safe Motherhood and Reproductive Health Working Group [SMRHWG, Core Group] 2004) (b) Standard for Maternity Care Report of a Working Party (RCOG, 2008) and (c) the review of various literatures, observation, sharing with consultants and experienced researchers. Various journals, internet, books, and magazines were the sources of literature review. In spite of this, consulting with the professors of Kathmandu University was the main guideline to generalize the

main theme of this study. Open -ended questions were used with pregnant women in Palpa and Tanahu district and a few *dalit* pregnant women from Kalaiya Municipality of Bara district. When I worked under the Ministry of Health and Population, I shared with health personnel, which was helpful to conceptualize the theory of this study.

Communication and discussion between participants and counselors during the period of local level population management in various districts and the daily newspapers played immortal role to identify the underlying factors. Data were collected from five districts including the Kathmandu Valley and from household level through structured questionnaire, in-depth study and observation.

Structured questionnaire was used to interview women in the sample. Women were asked 51 questions to measure their perception and attitude using the Likert scale. Descriptive analysis using frequency, number, and percentage, mean along with standard deviation was presented. Chi-square test was used to test the significance of association between two variables. Multivariate analysis is mainly used to test hypothesis set for the study and to observe the effects of independent variables to maternity care. Similarly, logistic regression was observed the effect of intermediate and new variables generated on maternity care. The odds ratio with confidence intervals were analyzed to predict the probability of the utilization of maternity care services under the different categories of independent and intermediate variables. Similar pattern was also followed to observe the effects of socio-economic, intermediate and 14 new variables generated for the study.

It is hoped that the application of theory, tools, technique and the old and new variables generated for the study could fulfill the gap in the literature, provide some theory for research and encourage further research by adopting both the quantitative and qualitative mixed research method.

Nature of the Study

Despite the great efforts of an improvement on health, population and education sectors each year, 600,000 women between the ages of 15 and 45 die in the world due to the pregnancy complication and child birth (Pate, Callado & Solis, et al. 2006) and 99 % of them are in developing countries (WHO, 2003). Similarly, Koblinsky and Campbell (2003) documented that nearly half of the maternal death is occurring in developing countries due to the lack of or poor delivery services. It is estimated that 14 million adolescent girls deliver babies each year. Over 90% of these young mothers live in low-income countries. Daily mortality rates from preventable complications of pregnancy and childbirth are 1600 for women and over 10,000 for neonates (Adanu & Hammoud, 2008). According to an estimate, from 30 to 50 women suffer short- or long-term disability due to complication of pregnancy and childbirth (Fortney & Smith, 1996 cited in Freedman, 2003). Almost all the maternal and 90% of neonatal deaths occur in low income countries, including Nepal.

The expected pregnancies were 9, 60,734 (DOHS & WHO, 2006) and NDHS (2006) showed that the MMR has fallen from 539 per 100,000 in 1996 to 281 per 100,000 live births in 2006 with 3.1 total fertility rate. Recently, a study carried out by Hagan, Foreman, Naghavi, Ahn, Wang, Makela, Lopez, Lozano and Murray (2010) showed that MMR has further declined and came 240 (CI=149-370). Moreover, remarkable progress was made in the use of ANC service (Koblinsky,Matthews, Z. Hussein, J. Mavalanker, D. Mirdha, M.K. Anwar, I. Achadi, E. Sam, A. and Padmanabham, P. Lerberghe W.V. (2006) but six women die in a day due to the pregnancy complication (Ensor, Clapham, & Prasai, 2008).Thus, it is a dreadful issue.

Koblinsky et al; (2006) documented all women in the world want to be safe during pregnancy, the delivery and beyond that. Many external development partners

including governments have mapped out various efforts to full-fill the desire of pregnant women, after the first international conference of Nairobi in 1987.

Globally, in 1978, the Alma –Ata declarations defined the primary health care (PHC), and recognized that poor health was the cause and consequences of biological and socio- economic factors. An important International Conference on Population and Development [ICPD] was held in Cairo in 1994 and recognized, the same vision of Alma -Ata declaration by setting up three targets: (a) universal access to primary education, (b) primary health care, and (c) full range of comprehensive reproductive health care services (WHO, 2000). Further, the ICPD was suggested to link between education and health. According to the broad and the vague of ICPD, United Nations declared the Millennium Development Goals (MDGs) and set up strategy for the reduction of maternal mortality by three quarters between 1990 and 2015 by reducing maternal mortality and increasing the proportion of birth attendants by skilled health personnel (Freedman, 2003).

Nationally, health care in the past was provided mainly by traditional faith healers (Dhami, Jhakris), and traditional birth attendants (Adhikari, 2002; Streefland, 1985; Archard, 1983 as cited in Acharya; 1996, p. 6). The Ayurbedic system of treatment has been practised in Nepal for many centuries and is popular. Ayurveda utilizes diverse range of therapies including diet, life-style therapy, herbs, aroma therapy, massage, gems, yoga, meditation, mantra, Pancha Karma (a system of cleaning) to maintain and create the health (Swami,1999 as cited by Adhikari, 2002).

Another type of traditional medicine is Homoeopathic service and was introduced in Nepal as early as 1920 as a natural healing system. In addition, Tibetan healing system and naturopathy are also practised in selected areas of the country

(NESAC, 1988 as cited Adhikari, 2000). Today, Yoga skill developed by Swami Ramadev is practised and popularized throughout the country.

Allopathic or modern health care system was started at the end of 19th Century in Nepal with the establishment of Bir Hospital in Kathmandu. This medicine system is based on the germ theory of disease and studies of anatomy and physiology (Adikari, 2000). The MOHP was established in 1956 and its initial priority was to control communicable diseases. As documented by Acharya (1996, p. 6) four vertical projects namely Malaria eradication project ,1958, Leprosy and Tuberculosis control, 1965, the Small Pox Eradication project became the Expanded Program on Immunization in 1977).

In the context of policy, MOHP has formulated various policies such as New National Health Policy (MOHP, 1991), Safe Motherhood Policy (MOHP, 1994), National Maternity Care Guide lines, Nepal (MOHP, 1996); Skilled Birth Attendants policy, (MOHP, 2006) to upgrade maternity care (Annex 1). Based on these policies, various interventions such as the number of ANC visit, delivery care, postnatal care was setup to boost up the maternity care status of Nepalese women. However, most of the policies and guidelines were not successful in building up of implementation modality to transfer the knowledge about the danger signs of pregnancy complications, theory and practice of care, importance of nutritious food for cognitive skills , responsibility of pregnant women, families, service providers and other concerned agencies .In addition, previous plans and program successful to introduce home and hospital care but redefine of self- care and interlink between home and hospital care were being questionable.

From 2006, the government has been implementing the safe delivery incentive program to create the demand for Skilled Birth Attendant (SBA) with the commitment

to provide Rs 1,500 to mountain districts, Rs 1,000 to hilly districts and Rs 500 to plain districts. Recently, Population Perspective Plan [PPP] (MOHP,2009) focus to interlink between population and development as per the commitment of 9th, and 10th five -year plan as well as three year interim plan .However, there is still a gap between the access to and the utilization of available health care services for the maternity care. Thus, the objective of this study was to explore the influential factors for the use of the maternity care services.

Regarding the institutional mechanism, Nepal has 8 central hospitals, 3 regional hospitals, one sub-regional hospital, 8 zonal hospitals, and 65 district hospitals providing curative services. The network of peripheral facilities are providing preventing , promoting and essential clinical care that includes 209 PHC, at least one in each of the 205 electoral constituencies ,696 HP staffed with ANMs and 3,129 SHP staffed with MCHWs. In addition, there are 14,366 outreach clinics (ORC) and 16,013 immunization outreach clinics providing community level services (Pradhan,Subedi, Barnett, Sharma, Puri, Poudel, Chitrakar, Naresh & Hutton; 2010). However, the availability of health care services for the maternal care remains low: Visiting and utilization of the full package of ANC and PNC services, institutional delivery care and examination by doctor along with BCG injection for newborn child within three days remain debatable.

Previously, MOHP has been carried out various surveys in various period. For example, Nepal Fertility Family Planning Health Status Survey (MOHP, 1991), Nepal Living Standard Survey (NLSS, 2001, NLSS, 2004), Nepal Family Health Survey (NFHS, 1996), Nepal Demographic Health Survey (NDHS, 2001, NDHS, 2006) have been carried out to monitor and evaluate various programs and intervention in health and education as well as equity, empowerment, satisfaction, and planning for

maternity care. However, these surveys were mostly dominated with “Yes” “No” questions and thus, there was a need to assess knowledge, attitude and practiced of an individual.

This study was based on cross -sectional descriptive research design. This study focuses on retrospective study to collect the information about the situation of pregnant women and newborn child. What sorts of signs of pregnancy complications did they learn from ANC to PNC and to what extent did they utilize the available health care service to reduce these symptoms and what sorts of care did they adopt for the welfare of her newborn child were the questions asked to the pregnant women three years back during the survey.

The study followed Caldwell’s (1996) interdisciplinary approach for research themes in which previous research activities did not cover various themes of various subjects. Theory, tools and techniques were adopted from various disciplines: education, economics, demography, public health, biology, anthropology, and sociology. Deductive technique was used to show the relationship between formal and non -formal/ informal education and the maternity care. After getting the permission of Creswell (2003), this study adopted the mixed method (quantitative and qualitative) to cope with the weakness of single method and to replace it with strength of another method.

Purpose of the Study

The primary purpose of this concurrent mixed approach was to assess the status of maternity care in the selected districts of Nepal by applying the “human capital” as well as “screening theory” of education through reproductive behavior, access to and utilization of available health care services. More specifically, this study was attempted to investigate how formal and non- formal/informal education as well

as other socio-economic factors were influencing the maternity care; through reproductive behavior, access to and utilization of available health care services among the Nepalese women in reproductive age (15-49). Additionally, an attempt was made to construct suitable indicators of empowerment, equity, satisfaction, responsibility and a plan for maternity care and finally, it was recommended the various measures for policy makers and planners to correct the past mistakes especially on safe motherhood policy, education policy and other policy adopted by the government of Nepal.

Problem Statement

The fundamental theory of maternity care is to ensure the life of the mother and her newborn child by providing comfort and welfare for an individual, family and community society along with the policy makers of the country as fully as possible. For this purpose, MOHP has formulated robust sets of policies such as National Health Policy (MOHP, 1991) and Safe Motherhood Policy (MOHP, 1994) National Maternity Care Guidelines, Nepal (MOHP,1996) to ensure maternity care in each corner of the country. But utilization of services like antenatal care, institutional delivery, and postnatal care was not fully utilized as the expectation of planners and the health professional. If, utilized these services, not in an equitable way and as a result, mismatch between the meet need and expected need in maternity care. Therefore, a felt is needed for further understanding and analysis of influential factors for the utilization of the maternity care service in Nepal.

Another concerned area of the study is education, which has been already recognized as the precondition and pillar of maternity care. To cope with the demand of available health care services for maternity care, Ministry of Education and Culture (MOE) of Nepal has formulated various policies such as, National Education Policy,

(MOE,1971) Non-formal Education Policy (MOE,2063) Open and Distance Learning Policy (MOE,2063) Training Policy, (MOE,2062) Technical Education and Vocational Training (TEVT)-Skilled Development Policy, (MOE,2064) and special focus has been paid for the expansion of formal and non- formal /informal education programs such as, Adult Literacy Program, Women Literacy Program, Alternative Schooling Programs, Outreach School Program, Flexible Schooling (Non-formal education program, program for School Dropout Program, Integrating Reproductive Health issues with adult literacy and out of school program. Various text books like *Sabaika Lagi Sikichaya, Naya Goreto, Mahila Sakchhrata Pustika*", has been included the message of reproductive health throughout schooling or non-schooling program. Similarly, various informal education such as, *Chetnaka Swoarharu, Janaswatha radio karyarkram* (Public Health Radio Program), *Gyan nai Shakti ho* (Knowledge is Power), *Sewa Ni Dhrama ho* (service is religion) *Hamro Swasthya Radio Program* (Our Health Radio Program), Sathi sanga manka kura (Discussion of issues of one's liking with a friend), *Jeevan Chakra* (Life-cycle) have been broadcasting through Radio, TV program and FM program through Ministry of Health and Population. Moreover, Ministry of Local Development (MOLD), Ministry of Youth (MOY), Ministry of Women and Social Welfare (MOWSW), Ministry of Agriculture (MOA) along with I/NGO including CTEVT are implementing various awareness programs but integrated mechanism are being always questionable.

Knowingly or unknowingly people talk about the relationship between the "stock of knowledge"(Santerre & Neun 1996, Freudenberg & Reglis, 2007) and the "stock of health" and again they may not be familiar with this kinds of health which is depreciated due to symptoms of pregnancy complications (Henderson ,2005; Santerre & Neun 1996). However, such relationship is not fully understood.

GON, Nepal has already adopted the “Education for All’(EFA) and set up National Plan of Action(NPAEFA, 2001-2015) has been placed since 2001.Various documents showed that quantity of education is increased but quality of education remained debatable due to early marriage, adolescent pregnancy, discrimination in sex, geographical deployment of physicians and nurses, lower status in fertility decision, and unfair opportunity for services and thus, realized urgent need to explore, which one was the more influential factors for maternity care.

Several researchers Santerre and Neun (1996); Elo, (1992); Caldwell, 1996) revealed that formal education has positive impact on maternity care i.e. Life- style, diet, sexual and reproductive behavior, timely decision making on access to a health facility and so on. In contrast, Bowmen and Anderson (as cited by Szirmai, 2005; p. 223) documented that literacy is necessary but not a sufficient condition to reproduce a child and participating sexual activities in human being. Another researcher Elo, (1992) documented that income and other factors were confounded for the protection of sex and care of mother and newborn child and in this situation functional alternative like training, media exposure, distance education, counseling, and recreational programs could be conditional factors for maternity care but study is very rare and dare.

Finally, the policy makers and planners recognized that the inclusion of women’s empowerment, equity, satisfaction, responsibility and the plan for maternity care were preconditions and pillars for maternity care but in the absence of potential indicators to measure of these variables are always being questionable and thus, there is a need to carry out research to construct indicators of the above mentioned components.

Research Questions

RQ 1 What is the existing status of maternity care in the selected districts of Nepal?

RQ 2 How does mothers' formal and non- formal/ informal schooling influence the maternity care?

RQ 3 What are the other factors influencing on maternity care rather than education?

RQ 4 How are intermediate variables such as, reproductive behavior, access to and utilization of health care services influencing maternity care?

RQ 5 What are the indicators of women empowerment, equity, satisfaction, responsibility and plan for maternity care and show how they are influencing maternity care?

Significance of the Study

Maternity care is vague subject. Investment of knowledge as well as nutritious food for mother and child contributes to better outcomes of pregnancy as a result; there would be high cognitive skills on children, and motivation to their parents' lower fertility and increase human capital. Moreover, it can lead lowering in absenteeism and dropout in schooling and ensure the quality of education. Therefore, policy makers considered maternity care as the seed and flowers of national development.

Most of the previous researchers (Caldwell, 1996; Elo, 1992; Cutler & Muney, 2006; Day and Newburger, 2002, Ross & Mirowasky, 1989 as cited by Freudenberg & Reglis, 2007, p.1-15) revealed that more schooling people have earn the more money they earn, which enabling them to purchase better housing in safer neighborhoods, healthier foods, better Medicare and health insurance and more quality education each of these factors are associated with improved health. Similarly,

family's education is the main way to improve children's chances in life (Szirmai, 2000, p. 214).

The Nepalese government has taken the strategy to increase the stock of knowledge in pregnant women through formal and non-formal /informal schooling. In addition, Nepalese government has formulated National Maternity Care Guidelines but still not fully understood the self- care program as well as indicators of empowerment, equity, satisfaction, the plan for maternity care and responsibility.

If, other things are remaining the same; this study has filled the gap by linking the formal and non -formal/informal education and other socio-economic factors with maternity care through reproductive behavior access to and utilization of available health care services. Moreover, the study has been contributed to fulfill the gap of previous research by constructing several indicators of empowerment, equity, satisfaction, responsibility and plans for maternity care and such indicators could be valuable worth to assess the psychometric test of the pregnant women. In additions, the finding of this study would identify the most influential factors for maternity care.

There is no doubt that education and the maternity care are complementary to each other (Caldwell, 1996) and thus, interdisciplinary approach along with mixed method of research could be useful to explore the influential factors of the maternity care. Since research themes have been collected from biomedical as well as socio-economic fields. Therefore, the finding of this study plays a significance role to provide new ideas for the following four groups of stakeholders: (a) individual/ household /community members (b) health professionals / services providers (d) policy makers and (e) educationalist, researchers and students.

Looking at the path, individual/household members, community leaders, and others, concerned stakeholders could be able understand their roles and

responsibilities towards the pregnant women. Similarly, they would be able to change the mind of pregnant women, about their reproductive behavior, which will result in preferences for late marriage, pregnancy, prefer the quality of children rather than quantity of children, increase in access to the health service points. Further, the finding of this study would be helpful to policy makers, planners, service providers, administrators, members of civil society in the following seven ways: (1) identify the gap between access to and utilization of available health care services, (2) design ways to reduce those gaps (3) develop strategies for curative, preventive and primitive health care intervention; (4) redesign the curriculum for formal and non-formal/informal education; (5) build the tools for KIT (knowledge, information and technology) box (6) bridge the gap between knowledge, attitude and practice (KAP - Gap) and (7) develop specific training package program for the maternity care.

Finally, the study would be useful to educationalists, researchers, and students to understand the research process and how education influences on the maternity care and vice versa through various intermediate variables. Researchers could be able to understand the process of the factor analysis and some new indicators of empowerment, equity, responsibility, satisfaction and the plan of maternity care.

Theoretical Framework

The study observed the relationship between education and maternity care by fitting the essence of human capital theory and screening theory of Education on the framework for analyzing the determinants of maternal mortality and morbidity developed by McCarthy and Maine (1992). These theories showed the positive relationship between “stock of knowledge” and “stock of health” (Santerre &Neun, 1996, Henderson, 2005).The research themes and variables were collected from various subjects, like education, population, public health, reproductive health, and

health economics along with sociology as of interdisciplinary approach developed by Caldwell (1996). Mixed method or concurrent triangulation strategy was adopted for research strategy to cope a weakness with another approach. In addition, Dexter, Levine and Velasco (1989-90), Rowe, (2005), Levine (1980), and Belle (1991) contributed to interlink between formal and non -formal/informal education on maternal health practices. In this way, various theories, tools, techniques, models, research and literature review contributed to build up the theory of this study. Despite these facts, Daniels', Bryant, Castano, Dantes, Khan and Pannarumothi (2000), policy tool (Annex 24) and theory of justice in resources distribution propounded by Sen (1992) were also become valuable worth to find out variables of empowerment, equity, responsibility, satisfaction and maternity care plan components. A study carried out by Anawar, Killewo, M. Chowdhruy and Dasgupta (2005), Papanastasiou (2005) support to computes wealth quintiles and principal component analysis. Robust set of articles and research papers were reviewed to conceptualize this research because the maternity care is vague and influenced by multiple factors. The preceding literature review is important to collect various evidences in this study.

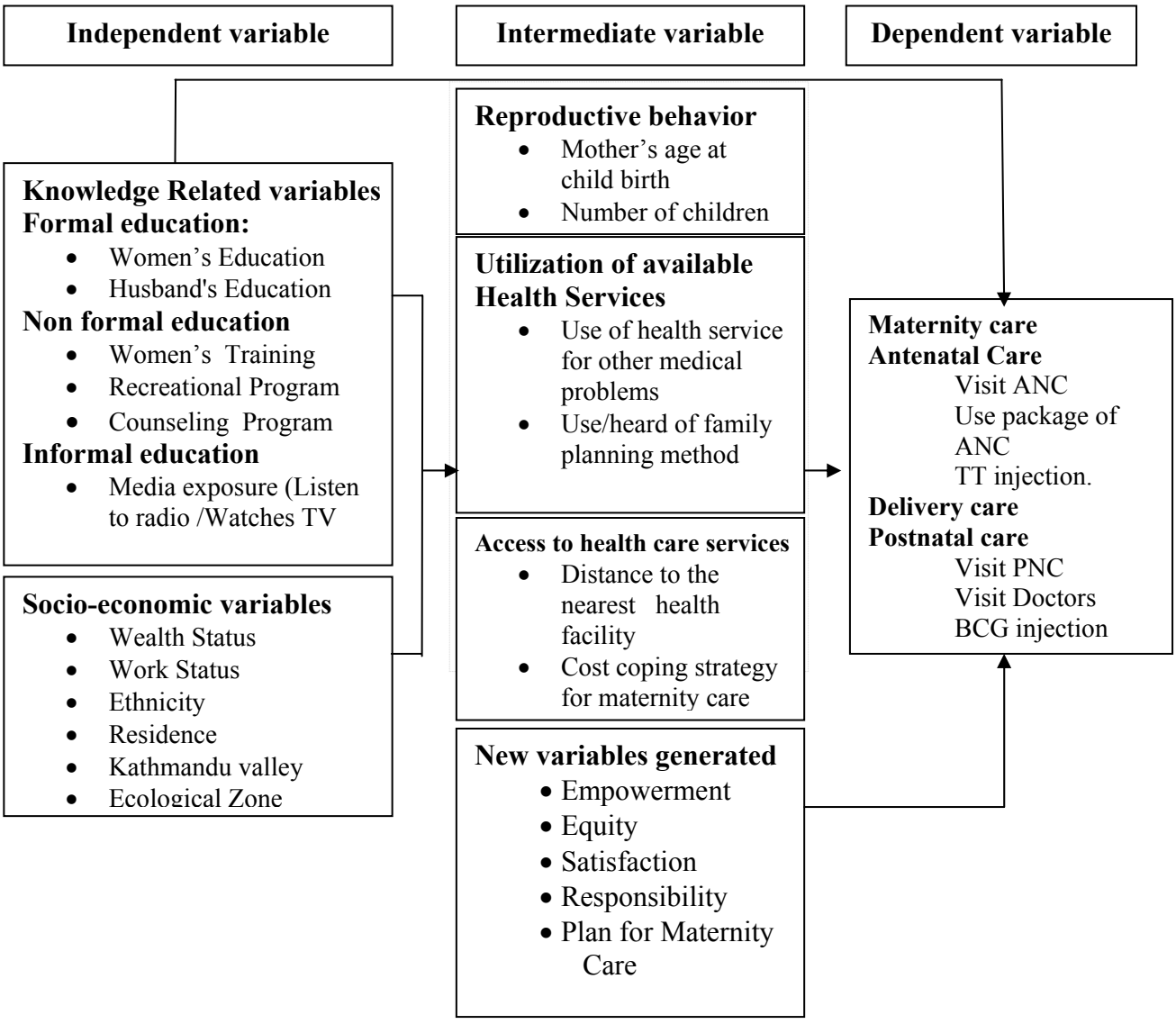
Conceptual Framework

In theory, the balance between access to and fair utilization of available health care services is the main pillar and precondition for the substantial reduction in maternal mortality and morbidity. The fair utilization of available health care services depends on four things: (a) access of information (b) availability of health services (c) utilization and recognition of the importance of available health services (d) willingness and affordability of the patients and, (d) empowerment and responsibility of an individual and community as well as service providers. There might be direct or indirect effect on maternity care. Therefore, to investigate both direct and indirect

factors to and assess the level of significance of the maternity care through three sets of intermediate variables is the main theory of this study. Moreover, to develop some indicators of empowerment, equity, satisfaction, responsibility and the plan for care and to observe how these variables are influencing the maternity care is the subsequent theory of this study.

Figure 1.

Influence of Formal and Non- formal /Informal Education on Maternity Care through Reproductive Behavior, Access to and Utilization of Available Health Care Services.



The primary purpose of this study was to assess the status of maternity care through reproductive behavior, access to and utilization of available health care services, in the selected districts of Nepal. More specifically, this study attempted to investigate how formal and non- formal /informal education and other socio-economic factors were influencing the maternity care in terms of reproductive behavior , access to and utilization of health care services among Nepalese women in reproductive age (15-49yrs).

Additionally, it aims to construct the indicators of various components of maternity care like empowerment, equity, satisfaction, responsibility and the plan for maternity care to test the attitudes and perception of pregnant women towards service providers, household head and finally to recommend measures for policy makers to ensure the maternity care through reproductive behavior, access to and utilization of available health care services.

Seven dependent variables such as the number of ANC visit, the use of the full package of antenatal care services, immunized tetanus injection, delivered baby at a health facility, PNC visit, and visit doctor and BCG vaccination for newborn child within three days were used in this study. Two groups of independent variables: knowledge related (formal and non-formal/informal education) along with other socio-economic related variables (wealth, work status, ethnicity, and place of residence) were influencing directly or indirectly the maternity care through three set of intermediate (reproductive behavior, access to and use of available health care services) variable. Additionally, the variables empowerment, equity, satisfaction, responsibility of an individual and the service providers were influencing directly the maternity care. The glimpse of the path way has been shown in figure (1). According

to this framework, education is only one of the many factors influencing decisions concerning the utilization of available health-care services.

In fact, maternal education is likely to be associated with many of the other determinants identified above. The education level of mother is, for example, likely to be related to change the reproductive behavior, access to and utilization of available health care service and financial resources to check up antenatal care, practice institutional delivery and postnatal care services. Furthermore, educational background of Nepalese women of selected districts of Nepal depends on wealth, work status and the place of residence because of the rapid increase formal and non - formal/informal education opportunities during the last five decades, the fast expansion of public hospital, nursing home, schools, colleges both in public and private sector in the Kathmandu Valley, may be barriers to discontinue in the use of available health care services as well as dropout in female schooling.

It was assumed that if there was any change in intermediate variables such as, reproductive behaviors, access to and utilization of available health care services, it would influence the maternity care directly. However, all the elements of independent variables may or may not influence all groups of intermediate variables. In this circumstance, controlled variables were used to observe the net effects of these variables the maternity care. Variables included in this model were developed from the body of literature in preceding sections of this chapter. The findings of this proposed model were compared with the framework of various researcher and the findings of other articles to recommend the policy for policy makers as well as health professionals.

Research Hypothesis

The main hypothesis of the study is to observe the relationship between formal and non-formal/informal education and maternity care. The conceptualization of safe pregnancy inspired by Nepal government's program is narrow. So, it needs more specific hypothesis to understand the influential factors as well as attitude and perception of the pregnant women. As of 33 variables, seventeen variables were used for hypothesis testing. In this regards ,while selecting all independent, intermediate and new variables generated including all dependent variables, specific statements for hypothesis were around 231 (33 *7) but, it would be unmanageable to establish more hypothesis. Thus, two criteria were developed for the selection of hypothesis. First, untested hypothesis by previous researcher and second was, if, tested at least one variable from each set of independent, intermediate, and new variables generated .were selected for hypothesis testing.

Table 1: presents the description of research hypothesis from first to fourth set including, research questions as well as concerned variables. By using these variables, 4 sets of hypothesis with 54 specific statements were established for hypothesis testing.

Table 1

Description Hypothesis from First set to Fourth Set.

Variable	S.N.	Hypothesis
Set 1:		
RQ 2	How does mothers' formal and non- formal/ informal schooling influences the maternity care?	
Education	1	There is no relation between women's formal and non-formal/ informal education and maternity care.

Variable	S.N.	Hypothesis
		Antenatal care
	1.1	There is no relation between women's formal education and at least 4 visit for antenatal care.
	1.2	There is no relation between women's formal education and the use package of ANC.
	1.3	There is no relation between women's formal education and TT. injection.
Training	1.4	There is no relation between women's training and at least 4 visit for ANC.
Recreation	1.5	There is no relation between women's recreational program and at least 4 visit for ANC.
Counseling program	1.6	There is no relation between women's counseling program and at least 4 visit for ANC.
Media exposure	1.7	There is no relation between media exposure and at least 4 visit for antenatal care.
		Institutional Delivery (ID)
Education	1.8	There is no relation between women's formal education and Institutional delivery.
Training	1.9	There is no relation between women's training and ID.
Recreation program	1.10	There is no relation between women's recreational program and Institutional delivery.
Counseling	1.11	There is no relation between women's counseling program and Institutional delivery.
Media exposure	1.12	There is no relation between women's media exposure program and Institutional delivery.
		Postnatal care

Variable	S.N.	Hypothesis
Education	1.13	There is no relation between women's formal education and visit postnatal care.
Training	1.14	There is no relation between women's training and PNC.
Recreation	1.15	There is no relation between women's recreational program and postnatal care.
Counseling	1.16	There is no relation between women's counseling program and postnatal care.
Media exposure	1.17	There is no relation between women's media exposure program and postnatal care.
Set 2:		
RQ 3 What are the other factors influencing on maternity care rather than education?		
	2	There is no relation between socio-economic status (wealth/ the Kathmandu Valley) and maternity care.
		Antenatal care
Wealth status	2.1	There is no relation between wealth status and at least 4 visit for antenatal care.
Kath. Valley	2.2	There is no relation between Kathmandu Valley and at least 4 visit for antenatal care.
		Institutional delivery (ID)
Wealth status	2.3	There is no relation between wealth status and ID.
Kath. Valley	2.4	There is no relation between the Kathmandu Valley and ID.
		Postnatal care
Wealth status	2.5	There is no relation between wealth and visit PNC.
Kath. Valley	2.6	There is no relation between Kathmandu Valley and PNC.
Kath. valley	2.7	There is no difference in BCG immunization program between

Variable	S.N.	Hypothesis
		inside and outside the Kathmandu Valley.
Set 3:		
RQ 4 How are intermediate variables such as, reproductive behavior, access to and utilization of health care services influencing the maternity care?		
	3	There is no relation between reproductive behavior, access to utilization of available health services and maternity care.
		Antenatal care
Mother's age at child birth	3.1	There is no relation between the mother's age at child birth and at least 4 visit for ANC.
No of children	3.2	There is no relation between the number of children and at least 4 visit for ANC.
Use of health service for other Medical.pro	3.3	There is no relation between the use of available health service for other medical problems and at least 4 visit for ANC.
Distance to a health facility	3.4	There is no relation between distance to the nearest health facility and antenatal care.
		Institutional delivery
Mother's Age At child birth	3.5	There is no relation between the mother's age at child birth and Institutional delivery.
No of children	3.6	There is no relation between the number of children and Institutional delivery.
Use of available	3.7	There is no relation between use of available health service for other medical problems and institutional delivery.
Distance to a health	3.8	There is no relation between distance to the nearest

Variable	S.N.	Hypothesis
facility		health facility and Institutional delivery.
		Postnatal care
Mother's Age at child birth	3.9	There is no relation between the mother's age at child birth and visit postnatal care.
No of children	3.10	There is no relation between the number of children and visit postnatal care.
Use of available Health service	3.11	There is no relation between the use of available health service for other medical problems and visit PNC.
Distance to the health facility	3.12	There is no relation between distance to the nearest health facility and postnatal care.
Set 4:		
RQ 5: What are the indicators of women empowerment, equity, satisfaction, responsibility and the plan for maternity care and show how they are influencing the maternity care?		
	4	There is no relation between empowerment, equity, satisfaction, the plan for maternity care, and responsibility and the maternity care
		Antenatal care
Empowerment	4.1	There is no relation between the shopping power and at least 4 visit for ANC.
Equity	4.2	There is no relation between the way of dealing by SP and at least 4 visit for ANC.
Satisfaction	4.3	There is no relation between the household environment and at least 4 visit for ANC.
	4.4	There is no relation between the care givers behavior and at least 4 visit for ANC.
Plan for maternity	4.5	There is no relation between the plan for maternity care and at

Variable	S.N.	Hypothesis
care		least 4 visit for ANC.
Responsibility	4.6	There is no relation between the willingness to monitor the pregnancy status by household head and at least 4 ANC visit.
		Institutional delivery (ID)
Empowerment	4.7	There is no relation the shopping power and ID.
Equity	4.8	There is no relation between the way of dealing and ID.
Satisfaction	4.9	There is no relation between the household environment and Institutional Delivery.
	4.10	There is no relation between the care givers behavior care and Institutional Delivery.
Plan for maternity care	4.11	There is no relation between the preparation of basic things for safe pregnancy and Institutional Delivery.
	4.12	There is no relation between the willingness to monitor the pregnancy status and Institutional Delivery.
		Postnatal care
Empowerment	4.13	There is no relation between the shopping power and visit PNC.
Equity	4.14	There is no relation between the ways of dealing to the pregnant women by SP and visit Postnatal Care.
Satisfaction	4.15	There is no relation between the household environment and visit Postnatal Care.
	4.6	There is no relation between the care givers behavior and visit Postnatal Care.
Plan for maternity care	4.17	There is no relation between in the preparation of basic things for safe pregnancy and visit Postnatal Care.

Variable	S.N.	Hypothesis
Responsibility	4.18	There is no relation between the willingness to monitor the pregnancy status of pregnant mother and visit Postnatal Care.

Assumptions

The following assumptions are associated with the conceptual framework and the design of this study.

- This theory would be apply, if other things remaining the same.
- The researcher assumed that the pregnant women answered the questions about themselves honestly and truthfully.
- The local enumerator translates the research tools correctly in local language; data are collected accurately reducing the cultural accessibility to information.
- Respondent did not have any political forces or other bias about access to health facility along with service providers.
- The ethics of researchers is honest.

Delimitations of the Study

Although the objective of the study was to sketch a path way how formal and non- formal/informal education has influenced on the use of maternity care through reproductive behavior, access to and utilization of available health care services by employing multivariate analysis, due to the limitations of time and large number of variables; this study has delimited Bivariate analysis showing the relationship between independent and intermediate variables .However, logistic regression analysis was carried out to examine the influence of intermediate variable on dependent variables.

Definitions of Key Terms

Access: it is defined in terms of geographical, social, financial and cultural distances between potential users and service delivery point.

Age of mother at child birth: Time completed by a woman in terms of years at the birth of her baby. It was calculated at the time of birth by subtracting infants' age from her age. With the permission of NDHS, (2006) the study consider Women in Reproductive Age (WRA, 15-49 yrs).

Antenatal care: Antenatal care is an umbrella term used to describe the medical procedures and care that are carried out during pregnancy (McDonough & Marilyn, 1996, pp.1-15). The overall aim of the antenatal care is to improve the health of mother and baby at the end of pregnancy (Lindmark & Cnattigius, 1991). Three parameters used in this study were: (I) number of ANC visit (ii) the use of the package of antenatal care services (as of eight use six types of services by the pregnant women during the period of antenatal checkup (iii) immunized two does of tetanus toxied injection.

Cost coping strategy for maternity care: Short-term strategy protecting household production and assets or money and borrowed money from various sources.

Counseling: It refers formal advice about maternity care given by someone to the pregnant women.

Delivery care: delivered baby at a health facility (either in private or public).

Distance to the nearest health facility: The travelling time needed from home to a health facility for the pregnant women.

Ecological Zone: It refers the mountain, hill and Terai area in this study.

Empowerment: The terms refers capable to initiate discussion with her husband, and for family member in maternity care, children education, and use of contraceptives measures, job sharing in kitchen by male people, shopping, decision making and supremacy power adopted by the male people .

Equity: Fair dealing to the pregnant women, encouragement to explain women's problem one-by one, equal opportunity in service and offered by the service providers and free atmosphere for exposure with service providers

Ethnicity: It refers various ethnic groups or castes

Formal education: The level of education completed by a pregnant woman and her husband. This was systematic teaching in school. The received credits, grade or diplomas – that was recognized and sanctioned by the society's most legitimate formal system of teaching and learning (Belle.T,1981).

Health care service: it is considered for the welfare of pregnant women and new born child health care services in this study.

Hear/use of family planning method: The permanent/ temporary method for contraception devices.

Kathmandu Valley: it refers Kathmandu district for the Kathmandu Valley and other district likewise Sindhupalchok, Syangja, Banke, Kailali were consider outside Kathmandu Valley.

Maternity care: This was vague term and thus, limited the benefit obtained by the pregnant women from the available medical or non-medical care, before during, and after delivery. Antenatal, delivery and postnatal care were considered the dependent variables.

Media exposure: listening to a radio /watching the television refers the media exposure.

Non- formal/Informal education: Both non-formal informal education comprises all forms of organized education that are not included in the regular schooling system: adult education; education for dropouts; literacy projects; agricultural extension or information; occupational training, in-formal training program; health education; education for family planning, and so on (Coombs and Ahmed, 1974, as cited Szirmai, 2005. P. 238) ,the life long process of accumulation of knowledge and skills, through experience in daily life –at play, at work, at home or elsewhere (Coombs, 1985; p.24, 1974 as cited by Szirmai, 2005. P. 238) was considered the non-formal/informal education in this study. Based on the above criteria training, counseling, recreational program and media exposure was considered as the non-formal/informal education in this study.

Number of children: Exact number of living children that women have in her lifetime.

Place of Residence: A state of living in a place.VDC for rural areas and municipality for urban areas. If not municipality, district headquarters in urban areas

Plan for maternity care: Oral or written action plan for medical checkup. This plan answers what to check, when to go, where to go and how to go and whom to visit. Similarly, some stock such as arrangements of food, some additional money for and fruit and three people prepared for blood donation in case of emergency period.

Postnatal care: Care for mother and newborn child after delivery. Used parameters for these variables were three: (I) visit to a health facility for PNC check up (ii) visiting doctors (iii) service providers' immunized BCG injection for new born child within 3 days either in health service point or home.

Recreational Program: Transfer of knowledge through experiences, learning and doing, sports, dancing, singing, music were considered recreational program.

Reproductive Behavior: Age of mother's at child birth, number of children, marriage age of the women and other sexual activities were considered reproductive behavior in this study.

Residence: Three variables were consider under this headings: (a) rural vs. urban (b) inside the Kathmandu Valley vs. outside from the Kathmandu Valley (c) Ecological zone.

Responsibility for maternity care: parenting skills transferred to the pregnant women by service providers, willingness to monitor the pregnancy status by household head, and life style adopted by the pregnant women.

Satisfaction: Satisfaction of pregnant women with household environment managed by household head and behavior offered by the service providers.

Training: It refers systematic teaching learning process development outside the school for pregnant women provided by any agency (Belle, Thomas, 1981) and the areas of skill development were knitting, sewing, weaving, gardening, painting, computer or any type training more than 15 days.

Use of health services for general health/medical problem: Visit to the health facility by a pregnant women for other medical problem.

Wealth status: Household assets like, radio, TV, car, bicycle, roof, piped water, sanitation facilities, cement use, floor and electricity.

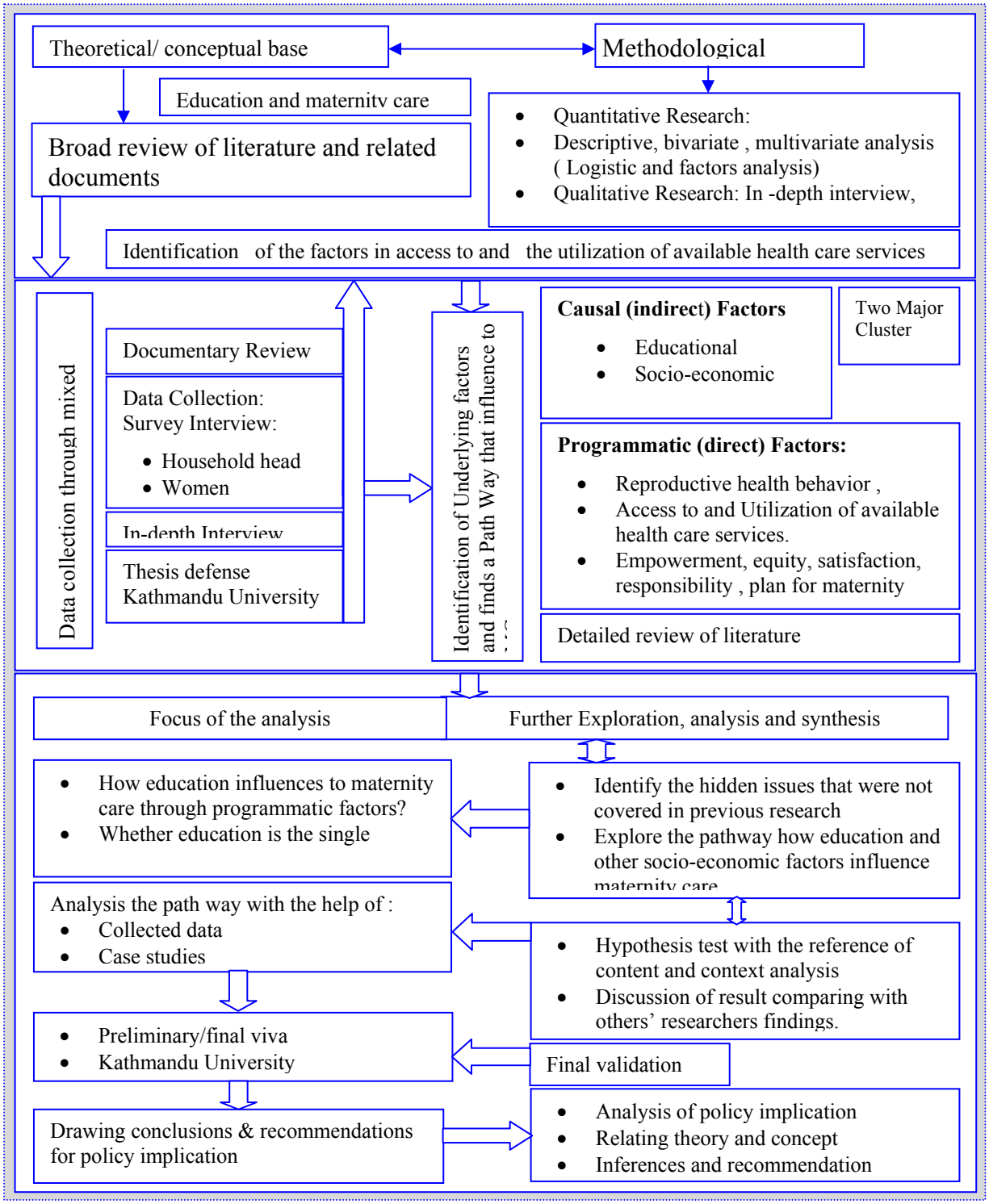
Work status: Women on the job with pay were refers the work status in this study.

Research Framework of the Study

Figure 2 Illustrates overall Framework and Roadmap of the present research In terms of its logical flow, process and different methodological application. The figure shows step by steps for research activities of this study.

Figure 2

Research Framework of the Study



Chapter Plan of This Thesis

The study report has been organized in ten chapters. Organized chapters are based on research questions.

Chapter I: This chapter presents introduction, nature of the study, significance, purpose, theoretical framework conceptual framework, research questions, hypothesis, assumptions, delimitations, and definitions of key terms.

Chapter II: This chapter deals with literature review, description about human capital theory of education, screening theory of education, reproductive health, concept and aspects of the maternity care, variable wise viewed literature both in global and national level.

Chapter III: This chapter includes study population of research, sampling frame, site and survey, stratification of the study areas, determinants of sample size, and allocation of samples have been included in this study. Similarly, description of research tools, validity, reliability, explained the methodology and procedures followed while conducting survey, selection and training for enumerator, tools for data analysis.

Chapter IV: This chapter deals with maternity care status - symptoms of pregnancy complication. By using the secondary data the study analyzed Doctor – population ratio, Nurse–population ratio, Para-medical staff and population ratio. Descriptive analysis and cross- tabulation among risk group of women and the use of available health care services.

Chapter V: This chapter presents maternity care status by education. Cross tabulation between formal and non- formal/informal education with all indicators of

dependent variables including reproductive behavior, access to and utilization of available health care services are presented in this chapter.

Chapter VI: Maternity care status by socio-economic background is presented in this chapter. Cross -tabulation between socio-economic with all indicators of dependent variables including reproductive behavior, access to and utilization of available health care services are also presented in this chapter.

Chapter VII: This chapter presents the result and findings of intermediate variables such as, reproductive behavior, the age of mother at child birth, the number of children, the use of available health care services for other medical problems and the access to health care for the maternity care are also presented in this chapter.

Chapter VIII: Result of new variables generated under the headings of empowerment, equity, the plan for maternity care, responsibility of an individual, household head, service providers. Result of factor analysis of these variables, reliability test, and correlation analysis for internal consistency are presented in this chapter.

Chapter IX: This chapter discusses the hypothesis set, result of logistic regression analysis; discussion of the gross and the net effect are presented in this chapter.

Chapter X: This chapter presents the summary of major findings; theoretical contribution of this study, conclusions and recommendations for policy makers to improve the maternity care status. Finally, sections on references and annexes are included.

CHAPTER II

LITERATURE REVIEW

Introduction

The purpose of this study is to supplement the body of knowledge on the status of maternity care. The information of the review is related to the following six areas : (a) human capital theory of education and screening theory of education, reproductive health, concept and aspects of maternity care (b) previous research on maternity care (c) mother's education and maternity care (d) socio-economic status and maternity care (d) reproductive behavior and maternity care (e) access in health facilities and maternity care (f) utilization of available health care services and maternity care (g) empowerment, equity, satisfaction, the plan for maternity care and (h) responsibility of pregnant women and maternity care.

Human Capital Theory of Education

Concept of human capital. Human capital is defined by the OECD (2007) as the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being. Further, WDR (2007, p.28) has used broader range of knowledge, skills, capabilities, that people need for life and work. Traditional human capital refers to the education and health levels of people as they affect economic productivity. In addition, the traditional notion highlights the skills and capabilities required for successful living. These fall under the three main headings (a) family, (b) job and (c) community (see annex 5). As regards to the family there are health and good parenting and managing or resolving conflict skills

which could be considerable elements of human capital theory of education . The job covers a range of skills and capabilities required to obtain and retain a job above and beyond the technical competence such as self-discipline and teamwork. The community encompasses the skills and capabilities involved belonging to community, enjoying its privileges and protections and living up to its obligations.

Similarly, Todaro (1993) defined that productive investments embodied in human persons are the human capital. They included skills, abilities, ideals, health, etc that result from expenditure on education, on the job-training program, and medical care. It can be said that elements of human capital theory of education are education capabilities, health, conflict, migration and so on.

Evolution of human capital theory. There is a long history about the evolution of human capital theory of education. Traditionally, many economists believed four things- the factors of production: (a) land (b) labour (c) capital (d) organization and paid less attention on reproduction. Recently, Sachs (2005) explored the concept of clinical economics the five things -factor of reproduction: (a) the human body is a complex system (b) complexity requires a differential diagnosis (c) all medicine is family medicine (d) monitoring and evaluation are essential (e) medicine is a profession. However, still that was narrow route for reproductive behavior and therefore the study focus on clinical governance- (a) empowerment, (b) equity, (c) satisfaction, (d) the plan for maternity care and (e) responsibility of mother towards newborn child.

Turning to the history of economic, as cited by OECD (2007) Scottish economist Adam Smith argued that “set of individual capabilities is a kind of capital”. He believed that economic activity was fuelled not by workers as a collective mass but by “the acquired and useful abilities of all the inhabitants or members of the

society. Another economist Robert Solow in the 1950s explained the relationship between various factors of growth –labor and physical capital by building economics model.

During the period of 1960s, an American economist Schultz (1961) pioneer of the concept of human capital theory of education observed and explained that mother education can influence child health in five ways : (1) education may lead to a more efficient mix of health goods used to produce a child;(2) a better educated mother may be more effective at producing child health for a given amount and mix of health goods; (3) schooling can affect parents preferences in systematic ways-for example, an educated mother tends to opt for fewer but healthier children; (4) more schooling increases family income, either through higher wages or increases productivity in self employment, which improves child health status; and (5) education raises the opportunity cost which tends to increase the time of working outside the home and thus reduces both maternal time for child -care and duration of breastfeeding Basu (1996 as cited by Furuta & Salway, 2006) documented that greater education may reduce the power difference between service providers and women.

Similarly, Ainsworth (1996) carried out the study of Fourteen Sub-Saharan African Countries and revealed that women schooling had effects on fertility and contraceptive use through wage effect, higher demand for child schooling, reduced child mortality, and the effective use of contraception. Lloyd et al; (2000, as cited by Szirmai, 2005) documented similar result through the external effects of education. That means the inclusion of education leads more rapid technological change, reduced fertility and better infant health.

Szirmai (2005) the professor of Technology and development studies at Eindhoven University of Technology, the Netherlands further discussed the human capital theory of education clustering in three versions. The author documented that there is a positive relationship between the years of education and a level of personal income. The second version of this theory documented that "society as a whole would be benefited from an increasing supply of better –educated workers and citizens". The final, version of this theory is that initially there would be lower growth and lower productivity rate due to the slower economic growth and later on there would be higher productivity and growth rates due to the high technology, knowledge and skills of labour, family and parenting skills.

There are some questions that, is it possible to apply the essence of human capital theory of education on health. Inquiry into each factors has in large measures along it's with narrow route. Recently, health economist Fox -Rushby and Cairns, (2005 p.123), Santerre and Neun (1996) documented that a rational individual or pregnant women always think the following cost and benefit of pregnancy care.

Cost of care:

Direct cost. User charge (doctors' fees, registration fees), nutrients food, investment on knowledge, teaching learning materials including audio-visual materials, transportation cost to a health facility, preparation of basic things, clothes for babies for mother and new born child, cost for iron tablets, laboratory test (urine, blood pressures, blood) cost and so on.

Indirect cost. Opportunity cost for mother from pregnancy, child rearing cost, lose for job, behavior of the service providers, cost from loosing job as well as cost for to her neighborhood or family member or community may lead.

Psychological cost. Fear anxiety, pain, cost of life style i.e. cigarette smoking, and alcohol drinking.

Benefit from care:

Direct benefit. Opportunity of better income as the result of the continuation of the job. Maintain or restore the depreciated health of mother and new-born-child.

Indirect benefit. Improve the quality of life; teach the techniques to estimate the total benefit of a medical intervention, discounted value of future earnings resulting of an improvement in or an extension of life. Moreover, change attitudes of the pregnant women, household head, service providers upon reproductive behaviors access to and utilization of available health services as well as increase cognitive skills of the newborn child.

Critic of human capital theory .The critic of the human capital theory argued that formal education is necessary but not sufficient condition for development. They argued that education is both the seed and the flower of economic development (Szirmai, 2005, p. 223). Mitch (as cited in Szirmai, 2005) argued that education level was not essential for agricultural and industrial development. As cited by the same author the other researcher Bowmen and Sandberg suppose literacy only mattered for limited number of clerks, engineers, bookkeepers, managers and foremen and no need formal education to reproduce a child and participating sexual activities in human being. Another researcher, Fox -Rushby and Cairns, (2005, p. 123) argued that it may lead gender discrimination in the work place, fails value of any pain and sufferings averted because of a medical treatment, and difficult to measure two way relationship (who works is determined by health and more productive people may also may also spend more maintaining health) between health or symptoms of pregnancy

complication and productivity. Therefore, screening theory of education was presented broader and an alternative theory of education for maternity care.

Screening Theory of Education

Essence of screening theory of education. The main essence of this theory is that education itself does not contribute to a persons' productivity and they argued that knowledge and skills acquired in educational institution are not applied in ones' later career. Moreover, the specific skills required in a profession are learned on the job rather than at school (Berg, 1970; Blaug, 1985; Dore, 1976; Spence, 1973 as cited by Szirmai, 2005). According to Szirmai, (2005, p. 221) the key elements of screening theory are:

*Learning by doing***.** On the job many employees do not use any of the cognitive knowledge they learned at school. Most skills needed in modern industries can be acquired within a few weeks, this respects' on the job training and "learning by doing" are of great importance.

Screening .Screening is one of the social functions of education .Given insufficient information; it is plausible to conclude that education, educational qualifications serve as an important screening device for job applicants.

Diploma inflation. Expanding the educational system does not always contribute economic development. Especially the rapid expansion of secondary and higher secondary may lead "diploma inflation".

According to this theory the mass function of education is to develop personal qualities such as, self-reliance, self-esteem, autonomy, and flexibility, capacity to assume leadership roles, managerial qualities and initiative. The most important contribution of education is indeed "learning to learn", reading, writing, and

arithmetic are basic requirements for being able to learn on in life .Cognitive skills learned at skill increase wages and are direct determinants of productivity and such skills depends on reproductive behavior, which is one of the most important aspects of reproductive health.

Reproductive Health

Concept of reproductive health .Recently, attention has shifted from maternal and child health and family planning to reproductive health, "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, in all matters related to the reproductive system and its function and process. The reproductive health has three components: the ability to procreate, regulate fertility and enjoy sex; the successful outcome of pregnancy through infant and child survival and growth; and the safety of the reproductive process (Mitchell, Littlefield & Gutter, 1999). However, components of reproductive health can be considered more broadly, than, family planning, antenatal care, postnatal care, management of the complications of abortion where safe abortions are not widely available. Therefore, the concerned of the study is maternity care which is one of the most important components of reproductive health.

Concept and Aspects of Maternity Care

Concept and aspects of maternity care. According to safe motherhood program of Nepal (1996) maternity care means provides the essential care services for pregnant women to ensure safe delivery, including postnatal care and treatment of complications of the mother and new-born child, from the time of pregnancy diagnosis through delivery and postnatal period. Several studies have documented the

dimension of maternity care but are varied. For example, WHO presents five-dimensions of care: pregnancy care, labor and delivery, postnatal care, neonatal care, anesthetic care. Similarly, SMRHW, Core Group (2004) and WHO (2002) have also presented five -dimensions but two different names; preconception/ Inter –conception, and postpartum care. In addition, Standard for Maternity Care developed by Royal College of Obstetrician and Gynecologist have presented (a) pregnancy care (b) antenatal care (c) pregnancy related complications (d) intrapartum (e) neonatal care (f) postnatal care (g) care of babies. Campbell and Graham,(2006) specify all pregnant women: (i) intra-partum women (iii) all postpartum women (iii) pregnant, intra-partum, postpartum women with complications (see annex 6). NIRPOT (2003) carried out a survey in Bangladesh about Maternal Health Services and Maternal Mortality Survey (2001) has been presented the three dimensions: (a) antenatal (b) delivery (c) postnatal care. Based on the above information the concern of this study is of three aspects of maternity care (a) antenatal care (b) delivery care (c) postnatal care.

Antenatal care. Medical procedure and care that are carried out before delivery provided by a health worker, either in a medical facility or at home is considered antenatal care service. The overall aim of this care is to produce a healthy mother and a healthy baby at the end of pregnancy (Lindmark & Chattinguis, 1991 as cited by Mcdonagh, 1996), improve certain output through detection, management of and referral for potential complications, although such care has not been shown to reduce rates of maternal mortality (Carroli et al., 2003, as cited by Reynolds, Wong & Tucker 2006).

Various research documents have been developed various indicators to measure ANC services. For example, Safe Motherhood and Reproductive Health Working Group [SMRHWG], Core group recommended the indicators were divided

into four level: (a) household level-the household prepares for birth and is ready for complications, including accessing essential and emergencies care during pregnancy, identifying dangers signs, and establishing a supporting environment for the pregnant women, (b) community level- the community facilitates birth preparedness and birth complications readiness at that household (c) first- level care -skilled ANC provides for normal pregnancies, and manages /or refers complication and (d) second -level care: provides comprehensive ANC for pregnancy complications and referrals. Similarly Royal college of Obstetricians and Gynecologists recommended two standards: (a) antenatal screening (b) routine antenatal care.

Utilitarian theory of micro economics advocates that equilibrium between demand and supply related factors plays significance role to restore or maintain the "depreciated health" (Henderson .2005, Santerre & Neun, 1996) due to the symptoms of pregnancy complication. However, different researcher argued in different ways: For example, one of the classical French economists J.B. Say' said "supply creates its' own demand" it means supply factors influence on the utilization of available services. Recently health economists Santerre and Neun are also near on the favor of Say's laws and argue that supplier induces demand and in their words:

> "Physician takes the advantage of the asymmetry of information about medical care to convince their patients to consume more medical care than is necessary to further their own economic self-interest (Santerre & Neun, 1996, p.559)"

Similarly, other researchers Jahn, Lang, Shah and Diesfield (2000) have revealed that service providers or suppliers' side is being more responsible for lowering the maternity care. They carried out a study about maternity care in rural

Nepal, aiming to assess the performance of maternity care and its specific service components (preventing interventions in antenatal care, antenatal screening, referral, and obstetric care) in Banke District, using a set of structure, process, and output/outcome based indicators. The data sources includes health service documents in first level health units and two hospitals , covering 1378 pregnancies and 1323 deliveries, structured observations , antenatal care exit interviews (n=136) and interview with maternity users (n=146). The coverage of antenatal care (28%) and skilled delivery care (16%) is low. In antenatal care, preventive interventions are only partially implemented (effective iron supplementation in 17 % of users). The study concluded that the lowering in the use of the maternity care is the result of deficiencies of all supply side or service components. However, Sundari (1992), Jelley and Madeley (1983) considered "patient's factors" were responsible for the failure of health care services.

In contrast, Sundari (1992) carried out a research about how the health care system in developing countries contribute to maternal mortality and concluded that "patients factors" are being responsible for the failure of health care services but the health care system is not responsible. Examples of such factors would be: delays before patients present themselves at hospital, or patient's refusal of treatment. Similar findings have been drawn by Jelley et al., (1983) in a research, which was conducted in Maputo, Mozambique. They revealed that women were at greatest risk but did not the used the available health care services. However, these two studies were limited only to hospital base information.

By considering socio-economic factors Abedin, Islam and Hossain (2008) carried out a research about antenatal care during pregnancy: a study on Naogaon districts of Bangladesh. Information was collected from 800 ever- married women by

interview method. The study revealed that respondent's education husband's education and occupation, place of residence, current use of contraception, frequent visit of health workers influential factors in the use of antenatal care during pregnancy but the coverage of the component was in narrow route.

Delivery care. According to Graham,W. Bell, and Bullough .C. (2001) the care babies who are delivered by skilled providers with adequate medical supervision, proper medical attention and hygienic conditions during delivery care either in hospital or in home is known as delivery care. Various research documents have been developed various indicators to measure delivery care. For example, [SRHWG,Core group, 2004] recommended the indicators were divided into four levels:(a) household level-the household prepares for a safe and clean birth , and has an emergency plan, (b) community level- the community supports families in efforts to ensure safe and clean deliveries, and mobilizes around emergency plans (c) first- level care - standards in addition to the above levels, health facilities are staffed with skilled attendants and stocked with essential supplies to ensure safe and clean deliveries . Health facilities work with communities to reduce delay in complication recognition and treatment (d) second -level care: standards in addition to the above level; secondary health facilities provides emergency obstetric care. Similarly Royal college of Obstetricians and Gynecologists recommended two standards: (a) pregnancy - related conditions (b) intrapartum care.

The objective of this care is to protect the life and health of the mother and her new born child (NDHS, 2001). Safe delivery care depends on the three conditions: (a) the location of women when they delivered babies (b) who is attending them (c) how quickly they can be transported to referral- level care. First,two factors are related with supply factors and remaining factors are related demand side. Place of birth can

play a significant role to ensure maternity care. For examples, Murthy, Vinayaka, Hari, Kumar and Rajasekhar (2007) carried out a research about the place of birth and organizing delivery care in Bangladesh. Similarly Koblinsky, Campbell, Heichelheim (1999) carried out a research relating the information of other developing countries. Both study concluded that location of the place as well as referral system directly influence in the use of maternity care as a result lowering in maternal mortality.

In contrast, some of the researchers documented that most of the women still prefer home delivery. For example, Murthy et al. (2007) carried out a research about the place of birth: why urban women still prefer home deliveries? The study has revealed that a good proportion of short-term migrants, respondents with low levels of education, lack of media exposure, low standard of living were more log odds of using home and public facility than private facility.

Similar findings were documented by Bhatia and Cleland (1995) and the majorities of the deliveries take place at home and are attended by untrained *dais* and elderly ladies in Bangladesh. Probably most of them lack the knowledge of aseptic techniques of delivery and many follows superstitious customs and practices which may endanger the health of the mother and the child.

Another researcher Kunst and Howling (www.jsieurope.org) documented that the poor-rich difference is the influential factor in the utilization of delivery care. Inequalities occurred due to the confounders such as rural-urban residence and the lower use of delivery care by poor mothers is partly due to the lack of proper education. Thus it can be concluded that both demand and supply factors plays significance role for delivery care.

Postnatal care. Visits to a health facility or skilled birth attendants after the delivery to checkup the health of mother and newborn are considerable postnatal care.

The objectives of this care is prevent or early detection and treatment of complication, advice for breastfeeding, parental skills, birth spacing, immunization and maternal nutrition breast care and care for newborn child. A woman should have at least three visits with a health worker. Among these three visits first visit is for BCG immunization within three days.

Various research documents have been developed various indicators to measure PNC. For example, Safe Motherhood and Reproductive Health Working Group, Core group renamed postpartum for postnatal care and recommended the indicators were divided into four levels: (a) household level- prepares for the postpartum period and is ready for complications, including accessing essential and emergency care, identifying danger signs and establishing a supporting environment for the postpartum women. (b) the community facilitates postpartum preparedness and complication readiness at the household and community (c) first- level care – skilled providers give postpartum care to all delivered mothers, facilities are equipped, staffed and managed to provide skilled care to the postpartum mother and child (d) second -level care: skilled providers give postpartum care to all delivered mothers, facilities are equipped , staffed and managed to provide skilled care to the postpartum mother and child. Similarly Royal college of Obstetricians and Gynecologists recommended numerous standards : (a) neonatal care(b) postnatal assessment and care of the mother(c) supporting infant feeding (d) care of babies requiring additional support (d) care babies born prematurely (e) promotion of healthy parent- infants relationship (e) transition to parenthood (f) supporting families who experience bereavement , pregnancy loss , stillbirth or early neonatal death (g) clinical governance (h) maternity and neonatal networks.

Some of the researcher concluded that supply factors are importance for postnatal care. For example , Rana,Rajopadhayapa,Bajracharya,Karmacharya and Osrin (2003) carried out another study about midwifery care in Nepal by using standardized interviews and record interview of the Birthing Center (BC) of Patan Hospital of Lalitpur with the sample sizes 988 women (550 at BC, 438 at CMU). Information was collected by standardized interviews and the record interview. The main outcome measures were (a) the incidence of complications of labor, (b) the technical procedure access to postnatal care and (c) the family planning services. This study revealed that women delivering at the BC. were more likely to attend both the postnatal (RR 1.33, 95 percent CI, 1.18.-1.51) and the family planning clinics (RR 1.85, 95 % CI 1.44- 2.38) but this was limited only hospital base information.

Previous Research on Maternity Care

Viewed information on previous research was associated with the independent variables of this study. Independent variables were related with knowledge and socioeconomic factors. Again knowledge related variables have been sub-classified into formal and non-formal/ informal education. Socio-economic variables were related with wealth, work, ethnicity, and place of residence. Further, place of residence is subdivided into the Kathmandu Valley, ecological zone, and rural –urban difference.

Formal Education and Maternity Care

Mother's education and maternity care. Women's schooling is associated with much of the world's improvement in maternal and child health since 1960 (Bicego & Boerma 1993, Caldwell .1979, Cleland & Ginneken .1988, Haddon and London,

1996; Emily & Claudia, 2003).Evidence for this association has been widely interpreted as representing a causal influence of formal education on health. Therefore, positive relationship between education and health is well established but explanations for this relationship are far more complex. Fuchs, (1979 as cited by Santerre and Neun1996, p. 30) has argued that acquisition of education and health depends on the value people place on future events, or the rate at which they discounted future events. This is because they want better life and better health.

Does Women Formal Education Influence on Maternity Care?

In theory, there is inverse relationship between the level of education and the episode of illness of pregnant women. Since women schooling has an effect on reproductive and maternal behavior on the utilization of available health care services by adopting the strategy of delay pregnancy, to maximize the life chances of children and to minimize the number of children and the burden of diseases. Further, education gives the individual opportunity to cope with a changing society (Carlson Per. 2000). Various researchers like as, Hogan, et al; (2010),Bhatia and Cleland (1995), Levine (1980); Rowe (2005), Paul (1998), Masaki and Gubhaju (2001; Madhavan and Thomas, K. Bloom (2005), Furuta and Salway (2006) ; Stone, (2003); Barrera (1990) and Rout (2006) , (1998) show the relationship between education and maternity care with various result.

Hogan, et al,(2010) carried out a research about maternal mortality for 181 countries, 1980-2008; a systematic analysis of progress towards millennium development goals. The sources of data were from vital registration, censuses, surveys and verbal autopsy studies. They estimated that there were 342900 (uncertainty interval 302.100-394.300) maternal deaths worldwide in 2008, down from 526300

(446.400-629.600) in 1980.The global MMR decreased from 422 (358-505) in 1980 to 320 (272-388) in 1990 and was 251(221-289) per 100 000 live births in 2008. The study concluded that combinations of the four powerful drivers are contributing for global progress to reduce the MMR: (a) rising number of women of reproductive age and the decrease in TFR (b) income per head (c) maternal education attainment, rising average years of schooling of women aged 25-44 year and (d) proportion of women giving birth with a skilled attendant. However, the country specific care information is being needed in regards to this issue.

Bhatia and Cleland (1995) conducted a cross- sectional survey during 1903 in urban and rural areas of Karnataka state, India. The survey included 3595 currently married women aged less than 35, who had at least one child under five. First, the study categorizes obstetric problems (symptoms of pregnancy complication) reported by pregnant women and observed health care during pregnancy, delivery and postnatal period by urban-rural residence of women. Nine out of ten women had at least one antenatal consultation during their most recent fertile pregnancies. Most consultations were with doctor and there was minimal use of the services provided by paramedical staff of the primary health care system. The study revealed that the educational background, economic status and religion of the mother are significant predicators of the use of maternal health services. But, this study focuses only on quantitative analysis.

Similar symptoms were documented by Smith, Lakhe, Thapa, Rajbhandari and Neupane (1996) also documented from the pregnant women of maternity care hospital Kathmandu, Thapathali Nepal. The total of 274 women who had admitted in, for delivery completed structured interviews on their experiences with maternal morbidity. The study found that overwhelming majority (94%) of respondents

suffered from the problems or illness during pregnancy or during the labor and delivery. However, information was limited on hospital base data .Another study carried out by Maine (1998, as cited by Furuta, 2006)) found that even when women knew about their obstetric complications do not seek care because of the poor quality of care as their expectation.

Levine (1980) produced a research paper about the influence of women's schooling on maternal behavior in the third world mainly focusing on the value of children. The main task of this report was to set ideology aside and to consider to what extent mother education had effects on child care and family life by identifying research question, reviewing empirical studies and interpreting their results with as little bias as possible. This report set up three hypothesis: (a) the more educated the mother would be the more likelihood to adopt parental investment strategies designed to maximize the life chances of her children, that is the probability of survival good health and economic success under the new conditions of life brought about by urbanization, economic development, and the introduction of western schools and medical services (b) In the case of fertility, the inverse relationship between years of school and numbers of children holds for their husband too, but less strongly and hardly at all when income is held constant and (c) the more educated the mother the more possible to provide her child with more useful forms of instruction, encouragement, interaction and exposure, transmitting skills and shaping his or her psychological development in distinctive and perhaps adaptive ways.

The researchers conducted their research in two phases. (a) In the first phase, they extremely appreciated and supported Thomas (1977) and revealed the positive relationship between education (both sex) and favorable attitudes to reduce fertility. Due to the small sample size of that study, Levine (1980) continued the study in

second phase, considering national sample of 2000-3000 respondents in each of nine countries: Indonesia, Korea, the Philippines, Republic of China, Singapore, Thailand, Turkey, Germany and the United States and found negative relationship ($r = -.11$, $P<.05$) in Turkeys' study carried by Kagitcibasi (1978). Based on the above mixed result Levine concluded that psychological change is stronger than economic change. However, the country specific information was needed for further clarification.

By using primary and secondary data from Nepal Family Health Survey (1996) Rowe, Thapa, Levine and Tuladhar (2005) carried out a research in Nepal showing the relationship between schooling and maternal health practices. This study was conducted in Kaski and Chitwan districts of Nepal. Snowball sampling method was adopted in which the field team visited household starting from a central neighbourhood in each site. There were 102 sites, 868 households, and 482 mothers whose children aged 12-60 months. This study used simple correlations (Pearson's r) of maternal health knowledge and behaviour with schooling. Factor analysis was done for data reduction. Additional sites were therefore, added until the proportion of unschooled mothers dropped below 50 % (42%). This raised the total Chitwan sample to 276 mothers (as opposed to Kaski). A literacy test, household survey, and maternal health surveys were administered orally in Nepali by native speakers to all 482 participants. Husband schooling, household wealth, caste, rural, literacy (standardized) media and, health knowledge were used as independent variables to predict maternal health behaviours. Household wealth, a composite summing whether or not the current household had specific items (e.g. electricity, iron, telephone, bicycle, motorcycle, toilet and type of house.) averaged 2.5 was used to show the wealth status of an individual. Again, principal components were used to understand the health-related knowledge, and practices. Seven items like (a) the number of

causes, (b) preventions (c) range of HIV/AIDS (d) knowledge of the medicintions (e) knowledge on the polio vaccine (f) knowledge of vaccines needed to be given to children, and (g) Knowledge on number of types of contraceptives were used to understand status of the women.

Health behaviour was the sum of a mothers' responses on the 9 items which included information on (a) the prenatal care during their last pregnancy, (b) the use of iron tablets during pregnancy (c) taking TT vaccines (d) the place of delivery their last child in a health facility (e) the use of latrine at home (f) washing hands after defecation (g) the use of iodized salt (stock of any medicine at home and (h) the treatment of unsafe water by boiling and or filtering .This study revealed that literacy assessment was a valuable instrument for investigating the pathways from formal education to maternal health behaviour. It suggested that further improvements were needed in the quantity and quality of women's schooling. However, this study was limited on snowball sampling and did not consider the issues of non-formal/informal education, empowerment, equity, satisfaction, the plan for maternity care and the responsibility of the pregnant women.

By using the data from World Bank Living Standard Survey, Paul (1999) carried out a research in Morraco about how schooling of mother improved child health and revealed that literacy skill improved the abilities of women to understand health information and interact effectively with health practisener.

Ainsworth, Beagle and Nametag (1996) carried out a research study of fourteen sub-Saharan African countries about the impact of women's schooling on fertility and contraceptive use. The hypothesis of this study was that educated women, could learn about and the use of contraception more effectively than illiterate women reducing the number of unanticipated child birth. The author used the data

from DHS conducted since the mid 1980s. This study found that female schooling has positive relationship with contraceptive use at all levels.

Masaki and Gubhaju (2001) carried out a research about women's status, household structure and the utilization of maternal health services in Nepal by using the logistic regression model, based on the data from NFHS, 1996. The data were collected from 8,429 married women to provide detailed information on fertility, family planning, infant and child mortality maternal and child health and nutrition. The use of prenatal care, the place of delivery, and professional assistance at delivery were used as the outcome variables and education, work status, job type, cash income, decision –making ,economic status, family structure , male/female headship, household size, residence, and region were used as the independent variables.

The sampling frame for the NFHS was the 1991 population census. They revealed that even primary -level of education was stronger influential factor to maternity care than other factors. Further, they noticed that bringing about changes in women's status would take several decades. However, this study, which has used secondary data and ignored equity- issue, is limited to formal education only.

Furuta and Sarah, (2006) carried out another study about women's position within the household as a determinant of maternal health care use in Nepal. Data on married women aged 15-49 from the NDHS (2001) were analyzed to explore three dimensions of women's position within the household-decision-making, employment and influence over earnings, and spousal discussion of family planning.The sample size of that survey was 8,400 married women who had given birth three years before the survey.Logistic regression model assessed the relationship of these variables. They revealed that women’s' secondary education was strongly associated with greater use of health care. Lower percentage of even highly educated women were

involved in decision making regarding their own health. This study suggested that greater attention needed in intra-household decision-making process in maternity care.

Stone, Ingham and Simkhada. (2003) carried out a research on knowledge of sexual health issues among unmarried young people in Nepal. The research consisted of a quantitative self-completion questionnaire distributed among young people attending classes 8, 9 and 10 in Dhading, Morang and Lalitpur districts. There were four sections in the questionnaires: (a) covered basic demographic questions including age, sex, family composition, parental education and employment status, ethnicity, religion and as measured by provision of household amenities and assets, socio-economic status. Section 2 asked the respondents about their current sources of information about sexual and reproductive health. Sections 3 was related with pupils' view, and section four was focused on the sex and sexuality education the respondents received at school. Two models (applied logistic regression) were used in this study. The study clearly showed that basic sex education at school (psychological and mental changes during puberty and the male reproductive system) plays an important role informing young people about sexual health matters. However, mainly it focused on HIV/ AIDS.

Elo. (1992) carried out a research showing the relationship between formal education and the use of maternal health- care services in Peru: net of the mother's childhood place of residence, household socio-economic and access of health care services. The data used in this study came from the Peruvian DHS of reproductive - aged women carried out in September –December 1986 with standard questionnaires. A two stage, cluster-sampling procedure was designed so that the sample was self-weighing within each of Peru's 17 geographic domains. 4,999 women were surveyed using the standard DHS questionnaire. The researcher used ordinary logistic

regression and computer software STATA package. The results from both the cross sectional and fixed effects model, controlling for service availability and the socioeconomic status of the household, conformed the importance of maternal education on the utilization of both prenatal care and delivery assistance. In addition, large differentials were found in the utilization of maternal health -care services as per the place of residence. Suggested that much greater efforts on the part of the government are required if modern maternal health care services are to reach women in rural areas. However, did not consider for non formal/ informal education.

Barrera (1990, as cited by ELo.1992, p. 2) a sketched a pathway to show how mother education influenced maternity care by changing knowledge and perception. As cited by same authors Orubuloye, Caldwell (1975) and Caldwell, 1979 and (1990) found that educated women were more benefited from available public health -care services than the uneducated women were, in Nigeria. Moreover, Caldwell believes that a woman who has been to school is more likely to feel personal responsibility for the health and welfare of her children, to enlist her husband and mother-in-law in this effort and to initiate a change in intergenerational relations in the family such that children get a larger share of family resources, gives less labor, and incur fewer risks. Finally, education also modifies women's beliefs about disease causation and cure and thus, influences on domestic child -care practices with modern health care services.

Rahman ,Choudhary,Mamun (2008) carried out a study to evaluate the effects and some selected demographic , socio-economic , cultural and programmatic factors on safe maternity delivery practices (delivered assisted by doctors , trained nurse or midwives and family welfare visitors) among the Bangladeshi women through the logistic regression method. The study was based on the national level data drawn from Bangladeshi Demographic and Health survey (BDHS, 2000) with a sample of 10146

ever married women aged 10-49 years who had at least one delivery before they were interviewed. The result of logistic regression showed that uneducated was less to have safe maternity deliveries.

Women's Formal Education does not Effect on Maternity Care?

Levine (1980) carried out a research during 1974-76 with the support of the National Science Foundation (SOC 74-12692) National Institute of Mental Health and concluded that the schooling of women becomes with confounded with the one's husband's occupation, education and income. In the set of hypothesis, concerning schooling and mothering, Levine (1980) viewed some research articles and documented that schooling and mothering in Africa, Philippines, and Los Angeles has found mixed relationship between mother schooling and maternity care.

Resenzweig and Schulz (1982, as cited by Elo.1992, p. 2) carried out a research about child mortality and fertility in Columbia. They viewed that female schooling and health care services were partial substitutes for information regarding knowledge of diseases, treatment of illness and child-care practices and hypothesize that the effects of education on child health becomes less important as access to public -health care services improves. Presumably, in areas where such services are readily accessible, both educated and uneducated women use them and thus advantages given by schooling are narrowed. Their studies support partially for this hypothesis. Their results are consistent with the findings of other studies that have shown that differentials in child mortality by maternal education are less pronounced in countries with strong public health program, such as Costa Rica and Cuba (Behm, 1979; Palloni 1981& Schultz, 1990, p. 2)

Kagitcibasi (1978) presented a paper at Turkish social science association seminar on women's in Turkish Society and shows that wife's education has a negative relation with numbers of children who wanted ($r = -.11$, $P < 0.05$), even when the influence of age, income and family type is controlled. Education is also strongly related to parity (number of existing children)…. when the effect of age controlled, the correlation between wife's education and parity increases from -.26 to -.31 ($P < .05$). Turkish study seems to indicate the schooling affects fertility at least partly through modification of the attitudes of women. However, this study did not show the effects of psychology on economic change.

Navaneenthan and Dharmalingam (2000) carried out a research about the utilization of maternal health care services in South India in the states of Andhra Pradesh, Karnataka and Tamil Nadu by using the data set from the National Family Health Survey (NFHS). For each state separate sample designs were applied and sample were drawn using multi-stage, self weighted sampling procedure. The study concluded that determinants of maternal health care services were not the same across state. Although, illiterate women are less likely to use maternal health care services, there was no difference among the educated group.

By using the data from Turkey DHS Celik and Hotchkiss (2000) carried out a research about the socio- economic determinants of maternal health care utilization in Turkey. The purpose of this study was to investigate the individual-household and community level factors that affect women's use of the maternal health care services in Turkey. They used logistical regression techniques to estimate models of the prenatal care users and birth delivery assistance among whom there had been at least one birth in three years prior to the survey. Data were collected from 6,519 married women on their reproductive histories, fertility, the use of family health and family

planning services and the health of their children. The result revealed that educational accomplishment, parity level, health insurance coverage, ethnicity, household wealth and geographically region were statistically significant factors that affected the use of health care services.

Behrman & Wolfe (1987a, 1987b, 1992) have proposed that the association between mother's schooling and health outcomes may reflect not only the influence of education, but the women's childhood background, for which education serves as a proxy. Other researchers (Caldwell, 1979; Caldwell, Reddy & Caldwell, 1983; Al Kabir; 1984; Rosenzweig & Schultz, 1982, Barrera, 1990 as cited by Frankenberg, 1993) have often suggested that the impact of access to health facilities varies by local level of education. One argument suggests that education and access to services are substitutes: access to services is more beneficial to the infants of poorly –educated women than to the infants of well-educated women. Another argument posits that education and access to health services are complements: infants of educated women have to gain more from access to services than infants of uneducated women do.

Husband's education and maternity care. Another part of this study was formal education of husband. Since an educated husband developed better plan for the maternity care consulting with his wife about importance of maternity care, monitor and managed pregnancy complication, reproductive behaviour, the access of health care services, and motivated the use of health care services when compared to an educated husband. However, known information in regards to this issues were varies. For example, a study carried out Ganatra ,Coyall and Rao (1998) about too far, too little, too late : a community -based case control study of maternal mortality in rural west Maharastra, India found a significant association between a low level of husbands' education and the risk of maternal death. Thapa, Chongsuvivatwong and

Ulstein (2000) carried out a research high -risk child birth practices in remote Nepal and they documented that if the husband had a level of education greater than fifth grade, it significantly reduced the high risk practices in all stages of childbirth. Similarly, Olsen (2008) carried out a research risk factors for maternal death in the highlands of rural northern Tanzania: a case –control study. The study concluded that low education of the husbands was associated with increased risk of maternal death.

Another study, Coombs and Fernandez (1978, pp. 57-73) carried out a research in Malaysia about husband -wife agreement on reproductive goals. To determine level of agreement between husbands and wives they used a scale measures on preferences for number and sex of children as well as the conventional measure of desired the number of children. They found that husbands with higher educational status were less likely to communicate with their wives if the latter had less education. In contrast, Furuta and Salway (2006), and Elo (1992) documented that level of husbands' education was less significant than the mothers' education in the use of contraceptives measure. Similarly, in a study carried out by Hodgkin (1996) from Kenya in household headed by males, and women was found not using the health facilities provided by the community. The above information were documented about for and against of the formal education on maternity care, but less information were collected how non -formal/ informal education such as, training, "working experience, learning by doing", recreational program, counseling program influence on the maternity care.

Non-formal /informal Education and Maternity Care

Non-formal education such as, training, on-the-job training adult education, counseling, and recreational program and working experience, learning by doing" and

informal education like, media exposure could be the functional alternatives of formal education. Such kinds of alternatives may effects on maternity care through sharing the idea about self , home and hospital care fertility decision, reproductive behaviour, providing the information about life-style practice, access of modern health care facility like as, where to go , when to go and how to go? The targets groups of non-formal education are adult, ethno-religious, professional, school–dropout group and school incompletes, youngsters who never went to school and out-of school youths (Szirmai, 2005; Kasaju, 1983, Coombs & Ahmed, 1974).

Training and maternity care. Training is one of the important components of non-formal education .The study assumed that there is positive relationship between training and the maternity care. Memoria (1984 as cited by Bhatta, 2052) documented that training is a process of learning, a sequence of programmed behavior and it gives people awareness on rules and procedures to guide behavior. Painting, farming, nursing, singing, mass education, skill education, women- centered education were the subject matter of training. Training can develop the skills of the pregnant women and then she can earn money for maternity care.

Further, training changes attitude and behavior of the pregnant women through various channels (a) boost up learning capabilities and developed potentialities of self-direction of a pregnant women, developed the capacity of exposure, initiate to develop the plan for maternity care and about the benefit of contraception with husband and other people (b) relevant information such as, sex education, unwanted pregnancies, responsibility of parents' and household head to the newborn child (c) breastfeeding , parenting, cleaning and giving oil massage, clothing, sunbathing, giving warm compression, very few studies were conducted regarding this issue. For example, by using the data from National Family Health

Survey (NFHS) of India, Lee and Mason (2005) carried out a research showing the relationship between mother's education (learning -by -doing) and child health care and concluded that training through peer review and self-assessment supported in the improvement in primary health care. However, this was limited only to prenatal and postnatal care and ignored delivery care.

Learning by doing is another component of non-formal education. Very few researches have been conducted in this area. For example, Pradhan (1999) carried out a research about traditional Nepali mother and baby care practices showing the relationship between mother and babies. The study concluded that traditional baby care practices, particularly oiling the baby in the sun, use of *Tori* (a variety of mustard) use of *gajal* (eye-lining made up local materials) and feeding practices of the baby could provide significant basic positive impact in the growth and development of the baby from birth but paid less attention on modern health care services.

Recreational programs and materity care. The third components of non-formal/informal education of this study are recreational program. It was generally believed that women who participated in recreational activities were more likely to visit a health facility for maternity care compared women who did not like this. This was because they were more exposed to service provider, acquired knowledge, and knew the place to go and how to go for better maternity care. Historically, Belle (1981) documented that recreational program as, singing, dancing, and composing poems were used to transfer the knowledge fertility and sexual behaviour from one person to another and thus, should recognized as the part of education but in the absence of research, this remained only a hypothesis, though this study showed the importance home care.

Counseling and maternity care. Counseling is the other considerable variable of this study. It is hypothesized that women with formal advice are more likely to have better maternity care than women who did not get opportunity for this. This can be used to (a) provide information about pregnancy complication and to reduce hypertension (b) impart knowledge on the importance of nutritious food and breastfeeding during pregnancy and postnatal care (c) teach the use of contraception, and (d) utilize the available services of maternity care. Very few researches have been carried out in this issue and with mixed results. For example, Kim, Putjuk, Basuki, and Kole (2000) carried out a research with Indonesian service providers. This study interlinked between counseling and maternity care and found positive impact on maternity care. However, recommended country specific information to understand the impact of counseling.

Media exposure and maternity care. Media exposure is being the most important factor of maternity care. It is generally believed that women who have opportunity listening TV and radio are more likely to have better maternity care than women who did not have such opportunity. It provided information to change the harmful habit of an individual, delivered the message for fair services, gave advice to utilize the available health care services and (d) fostered inter-personnel, relationship, which could facilitate behavioral changes allowing for the adaptation of new/ different behaviors.

Thapa and Mishra (2000) carried out a research about a mass media exposure among urban youths in Nepal. The source of data came from the Nepal Adolescents and Young Adults (NAYA). The survey's sampling included the five largest urban areas, Kathmandu, Lalitpur, Pokhara, Biratnagar and Birjung which together account for approximately 50 % of the country urban population. To make it gender-friendly

women interviewed female respondents and men interviewed men respondents. They found that a married man watched television daily compared to a married woman (relative odds ratio 0.359 $p< 0.001$ vs. 1.354, $p<0.01$). The adjusted odds of daily exposure to each media source were much lower among married respondents than among their single counterparts. The results of this study underscored the potential use of the mass media in health campaigns and intervention program for youth in urban areas of Nepal.

By using the data, Nepal Family Health Survey (NFHS, 1996), Dhakal (2001) carried out a research about factors related to unmet need for family planning among women in reproductive age groups in Nepal. By looking at the cross -tabulation, this study showed the positive relationship between husband -wife communication and the use of contraceptives measures but the study was limited to secondary data only.

Stephenson and Matthews (2004) carried out a research about maternal health-care services used among rural-urban migrants in Mumbai, India. Local research assistants by means of in-depth semi-structured interviews, collected data from migrant and non-migrant women. This study suggested information provides about the access of health service, transportation cost, places to contact, and the way to go were the influential factors for institutional delivery. However, this study was limited to in-depth interview only.

Rout (2006) documented that the positive association between education and health is well established but, explanation for this association are not clear. As cited by same authors (Ross & Wu, 1995) well-educated people enjoyed better health than the uneducated people as indicated by high levels of self -reported health and physical functioning and low level of morbidity, mortality and disability. In contrast, low educational attainment is associated with high rates of infection diseases, many

chronic noninfectious diseases, poor health, and shorter life expectancy (Feldman, Makue, Kleman & Cornoni-Huntley, 1989; Guralink, Land & Branch 1993; Morris, 1990 as cited Rout, 2006).

Socio-economic Status and Maternity Care

Several researchers like Elo (1992) , Celik and Hotchkiss ,(2000) ; Glei, Goldman ,Noreen, and Rodriguez, (2005) and Beutelspacher, M.Rosales, Izaba, Martelo, Emma and David (1999) carried out studies showing the relationship between education and maternal health care and revealed nearly universal relationship between education and maternity care. However, some other researchers argued influential factors should not be limited to education only since maternity care was the result of other factors. For example, a study carried out by Pena, Wall and Larsaki (2000) concluded that apart from absolute poverty, social inequity, illness of children, death of children may be an independent risk factor for infant mortality in low-income country and ultimately such phenomenon affected maternity care. Thus, this study considered four set of variables such as work, wealth status, ethnicity and place of residence.

Work status and maternity care. Work is associated with maternity care. It is generally assumed that women who are working in non-agriculture sectors are more likely to have better maternity care than those who are working agriculture sector. This was because of cash income. Several studies showed the mixed result. For example, by using the data from the National Family and Health Survey (NFHS) Navaneetham and Dharmalingan, revealed that earning capacity could contribute to the use of maternal health care services by empowering women inside and outside the household. It was also found that non -working women's likelihood of seeking some

maternal health care services was higher those of women earning in Andhra Pradesh (delivery assistance) and Tamilnadu (antenatal care and institutional delivery). In contrast, Furuta and Salway (2006) found that women's employment did not contribute to greater use of maternal health care, in Nepal.

Wealth status and maternity care. Maternity care depends on wealth status. The channels are various: (a) wealthy people can afford more money to take care of their children when sick, (b) they have access to health services and financial institutions (c) they have access to travelling nutrient foods (d) they can afford warm and clean clothes (d) they have better dwelling conditions contributing to better health and (e) they can minimize pregnancy frequency. Several studies were carried out showing the relationship between wealth status and maternity care with mixed result (Ronsmans, Koblinsky, 2006, Anawar; 2005; Celik 2000).

Ronsmans, Holtz, and Stanton, (2006) carried out a research on socio-economic differentials in caesarean rates in developing countries. They used data from 42 demographic and health surveys in Sub-Saharan Africa, South and Southeast Asia, and Latin America and the Caribbean and revealed three hypothesis (a) caesarean rates were extremely lower among the very poorest quintiles than the richer quintiles (b) deliveries among urban women showed higher rates of caesarean than among the rural rich except in the central African Republic, the Philippines, the Dominican Republic and Brazil (26 of 42 differences are significant) (c) Caesarean deliveries among the rural rich were higher than their poorer counter-parts in all countries but Benin (24 of 42 differences are significant). However, this study was limited only to secondary data though this study used wealth index to measure socio-economic status.

Similarly, by using three data sets (a) HDSS birth file (1997-2001), (b) pictorial card data (1997-2001), (c) the 1996 socioeconomics census data for the entire Matlab HDSS area, Anawar, et al,(2005) carried out a research in Bangladesh about inequalities in utilization of maternal health care services - evidence from Matalab. The study listed forty -one household assets like as, Khet, car, lamp, clock and so on and wealth index was built and defined poverty in terms of assets or wealth rather than income and consumption approach.

Similar pattern was followed by Malhotra, Mathur, Pande and Roca (2005).They, observed the distributional impact of participatory approaches on reproductive health for disadvantages youth in Nepal. Factor analysis was used for data reduction. The principle component method was used for factor analysis. Wealth quintile was used as developed by Gwatkin and others 2000 used ByWorld Bank. These studies revealed that income was more important predictor for the maternity care than other factors like education, physical distance, transportation cost, and referral system. Similarly, Rout (2006) examines the effects of income and education of the household on its health expenditure, based on primary data collected from *Jaipur* district of Orissa revealed that the income has greater positive effects on health expenditure than education. By using three indicators of household wealth like car ownership, the type of sanitation facilities used by the household members, and the type of floor in the women's house Celik, et al., (2000) carried out a research in Turkey. The analytical tool of this study was logistic regression and showed that owning a car was significant predicator of maternal care utilization.

Most of the researchers found that utilization was varied in terms of wealth status but in contrast, Sri Lanka was only country that showed equitable use of health professionals for births across quintiles (Koblinsky,2006).

Ethnicity and maternity care. Ethnicity is associated with maternity care. Ethnic groups could under or over use such care. Several studies (Glei,et al. 2003; Celik & Hotchkiss 2000: Navaneethanm & Dharmalingan, 2000; Schuler & Goldstein, 1985), were conducted showing the relationship between ethnicity and maternity care in various countries and were found mixed results. For example, Pouele & Martin, (2005) carried out a study about the question of health inequality in South Africa by using a Self Assessed Health (SAH) indicator. The main dimensions of the study were three: (a) inequality in access to health care (b) disparity in quality of health care and (c) racial discrimination in demand for health care. This study revealed that the white were more benefited than the non-white. The study suggested that each of this dimensions needed to be further analyzed and evaluated.

Glei, et al, (2003) carried out a research about utilization of care during pregnancy in rural Guatemala by dividing mainly people into two-ethnicity (a) descendents of Mayan were considered indigenous people and (b) others pro-conquest groups. They assumed that with some exceptions, indigenous population was poorer than the other groups. Similarly, Celik, et al., (2000) carried out a research about the socio-economic determinants of maternal health care utilization in Turkey and attempted to understand disparity in the use of health care services between Kurdish and Turkish citizens. The study revealed that Kurdish women used less health care services than Turkish women who utilized prenatal care and birth delivery assistance.

Despite the great efforts to maintain fairness services, providers had bias for maternity care in Nepal. For example, Schuler, Mcientosh, Goldstein and Pande (1985) undertook a study in Nepal to evaluate the client/ provider transaction, separating the accuracy and completeness of information given from the biasness of

the service provider. The study found a strong bias in methods their "lower class" clients were recommended. They were advised not to use condoms and were advised to use pills, IUDs, inject able contraceptives and sterilization but information was collected by qualitative approach. In contrast, Navaneethanm, et al., (2000) revealed that caste and religion were not the main factors in the use of antenatal care services in Andhra Pradesh and Karnataka. Thus, country specific information is being needed to understand maternity care status.

Place of residence and maternity care. Place of the residence was a strong predicator for maternity care. The categories of residence may vary but this study has considered three: (a) place of residence (b) ecological zone, (c) Kathmandu Valley. It is generally assumed that women who lived in urban areas were more likely to have better maternity care than women who lived in rural areas. This was because of more information about the health facility. They normally visited a health post for a general medical problem and had less the transportation cost than women who lived in rural areas. Several studies have been conducted regarding this issues and mixed result are found (Furuta et. al, 2006; Navaneethanm et al, 2000.

By using the data set from NDHS (2001), Furuta et al; (2006) revealed that higher proportion of urban women than rural women received antenatal care (79% vs. 36 %) and delivery care (53% vs. 10 %). Differences in the use across regions were also significant , with women living in the Terai being more likely than those living in the mountains or hills to receive antenatal (43 % vs 26.37 %) or delivery care (15 % vs 5.13 %).The authors suggested to raise the level of knowledge to ensure maternity care but were limited on ANC and DC.

Navaneethanm et al., (2000) revealed that urban residence increased the likelihood of institutional delivery and assistance during delivery. Moreover, this

study found that women living in rural areas were more likely to receive antenatal care than those living in urban areas. In contrast, as cited by Navaneethanm, et al; (2000) Govindasamy and Ramesh (1997) showed that rural and urban women did not differ in utilizing antenatal services. The researcher concluded that determinants of maternal health care services were not the same across the states.

The other categories of residence were from Kathmandu Valley and it was generally assumed that there are no differences in the use of maternity care services between inside and outside from the Kathmandu Valley. A final category of residence was ecological zone. It was generally assumed that women in terai region to have better maternity care than women from mountain areas. However, in the absence of evidence these assumptions are being imaginary.

Reproductive Behavior and Maternity Care

The word reproductive behaviour is related with a women's reproductive period which is from menarche to menopause. For practical purpose this is generally defined as beginning at age 15 and ending at age 49 (Lucas and Meyers, 1998), Mc Carthy and Maine (1992). Age, parity, child survival, and marital status are included in reproductive status. By considering mother's age at childbirth and the number of children, the study made an observation of the influence of reproductive behavior on maternity care.

Mothers' age at child birth and maternity care. There is association between mother's age at childbirth and maternity care. In addition, it is generally assumed that younger women are more likely to visit a health facility than older women. Popular demographer, Maine (1981 as cited by Mc Carthy, 1992, p: 23) showed "J" shape relationship between the age of mother at child birth, parity and maternal mortality

ratio. It means high risk for very young women, older women, women with no children, and those with many children but is lower for women in between. There are two reasons for this: (a) younger has less experience for prolonged labour (b) Adolescents who became pregnant may cut their education short because they are forced to leave school (Reynolds, Wong & Tucker, 2006).However, country specific information is needed.

Reynolds, et al., (2006) carried out a research about adolescents'' use of maternal and child health services in developing countries by using DHS data of 15 developing countries. They examined adolescents' use of antenatal, delivery care and infant immunization of services compared to that used by older women. They generalized that the use of maternal and child health care did not vary by mothers' age. There were no differences in health care used by mothers' age in the African countries except in Uganda. The authors concluded that country-specific investigation was needed in Asia to find out the reasons for differences in use of services.

The number of children and maternity care. It is hypothesized that women with more the numbers of children visit health care facilities for maternity care than the women who have less number of children. By using the data from NDHS, a study carried out by Furuta, et al. (2006) found that there was a big problem of maternal and child health care with higher number of children. Based on the bivariate analysis, they study found that the percent of women using skilled antenatal and delivery care fell from 49% and 20%, respectively, among 15-19 years old to 22 % and 6 % respectively among women aged 35 or older. Likewise, the proportion of using two types of care dropped from 56 % and 27 %, respectively among women who had one child to 19 %t and 4 %, who had had six or more children. However, this study was limited in secondary data.

Utilization of Available Health Services

Utilization of available health services refers the use of available health services. It consists of visiting to a health facility for general medical problems, heard /use of family planning methods. These variables plays significance role to ensure the maternity care.

Visiting to a health facility for general medical problems and maternity care: A woman who visits health facility for other illness rather than the symptom of pregnancy complication is more likely to have better maternity care compared to a woman who visits a health facility less frequently. The former has more contact with the service provider, is able to make an enquiry about her reproductive behavior and can receive advice to stop harmful practices if any. In addition, they may have an opportunity to buy contraceptives measures. However, little information was gathered linking between the effects of other medical problems on maternity care.

Use /Heard of family planning method and maternity are. Women who can mention the name of contraception is more likely to use it appropriately than the women who cannot mention its name correctly. Here the assumption is that the former could the use the contraceptives measure for birth spacing and limiting the number of children. However, oral information collection, comparison between users and listeners of contraceptives were little known.

Access to Health Service and Maternity Care

The definition of access is complex, various authors (Torgerson Wortsman & McIntosh, 2006; Wimhardeman (2000) Wimvan, Maurits, Heng & Brunol; Weisman, 1998 as cited by Moss 2002; Pullum , 1991 as cited by Mroz, Bollen, Speizer &

Manicini, 1999; Bertrand, et al. 1995; Chayovan et al, 1984 as cited by Mroz, et al., 1999) defined accessibility but no unique definition.

Torgerson, et al; (2006) conceptualized "the right service at the right time, in the right place" or context was the aspects of access but Wimhardeman, et al., (1998) considered "financial, geographical, informational and intra-household". Weisman (1998 as cited by Moss 2002) added some additional dimension insurance and "ability to pay" and in other components was on the line of Wimhardman, (Pullum, 1991 as cited by Mroz, Bollen, Speizer & Manicini, 1999) "Economic accessibility", "administrative accessibility" (Mroz, et al., 1999) "Psychological accessibility" (Bertrand, et al; 1995; Chayovan, et al, 1984 as cited by Mroz, et al.,1999). However, methods to measure these kinds of information were infancy and thus collected information about the distance of the health facility and cost coping strategy of for maternity care.

Distance to the health facility and maternity care. Distance to a health facility is associated with maternity care. In theory, a woman in short distance to the health facilities is more likely to utilize more maternity care than a woman in long distance. Very few studies were conducted regarding these issues. For example, Furuta, et al., (2006) carried out a study about women's position within the household, as a determinant of maternal and health care use in Nepal. It revealed that receiving services was also associated with their perceived accessibility. Women who reported the geographical or economic accessibility as a big problem were less likely to receive skilled maternal health care especially during delivery. However, this study used secondary data limiting only to delivery care.

Further, this study did not consider the nearest distance to a health facility from cost point of view. Frankenberg and Nicholas (1993) carried out a research

about the effects of access to health care on infant mortality in Indonesia. The results of the fixed effect model suggested that health services do significantly alter infant mortality risks. In particular, access to maternity clinics and to the doctors reduces the risk of infant mortality.

Cost coping strategy of an individual and maternity care. Alternative way to collect the fund for maternity care is a cost coping strategy. It is hypothesized that women who have willingness for the cost coping strategy are more likely to have better maternity care than women who do not have such a strategy. There are several ways: (a) the individual may have social contact (b) borrowed from relatives, Bank, neighbors, (c) selling their animals or grains from their house (d) joining a insurance company (d) changing the reproductive behavior (e) encouraging ideal family size (f) effort of fewer children to enhance better health and education (g) making social network and social support program for pregnant women.

Very few studies have been carried out in this issue. For example, by using 556 household Sauerborn, Adam and Hien (1996) carried out a research about household strategies to cope with the economics cost of illness in Burkina Faso. The study viewed that using and mobilizing savings, sales of assets, loans, income diversification , wage labour, free care, gifts were considered cost coping strategy for health care but concluded that sales of livestock was the main strategy to cope the cost of health care. However, information was limited in qualitative part.

Similarly, another study Nahar and Costello (1998), carried out a qualitative research about maternity care status focusing on the hidden cost of free maternity care in Dhaka, Bangladesh 220 postpartum mothers and their husbands were selected from four government maternity care facilities for this study. Some mothers with serious complications were excluded. The information consisted of cost, household income,

source of income and the family willingness to pay cost for maternity services. The study concluded “free maternity care in Bangladesh which included considerable hidden cost which may be a major contributor to low use of maternity care, especially among low income groups but was limited on hospital based information.

Others New Variables Generated Through Factor Analysis

Besides these variables, other important variables are related to maternity care. These variables related falls in components of empowerment, equity, satisfaction, and responsibility of household head, service provider, plan for maternity care;and these variables may have either positive or negative influences on maternity care.14 new variables were constructed under foresaid five variables to observed the attitudes and perception of the pregnant women.

Women’s empowerment and maternity car*e*: It is generally assumed that women with higher empowerment status are likely to have better level of maternity care than women with low empowerment status. There are three ways the women with empowerment can support to boost up maternity care. (a) The women can purchase consumable food items like rice, pulse, fish, meat ghee, fruit, milk, butter, clothes and so on for her and her children (b) They can communicate with her husband and other family members about antenatal care, birth control use, birth spacing, and the plan for maternity care (c) Such women can walk alone to a health facility for medical checkup .However; indicators about empowerment were little understood.

Very few studies were conducted regarding this issue. For example Pitt, Khandker, Shahidur and Cartwright (2006) carried out a research in Bangladeshi on Empowering Women with Micro Credit by conducting the household survey in 1998-99 with a follow up survey of an earlier survey conducted in 1991-92. In course of a

household survey 1,798 house-owners were randomly interviewed from 87 villages of 29 Thanas in rural Bangladesh. Of the 29 *Thanas,* 24 were program T*hanas (*from each of three programs Grameen Bank, BRAC & BRD-12 project) and five non-program Thanas. Three villages in each program were randomly selected from a list of programmed villages. By using the factor analysis, 75 individual variables were reduced to 10 variables, which were examined to see partial correlation among different dimensions of empowerment and exogenous covariates.

Another study with the title Can women's autonomy impede male involvement in pregnancy health in Kathmandu, Nepal? Was carried out by Mullany,Hinde and Becker (2005) using in-depth interview and focus group discussion. A questionnaire focusing on household decision –making and husband's role during pregnancy was administered to 592 pregnant women receiving antenatal services in a large maternity hospital. Multivariate regression techniques were used to compare male involvement in pregnancy health. This study revealed that the positive relationship between joint decision-making and male involvement implied that communications between couples and shared negotiation strategies could improve health practices. However, this study was mainly limited to hospital-based data only.

Equity and maternity care. Most of the policy makers and planners and researchers have paid more attention to incorporate 'equity' in their policy agenda, although there is no unique and precise definition of the term. Since equity plays significance role to increase maternity care, perhaps providing equal opportunity in maternity care and fair health services.

Several major world religions endorse the notions of social justice and care for the poor. Buddhists see 'care to the poor' as a duty, Christians "love neighbor", as themselves, and the Hebrew word for "Charity" is the same as the one for "justice".

One of Islam's five pillars of faith is Zakat, providing for the poor and needy (WDR 2007). This study considers the equal opportunity and exposure with health workers.

Equity is also a key theme in secular philosophical traditions. Western political and ethical philosophy, for instance, has long been concerned with distribution. In ancient Greece Plato argued that if a state is to avoid ….civil disintegration …… extreme poverty and wealth must not be allowed to rise in any section of the citizen -body because they lead to disaster. Roman law, while discriminating against slaves, as all ancient empires, also laid the foundations for some of the principles of equality that underlie modern legal principles of equality in the modern legal principles in many countries. In the modern era, western thinking about social justice is greatly influenced by utilitarianism-the idea, originally from the concept of equity was drawn by Human Development Report, 2007 which define this is an opportunity rather than welfare. Various researchers (Rows, 1971; Sen, 1985; Daniels, et al. Dantes, Khan, & Pannarunothai, 2000; Dixon & Grand, 2006, Thapa & Mishra, 1992) carried out research about equity.

As cited by USAID, SIDA, PAHOO (2007) the concept of equity and inequity in health are rooted in the framework of Row's (1971) theory of distributive justice. The theory developed the idea that all social primary goods like as, liberty and opportunity, income and wealth, and the bases of self-respect-are to be distributed equally, unless an unequal distribution of any or all of these goods is to the advantage of the least favored. From the idea mentioned above, as cited the same authors Oliver and Mossialos, (2004) carried out research equity of access to health care: outlining the foundations for actions. The study concludes that at least three principles of equity are needed to achieve the health of an individual. These three principles are:(a)

equal access to health care for those in equal need of health care (b) equal utilization of health services for those in equal need of them and (c) equitable health outcomes.

Each of these three principles requires the satisfaction of different conditions which make them more or less suitable for operational policy objectives within the scope of the health care. Sen (1985) recognized Row's "primary goods" and added additional capabilities required to discharge the specific actions within or across the states. Roemer (1998) argued that equity needed an "equal opportunity" policy. Recently, Daniels, et al. (2000) developed 82 criteria about benchmarks of fairness for health care reforms: policy tools for developing countries and tested the criteria in Thailand and recommended to apply specific country base program.

Dixon and Grand (2006) published an essay entitled 'Is greater patients choice consistent with equity? This article shows that demand and supply side played vital role for inequities in maternity care. Ability to share the idea and information between women and health workers plays significant role to understand each other's problem and develop confidence between service providers and recipients. There are several ways to maternity care: (a) making sure patients understand maternity care given by health workers (b) convincing the need of the care and recognizing the available health services. Very few studies have been conducted regarding this issue. For example, Thapa and Mishra (1992) carried out a research about contraception use among postpartum women by using DHS data of 25 developing countries. The study found that contraceptive use was considerably lower among unexposed women than the women who were exposed.

Plan for maternity care and maternity care .Plan for maternity care is a complex event and vague subject. The study is limited plan for maternity care. Since the experience of the plan for maternity care influences the future wellbeing of the

women, her child, and her relationship , as well as, the women relationship with her partners (Brudal 1985, Green, Coupland Kitzinger, 1990; Logerkrantz, 1974; Morris Thompson,1992; Oakley,1993 as cited Berg, Lundgren & Lindmark, 2003).Moreover, if they are in an obstetrical –risk situation , the women can be fragile and vulnerable during the child bearing period (Mccain & Deatrick 1994; Mercher, 1990; Stainton, & Mcneil, H. ,1992 as cited by Berg, et al., p. 2)

Recently, most of the planners and health professionals recognized the plan for maternity care which could be a corner stone for maternity care. Since it is assumed that a woman with a plan is more likely to visit maternity care more frequently and timely than the women who do not have one. Influential channels vary; (a) she may prepared action plan (b) managed food and additional money, stretcher, and (c) requested three people for blood donation in case of emergency care.

Very few studies were conducted in this issue. For example, Gay Hardee et al. (2003 as cited by [SMRHG, Core Group] (2004) documented that household birth planning includes preparation for birth using the five cleans: (a) locating a birth attendant and planning for contracting attendant at time of delivery (b) having a transportation plan in case of emergencies (c) availability of family care givers, readiness to provide help at home as needed, (d) having some money for care during emergencies (e) transportation, The findings suggested that people requested for blood donation could be considerable factors for plan for maternity care . However, known information was limited.

Another study was carried out by Berg, et al.,(2003) in the maternity care in Sweden by setting two segments (a) antenatal care, which is part of the community health care system and offers assistance to all women during pregnancy and 12 weeks

postpartum and (b) high-risk antenatal care and delivery care at the hospital level. The study concluded that an individual birth does not appear to improve the overall experience of child births rather it seems to intensify the negative feelings in several aspects. For example, negative feelings were found in birth plan due the symptoms of pregnancy complications but realized country specific research is needed.

Satisfaction and maternity care. Satisfaction of the pregnant women with household head, family members and service providers is being another important component of maternal care. Household environment managed by household head and service provided by care giver behavior was included under the heading of satisfaction. A woman satisfied with her intake, behaviour of household head, service providers, and husband is more likely to get better maternity care compared to the dissatisfied women. Satisfaction is the cause and consequence of services given by household head and other services providers. In addition, anxiety, fear and worry about the food stock and the distance of the health facility could be the indicators of dissatisfaction but in the absence of research such indicators are not well understood. Daniel, et al.,(2000) and Bruce (1990) have explored the influential factors for satisfaction in health care services but these criterion were not tested specifically in the reference to maternity care and thus, needed country-wise specific research.

Responsibility and maternity care. Parenting skills transferred to the pregnant women by service providers, willingness to monitor the pregnancy status by household head, smoking and drinking habit of the pregnant women are the components of responsibility adopted by the pregnant women. In theory, the demand for the maternity care services is depended on the responsibility of pregnant women.

Moreover, a cogitative skill of the newborn child is also depended on sustainable life-style of the pregnant woman. Therefore, need to restore and maintain the depreciated health of the pregnant women through the following ways: (a) compensating illness by increasing the demand for medical services (b) providing cost timely compensation (c) providing cost for the newborn child with tuberculosis or HIV/AIDS. However, in the absence of evidence this hypothesis remained imaginary. Therefore, country specific research was needed.

Based on the above information, it can be hypothesized that maternity care is depended on formal and non-formal/informal education as well as socio-economic factors. Moreover, more educated women can go on anti-fatalism on their health, perceived the useful of available health services, empowered women to visit alone to a health facility and have a plan for care to visit a health facility. Furthermore, they have more investment strategies designed to maximize the life chances of her children, that is their probability of survival and leads lowering in children. In addition, she may have healthy diet, smokeless behaviour, equal opportunity between male and female child, better household environment for maternity care, seek appropriate help within the family member, and follow medical advice in the treatment of her children. Finally, she can provide more useful forms of instruction, encourage to her children, interaction and exposure transmitting skills and shaping his or her psychological development in distinctive, perhaps adaptive ways.

On the other hand, better maternity care can plays significance role for brain formation and development takes place from the time the child is in the womb (UNICEF, 2010). As a result, cognitive skills of the child would be high and

absenteeism and dropout in schooling would be low. Moreover, by reducing the number of pregnancy, support teen mother to continue schooling, reduce newborn child mortality lessens emotional stress on families and linear relationship exists between empowerment, equity, satisfaction, and responsibility and individual pregnant women. However, in the absence of evidence linkage between maternity care and education these hypotheses remain imaginary.

CHAPTER III

RESEARCH METHODOLOGY

Introduction

Previous chapter discussed about the human capital theory, screening theory of education, reproductive health, aspects and of maternity care and findings of previous researchers. However, this chapter deals with research methodology. Data collection and analysis process and research design as well as sampling design with some equation are presented in this chapter.

The primary objective of the study was to assess the current status of the use of maternity care services by women aged 15-49 years in the five selected districts of Nepal. Data were collected by quantitative and qualitative research methods. Use of maternity care services is determined by multiple factors. Some of the in-depth factors determining the use of health services by women of reproductive age can be understood better from in-depth qualitative observations or interviews. So in this study two approaches for data collection and analysis were used. These two types of data also helped to triangulate information collected. Quantitative data were used to test the hypothesis set in the study and qualitative pieces of information were used to highlight some of the underlying factors associated with the utilization of MCH services.

Variables in this Study

As discussed in chapter 1, seven types of dependent were used in the data analysis. Variables used were selected on the basis literature review, interaction with health experts and health workers, personal experience of researcher and a mini

consultation with pregnant woman in Bara Districts prior the finalization of the study design. Selected variables have been categorized in three groups namely, independent variables, intermediate variables including some new variables constructed for this study and dependent variables. Use of maternity care services was the dependent variable. As there is no single variable that can measure MCH perfectly seven different indicators were used to measure it. The detailed discussion of the variables is in chapter 1. They are listed in the first column of table 2.Table 2 depicts the list of variables used in this study.

Table 2

Dependent, Independent, Intermediate and New Variables Generated

Type of Variables	List of Variables
Dependent	Number of ANC visit, use of the full package of ANC , Immunized TT injection, delivered baby at a health facility, visit PNC, visit to the doctors and immunized BCG injection for NBC child within 3 days
Independent	Women's education, Husband's education, women's training, women's participation on recreational program, Women's participation on counseling program, household wealth, type of work of women, place of residence, ecological zone, Kathmandu Valley .
Intermediate including new variables generated for the study	Mother's age at child birth, Number of children born, the use of health services for general medical problems, Use/heard of family planning method, cost coping strategy, distance to the nearest health facility. Initiating power of the pregnant women, Job sharing in Kitchen by male people, Shopping power of the pregnant women, Decision making power of the pregnant women, Supremacy power adopted by the male, Way of dealing with the pregnant women by service provider, Encourage to pregnant women by service providers, Household environment of pregnant women, Care giver's behavior with women, Plan for maternity care, Three people for blood donation, Parenting skills transferred by service providers, Willingness of household head to monitor the pregnancy status, Life-style adopted by the pregnant women.

Selection Process for the Dependent Variable

Phi -Value

Maternity care is vague subject and use of single indicator to measure it properly is not possible. In this study various seven indicators are used to represent it properly.Use of more than indicators should be carefully selected. One basic rule of selection is to check the autocorrelation between the selected variables.All the selected seven dependent variables are binary variables that means are measured in yes or no options. In such situation Phi -value/coefficient based on the chi-square value obtained from cross table analysis should be used to assess correlation between such variables.

Table 3

Correlation among Dependent Variables in accordance with Phi -Value.

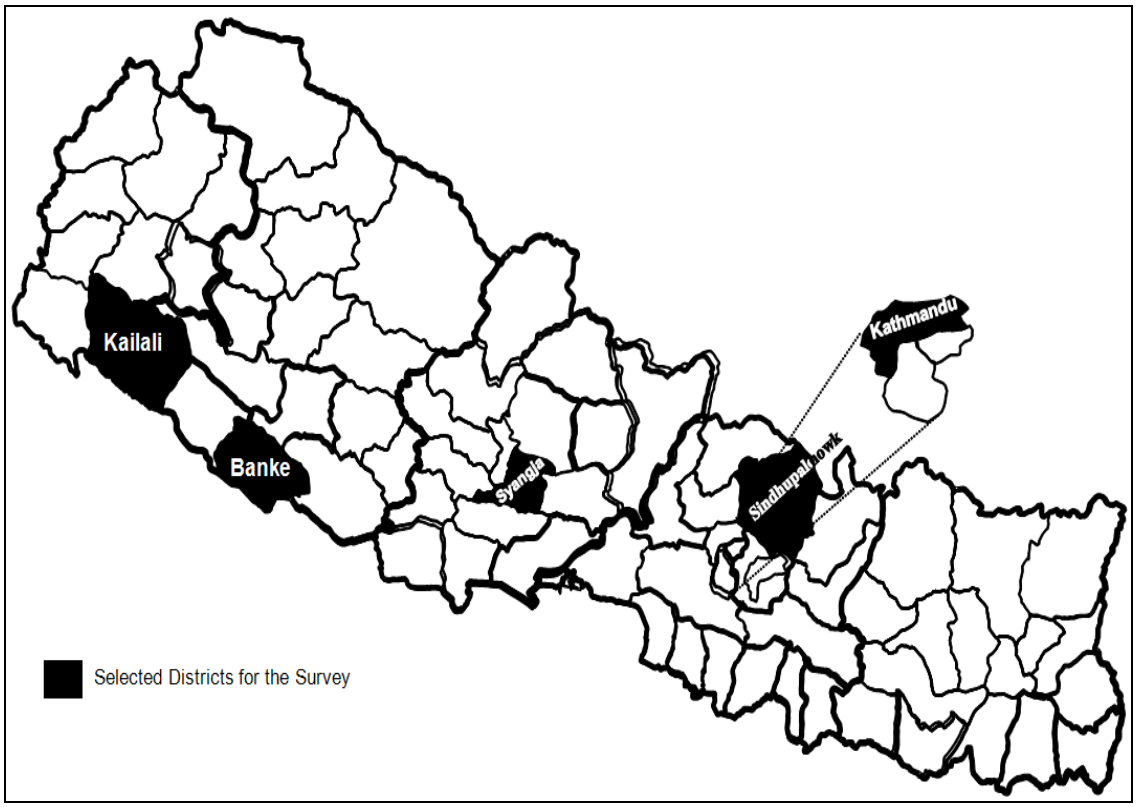
Dependent variables	1	2	3	4	5	6	7
ANC visit (1)	1	0.41	0.25	0.44	0.32	0.36	0.21
ANC package (2)	-	1	0.20	0.44	0.35	0.40	0.15
TT injection (3)	-	-	1	0.24	0.15	0.20	0.06
Institutional delivery (4)	-	-	-	1	0.31	0.60	0.32
PNC visit (5)	-	-	-	-	1	0.42	0.12
Visit Doctor (6)	-	-	-	-	-	1	0.32
BCG injection (7)	-	-	-	-	-	-	1

Table 3 depicts the Phi- coefficient between these seven dependent variable. None of the variables are strongly correlated (Phi> 0.8). This clearly indicates that the selected seven dependent variables do not have strong auto- correlation so can be used in the analysis safely. However, a correlation among institutional delivery and visit doctor was highest 0.60 and the lowest was for immunized TT injection and BCG injection for newborn child.

Study Area

Study area was composed of five districts including Kathmandu district. These five districts were Sindhupalchok, Kathmandu, Syangja, Banke and Kailali (Fig 1). Based on the proportional formula, the five districts were selected by using Tippet's random sampling from each ecological zone .Overall there were 10 sites in this study. Among these sites, eight were from Terai remaining two were from hills (4*2) and 2 from mountains.

Figure 3 Map of the Nepal



Study Population and Exclusion Criteria

Women of reproductive age 15-49 from these five selected districts were the study population. The specific definition of the study population used in this study was "Nepali woman aged 15-49 years who had delivered at least one live birth in the last three years before the date of interview". Women who had given birth to children but did not meet the above criteria are excluded from the study. The exact exclusion

criteria used in the study was is the “woman who had not given birth or those who had given birth three years before the date of interview”. Similarly, women who had given birth but whose children died within a few days of birth or during the period of delivery were also excluded from the study.

Sample Size

A representative probability sample of eligible women is drawn. The sample size is determined by using standard statistical formula discussed below.

$$n = \frac{Z_{\alpha}^{2}\ PQ}{d^{2}}$$

Where, n= Sample size

z = the standard Z value from normal distribtion. Value of z was 1.96 which corresponds to the 95 percent confidence level.

P = estimated proportion of women using the ANC services in the selected districts.

Q = 1-P = estimated proportion of women who do not use ANC services in the five study districts

d= desired degree of accuracy or precision

Using the values of P= 0.50; z = 1.96 (for 95% confidence sample) and d = 0.05 (precision of 95%) the estimated sample size was 384.

Sampling Frame

Primary sampling units (PSU) were eligible women as defined in the previous sub-sections. In each five selected districts a list of village development committees and municipality was prepared using the information collected from district headquarters. From each district one VDC and one ward of the municipality was

selected purposively. Therefore, in total 5 municipality wards and 5 VDCs were selected for data collection. Then from each selected wards and VDCs a pre determined sample based on proportional allocation was drawn randomly using Tippet's Random Number Table. To select 384 samples required for this study, first household list was prepared in the selected VDCs and municipality wards, Households were selected randomly from the list. If the selected household had more than one eligible woman only one woman was selected randomly for the interview. If the selected household had no eligible woman it was replaced by the neighbouring household.

Allocation of Sample

The samples were proportionally allocated in the selected VDCs and municipality wards based on the total estimated number of households. The allocation of samples between rural and urban areas is 80% vs. 20%. The final distribution of the samples is depicted in Table 4.

Table 4

Sample Allocation among Various Districts.

District	Sampled Women				
	Rural	N	Urban	N	Total
Sindhupalchok	Melamchi	20	Chautara (2)	5	25
Kathmandu	Tokha Sarswoti	110	KTM (5)	27	137
Syangja	Kalikakot	30	Putalibazar (7)	7	37
Banke	Indrapur	57	Nepalgung (3)	14	71
Kailali	Gadaria	91	Tikapur (1)	23	114
Total		308		76	384

Note: Number in paranthesis indicate the ward number of the municipality.N= Number of cases.

Sampling Units

The primary-sampling units (PSU) for this survey were VDCs in rural areas and municipality wards in the urban area. In the first stage VDCs and wards were selected. In the second stage households were selected. From each selected household only one eligible woman was interviewed. If the selected household had no eligible woman it was replaced by neighbouring household. The interviews were conducted in the locations that were convenient and comfortable to the participants and offered privacy throughout the interview. Participants were pre informed that interview may take approximately 2 hours and they will be allowed break during the interview for any urgency. Participation in the study was voluntary and randomly selected participants were allowed to quit the interview if they want to do so. However, all respondents were requested to complete the interview.

Pretest of Questionnaire

A set of questions were prepared in advance for the collection of quantitative data from the eligible women selected in the sample. With the permission of Kathmandu University, pre test of the questionnaire was conducted in Tanahu District. The Nepali translation version of the questionnaire was used in the field. Questionnaire was revised on the basis of the finding of pretest. Mostly, the rewording and rephrasing of Nepali sentences in the questions were done to make it more understandable to the study participants. For pretest also both urban and rural areas were selected. During the pretest qualitative data collection guidelines also were pretested.

Data Validity

Data validity was a major concern of the study. Data quality check mechanism was developed and used in the field. Each of the questionnaires was reviewed by the person who interviewed the respondent immediately after the interview. Moreover, on the same day next person in the field team checked the questionnaire field by her/his colleague. If any inconsistencies were found or any questions were unasked during the interview, respondents were revisited on the same day or day after to complete the data in missing questions.

Selection of Enumerators and Quality of Data

Qualified local level female enumerators were selected for the interview. In total 18 enumerators were selected for data collection for the entire study. Enumerators were from all the study districts. Authors conducted training/orientation to the enumerators in each districts prior the data collection. During the entire field work period of the study the author was with the study team to facilitate the process and has been maintained the quality of the field work.

Methods of Data Analysis

Assessment of the impact of the selected variables on the use of maternal and child care services is a complex process. The conceptual frame work described in Chapter I shows that there are many layers of explanatory variables that have a joint impact on the use of services. To asses and analyse the effect of each variable eliminating the effect of confounding factors is the demand of the conceptual frame work used. No single approach can be argued to fit best in such analysis. In this study a number of approaches have been utilized to analyse the effect from many aspects.

Priority is to highlight the role of education on the utilization of MCH services by women included in the study from the study districts. In this regard, this study has used number of approaches and has included (a) descriptive analysis (b) bivariate analysis (c) principal component analysis and (d) factor analysis. Moreover, some new index variables are constructed and analysed. Some major analytical tools used are discussed below.

Descriptive Analysis. Simple statistical parameters like frequencies, mean, median or mode, percentiles, (inter quartile range), standard deviation were used. These parameters help to summarize the characteristic of the respondent included in the study. Descriptive analysis highlights on the present status of the MCH service utilization by the study population. In some situations descriptive analysis is used for comparison of study population with other similar women population.

***Bi-variate Analysis*.** Bivariate analysis is mainly used to analyse the relationship between two selected variables. In general selected independent and intermediate variables are cross tabulated with the seven independent variables to analyses one to one association between these variable. Chi-square test is used to test the significance of association between two variables. SPSS program has been used for generating cross tables and the chi-square statistics. The entire significance tests are done in 95% confidence level.

As we are aware, which is discussed in the conceptual framework described in Chapter I also, association or effect of independent or intermediate variables on the dependent variables are most likely to be confounded by other factors. It is very important to analyse what is the net association or effect of the selected independent and intermediate variables on each of the seven dependent variables. Bi-variate analysis cannot answer such questions; so a multivariate approach has been used.

Multivariate. Analysis literature review shows the possibility of using various alternative methods for multivariate analysis. In this study multivariate analysis is mainly used for two purposes: (i) to test the null hypothesis set for the study and (ii) to analyses the net effect of the independent or intermediate variable on the dependent variable. As discussed above the net effect allows us to analyse the effect after controlling the effect of all other variables. In other words, what would be the net effect of a particular variable on the dependent variable if the effect of other variables is controlled?

In this study logistic regression analysis is used as the multivariate analysis tool. As all the dependent variables were measured in binary scale (yes or no) and most of the dependent variables are categorical variables logistic regression analysis is the best method to analyse the data (Anwar, et al, 2005). The logistic analysis results are presented in terms of the odds ratios (ORs) which are much easier parameter to interpret the results. Odds Ratios are easily understood by the program managers as well. Odds ratios are calculated with respect to the reference category. For example: If OR for one category is 2, it indicates that chances of happening that particular event in that category are two times higher compared to the reference category.

Using the logistic regression analysis the gross and the net odds ratios are calculated to understand the gross and net effect of a particular variable of interest on the dependent variables. For example, the effect of education on the use of 4 ANC visits is calculated from two regression equations. In the first equation only the education of mother is used as independent variable and in the second model many others independent and intermediate variables are added to calculate the net effect of education.

Multiple logistic regression analysis is also used to analyse which variable has emerged as the strongest variable in explaining the variation in the dependent variable. For example if odds ratio odd education of mother was significant to explain the variation in the use of institutional delivery service but not significant in the multiple logistic regression, this indicates that the gross effect of education was seen significant because of other variable but its own net effect was not that important. The multiple logistic regression models is given by,

Legit (π) = $\alpha + \beta iXi$.

Where,

$\pi = p/1-p$

p = probability antenatal care visit.

α = Constant

ßi =Regression coefficient of X_i variables, i = 1, 2, 3, k.

$X_i = i^{th}$ independent variable, i = 1, 2, 3, k.

From the above equation, we can get the ratio of probability of occurring (p) to the probability of non-occurring (1-p) of an event as,

$$P/1-p = \exp \{\alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \ldots\ldots\ldots\ldots + \beta_kX_k\}$$

Or, $p/1-p = e^z$

Where $z = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \ldots\ldots\ldots\ldots + \beta_kX_k$

The probability of event is, $P(\text{event}) = e^z/1+ e^z = 1/1+e^{-z}$

Principal Component and Factor Analysis

The principle component analysis was used to group most relevent variables for the construction of new variables used in the study. For example, nine variables

such as, cycle, motorcycle, car, electricity, radio, television, watch and toilet were used to define the wealth status using PC analysis.Similarly, factor analysis was used to reduced the large number variables into a small number of relevant indicators. For example, 51 items collected using five scales and were reduced to 14 new variables using factor analysis.

Scales and Index Construction

During the period of survey by using Likert type questions from strongly agree to disagree the study assesse the attitudes and perception of pregnant women towards household head, service providers, and their relatives. Factor analysis was run with the permission of various researchers like Aguinis, et al., (1995) , Papanastasiou (2005), Rowe et al; (2005) Anwar, et al; (2005), Pitt, et al; (2006); for data reduction.Risk assessment index, antenatal care package index, women empowerment index, women equity base index, satisfaction base index, plan for the maternity care index, and responsibility base index were constructed to measure the attitudes, behaviour, intentions, beliefs, emotions, or values of the pregnant women.

Risk Assessment Index (RAI). Information on symptoms of pregnancy complications were self-reported which were collected by making complete list of such symptoms. The study attempted to interview with the pregnant women. A detailed analysis of obstetric morbidity in this study could be found elsewhere (Bhatia & Cleland, 1995). Symptoms of pregnancy complications in mother and newborn child are shown in Table 5. To understand the maternity care status these symptoms were recoded into three categories (a) high (b) medium and (c) low risk.

Risk Assessment Index was derived by recoding , computing and counting based on the total signs of complication during pregnancy , delivery, postnatal stage

of the newborn child. The collected information sets were again recoded into three clusters. High risk women agreed to at least three symptoms, medium risk women agreed to 1 to 2 symptoms for and low risk women had no problems at all. Finally, all of these were assessed comparing with the utilization of the available health services.

Antenatal Care Package Inde (ANCPI). The full package of ANC service was assumed if a pregnant woman was benefited by more than 6 types ANC services. The type of services included taking height, weight, blood pressure, blood test, urine test, and examination of abdomen giving iron tablets, and de-warming. More than six services were considered the full package and 2 to 5 symptoms were considered partial, and none for non-visit.

Women Empowerment Index (WEI). Initially, 51-Likert scale was employed to measure the empowerment, equity, satisfaction, plan for maternity care, and responsibility base criterion. The variables related to women‘s empowerment have been categorized into three groups. The first category was measured the influence indirect and called conventional indicators, such as education, occupation, training, counseling, recreational program and so on. The next category of empowerment influence directly like initiation power, job sharing by the male in the kitchen, shopping power, decision-making power of pregnant women , and supremacy power realized by the male partner. The study did not employed first catogorical indicators to measure maternity care since Furuta and salwal (2006) Masaki & Gubhau (2001) have already observed household status of women by using these variables. Thus, the study employed factor analysis and constructs a new genertaed variable to establish indicators of empowerment

Women Equity Base Index (EBI).Two criteria i.e. offering maternity care services equally to all pregnant women and encouraging pregnant women to explain their

problems one by one about the service provided were developed to measure equity concerned issues.

Satisfaction Base Index (SBI). Two direct criteria i.e. household environment i.e. for food intake leisure time, clean clothes, hygienic and smokeless and ventilated place managed household head, courtsey and proper attention offered by caregiver were considered the satisfaction based index (SBI) in this study.

Plan for Maternity Care Index (PMI). Two direct critera i.e. preparation of various things and three people for blood donation, in case of emergencies were considered the plan for maternity index.

Responsibility Base Index (RBI). Three direct criteria like parenting skill by service providers, willingness to monitor the pregnancy status and life-style adopted by the pregnant women were used to establish responsibility base index.

Reliability Test

Adopted strategy for reliability test in this study were : (a) Persons who were not familiar with the original wording of the questionnaire were expalined in simple Nepali words. (b) The interview were conducted in local languages if needed. For those whose native language was not Nepali the local enumerators who speak local language were instructed to interview expaling the difficult words in the local languages. Training program was organized for the interviewers to orient on the intent and meaning of the questions (c) To maximize the response rate respondents who were not availabble in the household at first visit were visited at least rwo times more. Moreover, interviewers followed women and interviewd them at the field if women were but at their work outside home (d) Cornbach's alpha coefficient was used to measure internal consistency of the item in the scale.

Qualitative Data Collection

The qualitative indepth interviews were conducted with 10 eligible women. Following types of women were selected for qualitative indepth interview (a) pregnant women from untouchable or marganilized group (b) pregnant woman between 4 weeks to 37 weeks of pregnancy. Interviewers used follow-up questions and probing desired responses were not expressed in the main questions asked. Most of the in-depth interviews were taped with the permission of interviewee. Note were taken by researcher himself. Interviewers asked semi-structured open –ended questions so that it allows participants to unfold their views. Taped responses were transcribed for analysis. The indepth interviews were conducted at locations that were convenient and comfortable to the participants and offered privacy throughout the interview. Participants were informed that the interview would be approximately 2 hours. A relatively detailed guideline to follow on indepth interviews was developed and used.

Data Processing

Statistical Package for Social Science (SPSS) was used for data analysis. Data files were created using EPI- INFO (version 6.04) software. To minimize the error in data entry double entry system was used. All the data entered were verified by generating frequency tables. The qualitative data were coded and analyzed manually by the researcher himself. All sources of data included in this study were limited to the assessment of maternity care services conducted within the time of 3 months prior to April, 2008. American Psychological Association, sixth edition was used for writing, tabulation, and analysis the data.

CHAPTER IV

MATERNITY CARE STATUS

Introduction

Previous chapter has been presented research methodology but this chapter deals with the existing status of maternity care by using both primary and secondary data. Available data were presented into five section: (a) access to health workers (b) symptoms of pregnancy complications and the degree of risk for pregnant women (c) utilization status of available health care services by pregnant women (d) discussion of findings.

Access to Health Workers

Table 5 presented the overall access to health workers especially doctor/ nurse and paramedical staff ratio in the study area. Access to health care was measured by using the formula: the number of different types of health workers available per thousand populations was given by this ratio at a given period of time. The sources of data were secondary which were published by WHO, OCHA and DoHs (2006). The collected information was presented into four groups: (a) distribution of the health workers (b) doctor-population ratio. (c) nurse-population ratio (d) paramedical staff–population ratio.

Doctor- Population Ratio

Medical Doctors are prestigious and backbone to restore and maintain the depreciated of health of pregnant women due to the pregnancy and other health related causes. Efficient distribution of the doctors in the country could play the

significant role to improve pregnancy outcomes and reduce the risk of pregnancy complications. Table 5 depicts the doctor -population ratio in the sample districts. It was the lowest in Syangja (1:57,000) and the highest in Kathmandu Valley (1:4500). While it was 1:56,000 in Sindhupalchok and followed by 1:31,000 in Kailali and 1:13,000 in Banke district. This indicates that due to high doctor-population ratio the quality of care in Kathmandu district is better than Syangja. The possible reasons were three: (a) Most of the of the private hospitals did not prefer to go outside Kathmandu due to lower affordability of people for medical services (b) the National Health Policy 1991, did not allow to post more than three doctors at district level hospital, and one doctor for primary health care centers though the demand and density of population is high and thus, lead to increase emigration of medical graduate.

Table 5

Districtwise Health Workers Population (Ratio in' 000)

District	Doctor- Population	Nurse -Population	Para-medicals-Population
Syangja	57.1	4.0	3.4
Sindhupalchok	56.1	3.5	3.0
Kathmandu	4.5	2.1	3.0
Banke	13.3	4.8	3.2
Kailali	31.1	7.9	5.6

Source: WHO OCHA (2007).Nepal District Health Profile EHA Publication No .22

Nurse Population Ratio

Nurses were the front linear service providers and dealt with all patients with cancer and surgical cases. Nurse –population ratio was the lowest (1:21,000) in Kathmandu and the highest (1:79,000) in Kailali district. In addition, this ratio in Banke district was 1:48,000, followed by 1:40,000 Syangja and 1:35,000 in

Sindhupalchok district. This indicates that work load for Nurse in Kathmandu was lower than other districts. The possible reasons were that many private hospitals and as well as public hospitals create more position in the Kathmandu Valley rather than outside due to the reluctance by Nurses to go outside the Kathmandu Valley. Again, MOHP has not created the post for Matron in district hospitals though few surgical services were being available in so many district level hospitals.

Para-medicals Population Ratio

Table 5 depicts the distribution of population - paramedical staff ratio. Finally, paramedical staff consisted of both male and female staff. They were playing the role of little doctors especially in rural areas. Systematic referral system and primary health care services were provided by them. Again, the population paramedical ratio was lower in Kathmandu district. One interesting thing was that similar trend was found in Sindhupalchok district where there is the largest drinking water project for Kathmandu. There was not so much difference in population in paramedical staff ratio among Syangja and Banke district and the number was 1:34,000 and 1:32,000, respectively. The highest ratio (1:56,000) of population –paramedical staff was in Kailali district. The imbalance in the distribution of resources was caused by our National Health Policy, 1991.

Overall Access to the Health Care Service

Due to the great effort of national and international development partners, the demand for health care services is available in different corners of the country. However, the access to service providers was higher in the Kathmandu Valley due to the geographical distribution of human resources. For instance as documented by

Acharya (2008) more than one –fifth (22 %) of people were out of access to basic health care services. Moreover, a significant level of inequality, in health outcomes, still exists in Nepal. Life expectancy was at birth (LFB) was the highest (74 years) in Bhaktapur and followed by Kaski ; (70.80 years) Kathmandu (69.53) and so on whereas it the lowest in Mugu (44.10 years) was followed by bajura (45.70 years) and Kalikot (46.70 years) (Acharya,2008.) Similar differences were seen in infant mortality rate (IMR) between geographical regions, economic status, and education level as reflected in NDHS, 2006. She concluded that the reduction of health inequalities remained challenges for many national and international health organizational institutions including Ministry of Health and Population in Nepal.

Symptoms of Pregnancy Complication Status

Despites this fact, the study has been collected primary data about the symptoms of pregnancy complication. A research question "what sort of symptom of pregnancy complication had they experienced during the period of antenatal care to postnatal care (newborn child)" was asked to the respondents to assess the symptoms of pregnancy complications. Collected information was self -reported and was presented sequentially covering the antenatal, delivery and postnatal care. Symptoms were categorized on the basis of nature of their problems, some consultations with gynecologist and as suggested by various literature reviews.

Symptom of complications during Antenatal period. Table: 6 present the information on symptoms of pregnancy complications from antenatal care to postnatal care. The first column shows symptoms occurred in pregnancy period followed by symptoms of delivery, postnatal (mother) and postnatal care for newborn child, respectively in the second, third and fourth column.

As of 384 of the respondents, the highest (53%) percentage of women reported that they had severe pain in abdomen when passing urine compared to the lowest (16%) percentage of women who suffered from two symptoms: (a) bleeding/ vomiting and (b) fits or loss of consciousness (see in Table 5). In addition, more than one -fourth (29%) of the pregnant women felt two types of problems i.e. (a) swelling of hands /face and severed headache and (b) fever with or without chills. The remaining 17% of the pregnant women felt foul smelling discharge from vagina. The study result showed that more than two- thirds (71%) of women experienced at least one type of antenatal problem or complication during the period of pregnancy. This indicates that most of the pregnant women were sufferer from the symptoms of pregnancy complication during the period of ANC.The possible reasons were: (a) may have opportunity cost for pregnancy checkup (b) adaptation of the law of diminishing marginal returns (c) Inappropriate household environment.

Symptom of complications during delivery period. The second column of Table 6 shows the symptom complications, experienced; by pregnant women during the period of delivery, fever with or without chill and swelling of hands /face and severe headache were repeated from antenatal to the period of delivery, although the magnitude effect was varied. Overwhelming (86%) of the pregnant women reported that they had at least one morbid or symptom of pregnancy complication. More than two- third (67%), of the pregnant women reported that they had experienced pushing more than one hour and this percentage was followed by 46 % of women with labor longer than 12 hours who had more serious complications that could cause maternal morbidity and mortality . Moreover, more than one -fifth (21%) of the pregnant women reported that they have experienced some symptoms like, swelling hands and face occurred in that period. In addition, nearly one-fifth (19%) of the pregnant

Table 6

Distribution Pattern of Respondents by Symptoms of Pregnancy Complications during the Period of Antenatal, Delivery and Postnatal Care.

Symptoms of pregnancy complication	During ANC (N=384)	During delivery (N=384)	During PNC	
			Mother (N=384)	NBC (N=384)
Bleeding/ vomiting	62 (16)	-	-	-
Swelling of hands / face and severe headache	110(29)	82(21)	-	-
Foul smelling discharge from vagina	65(17)	-	55(14)	-
Fits, or loss of consciousness	60(16)	-	102(27)	-
Fever with or without chills	113(29)	71(19)	77(20)	-
Severe pain in abdomen or when passing urine	203(53)	-	231(60)	-
Heavy bleeding	-	106(28)	162(42)	-
Labor longer than 12 hours	-	178(46)	-	-
Male presentation /Convulsions / abdomen pain	-	73(19)	-	-
Pushing more than one hour	-	259(67)	-	-
Convulsion / rigidity / no urine first 8 hrs	-	-	52(14)	-
Placenta not delivered within 30 minutes	-	-	69(18)	-
Headache / visual disturbance	-	-	116(30)	-
Trouble breathing/serve chest in drawing / all	-	-	-	51 (13)
Poor suck or not able to suck	-	-	-	57(15)
Feels cold or hot	-	-	-	69(18)
Pus or redness any place on the baby :eyes	-	-	-	86(22)
Fits , rigid, stiff, floppy	-	-	-	56 (15)
Born too small	-	-	-	92(24)
Poor skin color: pale, blue, yellow	-	-	-	69(18)
No problem	111(29)	53(14)	67(17)	141 (37)

Number in brackets indicates the percentage. Because of Multiple response cases were more than 100, percentage was not adopted 100 percentages. , NBC =New born care .HRS= hours.

Consultation was made with Gynaecologist Dr. Meera Ojha and Dr. Babu Ram Marasini to translate English into Nepali as well as categorize the symptoms of pregnancy complication.

women reported life threatening risk such as, fever or chills and convulsion / male presentation/abdomen pain as shown in Table 6. The remaining 28% of women suffered from heavy bleeding during the period of delivery. This indicates that most of the pregnant women were in risk during the period of delivery. The possible reasons were: (a) home delivery(b) unaffordable and long distance of the health facility (c) Psychologically depressed visit to a health facility.

Symptoms of complication during postnatal period. Symptoms of pregnant women during delivery and during pregnancy were presented in the same Table: 6. postnatal care consisted of the information about mother and newborn children since the latter are inseparable from postnatal care. It was found that the highest (60%) percentage of women experienced severe pain in abdomen / when passing urine and the lowest (14%) percentage of the women experienced other two symptoms i.e. foul smelling discharge from vagina and convulsion / rigidity / and no urine for 8 hours. In addition, women who had reported the realization of headache / visual disturbance and loss of consciousness were more than one -fourth: 30 % and 27 %, respectively. The study found that more than three -quarters (83% vs. 17%) of women reported that they had at least one problem during the postnatal period. This indicates that morbidity is still high though maternal mortality is declining trend. The possible reasons were: (a) Individual ignored to checkup her health (b) they did not perceive the need of postnatal checkup and (c) gap between the desired and access on money.

Symptoms of newborn child are included in this study with the assumption that women along with their family members' decisions could go to substitute another healthy child to compensate the risk of unhealthy newborn child (Dasgupta, 1995). Information is included in Table 6, which shows that more than one –third (37%) mothers of the newborn children reported that they did not experience any type of

pregnancy complications. The highest (24%) percentage of newborn children is born too small followed by 22 % with pus or redness on eyes or elsewhere. In addition, they were born with poor skin color: pale, blue, and yellow with cold or heat as reported by 18% of pregnant women. Remaining 13% newborn children had trouble in breathing or had severe pain in the chest. This indicates that newborn child have the shortage of nutrients foods. The possible reasons were: (a) no knowledge and skills that how to prepare nutrients foods (b) shortage of food for mother during the period of pregnancy (c) inappropriate environment in household level for the preparation of basic things to visit a health facility .

Pregnant Women Risk Status

Previous section of this study explains the maternity care status based on the symptoms of pregnancy complication. This section presents the maternity care status based on the degree of risk. The degree of risk was constructed by recoding the symptoms of pregnancy complication faced by the pregnant women. Measurement scales for risk assessment index (RAI) was presented in chapter 3. The degree of risk of the pregnant women during the period of pregnancy to postnatal period is presented in Table 7. The number and percentage is based on the symptoms of pregnancy complication. The first and second column of this table shows the number and percentage of the women who were in risk group during the period of pregnancy. The study found that more than one -quarter (27%) of the women were in high-risk group during the period of pregnancy and nearly one -half (44 %) of the women were in medium risk group. More than one -fourth (29%) of women were in low risk group.

Table 7

Degree of Risk of Pregnant Women during the Period of Antenatal, Delivery and Postnatal Care

Degree of Risk	Antenatal		Delivery		Postnatal			
					Mother		NBC	
	N	%	N	%	N	%	N	%
High	105	27	125	33	147	38	64	17
Medium	168	44	195	50	184	48	181	47
Low	111	29	64	17	53	14	139	36
Total	384	100	384	100	384	100	384	100

N Indicates the Number of cases.

By adding up high and medium groups, more than two- thirds (71%) of the pregnant women had at least one pregnancy complication symptom. This indicates that most of women were vulnerable group during the period of pregnancy. The possible reasons were: (a) desire for ANC check up but not affordability (c) lower empowerment status of the pregnant women (c) lower level of education (d) unable to make fertility decision (e) delaying in decision making.

The third column in Table 7 shows the degree of risk for the pregnant women during the period for delivery. The study shows that one -third (33%) of the women were in high-risk group during this period. This percentage increased to one –half (50%) of the pregnant women who were in medium and high risk groups during the period of delivery. By adding up, the percentage of high and medium groups, the majority (83% vs. 17%) of women experienced, at least one symptom of complication during the period delivery. The fifth column of the Table: 7 indicate the degree of risk for mother during the period of postnatal period. The study showed that more than one -third (38 %) of the women were in high risk during the period of postnatal care.

This increased by ten percentages and reached nearly -one-half (48%) with the women in medium group. The majority of women experienced at least one symptom of complication during the period of postnatal. This indicates that women were in miserable condition as the bleeding occurred before and after the delivery. The possible reasons were (a) early marriage (b) greater the number of children. The second last column is related with the postnatal care (newborn child). The risk group of newborn child was as high as 47 % with medium group. Further, the study result showed that nearly one –fifth (17%) of the newborn children was in high-risk group. By adding up high and medium group, nearly two- third (64%) of the newborn children were in risk during the period of postnatal period. This indicates that the risk group for newborn child was lower in all groups of the care due to reasons such as, (a) there was more intervention for the newborn child and (b) family members ignored mothers' morbidity.

Risk vs. Health Utilization Status

Previous section observed the risk status of pregnant women but this section observed the risk group of women vs. utilization status of available health care services. Descriptive analysis, correlation analysis, bivariate analysis shows the relationship between risky women and the use of available health care services.

Descriptive Analysis

Antenatal care. Table 8 presents the distribution pattern of Pregnant women by the use the of available health care services .Information was collected from the pregnant women with some questions like how many times did she have to visit health facility for antenatal checkup and the other questions was asked that whether she received the full package of antenatal care or not though she has visited the health facility.

Table 8

Distribution Pattern of the Pregnant Women in accordance with their Utilization Status of Available Health Care Services, in the Selected Districts of Nepal.

Types of dependent variable.	(N=384)	%	Mean	SD
Number of ANC visit			1.4	0.67
Never	39	10		
1 to 3 times	156	41		
4 ANC visits	188	49		
ANC care package			1.3	0.70
Full package	203	53		
Partial	142	37		
None	39	10		
Tetanus Toxiod			1.5	0.79
No	72	19		
1st dose	43	11		
2nd dose	269	70		
Institutional delivery			1.7	0.91
Home	251	66		
Health post/ health center	17	4		
Hospital	116	30		
Visit Postnatal care			1.4	.49
No	147	38		
Yes	237	62		
Visit Doctor			2.7	1.18
Doctor	84	22		
Paramedical staff	78	20		
MCHW/FCHV	75	20		
Not visited	147	38		
BCG injection			2.4	0.90
Agreed	107	28		
Undecided	12	3		
Disagreed	265	69		

N=Number, SD =standard deviation

Additionally, she was also asked whether she received tetanus injection or not during the period of pregnancy. The study found 90 % of the pregnant women, at least one time visited to a health facility for antenatal checkup, in addition, nearly one -half (50%) of the women have visited at least four times to a health facility for ANC checkup and finally more than one -third (41%) of the women visited 1 to 3 times a health facility for ANC checkup. The study indicates that the dropout for ANC service was high in the selected districts of Nepal. Another indicator used for antenatal care services was about the full package of antenatal care services and the construction methods for indicator has been explained in chapter 3.

The study result showed that more than one -half (53%) of the pregnant women received the full package, and more than one -third (37%) of women were partially benefited from the available health care services of ANC. This indicates that most of the women deprived in the use of the full package of ANC services. The possible reasons were: (a) neglected by service providers (b) constraint of equipments in the health service points. Finally, antenatal care services were related to the dose of Tetanus Toxiod Injection and the women were asked whether they were given the injection in the arm to prevent them and their babies from getting tetanus infections. The study found that more than two-third (70% see Table 7) of women were fully immunized with tetanus Toxic injection. The women receiving two doses were six times more than the women who had received one dose (70% vs. 11%). In addition, one -fifth (19%) of the women did not benefit from tetanus injection. This indicates that dropout rate for tetanus injection was higher in Nepal. The possible reasons were: (a) did not perceive the need of second dose (b) long distance of the health facility.

Institutional delivery. The place of delivery was an important determinant for safe pregnancy outcome such as, reducing the risk of maternal mortality, morbidity and

newborn child death. For this purpose, this study examined whether the pregnant woman delivered her baby in a health facility or in a conventional way at home. The study found that nearly two -third (66 %) of the women delivered their babies at home without any support from skilled birth attendants. In addition, only 4% of women delivered their babies at health facility though it was not well equipped.

Postnatal care. Medical checkup by health professional plays normally a significant role to ensure the life of mother, newborn child and to reduce the risk of maternal morbidity and death of newborn child. For this purpose, this study observed the postnatal care status with some quarries such as, whether the pregnant women visited health facility for postnatal checkup, if yes, what level of health workers they visited. Nearly two- third (62%) of the women replied that they visited a health facility for postnatal checkup. However, the study result showed that only one -fifth (22 %) of the respondents visited medical doctor. Rest of the respondent visited either paramedical staff or Maternal and Child Health Workers or FCHV. Another remarkable question to pregnant women was about BCG immunization for a newborn child within three days. Likert scale was used to ask whether the new born child was immunized within three days. More than two - third (69 %) of the women replied that their children were not immunized within three days. This indicates that many of the children were not immunized within three days. The possible reasons were: (a) inability to walk to a health facility until one month. (b) BCG was not provided if, the child was born other day than of hospital schedule.

Correlation among Symptoms of Pregnancy, Delivery, and Postnatal Period

Table 9 presents the correlations among risk group of women from pregnancy, delivery and postnatal period. Pearson correlation was calculated to determine the

correlation among these variables. All of the self -reported symptoms were categorized high, medium and low risk by recoding, counting and counting based on the total signs of complication during pregnancy, delivery and postnatal stage of the newborn child. In such situation, Pearson correlation obtained by bivariate correlation analysis should be used to assess correlation among these variables. The first column shows the simple symptoms of complications during the period of pregnancy, delivery, and postnatal care for mother and newborn child. The second column shows Pearson correlation between the symptoms of pregnancy complication, during delivery to postnatal care for mother (newborn child).

Table 9

Pearson's Correlation among Risk Group of Women during the Period of Pregnancy Delivery and Postnatal Period.

Riskky group of women	1	2	3	4
Complication during pregnancy period (1)	1	0.43**	0.52**	0.32**
Complication during delivery period (2)	-	1	0.42**	.028**
Complication during postnatal period (mother) (3)	-	-	1	0.36**
Complication during postnatal period (newborn) (4)	-	-	-	1

*Note : ** Correlation is significant at the 0.01 level (two tailed) ANC =Antenatal care , PNC = Postnatal care , NBC =Newborn care.*

None of the variables were strongly correlated (Pearson correlation >0.8), although significance relationship was found with P< 0.01. The highest value for correlations among complication during the postnatal care period was 0.52 and the lowest 0.28 was for complication during delivery period. This clearly indicates that the selected three risk groups of independent variables do not have strong correlation so can be used further analysis.

Bivariate Analysis

The descriptive part was analyzed in previous section. This section shows the relationship between the degree of risk of the pregnant women and the use available health care services through cross- tabulation. The information was presented into three groups (a) antenatal care (b) delivery care (c) postnatal care.

Antenatal care. Association between risk group of women in pregnancy and antenatal care to immunized BCG injection for newborn child has been presented in Table 10. The detailed output of cross -tabulation has been presented in Annex 8.The study found that the higher percentage of the women with low risk group, at least visited a health facility for ANC checkup than those women with in high risk group of women (41% vs. 49%). In addition, 46% of women 1 to 3 times, and more than one -half (54%) of women who were in medium risk group visited health facilities at least four times for ANC checkup. Never visitors were 13 with high risk group of the women. The chi- square value of 11.11, with observed $P<0.05$, indicates that significant relationship between degree of risk during pregnancy and at least four time visiting for antenatal care. The possible reason was that women understood the importance of seeking risk factors that might affect the pregnancy outcomes. Another indication is that more than three quarters (78%) practised home delivery though they were in high risk. This percentage decreases with women in medium risk group and slightly bigger in low risk group. More than one fourth (26%) of the women have practised hospital delivery. The chi- square value of 11.87, observed with $P<0.001$, noticed that the significant difference between degree of risk during pregnancy and institutional delivery. The possible reasons were the lower quality of services, long distance of health facility and shortage of money for delivery practices. Similar pattern was found with institution delivery and visit PNC checkup. This indicates that women who felt risk during the period of pregnancy have found positive relationship

between at least four visits for ANC, institutional delivery and postnatal care. The possible reasons were that women understand the importance of four visits of ANC services, institutional delivery and visit PNC.

Table 10
Association between Degree of Risk of the Pregnant Women during Pregnancy , Delivery and Postnatal Care and Utilization Status of Available Health Care Services.

Degree of Risk	Variable	χ^2	P Value
During pregnancy	Number of ANC visit	11.11	P <0.05*
	Use ANC package	7.78	P >0.05
	Immunized TT injection	7.15	P >0.05
	Institutional delivery	11.87	P <0.001***
	Visit postnatal care	6.56	P <0.05*
	Visit doctor	10.06	P >0.05
	BCG injection for NBC	5.94	P >0.05
During delivery	Institutional delivery	4.05	P >0.05
	Visit postnatal care	0.96	P <0.05*
	Visit doctor	8.76	P >0.05
	BCG injection for NBC	0.95	P >0.05
During PNC	Visit postnatal care	0.90	P >0.05
(mother)	Visit doctor	14.55	P <0.001***
	BCG injection for NBC	8.95	P >0.05
During PNC(NBC)	Visit postnatal care	0.24	P >0.05
	Visit doctor	17.39	P<0.001***
	BCG injection for NBC	11.53	P >0.05

significant at 5%; ** = significant at 1%; * = significant at 0.1%, Number in brackets indicates the percentage.*

Institutional delivery. Table 10 presents an association between risk of women during delivery and the use available health care services from institutional care to postnatal care. The study found that the greater percentage of women with high risk group during delivery were less likely practise institutional delivery than the women with low risk (26 % vs.38%, see Annex 9.

In addition, nearly one- third (33%) of the women delivered their babies in a health facility. In contrast, the result showed that more than two- third (69%) of the women with high risk delivered their babies at home in addition, only 6 % who were in high-risk group delivered their babies at the health post /center and this indication of this result are: (a) the sorrowful condition of the pregnant women (b) maternity care is depended the nature and conditions of the symptoms of pregnancy complications (c) visit postnatal care depends on degree of risk of the pregnant women. This indicates that demands for institutional delivery are depended on the perceived risk of the pregnant women. The possible reasons were: (a) greater willingness for institutional delivery but lower affordability (b) long distance of a health facility. The test of significance between two covariates was tested by using Person chi-square test. The chi square of 0.96 observed values 0.05 indicates association between during delivery and visit postnatal care. However, significant relationship did not find between during delivery and the visit doctor, and immunized BCG injection for newborn child within three days.

Postnatal care. Finally, again Table 9 presents association between degree of risk for pregnant women during postnatal period as well as newborn child and visit to a health facility for postnatal care. Detailed result of the cross- tabulation has been presented (Annex 10). The study found that greater percentage of women visit MCHW rather than the doctor (20% vs. 9%) and in addition, nearly one-third (31%) of the pregnant women visited to the paramedical staff for their medical checkup during the period of Postnatal care (see Annex 10). In addition, one in five of the women visited to MCHW to check up the health of newborn child. This indicates that most of the pregnant women visit either paramedical staff or MCHW. The possible reasons were: (a) lower access of doctor (b) user charge of the doctors is higher than medication (c) lower affordability of the pregnant women (d) the MCHWs were easily available in

rural areas (e) lower cultural accessibility for medical checkup with MCHWs and (f) long waiting time to see the doctor. This has suggested that women headed office is being urgent need to ensure maternity care in Nepal. The chi -square value women visited with doctors of 14.55, observed P <0.001, found significant relationship between the degree of risk for women during the period of PNC and visited doctor. This section concludes that the symptoms of pregnancy complication were higher in pregnant women though there were various programs to reduce the morbidity of the pregnant women. However, A case study, discussion between Assistant Health Workers (AHW) and researcher at Gadyaria village development committee of

Case study 1: Confusion about the Concept of Hospital and Doctor

During the period of survey, I started to interview some women in Gadariya Village Development Committee of Dhangadhi District. I asked them where they visited for their medical checkup during the period of pregnancy.

The respondent responded me that they had visited a hospital and consulted the doctors. Similar answer was given by the entire respondents whom I interviewed that day. In the evening, I discussed with the Assistant Health Workers (AHW) and the narrative part was as follows.

Researcher: Why are the people in these areas conducting a strike? What is the demand of them? Have all the women visited a hospital and have opportunity to see the doctor.

Chaudhary: Honestly, please do not be surprised that people supposed and addressed me as a doctor. They thought sub health-post as hospital.

Next day, I tried to verify how much of them were clear about the post of doctors and hospital. I found the similar problem and I advised to all my enumerators to be careful in regarding this issue. This indicated that people have confusion about the level of service providers and health facilities.

Kailali district showed that most of the women along with men who were in confusion show the difference between doctor and para-medicals and hospital and

sub-health post. They understood doctors for AHW and Hospital for Sub-health post / Health center. This indicates that lower knowledge about the level of health facility and confusion about the concept of hospital and identification of doctor. Another case study indicates most of the women want to use permanent contraceptives. However, husband denied, kick and beat again gave pressure to go on next pregnancy.

Case Study2: Gender Base Violence due to the Use of Contraceptive Measure

One woman lived in Indrapur Village Development (IVDC) Committee, about 10 kilometers far away from NepalJung Municipality. Most of the male members of that VDC were rickshaw pullers and household women were jobless and landless. Most of the people were Muslims and illiterate. During the period of survey, one of the women reported that she was married at the age of 18. She gave birth to a female child after a couple of years and followed by another child with the same sex, after eighteen months.

The woman reported to her husband that she had experienced restlessness, weakness, severe abdominal pain during the period of pregnancy. Moreover, she was suffering from fever, vomiting early in the morning, and bleeding, weakness and restlessness. Finally, there was long labor during the period of delivery and place of delivery was at home due to the lack of money. She had requested her husband to use permanent family planning but her husband denied it. She made a plan to inform health workers. Assistant Health Workers (AHW) and Maternal Child Health Workers (MCHW) who were female in the Sub- Health Post (SHP) of that VDC .She requested them to counsel to her husband. The health workers visited her house, advised to visit a health facility for her check up, not to carry heavy load, to offer bean, fish, meat and soup, and use contraceptives measures

She used contraceptives against the wish of her husband. However, one night her husband raised some issues. He argued that daughters are the property of the others and male child are the old age pension. Thus, he pressed her to go on next pregnancy. During the period of discussion, she argued that there was no difference between male and female child and informed that she had used contraceptives measure but her husband was angry with her and was beaten by him. She showed her head injury to health workers and researchers during the period of survey. It was

Discussion of Findings

Status of maternity care was studied based on the secondary and primary data. Thus, the information have been presented into three clusters: (a) Access to health workers (b) symptoms of pregnancy complication (c) utilization status of available health care services.

Access to Health Workers **.**By using the secondary data the study analyses health workers –population ratio. The study found that health workers population ratio was lower in the Kathmandu Valley and higher outside the Kathmandu Valley. The possible reasons were (a) higher skilled and more experienced health workers prefer to work in Kathmandu Valley (b) well recognized private hospital and nursing home (c) central level hospital are being established in the Kathmandu Valley (d) the adverse effect of liberalization policy (e) medical college also established in the capital of the country and around that location.

Finally, from rural to urban brain- drain in health sectors is compounded by public to private brain -drain. This indicates that unequal distribution of health profession is being the lower status of maternity care and thus suggested that density of population could be useful for the distribution of manpower rather than geographical distribution. Similar problem was found Nicaragua; around 50 % of the health personnel are concentrated in the capital. Similarly, in Bangladesh the metropolitan areas contain around 15% of the country's population but 35% of doctors and 30 % of nurses in governmental positions. Doctors and nurses were not available outside the metropolitan areas. In Ghana in 1997, 1087 of the 1247 (87.2%) general physicians worked in the urban areas.

Symptoms of Pregnancy Complication**.** Risk group of women were explored by asking the questions whether they felt any type of pregnancy complications during

delivery before three years from the date of the survey. There was a widespread belief that utilization of available maternity care services during pregnancy, delivery and the postnatal period could improve the health of the mother and the newborn child. Symptoms of pregnancy complication are presented in Table 5 and the risk assessment index is described in chapter 3.

Information about the symptoms of pregnancy complications was self-reported. No attempt to verify the reported symptoms with clinical diagnosis and laboratory test is made in this study. In fact, it was difficult to know exactly how much importance was exactly reported by the pregnant women about the symptoms of pregnancy complication like "dizziness" or excessive vomiting as the degree of severity was subjective and the symptoms could have various etiologic origins. Still other complications during pregnancy such as swelling hands and feet, fever more than three days, bleeding during delivery and blurred vision were subject to similar impression. Yet, a few argued that they were little in value or had no clinical significance. Similar study was carried out by Smith, Lakhey, Thapa, Rajbhandari & Neupane, 1996 in Nepal.

There are various methods to collect such complications. Some of the researchers have observed maternity care status through hospital base information but all the pregnant women have access to report in the hospital and thus self- reported were also important to understand maternity care status, though information was documented in the absence of laboratory test. Further, such information shows the status of the symptoms of pregnancy complication though there was no immediate action and drugs to correct their immediate problems.

Despite these limitations, the study found that 71% of women were felt at least one symptom of pregnancy complication during the period of antenatal care.

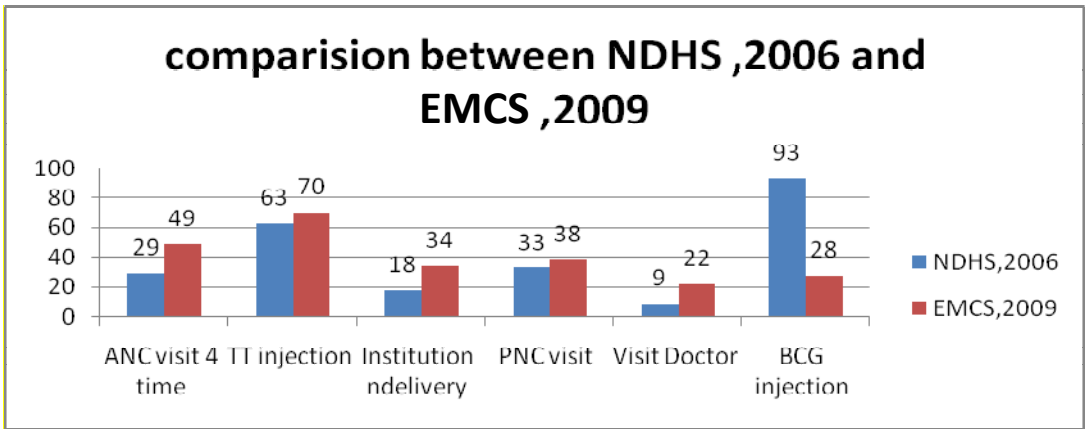
Linear relationship was found between complications during antenatal period, up to 83 % in delivery which continuously increased and reached 86% during the period of PNC for mother but this percentage declined to 36% in the case of NBC.

Similar study was carried out by Bhatia and Cleland (1995) in a region of South India and Smith et al., (1996) collected similar symptoms of pregnancy complication by the pregnant women in Nepal though the source and nature of data were varies. Former one was self -reported by pregnant women while as, the latter one was from hospital- base information. The self- reported symptoms of this study were almost similar although the magnitude of effect and sample size and some of the variables were varied. However, the effect on Nepali women was bigger than on Indian women due to the lower access in health services in Nepal. The consultation group with doctors was higher in Indian women due to the influence of formal education and more access doctor in India.

Utilization Status of Available Health Care Services. It was good news for Nepalese planners, that the symptom of pregnancy complication with the pregnant is in decreasing trend from that date of a study carried by Smith, et al., (1996) and utilization of available health care service increasing from than NDHS, 2006. The Figure 4 shows that at least four time visiting to a health facility for ANC checkup was increased from 29 % to 44%; immunized TT injection was increased from 66% to 70%; institutional delivery increased from 18 % to 34% ; PNC visit increased from 33% to 38%; viewed doctor increased from 9% to 22 percent but BCG immunization decreased from 92% to 28%. The increase of the percentage was normal. Since collected information of this survey was after the one decade. In addition, increased access of outreach mobile clinic for antenatal care, immunized BCG injection even in ward level of each VDC.

Figure: 4.

A Comparison the In the Utilization of Available Antenatal, Delivery and Postnatal Care Services between NDHS, 2006 and EMCS, 2009.



Moreover, arrangement of at least one female teacher is provided in each primary school; perhaps contributed for lowering the signs pregnancy complication through peer's group education. However, lower percentage of BCG injection, was due to the nature of information which was collected only to the newborn child those who have immunized within the three days.

Overall, all of the indicators showed that better status of maternity care services. The possible reasons were: (a) collected information of this study were three years later than NDHS (2006) (b) most of the information were from hill areas and Kathmandu included in this category. However, the study found that lower the utilization rate in BCG immunization than DHS (2006), analyzed data were limited only to the BCG injection immunized within three days and in addition questions were varies than NDHS,2006.

While comparing the number of people who visited health facilities for antenatal care services and those who received antenatal care service package, it was found that it was common to visit a health facility for antenatal care but the utilization of the full package of the antenatal care service was questionable. The reasons for this were as follows: (a) most of the pregnant women visited only the outreach mobile

clinic (*Gaunghar clinic*) with no room/space for medical checkup (b) the service providers did not care to provide the full package of antenatal care services (c) individuals did not care to visit the facility for antenatal care services. The findings of the study indicates that at least one time visitors were nearly universalized (90%) but at least the four time visitors women were one in two that indicates that dropout rate for ANC services was higher in the selected districts of Nepal . The probable reasons were: (a) illiteracy, (b) backwardness (c) long distance of the health facility.

The findings of qualitative study suggested that, women were motivated and more exposure if female health workers are available in the health facility for the use contraceptives. Unfortunately, a few case studies indicated that fertility decision was made by their husband as the expectation of son, if wives are in against of their husband may kick and beat her and occurring gender base violence. In this context, it is needed to increase male participation in reproductive health program.

This section concludes that the symptoms of pregnancy complication were higher in pregnant women though there were various programs to reduce the maternal morbidity. Moreover, many women felt high risk during the period of pregnancy but lower the utilization of available health care services. The possible reasons were ignorance of such symptoms by individuals, who did not like to share with other people due to cultural accessibility. Therefore, the study suggested introducing self - caring program to ensure the maternity care in the selected districts of Nepal.

CHAPTER V

EDUCATION STATUS AND MATERNITY CARE

Introduction

Chapter 4 presents the status of maternity care. This chapter presents the effects of education on maternity care. Collected information is presented in three clusters (a) Descriptive part (b) Bivariate part and (c) Multivariate analysis. Descriptive and Bivariate both part are presents in this chapter but multivariate analysis has been presented in chapter IX.

Descriptive Analysis

Formal Education and Maternity Care

Descriptive statistics of women and their husband are presented in Table 11. Research questions 10 and 12 "which of the category best describes theirs' literacy status" were asked with women to understand their education background. The study found that one -half (50%) of the women were illiterate, in addition, one-third (42%) of women had completed the primary level of education and only 8% of women have completed SLC and above. Regarding the husband education, more than one -fourth (27%) of the husband were illiterate, in addition, more than one -half (57%) of the husband had complicated the primary level of education, and nearly one- fifth (16%) of the husband had complicated the SLC and above.

The study found that the level of husband education with SLC and above was double than the level of wife education (27% vs .50%). Primary level of education of husband was greater than women's level of education by fifteen percentages. This

indicates that husband level of education was greater than wife. The probable reasons are women dropout in schooling due to early marriage and pregnancy.

Table 11

Distribution Pattern of Respondent and their Husbands by Level of Education.

Independent variables	(N=384)	%
Women's education		
Illiterate	194	50
Primary level	160	42
SLC and above	30	8
Husband's education		
Illiterate	102	27
Primary level	219	57
SLC and above	63	16

N=frequency number.

Non-formal Education

Distribution of the respondents by training, recreational, counseling and mass media (TV/radio) program is presented in Table 12. Independent research question were asked to observe the status of training, recreational, counseling and media exposure.

Training and Maternity Care.

The research questions "Did you receive any type of vocational or professional trainings? was asked to women to know about the influence of training program on the maternity care Training such as, traditional birth attendant, carpenter, computer, gardening, book bindings and so on for more than 15 days were considered

training in this study. The study found that only one-fifth (21 %) of women received training program. This indicates that coverage of training program has been found lower for pregnant women.

Table 12

Distribution Pattern of Respondent by Training, Recreational, Media Exposure and Counseling Program.

Independent variables	N=384	%
Training		
No	304	79
Yes	80	21
Recreational program		
No	191	50
Yes	193	50
Media exposure(TV/Radio)		
Not listen	144	38
Listen	240	62
Counseling program		
Yes	217	57
No	167	44

N=frequency number.

In Hindu caste, most of the people still prefer *Kanyadan* and it means donations of daughter before menstruation. They believe that heaven is secure for them as the result of *Kanyadan* as fast as they can offer. Because of this many of the teenager girls have practice early marriage and that leads dropout in schooling as well as early pregnancy too. In this situation training could be useful to them to generate income for adolescent girl and as a result that support to care for their children.

In a case study 5 one of the adolescent girl of Kalikakot VDC of Syangja district responded that opportunity of training would be *Bardan* for her livelihood.

Case study 3: Training and the Use of Contraceptive Measure

During the period of survey, I have taken an interview with an adolescent girl in Syangja district to response about the importance of training for reproductive behavior. At the beginning, she denied to give an answer of my questions but later I convenience to her to participate on that interview.

Researcher: Can you tell me about the most important events in your life?

Adolescent Girl: In the name of Kanyadan, I was forced to marry at the age of fourteen years before Menstruation. *Moreover, I was not allowed to continue my study by my mother-in-law. I was advised to reproduce a child as soon as possible.*

Researcher: can you tell me about your reproductive behavior?

Adolescent Girl: After a couple of day of my marriage, my mother-in-law advised me to massage with mustard oil first to her and then after to my husband also. This was normal and became my daily routine.

Researcher: Any things about reproductive behavior?

Adolescent girl : After a couple of years,I gave birth to a daughter that makes my mother-in-law unhappy .She said that " daughter are the property of others" and forced me to make another child with the expectation of son. She advised me not to use contraceptives measure unless having a son. She advised me no heaven without son. Luckily, I have son in third parity that makes her silence in this matter.

Researcher: Are there any suggestions that you can give to the government?

Adolescent girl: Some sort of non-formal schooling program would be useful for themselves. Thus, there should be the expansion of training program focusing for adolescent girls, like me. That could be bardan (useful) to generate the income as well as the quality of life.

Recreational Program and Maternity Care

Table 12 presents the distribution percentage of women with the background of recreational program. Such program directly influences on maternity care with the transformation of the knowledge. A question "whether she has participated any type

of recreational program during the leisure period or not" was asked with the women to assess the influence of recreational program on maternity care. The study result showed that one-half (50%) of the women did not participate in any type of recreational program. This indicates that the program designers did not successfully recognize about the recreational programs especially *Teej* and other religious songs were influencing on maternity care. Perhaps the program managers are not aware how the recreational programs influence on maternity care.

Counseling Program and Maternity Care

Table 12 presents the distribution of women with the background of counseling, which was recognized third component of non-formal /informal education. Formal advice provided to the pregnant women was the conceptualized counseling program in this study. In order to know the effect of counseling program "what sort of information have you received from Female Community Health Volunteers (FCHV), community members and mothers or household head was asked to pregnant women. The study found that more than one- half (57%) of women participated in counseling program. This indicates that coverage of the counseling program was found greater on women due to the access of paramedical staff, Maternal and Child Health Workers (MCHW), and FCHV.

Media Exposure (Listen TV / Radio)

Research questions "whether the women had either listened to the radio or watched the television? was asked to the women to assess the effects of mass media on maternity care. The study found that nearly two -third (62 %) of the women listened to the news on the radio and TV. This indicates that they have higher practice

to listen of radio and watch TV. However, understanding of the message was difficult. For example, one of the Tamang women in Melamchi VDC responded that she used to listen the Radio but could not understand the message of that program due to the language problem. She said:

"*I have practiced to listen to the news of Radio but I could not catch-up the meaning of that message.*

Bivariate Analysis

As noticed earlier, the previous section were presented the descriptive analysis of education related variables as well as some case study collected by qualitative method but this section shows the relationship between education and maternity care as well as the relationship of education related variables with set of intermediate variables like reproductive behavior, access to and utilization of available health care services.

Education and Number of Antenatal Care Visit

The relationship between women's and her husband formal education, and non-formal education as training, recreational, counseling program and the number of antenatal care visit is presented in Table 13. As expected, women's education showed a positive association with all measures, though the pattern was varied. As the level of women education increased at least four times visiting to a health facility for ANC check up also increases. The greater percentage of women with SLC and above visited at least 4 times a health facility for ANC than did women with illiterate (97% vs 38%). In addition, more than one -half (53%) of the women with primary level of education visited, at least four visit a health facility for ANC services. In contrast, lower percentage of women with SLC and above visited 1 to 3 times to a health

facility for ANC than did illiterate women (3 % vs. 46 %). This indicates that education contributes to increase the ANC visit .The possible reasons were: (a) educated women motivated to screening for risk factors and (b) they understood the importance of ANC checkup through schooling and non schooling program (c) she has initiating power to discuss with her husband and family members about the importance of ANC services. Pearson chi-square test was applied to show the relationship between women's formal education and at least 4 times visiting for antenatal care. The chi-square value of 43.17, which have an observed P <.0.001, indicates that an association exists between these variables.

Almost similar pattern was found with the husband education background though the magnitude effect was varied. The study found that percentage of at least four times ANC visitors was greater with women SLC and above than the husband's education (97% vs. 81%). Almost similar pattern was found with other level of education. This indicates that women's education was stronger than husband education. The possible reasons were: (a) educated mother can make their decision by themselves (b) they have better income (c) she understood the importance of visit ANC (d) she understood that at least four visit is needed for quality of ANC .

Training is the most important components of non-formal /informal education. The study found that greater percentage of women with training with more than 15 days have made at least 4 visit to a health facility for their medical checkup than did untrained women (75% vs. 42%, P <0.001). In contrast, lower percentage of trained women visited 1 to 3 times to a health facility for ANC services than did untrained women (24% vs. 45%). Remaining 1% of trained women did not visited to a health facility for ANC check up. Again high dropout rate in ANC visits existed with untrained women. This indicates that training plays significance role for ANC visit.

The possible reason was that the training increased the exposure capacity, self care; home care and hospital care capacity and bonding skills as well as parenting skills for pregnant women. The chi- square value of 29.23, which have an observed p <.0.001, suggested that there is a highly significant association between training and the number of visit to a health facility for ANC.

Concerning the recreational program, the study found greater percentage of women with recreational programs visited at least 4 times, to a health facility for ANC services than those women who did not participate in recreational program (58%vs 40%). Only 7 % of trained women were never visitors to a health facility for ANC services and more than one -third (46%) of untrained women visited 1 to 3 times to a health facility for ANC services. This indicates that recreational program could be potential intervention to increase the users of ANC services. The possible reasons were that they have developed the exposure power, sharing the problems of pregnant women and communicated the message of reproductive behavior through recreational program as, dancing, singing and other program. The chi- square value of 13.12, which have an observed, P<.0.001 suggested, that there is a highly significant association between the recreational program and the number of visit to a health facility for ANC.

In regards the counseling program, the study found that greater percentage of women with an opportunity counseling program visited at least four times than those who did not have an opportunity to an opportunity for counseling program (50% vs. 47%, Table 13). Only 6 % percentage of women did not visit to a health facility for ANC services, though they have an opportunity for counseling. The chi- square value of 13.12, which have an observed, P <0.05 suggested that there is significance relationship between counseling and number of visiting for ANC services.

Table 13

Number of ANC Visit to a Health Facility by Respondent's and theirs' Husband's Level of Education, Training, Recreational, Counseling and Media Exposure.

	Number of ANC visit					
Independent variables	Never (N=40)	1to 3 (N=156)	4 visit (N=188)	Total (N=384)	x^2	P value
Women's education					43.17	P< 0.001***
Illiterate	31(16)	89(46)	74(38)	194(100)		
Primary level	9(6)	66(41)	85(53)	160(100)		
SLC and above	0 (0)	1 (3)	29 (97)	30 (100)		
Husband's education					41.85	P < 0.001***
Illiterate	16(16)	56(55)	30(29)	102(100)		
Primary level	21(10)	91(41)	107(49)	219(100)		
SLC and above	3(5)	9(14)	51(81)	63(100)		
Training						
No	39(13)	137(45)	128(42)	304 (100)	29.23	P < 0.001***
Yes	1(1)	19(24)	60(75)	80(100)		
Recreational program					13.12	P < 0.001***
No	27(14)	84(46)	77(40)	191(100)		
Yes	13(7)	69(35)	111 (58)	193(100)		
Counseling program					10.77	P < 0.05*
No	27(16)	61(37)	79(47)	167(100)		
Yes	13(6)	95(44)	109(50)	217(100		
Media exposure (Radio /TV)						
Listen	15(6)	84(35)	141(59)	240(100)	28.19	P<0.001***
Not listen	25(17)	72(50)	47(33)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%, the number in parenthesis indicates the percentage.*

This clearly indicates that the variables counseling program was influential factors, the number of visit to a health facility for ANC checkup. The possible reasons

were: (a) FCHV and MCHW gave formal advice about the importance of ANC services, and (b) obtained information through peer group success to change the minds of pregnant women towards ANC services (c) counselors counsels that visit ANC would be useful to detect the risk of pregnancy and support to reduce such risk through medication.

Media exposure plays a significant role to ensure the maternity care. The study found that greater percentage of women with listening to mass media has been made at least four time visiting to a health facility for ANC checkup than did women who did not listen to radio and watch TV(59% vs. 33%). On the other hand, only six percentages of women were never visitors to those women who listened radio or TV.

Pearson test was observed to show the relationship between the media exposure and the number of visit to a health facility for ANC. The chi- square value of 28.19, with observed, $P < 0.001$, indicated there is significant relationship between mass media and the number of visit to a health facility for ANC. The possible reasons are that women were benefited through the non-formal education and awareness program through the mass media exposure like radio and newspaper.

Education and Utilization of Antenatal Care Service Package

Table 14 presents the use of ANC care services package by respondents' background characteristics as women's formal education, husband education, women's training, recreational and counseling program. As expected, the result showed that women who attained SLC or higher degree were more likely to use the package of ANC service as compared to illiterate women (93% vs. 40%).The percentage of the women of service utilized was 61% women with primary level of education. The highest (44%) percentage of partial utilizing group was with illiterate women and this percentage decreased as the level of education increased. The chi-

square value of 42.30, which have an observed P< 0.001, indicates that an association exists between the women's levels of education and the use package of ANC services. Similar pattern was found with the husband's education. This indicates that educated persons were more likely to use the full package of antenatal care services due to more exposure, good relationship between service providers and pregnant women, recognized mutual values, of each other.

Training is one of the major components of non-formal education. As expected, the study found that the women who have an opportunity for training used the full package of ANC services as compared with untrained women (74% vs. 47 %). While, partial utilizes were higher with untrained women than trained women (40% vs. 26%). This indicates that user of the ANC service package were higher with trained women than untrained women. Since this program developed the exposure capacity of respondents to discuss with service providers about blood pressure, urine, iron tablets and checking height and weight checking. The chi square value of 21.75, which have observed P<0.001, indicates that an association exists between training and the use package of ANC services. Similar pattern was found with the variable counseling program. Another dimension of non- formal education was recreational program which can plays a significant role to create appropriate household environment for the responsibility of household head, provide information of marriage and the number of children and the age of marriage. As expected, the study found significant relationship between women who has participated in recreational program compared to those women who have not participated in this program (59 % vs. 47%). The chi- square value of 8.62, with observed P <0.001, suggested that there is a highly significant relationship between recreational program and the use

Table 14

ANC Package Service Used by Respondent's and theirs' Husband's Level of Education, Training, Recreational and Media Exposure.

	The Use of Antenatal Care Package					
Independent variables	Full (N=203)	Partial (N=142)	None (N=39)	Total (N=384)	x^2	P value
Women's education					42.30	P < 0.001***
Illiterate	77(40)	86(44)	31(16)	194 (100)		
Primary level	98(61)	54(34)	8(5)	160(100)		
SLC and above	28(93)	2(7)	0(0)	30(100)		
Husband's education					36.01	P < 0.001***
Illiterate	42(41)	44(43)	16(16)	102(100)		
Primary level	107(49)	91(41)	21(10)	219(100)		
SLC and above	54(86)	7(11)	2(3)	63(100)		
Training					21.75	P < 0.001***
No	144(47)	121(40)	39(13)	304(100)		
Yes	59(74)	21(26)	0(0)	80(100)		
Recreational program					8.62	P <0.001***
No	90(47)	74(39)	27(14)	191(100)		
Yes	113(59)	68(35)	12(6)	193(100)		
Counseling program					23.61	P < 0.001***
No	93(56)	45(27)	29(17)	167(100)		
Yes	110(51)	97(44)	10(5)	217(100)		
Media exposure (Radio /TV)						P <0.001***
Listen	149(62)	76(32)	15(6)	240(100)	74.79	
Not listen	54(38)	66 (45)	24(17)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%, the number in parenthesis indicates the percentage.*

package for ANC service. Since recreational program can transfer the knowledge about the use package of ANC services, initiating power to discuss about the

importance of package of ANC services and message of anti- fatalism as well as gender equity.

In regards the counseling program, full-utilizes were higher with the women those who did not participate in counseling program (56% vs. 51%). Moreover, greater percentage of women with counseling program utilizes partial package of the ANC services than did women who did not participate in counseling program (45 % vs. 27%).This indicates that women have an opportunity to participate in counseling program but did not get opportunity to use the full package of ANC services. The possible reasons were either lower access of the equipments for blood test, or iron tablets or neglected to offer the service by service providers. The chi square -value of 23.61, with observed $P < 0.001$ suggested that there is a significant association between counseling and the use package of ANC services.

Regarding the media exposure, the study found that greater percentage of the pregnant women with media exposure use the full package of ANC services than women who listen the media (62%vs 38%). Nearly one- third (32%) of the women were partial utilizes of the use package of ANC services. This indicates that media exposure success to transfer the knowledge with importance of the package of ANC services. The possible reasons were program of NHIEC, and Population education transferred the knowledge and creates the demand of the full package of ANC services. The chi-square value of 74.79, with observed $P<0.001$, suggested that there is significant relationship between mass media and the use package of ANC services.

Education and Immunized Tetanus Injection:

Potential interactions between women / husband education, training, recreational and counseling program and immunized tetanus injection were initially explored as shown in Table 15.

Table 15

TT Injection Immunized by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

	TT Injection received by the pregnant women					
Independent variables	No (N=72)	1st dose (N=43)	2nd dose (N=264)	Total (N=384)	x^2	P value
Women's education					9.72	P >0.05*
Illiterate	43(22)	22(11)	129(67)	194(100)		
Primary level	28(18)	20(12)	112(70)	160(100)		
SLC and above	1(3)	1(3)	28(94)	30(100)		
Husband's education					9.07	P >0.05
Illiterate	24(24)	10(9)	68(67)	102(100)		
Primary level	41(19)	30(13)	148(68)	219(100)		
SLC and above	7(11)	3(5)	53(84)	63(100)		
Training					1.70	P >0.05
No	61(20)	34(11)	209 (69)	304(100)		
Yes	11(14)	9(11)	60(75)	80(100)		
Recreational program					0.70	P<0.05
No	39(20)	21(11)	131(69)	191(100)		
Yes	33(17)	22(11)	138(72)	193(100)		
Counseling program						
No	37(22)	14(8)	116(70)	187(100)	3.93	P>0.05
Yes	35(16)	29(13)	153(50)	217(100)		
Media exposure (Radio /TV)						
Listen	39(16)	29(12)	172(72)	240(100)	2.82	P>0.05
Not listen	33(23)	14(10)	97(67)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%.,The number in parenthesis indicates the percentage.*

As of 6 independent variables only one variable as mother's education was associated with immunized TT injection. The study found that greater the percentage of women with SLC and above were immunized two dose of TT injection as compared to the

women those who were illiterate (94% vs. 67 %). This indicates that TT injection was important for pregnant women. The possible reasons were: (a) TT injection prevents tetanus toxoid (b) support for safe pregnancy (c) better indication of quality of care. The chi -square value 9. 72 with observed $p<0.05$ indicates that exists an association between the level of education of TT injection. However, the study did not find significant relationship between the other independent variables and the immunized TT injection. The possible reasons were that some of the women did not recognize the need of TT immunized twice, during the period of pregnancy.

Education and Institutional Delivery

Table 16 reports the association between formal education, training, recreational, counseling program and media exposure and institutional delivery. The study found that greater percentage of women with SLC and above delivered baby in the hospital as compared with illiterate women (83% vs. 18%). This clearly indicates that the institutional delivery was increased as the level of education increased. In addition, only 3 % of the women delivered the baby in either sub-health post or health center and more than one deciles (13%) of the women practiced home delivery though they have well education background. This indicates that positive relationship between education and hospital delivery.The possible reasons were: (a) educated women can make decision by themselves (b) may have opportunity for a job .The chi-square value of 55.95, which have an observed $P< 0.001$, indicates that an association exists between the levels of education and institutional delivery. Almost similar trend was found with husband's education.

Table 16

Institutional Delivery by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

Independent variables	Home delivery (N=251)	Institutional delivery				
		HP /C (N=17)	Hospital (N=116)	Total (N=384)	x^2	P value
Women's education					55.95	P <0.001***
Illiterate	149(77)	10(5)	35(18)	194(100)		
Primary level	98(61)	6(4)	56(35)	160(100)		
SLC and above	4(13)	1(3)	25(84)	30(100)		
Husband's education					56.42	P <0.001***
Illiterate	85(84)	3(3)	14(13)	102(100)		
Primary level	148(68)	11(5)	60(27)	219(100)		
SLC and above	18(29)	3(5)	42(66)	63(100)		
Training					21.33	P <0.001***
No	215 (70)	14(4)	75(25)	304(100)		
Yes	36(45)	3(4)	41(51)	80(100)		
Recreational program					14.92	P < 0.001***
No	142(74)	4(2)	45(24)	191(100)		
Yes	109(57)	13(6)	71(37)	193(100)		
Counseling program					17.06	P <0.001***
No	102(61)	1(1)	64(38)	167(100)		
Yes	149(69)	16(7)	52(24)	217(100)		
Media exposure (Radio /TV)						
Listen	135(56)	11(5)	94(39)	240(100)	25.17	P <0.001***
Not listen	116(81)	6(4)	22(15)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%, the number in parenthesis indicates the percentage.*

Training plays a significant role for institutional delivery through increasing the quick decision making reaching the health facility. Institutional delivery was doubled with trained women unlike untrained women (51% vs. 25%).On the other

hand, greater percentage of untrained women have practice home delivery than trained women (71 % vs. 45 %) . This indicates that there is strong relationship between training and institutional delivery. The possible reason were: (a) trained women have an opportunity to make cash from their job (b) they may have greater exposure power (c) quick decision making power for institutional delivery The chi-square value of 21.33, which have an observed $P < 0.001$, suggested that there is a highly significant association between training and institutional delivery.

Regarding the recreational program, higher percentages of women who have participated in recreational program have practiced hospital delivery (37% vs. 24 %) than those women who have no opportunity for recreational program. Home delivery was higher with those women who have not participated in recreational program. This indicates that recreational program plays significant role for institutional delivery. This is because peer groups can discuss where to go, when to go and information about the service providers. The chi -squared value of 14.92 with $P < 0.001$ suggested that there is significant relationship between recreational program and institutional delivery.

Turning to the counseling program, the result shows that there is slightly difference among the women who participate in counseling program in the use of institutional delivery (69 % vs. 61%).The hospital delivery was lower (24% vs. 38%, $P <0.001$) with the women who had participated in counseling program than those women who did not participate. The possible reasons were: (a) long distance of the health facility (b) lower quality of health services and (c) higher opportunity cost. One of the most important components of informal education was media exposure, the study found greater percentage of the pregnant women with mass media have

institutional delivery than did the women who did not use the mass media (39% vs. 15%).

In addition, more than two thirds (81%) of the women without media exposures have practiced home delivery. This indicates that media exposure plays significant role for institutional delivery. The possible reasons were that women were benefited through the non-formal education and awareness program through the program of National Health Information and Education Centre with other school health program, population education program .Since these program s transferred the knowledge and importance institutional delivery and risk of home delivery to the pregnant women. The chi-square value of 25.17, with observed P<0.001, suggested that there is significant relationship between the mass media and the institutional delivery.

Education and Postnatal Care:

Table 17 presents the association between women' formal education, non - formal education as training, recreational, counseling program and visit to postnatal care. The study found that higher percentage of women with SLC and above visited a health facility for postnatal checkup than that of illiterate women (83% vs. 56 %, In addition, 65 % of women with primary level of education visited to a health facility for postnatal care. This indicates that as increase the level of education visit postnatal care also increases. The chi-square value of 28.71, with P< 0.001 revealed that the association exists between the women's education and visiting to a health facility for postnatal care. This indicates that strong association between the level of education and visit postnatal care. The possible reasons were that higher level of education which provides the knowledge of reproductive health and demand for PNC checkup and use of contraceptive for birth spacing and limiting the child.

Table 17

Postnatal Care Visits by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

	PNC visit				
Independent variables	Yes (N=237)	No (N=147)	Total (N=384)	x^2	*P value*
Women's education				28.71	P < 0.001
Illiterate	108(56)	86(44)	194(100)		
Primary level	104 (65)	56(35)	160(100)		
SLC and above	25(83)	5(17)	30(100)		
Husband's education				2.68	P >0.05
Illiterate	57(56)	45(44)	102(100)		
Primary level	137(63)	82(37)	219(100)		
SLC and above	43(68)	20(32)	63(100)		
Training				14.29	P < 0.001***
No	173(57)	131(43)	304(100)		
Yes	64(80)	16(20)	80(100)		
Recreational program				19.23	P < 0.001***
No	97(51)	94(49)	191(100)		
Yes	140(72)	53(28)	193(100)		
Counseling program				.000	P < 0.001***
No	103(62)	64(38)	167(100)		
Yes	134(62)	83(38)	217(100)		
Media exposure (Radio /TV)					
Listen	161(67)	79(33)	240(100)	7.80	P < 0.05*
Not listen	76(53)	68(47)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%,*
The number in parenthesis indicates the percentage.

Concerning the training variables, greater percentage of women, visited a health facility for postnatal checkup with trained women than did untrained women,

P< 0.001). The chi-square of 14.29, with P < 0.001 reveals that an association exists between the trained women for postnatal care. This indicates that there is strong association between the training and the postnatal care.

The possible reasons were that training program like; adult, vocational training can provide the information of postnatal care and change the behavior and the life style of the pregnant women. Similarly, the study found that greater the percentage of women who have participated in recreational program were visited more than the women who did not participate in recreational program (72 % vs. 51%).

The study found that more than one fourth (28%) of the pregnant women did not visit to a health facility for the postnatal care those who participates in recreational program. The chi-square test revealed that there is statistically significant relationship between the recreational program and the postnatal care (chi-square 19.23 with P <0.001). This indicates that recreational program supports and facilitates to change the life style of the pregnant women. The possible reasons were that women can share the idea and discuss the importance of postnatal care women who have an opportunity in recreational program.

One of the most important components of non- formal education was media exposure ; the study found greater percentage of the pregnant women with mass media have visited postnatal care than did the women who did not use the mass media (67% vs.53%). In addition, one -third (33%) of the pregnant women did not visit to a health facility for postnatal care those who have an opportunity of media exposure. This indicates that there is positive relationship between the media exposure and the postnatal care. The possible reasons were that media exposure transfer the knowledge of appropriate life-style, message of antismoking and ant fatalism and changes the attitudes and behavior of the pregnant women. Additionally,

National Health Information and Education Centre (NHIEC) with other school health program, population education program transferred the knowledge and importance of postnatal care. The chi-square value of 12.99, with observed P<0.05, suggested that there is significant relationship between the media exposure and the PNC visit.

Education and Visit Doctor

Table 18 presents the relationship between formal education of women and their husbands, non formal/ informal education of women as, training, recreational program, counseling program and visit to the doctor for postnatal care. The study clearly shows that there is greater percentage of women with SLC and above visited the medical doctor than did illiterate women (53% vs. 16%). This result clearly indicates that as the level of education increase the number of visiting to a doctor also increases. On the contrary, visiting paramedical staff and MCHW were lower with the women of SLC and above. This indicates that the pregnant women with SLC and above visited doctors more than did illiterate women and illiterate women visited MCHWs as well as paramedical staff more than did women with SLC and above (23% vs. 17%, P<0.001).The chi-square value of 28.71, with observed P<0.001 found significant relationship between the women education with SLC and above and visiting to doctors due to the expectation of better quality of care. Similar trend was found with her husband's education. The possible reasons were: (a) higher users' charge of the doctors (b) lower access of the health professional but easily access of paramedical staff and MCHW especially in rural areas.

As expected the study found that there is greater percentage of trained women's visit doctor for PNC check up than that of untrained women (33% vs 19%). In addition, untrained women have more MCHW than trained women. Almost similar

trend was found visiting for paramedical staff but there is no surprising that untrained women visited more to Maternal and Child Health Workers.

The chi -square value of 28.71, with, $P< 0.001$ indicates that there is significant relationship between the trained and the untrained women. The possible reason was that training has increases the capacity where to go, how to go and whom to visit for postnatal checkup. Similar pattern was found with women who have participated in recreational program to visit the doctors. The possible reasons were that cultural and religious song, singing and dancing and *Teej* song as well as song of Cinema supports to increases the exposure capacity of women to talk with doctor, and importance of doctors for PNC.

There is no surprising that there is greater percentage of those women who have no opportunity for counseling program visited doctors for PNC check up than those women who participated in counseling program (16% vs. 30%, see table 18) .

Greater the percentage of women with counseling program was visited paramedical staff .Similarly, greater the percentage of women visited with maternal and Child Health Workers (16 % vs. 30%). The chi- square value of 24.35, with observed $P < 0.001$, suggested that there is significant relationship between counseling program and visit postnatal care. The possible reasons were that other program like recreational, training, formal education program might have changed their minds towards visiting to doctors for PNC checkup. Regarding the mass media, the study found greater percentage of the pregnant women with media exposure has visited the doctor for PNC checkup than did women who have no practice media exposure (27 % vs. 14%).

Table 18

Visited Doctors for Postnatal Care by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

	Visit Doctor						
Independent variables	Doctors (N=84)	PMS (N=78	MCHW/ FCHV (N=75)	No (N=200)	Total (N=384)	x^2	P value
Women's education						28.71	P <0.001***
Illiterate	31(16)	33(17)	44(23)	86(44)	194(100)		
Primary level	37(23)	41(26)	26(16)	56(35)	160(100)		
SLC and above	18(53)	4(13)	5(17)	5(17)	30(100)		
Husband's education						27.78	P <0.001***
Illiterate	14(14)	19(19)	24(24)	45(44)	102(100)		
Primary level	45(20)	55(25)	39(18)	82(37)	219(100)		
SLC and above	27(43)	4(6)	12(19)	20(32)	63(100)		
Training						22.99	P <0.001***
No	58(19)	52(17)	63(21)	131(43)	304(100)		
Yes	26(33)	26(33)	12(14)	16(20)	80(100)		
Recreational program						23.41	P <0.001***
No	31(16)	28(28)	38(20)	94(49)	191(100)		
Yes	53(28)	50(25)	37(19)	53(28)	193(100)		
Counseling program						24.35	P < 0.001***
No	50(30)	17(10)	36(22)	64(38)	167(100)		
Yes	34(16)	61(28)	39(18)	83(38)	217(100)		
Media exposure (Radio /TV)							
Listen	64(27)	53(22)	44(18)	79(33)	240(100)	12.99	P<0.05*
Not listen	20(14)	25(17)	31(22)	68(47)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1% Number in brackets indicates the percentage.PMS= paramedical staff, MCHW =Maternal and Child Health Workers/Female Community Health Volunteers.*

Almost similar pattern was found to those women who visited to PMS and MCHW. This indicates that women with media exposure visited doctors rather than PMS and MCHW. The possible reasons were: (a) they understood the importance of PNC visit (b) media exposure success to change the behavior of the pregnant women. The observed chi square value showed the significant relationship between these two variables in $P < 0.05$.

Education and BCG Injection for New Born Child

Table 19 presents the relationship between formal and non-formal education/ informal education and BCG injection for respondent's new born child within three days. As our expectation, the study found that greater percentage of women with SLC and above agreed that service providers visited their home and immunized BCG injection to her children within three days than did illiterate women (57% vs. 22%, $p < 0.001$). In addition, more than one fourth (29%) of women with primary level education agreed that the service providers to her home immunized BCG injection within three days. The chi- square value of 21.74, with observed $P < 0.001$, suggested that there is significant relationship between women's' education and immunized BCG injection to her newborn child. This indicates better client- provider's relationship. The possible reasons were that the educated women understood the importance of BCG injection and always success to maintain appropriate relationship with service providers. Similarly, the study found that greater the percentage of the pregnant women with her husband education more than SLC and above agreed that the service providers made home visit and immunized BCG injection to newborn child within three days as compared to the women those who have illiterate husband (41% vs. 21%).

Table 19
BCG Injection for Newborn Child within three days by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

Independent variables	BCG injection					
	Agreed (N=107)	Undecided (N=12)	Disagreed (N=265)	Total (N=384)	x^2	P value
Women's education					21.74	P < 0.001***
Illiterate	43(22)	3(2)	148(76)	194(100)		
Primary level	47(29)	9(6)	104(65)	160(100)		
SLC and above	17(57)	0(0)	13(43)	30(100)		
Husband's education					14.35	P < 0.001***
Illiterate	21(21)	1(1)	80(78)	102(100)		
Primary level	60(27)	11(5)	148(68)	219(100)		
SLC and above	26(41)	0(0)	37(59)	63(100)		
Training					3.56	P >0.05
No	78(26)	10(3)	216(71)	304(100)		
Yes	29(36)	2(3)	49(61)	80(100)		
Recreational program					6.01	P<0.01***
No	51(27)	2(1)	138(72)	191(100)		
Yes	56(29)	10(5)	127(66)	193(100)		
Counseling program					6.50	P >0.05
No	50(30)	1(1)	116(69)	167(100)		
Yes	57(26)	11(5)	149(69)	217(100)		
Media exposure (Radio /TV)						
Listen	69(29)	9(4)	162(67)	240(100)	1.99	P>0.05
Not listen	38(26)	3(2)	103(72)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1% Number in brackets indicates the percentage.*

Additionally , more than one fourth (27%) of the pregnant women's husband with primary level of education agreed that service providers made home visit and immunized TT injection to her new born child within three days. The chi- square

value of 14.35, with observed $P < 0.001$, suggested that there is significant relationship between the pregnant women with her husband education and immunized BCG injection to her newborn child within three days. This indicates that educated husband always prefer transfer the importance of BCG injection to her new born child. The possible reasons were that couple always understood that immunization BCG injection prevents tuberculosis, as well as other types of diseases and as a result there is a chance to be disabled child.

Mass media is one of the most important components of non-formal education. The study found, slightly difference between the women with listening to radio and watching Television as compared to the women who did not do so (29% vs. 26%). However, the listening group of women disagreed that she did not immunized BCG injection to her newborn child within three days. The chi-square value of 1.19 with observed $P > 0.05$ suggested that there is no significant difference between media exposure and BCG injection.

Education and the Age of Mother at Child Birth

Table 20 shows the positive relationship between women's formal education with her husbands' education and non-formal education as training, recreational counseling and media exposure. The age of mother at childbirth found substantially different with the level of education, husbands' education, training, recreational program and counseling program. The study hypothesized that those women who were less than 25 years gave more birth in the comparison to those women who were above 30 years. The finding of this study is true that the women with age less than 25 years give more birth than the age of mother more than 30 years (63% vs. 17%).

Table 20
The Age of Mother at Child birth by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

Independent variables	The age of mother at child birth				x^2	P value
	<25yrs (N=212)	25-29yrs (N=77)	>30yrs (N=95)	Total (N=384)		
Women's education					17.13	P < 0.001***
Illiterate	191 (47)	38(20)	65(33)	194(100)		
Primary level	102 (64)	33(21)	25(15)	160(100)		
SLC and above	19(63)	6(20)	5 (17)	30(100)		
Husband's education					36.64	P < 0.001***
Illiterate	38 (37)	17(17)	47(46)	102(100)		
Primary level	130(60)	49(23)	40(18)	219(100)		
SLC and above	44(70)	11(17)	8(13)	63(100)		
Training					3.91	P > 0.05
No	163(54)	59(19)	82(27)	304(100)		
Yes	49(61)	18(23)	13(16)	80(100)		
Recreational program					5.52	P >0.05
No	100(52)	34(18)	57(30)	191(100)		
Yes	112(58)	43(43)	38(19)	193(100)		
Counseling program					5.40	P > 0.05
No	81(49)	39(23)	47 (28)	167(67)		
Yes	131(60)	38(18)	48(22)	217(100)		
Media exposure (Radio /TV)						
Listen	147(61)	55(23)	38(16)	240(100)	27.37	P < 0.001***
Not listen	65(45)	22(15)	57(40)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%, the number in parenthesis indicates the percentage.*

In addition, nearly two -third (64%) of the women with primary level of education were less than 25 years for the age of mother at child birth. The study found that the

age of mother at child birth less than 25 yrs was common in this study. In addition, as the level of education increases the age of the mother at child birth less than 25 yrs cohort increases.

This indicates that age of mother at child birth depends on other circumstances or reproductive behaviors or life -style of an individual rather than education. The possible reasons were: (a) marriage is universal and normally women marry around 20 years (b) they did not use the contraceptive measures unless having a child.

Another indication of this study is that as increases the level of education increases the age of mother at child birth more than 30 years was lower than illiterate women (17% vs. 34 %). This indicates that educated women understood that high risk of death or disabled with an increase of the age of mother at child birth. The chi-square of 17.13, with $P< 0.001$ revealed that significant difference between the women with SLC and above and illiterate women with less than 25 yrs age of the mother at child birth. Almost similar trend was found with husband education.

Mass media is one of the most important components of non-formal /informal education. The study found that greater percentage of women with the listener of radio and TV were at the age of mother less than 25 than those women with non-listener Radio and TV (61% vs. 45%) . In addition, the study found 23 % of women between the ages 25 -29 years. However, more than one -third (40%) of the women with the age of mother at more than 30 years were very far from the media exposure. This indicates that as the age of mother increases the use of media also decreases in the same ratio. The possible reasons were: (a) lower access of audio-visual (TV and radio) materials (b) lower education and income with that the age cohort (c) media exposure transferred the knowledge about benefits of late marriage, low risk in delay pregnancy. Pearson correlation test was applied to test the independence and test

shows statistically significance between the women's education with chi- square of 17.13, husbands education with chi square of 36.64, and media exposure with chi-square of 27.37, was observed with P<0.001, indicates that there is high significant relationship between women's education , husband education and media exposure and the age of mother at child birth. On the other hand, the study did not find significant relationship between the independent variable as, training, recreational and counseling program and the age of mother at child birth.

Education and the Number of Children

Another variable of reproductive behavior was related to the number of children. The relationship between reproductive behaviors in the study areas is inter-related in a complex way. Table 21 shows non-linear relationship between the women education, husband's education, training, recreational, counseling and the number of children. As expected, the study found, that majority (93%) of the women with SLC and above have 1 to 2 children; in addition 75 % of educated women with the primary level of education and 54 % of illiterate women have 1 to 2 children. Moreover, as of 194, one -fifth (21%) of illiterate women, have 3 children, and followed by 25 % women with more than three children. This indicates that as the level of mother education increases the number of children also decreases. The possible reasons were that the educated women know the benefit from lower the number of children and prefer quality of children rather than quantity.

Almost similar trend was found with husband's education. The chi-square value of 28.50, with observed P <0.001 indicates that there is a relationship between women's education and the number of children. With regards, the training as independent variables, the study found that more than three quarters (81 %) of trained

women have 1 to 2 children, in addition, 13 % of women have 3 children, and finally 6 % have more than three children.

Table 21

The Number of Children with Pregnant Women by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

	Number of children					
Independent variables	1to 2 (N=253)	3 child (N=61)	>3children (N=70)	Total (N=384)	x^2	P value
Women's education					28.50	P < 0.001***
Illiterate	105 (54)	40(21)	49 (25)	194(100)		
Primary Level	120 (75)	19 (12)	21 (13)	160(100)		
SLC and above	28(93)	2(7)	0 (0)	30(100)		
Husband's education					36.76	P < 0.001***
Illiterate	47 (46)	20(20)	35(34)	102(100)		
Primary Level	151(69)	37(17)	31(14)	219(100)		
SLC and above	55(87)	4 (6)	4 (7)	63(100)		
Training					12.31	P >0.05
No	188 (62)	51(17)	65(21)	304(100)		
Yes	65(81)	10(13)	5(6)	80(100)		
Recreational program					9.01	P >0.05
No	115(60)	30(16)	46(24)	191(100)		
Yes	138(72)	31(16)	24(12)	193(100)		
Counseling program					1.81	P >0.0.5
No	112(67)	22(13)	33(20)	167(100)		
Yes	141(65)	39(18)	37(17)	217(100)		
Media exposure (Radio /TV)					27.37	P <0.001***
Listen	147(61)	55(23)	38(16)	240(100)		
Not listen	65(45)	22(15)	57(40)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%, the number in parenthesis indicates the percentage*

This indicates that training provides the information about the importance of fewer children. The possible reasons were: (a) understood better socio-economic benefit with the lower the number of children (b) want to substitute's income generated activities rather than the number of children (c) chance of the better quality of care. The chi- square value of 28.50, which have an observed $P < 0.001$, indicates that a strong association exists between the training and the number of children. Almost similar trend was found in husband's education. The-chi- square values of 9.01 suggest that the significant relationship exists between the recreational program and the number of children.

The possible reason was that both formal, non- formal/ informal education provides knowledge to the pregnant women about the benefit for them and their families from lower number of children. Although counseling program provides formal advice to the pregnant women lowering the number of children, the study did not find significant relationship between counseling and the number of children due to the influence of other factors.

Concerning the media exposure, as an independent variable, the study found that greater percentage of women with media exposure have the lower the number of children as compared to the women those who did not do so (79% vs. 73%). This indicates positive relationship between the media exposure and the number of children. The possible reasons were women with media exposure create the demand for quality of children rather than the quantity of children. Women with media exposure allocate her time to reproduce the message rather than to reproduce more children. The chi-square value of 13.13, with observed, $P<0.001$, indicates that there is significant relationship between the media exposure and the number of children.

Education and The Use of Health Services for Other Medical Problem

Table 22 presents the relationship between educations, training, recreational, counseling program as well as media exposure and the use of available health services for other medical problems. Life-style traits also appear to significantly the use of available health care services. For instance, those women who have the habit of visiting to a health facility for other medical problems may have health profile as well as action plan for maternity care. In this circumstance, she can consult with service providers about maternity care simultaneously with other medical problems.

The study found that nearly one -fourth (23 %) of the women with SLC and above, in addition, slightly over than one -fifth (21 %) of the women with primary level of education and remaining one deciles (10 %) of the illiterate women those who have felt other medical problems frequently visited a health facilities consulted with service providers for maternal and child health care services. This indicates that the women with lower the level of education have lowering in the use of available health services as compared to those women who have higher level of education. The possible reasons were: (a) no idea about integrated services (b) lower expression power (c) the lack of consensus (d) the lack of good quality of data. The chi-square value of 19.14, observed $P< 0.001$ indicates an association exists between women's education and utilization of available health care services. Since the educated women understood that there might be linear relationship with multiple causes among other medical problems and maternal child health problems.

Regarding the training, the study found that more than one- fourth (30%) of trained women frequently visited to a health facility for other medical problems as compared with untrained women. However, sometimes visitors were declined from 78 % to 64 % with untrained to trained women. The chi-square value of 15.29, which an observed $P<0.001$, indicates that an association exists between training and utilization

of available health services. The possible reasons were: (a) training increases the exposure capacity of the pregnant women and (b) empowerment status of pregnant women.

Recreation was another dimension of non- formal/ informal education, which plays a significant role to utilize the available health care services. The study found that greater percentage of women with participation in recreational program frequently visited to a health facility for other medical problems as compared women those who did not participate in recreational program. This indicates that message of the recreational program can change the life style traits of the pregnant women. The chi -square value of 38.15, which have an observed P <0.001, indicates that an association exists between the level of recreational program and use of the available health care services for other medical problems.

The study found that greater percentage of women who participated in counseling program frequently visited to a health facility for other medical problems as compared to the women those who did not participate in counseling program. The chi-square value of 23.97 with observed, P<0.001, indicates there is a highly significant association between the counseling program and the utilization of available health care services for other medical problems. The possible reasons are: (a) counselors provide valuable information about the use of contraceptives measures and Regarding the media exposure, as independent variable, the study found the difference, between the women using available health services for other medical problems as compared to those women who did not do so (51% vs. 7%). In addition, (b) measures for cost efficiency in medical care.

Only 6 % of the women were non-user though they watch TV and listen to radio program. The possible reasons were: (a) quality of services (b) long distance of health facility (b) behaviors of the service providers.

Table 22

Utilization of Available Health Care Services for Other Medical Problems by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

	Use of available health services					
Independent variables	Never (N=35)	Sometimes (N=288)	Frequently (N=61)	Total (N=384)	x^2	P value
Women's education					19.14	P < 0.001***
Illiterate	26(13)	148(78)	20(10)	194(100)		
Primary level	5(3)	121(76)	34(21)	160(100)		
SLC and above	4(13)	19(64)	7(24)	30(100)		
Husband's education					9.51	P < 0.001***
Illiterate	18(17)	76(76)	8(7)	102(100)		
Primary level	13(6)	169(77)	37(17)	102(100)		
SLC and above	4(6)	43(69)	16(25)	219(100)		
Training					15.29	P<0.001***
No	30(10)	237(78)	37(12)	304(100)		
Yes	5(6)	51(64)	24(30)	80(100)		
Recreational program					38.15	P <0.001***
No	30(16)	148(77)	13(6)	191(100)		
Yes	5(3)	140(72)	48(24)	193(100)		
Counseling program					23.97	P <0.001***
No	23(13)	133(80)	11(6)	167(100)		
Yes	12(6)	155(70)	50(24)	217(100)		
Media exposure (Radio /TV)						
Listen	14(6)	175(73)	51(21)	240(100)	19.53	P < 0.001***
Not listen	21(15)	113(79)	10(6)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1% Number in brackets indicates the percentage.*

The chi- square value of 19.53, with observed P <0.001, indicates that there is significant relationship between the media exposure and the utilization of available health care services for other medical problems. The possible reasons were that media provides the knowledge to interlink her medical problems with maternity care. Again, the pregnant women can consult simultaneously about all problems in the same time with the single service providers and due to the one door policy for medical treatment of the sick women.

Education and Heard of Family Planning Method.

Association between hear of contraceptives measures and education, training, recreational, as well as counseling has been presented in Table 23. Oral test was done to assess the hearing about the name of contraceptives measure. Spelled out contraceptives measures were documented in research tools during the period of survey. Further, other enquiries were established to assess how much of them were familiar with contraceptives devices and some enquiries were made about the reasons for not utilizing the contraceptives measure to assess the gap between hearing and utilization of contraceptives measures. Of all women in union, over-wimbling (93%) of women with SLC and above heard at least one method of contraceptives measures, in addition, 86% of women with primary level of education, and 65% of illiterate women heard at least one method of contraception. This indicates that as increases the level of education increase the use of contraceptives measures. The chi -square value of 15.97, which have observed, P<0.001, indicates that an association exists between the level of education and hearing about at least one method of contraceptives measures. The possible reasons were: (a) school education program provides the knowledge of contraceptives (b) non-formal education especially counseling program

change the attitudes and behavior of the service providers (c) media exposure provides the information to the pregnant women for safe delivery.

Table 23

Contraceptives Measure heard by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

	Heard about contraceptive measures				
Independent variables	Yes (N=296)	No (N=88)	Total (N=384)	x^2	P value
Women's education				15.97	P < 0.001***
Illiterate	130(65)	64(35)	194(100)		
Primary Level	138(86)	22(14)	160(100)		
SLC and above	28(93)	2(7)	30(100)		
Husband's education				15.70	P< 0.001***
Illiterate	66(64)	36(35)	102(100)		
Primary Level	173(79)	46(21)	219(100)		
SLC and above	57(91)	6(9)	63(100)		
Training				18.36	P < 0.001***
No	220 (72)	84(28)	324(100)		
Yes	76(95)	4(5)	80(100)		
Recreational program				43.72	P < 0.001***
No	120(63)	71(37)	191(100)		
Yes	176(91	17(9)	193(100)		
Counseling program				9.72	P <0.001***
No	116(70)	51(31)	167(100)		
Yes	180(83)	37(17)	217(100)		
Media exposure (Radio /TV)				60.45	P<0.001***
Listen	216(90)	24(10)	240(100)		
Not listen	80(56)	64(44)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%. Number in brackets indicates the percentage.*

Regarding the training as of the independent variables of non- formal /informal education, greater percentage of trained women heard about family planning method as compared than those untrained women (95 % vs. 72%). Only 5 % of the pregnant women heard about contraceptives measure but did not use such measures. The chi-squared value of 18.36 with observed $P < 0.001$ indicates that an association exists between training and hearing about contraceptives.

As our expectation, the greater percentage of women who participated in recreational program group was findings contraceptives listener as compared with non participatory group (91% vs. 63%). The chi- square value of 43.90 with observed, $P <0.001$, suggested that an association exists between recreational program and use of contractive. The possible reasons were that religious group of the women as well as other people can transferred the knowledge and skills to use contraceptives through cinema, *Teej* songs, religious *Bhajan* or traditional songs. Almost similar trend is found with women those who participated in counseling program.

Counseling program plays a significance role for the use of contraceptives measures. As expected, the greater percentage of women used contraceptives measures those who got an opportunity to participate in counseling program than those women who did not participate on that program (83% vs. 70%). The chi- square value of 9.72, with observed $P <0.001$ suggested that an association exists between counseling program and the use of contraceptives. The possible reasons were the counselor provides the information both the positive and the side effects of contraceptives measures.

Turning to the media exposure, the majority (90%) of the pregnant women with media exposure heard at least one methods of family planning. This indicates that media exposures transfer the knowledge, importance and methods on the use

contraceptives measures. The possible reasons were that the media exposure provides information about the benefit of contraceptives as well as change the behavior of an individual. The chi- square value of 60.45, which have an observed P <0.001 indicates that an association exists between media exposure and heard about contraceptives measures.

Education and the Use of the Family Planning Method.

Table 24 presents the relationship between the use of contraceptives measures by respondent's background characteristics as education, training, recreational, as well as counseling. Greater percentage of trained women used contraceptives measures as compared with the untrained women (58%vs 43%). This indicates that there is positive relationship between training and use contraceptives measures. The possible reasons were: (a) trained women to substitute's income generated activities rather than the number of children (b) preferred healthy children rather than quantity of children. The chi- square value of 5.29 with observed P<0.001 indicates that an association exists between training and the use of contractive measures.

Regarding the recreational program, greater the percentage of women with participation in recreational program use contraceptives measures as comparatives measures to the women with untrained women. The chi- square value of 13.642, with observed P< 0.001 indicates that there is highly significant relationship between recreational program and the use of family planning. The possible reasons were: (a) useful knowledge and importance of contraceptives measures were transfer to the pregnant women through recreational program (b) sharpen the knowledge and skills of the use contraceptives through peers group education.

Table 24
Contraceptives Measures used by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

	Used contraceptives measure				
Independent variables	Yes (N=177)	No*** (N=119)	Total (N=384)	x^2	P value
Women's education				1.84	P >0.05
Illiterate	83(43)	111(57)	194(100)		
Primary Level	80(50)	80(50)	160(100)		
SLC and above	14(47)	16(53)	30(100)		
Husband's education				3.57	P >0.05
Illiterate	39(38)	63(62)	102(27)		
Primary Level	106(48)	113(52)	219(57)		
SLC and above	32(51)	31(49)	63(100)		
Training				5.29	P <0.001***
No	131(43)	173(57)	304(100)		
Yes	46(58)	34(43)	80(100)		
Recreational program				13.64	P <0.001***
No	70(37)	121(63)	167(100)		
Yes	107(55)	86(45)	217(100)		
Counseling program				2.10	P >0.5
No	70(42)	97(58)	167(100)		
Yes	107(49)	110(51)	217(100)		
Media exposure (Radio /TV)				18.56	P<0.001***
Listen	131(55)	131(55)	240(100)		
Not listen	46(32)	46(32)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%*
*Number in brackets indicates the percentage. **** Among the respondent* who said *no, the non-applicable group are also included.*

This indicates positive relationship between media exposure and use contraceptives measures. The possible reasons were: (a) media exposure provides the information about method use of contraceptives (b) transform the knowledge of the importance of the use of contraceptives measures (c) media exposure success to change the behavior of the women. The chi-square value of 18.56 with observed P <0.001, indicates that there is high significant association between media exposure and used contraceptives measures. The study did not find significance relationship between women's education, husband education, and counseling program and use of contraceptives measures.

Education and Distance to the Nearest Health Facility

Table 25 presents the relationship between health facilities by women's education, training, recreational program, counseling program and media exposure. The study found that greater the percentage of women with SLC and above travelling time was less than 30 minutes as compared with illiterate women. (50% vs. 17%).In addition, more than one -fourth (27%) of the women with primary level of education travelling time was less than 30 minutes.

Similarly the study found greater the percentage of women with SLC and above travelled less than 30 minutes than did illiterate women (50% vs. 13%). This indicates that the negative relationship between educated women and the travelling time to a health facility. The possible reasons were: (a) educated women reach earlier to health facility as much as they can (b) rented the room in the side of the health facility for delivery purpose (c) visit relative's house or made social network (d) service providers motivate to create the demand of contraceptives among the pregnant women.

Table 25

Traveling Time to a Health Facility by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

	Distance to the nearest health facility				x^2	P value
Independent variables	<30 (N=91)	Exact 30 (N=175)	>30 (N=118)	Total (N=384)		
Women's education					22.98	P < 0.001***
Illiterate	33(17)	104(54)	57(29)	194(100)		
Primary Level	43(27)	60(38)	57(35)	160(100)		
SLC & above	15(50)	11(37)	4(13)	30(100)		
Husband's education					47.01	P < 0.001***
Illiterate	9(9)	65(64)	28(28)	102(100)		
Primary Level	50(23)	89(41)	80(36)	219(100)		
SLC & above	32(51)	21(33)	10(16)	63(100)		
Training					22.77	P < 0.001***
No	56 (18)	150(49)	98(32)	304(100)		
Yes	35 (43)	25(31)	20(25)	80(100)		
Recreational program					6.07	P < 0.001***
No	35(18)	93(49)	63(33)	191(100)		
Yes	56(29)	82(42)	55(29)	193(100)		
Counseling program					3.33	P < 0.001***
No	47(28)	73(44)	47(28)	167(100)		
Yes	44(20)	102(47)	71(33)	217(108)		
Media exposure (Radio /TV)						
Listen	70(29)	101(42)	69(29)	240(100)	10.60	P < 0.05*
Not listen	21(15)	74(51)	49(34)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%, Number in bracket s indicates the percentage.*

The chi-square value of 22.98, with observed P<0.001, indicates that there is a high significant association between education level and travelling time to a health facility. Similar trend was found with husband education.

Concerning training, the greater percentage of the trained women's traveling time was less than 30 minute than untrained women (43% vs. 18 %).In addition nearly one third of the trained women were travelled exactly 30 minutes. This indicates the positive relationship between travelling time and nearest distance of the health facility. The chi-square value of 22.77, with observed P <0.001, reveals that there is a high significance association between training and travelling time to a health facility. Almost similar trend was found women with recreational and counseling program and as well as travelling time to health facility.

The study found that greater percentage of women with listening TV and Radio travels less than 30 minutes as compared to the women with more than 30 minutes (29%vs 15%). The chi- square value of 10.60, with observed P < 0.05 indicates that there is significant relationship between media exposure and distance to the health facility. The possible reasons were: (a) lower opportunity cost (b) lower travelling time (c) good relationship between clients and service providers.

Education and the Cost Coping Strategy for Maternity Care

Table 26 presents the Respondent's cost coping strategy for maternity care by education, training, recreational program and counseling background. There is great differences between women with SLC and above, and illiterate women with cost coping strategy for maternity care. The study found that greater the percentage of the pregnant women with SLC and above managed their cost self than the women who did not participate in counseling program (97% vs. 62 %.) In addition, 84 % of the women with primary level of education managed their cost self as compared the women with no education. This indicates that as increase the level of education for cost coping strategy was increases. The possible reasons were : (a) educated women

were more concerned with cost coping strategy (b) prepared basic things with cost coping strategy (c) have strong social support and net work program (c) may have insurance (d) job opportunity. The chi-square value of 29.52, which have an observed P <0.001, suggested that an association exists between formal education and cost coping strategy for maternity care. The possible reasons were that the more educated women have practiced to make social net work for resources collection, intend to save money, cloth stock and food stock, for her pregnancy and newborn care.It is generally believed that those women who have opportunity for training is more likely self- managed their cost than did untrained women (75% vs. 70%). The chi -square value of 13.50, which an observed, P<0.001, indicates that an association exists between trained and untrained women.

Similarly more than 90 % of the pregnant women with recreational program self- managed their cost as compared with women those who did not participated in recreational program. This was because participatory group of recreational program can generate more money by the exhibition of cultural program especially, in the promotion on internal and external tourism.

Moreover, they may have strategy to transfer their dancing and singing skills in weeding ceremony and other cultural program. This indicates the positive relationship between recreational program and cost coping strategy for maternity care. The chi- square value of 6.86, which an observed, P <0.001, indicates that an association exists between participatory group and non-participatory group in recreational program.

Table 26

Cost Coping Strategy for Maternity Care by Respondent's Level of Education, Training, Recreational, Counseling and Media Exposure.

	Cost coping strategy for maternity care				
Independent variables	Borrowed (N=100)	Self-managed (N=284)	Total (N=384)	x^2	P value
Women's education					
Illiterate	73(38)	121(62)	194(100)	29.52	P < 0.01***
Primary level	26(16)	134(84)	160(100)		
SLC and above	1(3)	29(97)	30(100)		
Husband's education				15.38	P < 0.01***
Illiterate	39(38)	63(62)	102(100)		
Primary level	54(25)	165(75)	219(100)		
SLC and above	7(11)	56(89)	63(100)		
Training				13.50	P < 0.01**
No	92(30)	212(70)	304(100)		
Yes	8(10)	72(90)	80(100)		
Recreational program				6.86	P < 0.01**
No	61(32)	130(68)	191(100)		
Yes	39 (20)	154(80)	193(100)		
Counseling program				0.35	P > 0.05
No	46(28)	121(72)	167(100)		
Yes	54(25)	163(75)	217(100)		
Media exposure (Radio /TV)					
Listen	53(22)	187(78)	240(100)	5.21	P < 0.01**
Not listen	47(33)	97(67)	144(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%, Number in brackets indicates the percentage.*

The chi-square value 0.35 does not show the significance differences between the counseling and the cost coping strategy for maternity care. Greater percentage of

women with listen media exposure self managed their cost as compared the women those who did not listen media exposure (78% vs. 67%). However, the chi- square value of 5.21, which observed $P < 0.001$, shows significance difference between the media exposure and the cost coping strategy for maternity care.

It can be concluded that bivariate analysis has been observed to show the relationship of 6 independent (knowledge related) variables with all 7 dependent variables as well as 7 intermediate variables. However, logistic regression is fitted linking between mothers education, husband education, training, recreational counseling and media exposure with all indicators of 7 dependent variables. Among these variables, 5 independent variables likewise, mother's education, training , recreational , counseling, and media exposure were selected for hypothesis testing with some selected indicators of dependent variables as shown in chapter IX.

CHAPTER VI

SOCIO-ECONOMIC STATUS AND MATERNITY CARE

Introduction

Effects of formal and non-formal/ informal education have been presented in previous chapter and; this chapter considers the influence of other socio-economic factors like wealth, work status, ethnicity, place of residence, Kathmandu Valley on maternity care. Definition and indicators of these variables have been presented in chapter 1 and 3, respectively. The research questions what others factors are influencing on the maternity care other than education" was the third question of this study. Available information has been presented into three clusters: (a) descriptive analysis, (b) bivariate analysis and (c) multivariate analysis but result of multivariate analysis has been presented in chapter IX.

Descriptive Analysis

Wealth and Work and Maternity Care

Table 27 depicts description of wealth, work, ecological zone and Kathmandu Valley. Wealth is defined in terms of assets rather than income or consumption. Household assets are measured by asking the sort of available accessories through the research question 19. Principal component analysis is used to construct the wealth quintile.

As of 384, more than one -third (38%) of the respondents were in poorest quintiles and more than one- fourth (28%) of the women were in the richest quintile. In addition, 4% were in the second quintiles and followed 17% and 13% for the third

and the fourth quintile. Occupation is another confounding factor of maternity care. Research question: 34 “what was the occupation of women” was asked to measure the work status of women. Since, this was the good predictor for the utilization of the maternity care. Nearly two- third (65 %) of the women were involved in the traditional agriculture sector as shown Table 27

Table 27
Percentage and Distribution Pattern of Respondents by Wealth, Work and Place of Residence.

Independent variables	(N=384)	%
Wealth status		
Poorest	144	38
Second	17	4
Third	64	17
Fourth	52	13
Richest	107	28
Work status		
Agriculture	250	65
Non-agriculture	134	35
Ecological zone		
Mountain	29	8
Hill	173	45.
Terai	182	47.
Kathmandu valley		
Outside	254	66.
Inside	130	34

N=frequency number.

Geographical Disparity and Maternity Care

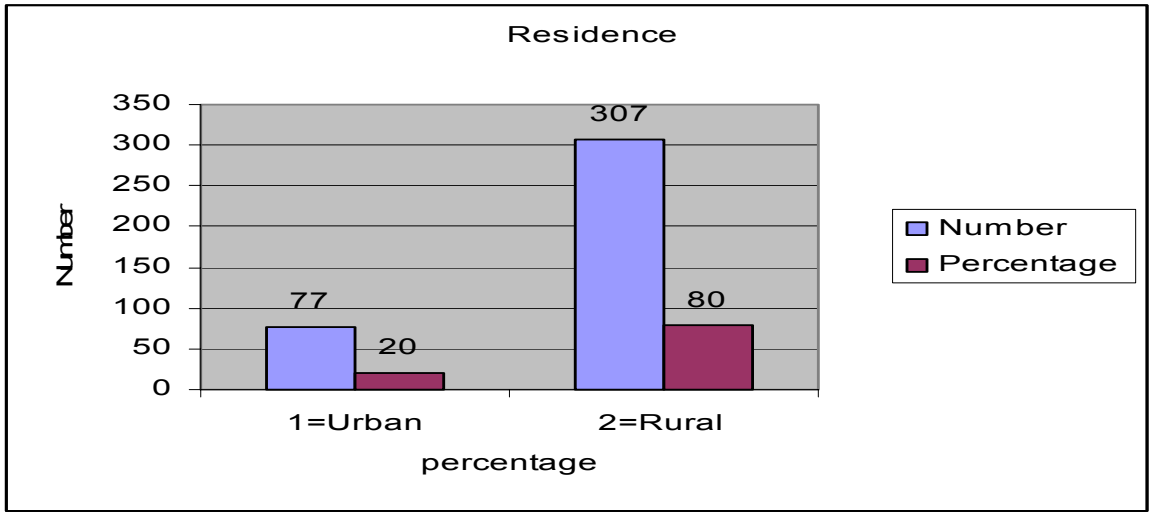
Geographical disparity has been presented in three ways (a) ecological zone (b) Kathmandu Valley (c) residence. Collected information from mountain, was 8%, in addition, 45 % from the Hills and 47 % were collected from Terai district.

Similarly, the survey result show that more than two- third (66%) of the women were out of the Kathmandu Valley.

Residence and Maternity Care

Figure (2) shows the differences between the rural and urban areas. The survey result shows that more than three –quarters (80 %) of the women reside in the rural areas where as only 20 % of the women reside in the urban area.

Figure: 5.
Showing the Distribution Pattern of Respondents by Residence

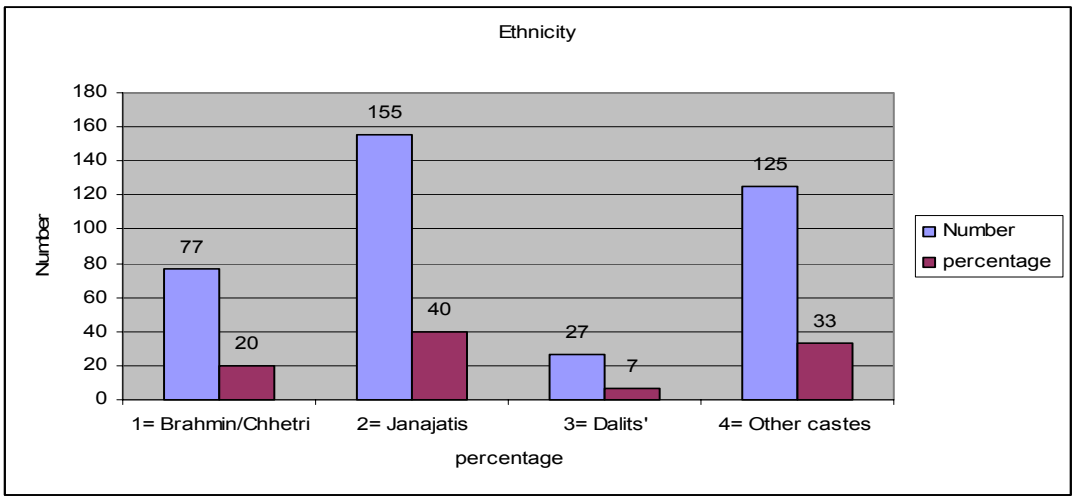


Ethnicity and Maternity Care

Ethnicity also have a potentially influence on service utilization. Although, there are 103 castes in Nepal, this study is categorized into Brahmin/Chhetri, Janajatis, Dalits and other castes. The diagram 1 shows that the highest (40 %) group of the respondents was from Janajatis and the lowest (7 %) were from Dalits. Moreover, the study result found that one –fifth (20%) of the women were from Brahmin / Chhetri, and rest of the respondents were from other unspecified cast groups.

Figure 6

Showing the Distribution of Respondents by Ethnic Group



Bivariate Analysis

Bivariate analysis was used to examine the relationship between several independent variables like wealth, work, ethnicity and place of residence (rural vs. urban, Kathmandu Valley, and ecological zone) and several dependent variables.

Socio-economic Status and Number of ANC Visit

Table 28 presents the relationship between the socio-economic status like wealth, work, ethnicity, Kathmandu Valley, place of residence, ecological zone and the number of ANC visit. The study found that at least four time visitors group of women to a health facility for ANC was greater from the richest quintile than did the women from the poorest quintile, as our expectation (83% vs. 27%). Moreover, more than one-half (53 %) of the women from second quintile, more than two- fifth (44%) each of from third and fourth quintile did the similar practice as of the richest quintile. In addition, more than one -half (58%) women were visited 1 to 3 times from the

poorest quintile and indicated inadequate visit for ANC. In addition, the study indicates the inequality existed in the use of ANC services. The possible reasons were: (a) women think unnecessary to visit ANC services unless being a serious illness (b) lower willingness and affordability and (c) higher opportunity cost.

This was true that two -third (66%) of the women who worked in non-agriculture sectors had visited at least four times for ANC as compared to those women who worked in agriculture sectors. In addition, greater percentage of those women with agriculture sectors visited 1 to 3 times to health facility as compared to those women who worked in non-agriculture sectors (47% vs. 29%). This indicates inadequate visit for ANC service with the women those who worked in agricultural sectors. The possible reasons were that women who worked in non-agricultural sectors have an opportunity for cash income and powerful decision for ANC visit.

The visit to a health facility for antenatal checkup was varied by ethnic group. Greater percentage of women who were from other caste visited health facility at least four times for ANC than did dalits women (62% vs. 26%, P<.001). Utilization status of antenatal care services was found slightly differences between the Brahmin and the other caste (Table 28). The dropout rate for ANC visit was highest (70%) in Dalit women and it is being a challenge for Nepal. The possible reasons were: (a) discrimination by service providers (b) lower level of education (c) lower willingness and affordability for ANC service. Three variables like rural and urban differences, Kathmandu Valley and ecological zone were consisted under the variable place of residence. Nearly two- third (63%) of urban women visited at least four times for ANC, this percentage was increased by 13 % and reach to 77% with women of Katmandu Valley. The study found that the highest (61%) percentage of the women was from hill areas who utilized the available ANC services than did the women who

lived in Mountain and Terai region. Within the place of residence, the highest (53%) percentage of the women visited 1 to 3 times in Terai.

Table 28
Number of ANC Visit by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	Number of ANC visit					
Independent variables	Never (N=40)	1 to 3 (N=156)	4 visit (N=188)	Total (N=384)	x^2	*P* value
Wealth status					79.76	P<0.001***
Poorest	21(15)	84(58)	39 (27)	144(100)		
Second	2 (12)	6(35)	9(53)	17(100)		
Third	8(13)	28(43)	28(44)	64(100)		
Fourth	7(14)	22(42)	23(44)	52(100)		
Richest	2(2)	16(15)	89(83)	107(100)		
Work status					23.80	P<0.001***
Agriculture	33(13)	117(47)	100(40)	250(100)		
Non-agriculture	7(5)	39(29)	88(66)	134(100)		
Ethnicity					40.49	P<0.001***
Brahmin	3(4)	28(36)	46(60)	77(100)		
Janajaties	29(19)	69(44)	57(37)	155(100)		
Dalits	1(4)	19(70)	7(26)	27(100)		
Other Casts	7(6)	40(32)	78(62)	125(100)		
Katmandu valley					62.67	P<0.001***
Outside	31(12)	135(53)	88(35)	254(100)		
Inside	9(7)	21(16)	100(77)	130(100)		
Residence					9.75	P<0.001***
Urban	3(4)	25(33)	49(63)	77(100)		
Rural	37(12)	131(43)	139(45)	307(100)		
Ecological zone					36.28	P<0.001***
Mountain	8(28)	12(41)	9(31)	29(100)		
Hill	21(12)	47(27)	105(61)	173(100)		
Terai	11(6)	97(53)	74(41)	182(100)		

*significant at 5%; ** = significant at 1%; *** = significant at 0.1% *and the number in parenthesis indicates the percentage.*

In addition, more than one -third (43%) of the hilly women discontinued the use of ANC services. That might be either due to the application of the law of diminishing marginal utility or people commonly thought the visit for ANC was unnecessary for them. Moreover, the distance to a health facility, lack of transportation as well as money, traditional beliefs and values were the factors to increase the discontinue rates for ANC.

It is not surprising that greater percentage of the women who lived in the Kathmandu Valley visited double for ANC than did women who lived outside the Kathmandu Valley (77% vs. 35%). Never visitor group of women who lived in mountain areas were accountable for 28% and in addition, 12% in hilly areas and finally 6% of the women in Terai region. This indicates the miserable and painful conditions of women. Such phenomenon may occur either due to the reluctance of service providers in health service point or the lower demand in available health services in those areas. The test of significance between covariates of all independent variables was carried out by the application of Pearson chi- square test and the test showed statistically significant between all covariates and the number of ANC visit. The Pearson chi -square value was 79.76 for wealth, 23.80 for work status, 62.67 for the Kathmandu Valley, observed with $P < 0.001$ and suggested that there was high significant relationship between all independent variables and dependent variable. But the qualitative approach indicates that some of the educated women received Iron tablets but did not use that due to the risk from the larger size of the baby than their capacity. For example, one of the case studies (Case 3) obtained in *Tanahu* districts indicates the used patterns of Iron tablet obtained by a local level health worker.

Case study 4: Iron Tablet could not be Consumed due to the Pressure of Mother-in-law

During the period of pilot test, the study found an interesting story in one of the wealthiest families in Bhanumati Village Development Committee of Tanahu District, nearly 60 kilometer west from Kathmandu. Husband and wife both were educated more than SLC. The Pregnant woman made regular visits to the sub-health post of that VDC and always received iron-tablet. Health workers always advised her to consume the iron tablets regularly and she agreed to follow his advice and returned to her home. The interesting thing that her mother –in-law advised her not to use the iron tablets because, the size of the baby would be bigger and as a result there might be difficult for normal delivery. The Hospital was very far and might come a greater risk of the long labor during midnight. There was a private hospital on the side of the Prithivi High way but was not affordable for them due to the lack of job as well as income. Therefore, she followed her mother –in-law advice and avoided consuming iron tablets though she had completed the proficiency level of education.

Socio-economic Status and the Use Package of Antenatal Care Services

Table 29 presents the use package of ANC service by respondent wealth, work, ethnicity, and place of residence. As expected, greater is the percentage of women from the richest quintile used the full package of ANC than did women from the poorest quintiles (81 % vs. 31%). Moreover, more than one -half (56%) of women used the full package from the second quintile. The data were fluctuating in accordance with the level of income of pregnant women. In contrast, greater percentage of the women with poor group partially used the package of ANC services. This indicates that ANC service is depended on other various factors. The possible reasons were that income leads for the willingness and affordability of the pregnant women to use the available services.

Table 29
ANC Package Used by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	Use ANC Package					
Independent variables	Full (N=203)	Partial (N=142)	None (N=39)	Total (N=384)	x^2	P value
Wealth status						
Poorest	45(31)	75(52)	24(17)	194(100)	63.95	P<0.001***
Second	10(58)	5(30)	2(12)	17(100)		
Third	32(50)	26(41)	6(9)	64(100)		
Fourth	29(55)	18(35)	5(10)	52(100)		
Richest	87(81)	18(17)	2(2)	107(100)		
Work status					30.59	P<0.001***
Agriculture	107(43)	109(43)	34(14)	250(100)		
Non-agriculture	96(71)	33(25)	5(4)	134(100)		
Ethnicity					43.56	P<0.001**
Brahmin	51(66)	21(27)	5(7)	77(100)		
Janajatis	51(32)	80(52)	24(16)	155(100)		
Dalits	15(56)	10(37)	2(7)	27(100)		
Other Caste	86(69)	31(25)	8(6)	125(100)		
Kathmandu valley					105.61	P<0.001***
Outside	87(34)	134(53)	33(13)	254(100)		
Inside	116(89)	8(6)	6(5)	130(100)		
Residence					33.23	P<0.001***
Urban	63(81)	13(18)	1(1)	77(100)		
Rural	140(47)	129(41)	38(12)	307(100)		
Ecological zone					59.51	P<0.001***
Mountain	8(28)	12(41)	9(31)	29(100)		
Hill	120(69)	34(20)	19(11)	173(100)		
Terai	75(41)	96(53)	11(6)	182(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1% the number in parenthesis indicates the percentage antenatal care services.*

In the context of geographical disparities, over wimbling (89%) of the pregnant women used the full package of ANC services inside the Kathmandu Valley and slightly over than one-third (34%) of the pregnant women were from hilly areas. More than two -thirds (69%) of the pregnant women utilized the full package of ANC services in hill areas. The finding indicates that the women from hill areas were more benefited from ANC package rather than the women from mountain and Terai areas. The possible reasons were (a) long distance of a health facility in mountain and (b) ignored for ANC service in Terai areas (c) women in hill areas were more educated.

Regarding the ethnicity, the study found that highest percentage (69%) of women was from the other caste, 66 % from Brahmin, and 32% percent from Janajatis fully used the full package of antenatal care service. Utilization of the package of the ANC services was varied in accordance with the ethnic group. The possible reasons were discrimination between the higher and lower caste by service providers, rich and poor women as well as educated and uneducated women.

Pearson Correlation test was applied to test the independence and the test shows statistically significant relationship between the wealth status of 63.95, with work status of 30.59, residence of 33.23, and ecological zone of 59.51, ethnicity of 43.57 was observed with $P < 0.001$, indicates that there was high significant relationship between work status, residence, ethnicity and ecological zone and utilization the package of ANC services.

Cross -tabulation revealed that the income was influential factors for ANC services. However, fourth case of study indicates that still superstition and traditional belief miss-guided the women in the use of available health services.

Case Study 5: Time for Out Reach Mobile Clinic

Katunje, 8 with the height of 10,000 meters from the sea level: in Melamchi Village Development Committee of Sindhupalchok was dominated by Tamang community and the traveling time from Melamchi Primary Health Care center to this village was more than three hours and was out of transportation facilities.

During the period of survey, most of the villagers of that ward made grievances about the time for service delivery mechanism provided by service providers.

Most of the children were not immunized by BCG injection lthough the health service providers organized out-reach mobile clinic in that location. Usually, the women went to the forest to collect either wood for fire or grass for cattle and most of them usually came back during the period of afternoon and always tried to visit the mobile clinic. However, all the service providers ran away to their home prior to 2 o'clock. Therefore, the villagers asked with me, "Why doesn't the Nepal government regulate the mobile outreach clinic up to five o' clock of that day?"

Socio-economic Status and TT Injection

Table 30 presents the relationship between wealth, work, and ethnicity, place of residence and TT injection. The studies found that the highest (81%) percentage of the women were immunized by TT Injection more than two doses in their right arms from the richest quintile where as, the lowest (61%) percentage of women were from third quintile. Similarly (11%) percentage women were accounted for richer and poorer quintile with the women who immunized one dose .This indicates that dropout is still higher in Nepal due to the negligence of the women.They did not recognize the need of second dose of TT injection. The study found that the highest (84%) percentage of women was immunized by TT injection from other group and the lowest (54%) from Janajatis. In addition, more than two -third (67%) of dalit women were immunized by tetanus injection more than second doses.

Table 30

TT Injection Immunized for Pregnant women by Wealth, Work, Ethnicity and Place of Residence.

	TT Injection dose obtained by the Pregnant Women					
Independent variables	No (N=72)	1st dose (N=43)	2nd dose (N=269)	Total 384(100)	x^2	P value
Wealth status					22.35	P<0.001***
Poorest	38(26)	16(11)	90(63)	144(100)		
Second	3(18)	1(6)	13(76)	17(100)		
Third	13(20)	12(19)	39(61)	64(100)		
Fourth	10(19)	2(4)	40(77)	52(100)		
Richest	8(8)	12(11)	87(81)	107(100)		
Works status					16.35	P<0.001***
Agriculture	59(24)	33(13)	158(63)	250(100)		
Non-agriculture	13(10)	10(8)	111(82)	134(100)		
Ethnicity					34.53	P<0.001***
Brahmin	10(13)	5(7)	62(81)	77(100)		
Janajatis	44(28)	27(17)	84(55)	155(100)		
Dalits	6(22)	3(11)	18(67)	27(100)		
Others caste	12(10)	8(6)	105(84)	125(100)		
Kathmandu valley					12.52	P<0.001***
Outside	56(22)	35(14)	163(64)	254(100)		
Inside	16(12)	8(6)	106(82)	130(100)		
Ecological zone					15.08	P<0.001***
Mountain	11(38)	2(7)	16(55)	29(100)		
Hill	33(19)	12(7)	128(74)	173(100)		
Terai	28(15)	29(16)	125(69)	182(100)		
Residence					10.12	P<0.001***
Urban	5(7)	8(10)	64(83)	77(100)		
Rural	67(22)	35(11)	205(67)	307(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1%.The number in Parenthesis indicates the percentage.*

Concerning the geographical disparities, this was true that the greater percentage of the women from the Kathmandu Valley obtained two dose of TT injection than women those who live outside the Kathmandu Valley (82% vs. 64%). Similarly, urban women were benefited from this service than the rural women. More than two- thirds (69%) from hilly women were immunized by TT injection. This indicates that women from the Kathmandu Valley, hill areas and Terai were more benefited from this service as there was an access of health care services as well as transportation facilities. Pearson chi-square test was adopted to test the independence of all covariates with TT injection. The chi -square value of wealth quintile of 22.35 ,work status 16.35, ethnicity 34.53 of the Kathmandu Valley 12.52 ecological zone 15.08, and the residence 33.23 was observed $P<0.001$ indicates that there was high significant association between TT injection and all the variables of socio-economic status.

Socio-economic Status and Delivery Care

Table 31 presents the institutional delivery by respondent socio-economic background characteristics like wealth, work, ethnicity, and place of residence. The study found that the hospital delivery from the richest group was greater by 8 times as compared to women from the poorest group (65% vs. 8%). One in five women with richest group used HP/C to deliver their baby. In contrast, more than three quarters (87%) of the women with poorest quintile delivered the baby at their home. This indicates that the poorest women delivered their baby at the home, if they have institutional delivery they would not go far from the health center or health post. The possible reasons were: (a) the slower economic status (b) lower capacity for the

Table 31

Institutional Delivery by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	Institutional Delivery					
Independent variables	Home (N=251)	HP/C (N=17)	Hospital (N=251)	Total (N=384)	x^2	P value
Wealth status					113.	P<0.001***
Poorest	125(87)	7(5)	12(8)	144(100)		
Second	11(65)	0(0)	6(35)	17(100)		
Third	46(71)	8(13)	10(16)	64(100)		
Fourth	34(65)	0(0)	18(35)	52(100)		
Richest	35(34)	2(1)	70(65)	107(100)		
Work status					48.56	P<0.001***
Agriculture	189(76)	15(6)	46(18)	250(100)		
Non-agriculture	62(46)	2(2)	70(52)	134(100)		
Ethnicity					63.26	P<0.001***
Brahmin	36(47)	3(4)	38(49)	77(100)		
Janajatis	126(81)	12(8)	17(11)	155(100)		
Dalits	21(78)	2(7)	4(15)	27(100)		
Other Caste	68(54)	0(0)	57(46)	125(100)		
Kathmandu valley					127.75	P<0.001***
Outside	208(82)	17(7)	29(11)	254(100)		
Inside	43(33)	0(0)	87(67)	130(100)		
Ecological zone					79.45	P<0.001***
Mountain	24(83)	2(7)	3(10)	29(100)		
Hill	81(47)	1(1)	91(52)	173(100)		
Terai	146(80)	14(8)	22(12)	182(100)		
Residence					34.86	P<0.001***
Urban	33(43)	0(0)	44(57)	77(100)		
Rural	218(70)	17(6)	72(23)	307(100)		

significant at 5%; ** = significant at 1%;* = significant at 0.1% the number in Parenthesis indicates the percentage.*

affordability of money (c) unavailable of the health facility outside the Kathmandu Valley. The chi- square value of 113.83, with observed, P<0.001indicates

the significant differences existed between the wealthy family and the institutional delivery. Concerning the wealth status, the greater percentage of women delivered their baby in the hospital as they were from non-agriculture sector as compared to women in agriculture (83% vs. 63 %). As our expectation, the women from the Brahmin caste delivered their baby in the hospital as dalits and Janajatis did (Table 31). The probable reasons were: (a) higher education and (b) better socio-economic status of Brahmin caste than others.

More than two- third (67%) of women in the Kathmandu Valley delivered their baby in the hospital where as more than three -quarters (82%) of women have practiced home delivery outside the Kathmandu Valley. A similar practice was found with women from mountain and Terai region. This indicates that there was lower utilization of hospital delivery outside the Kathmandu Valley. The possible reasons were: (a) supply constraints (b) lower affordability (c) lower access of health service point (d) limited birthing center outside the Kathmandu Valley (e) long distance to the health service points (f) the quality of private hospital is lower. The test of significance was carried out by using the Pearson correlation test and the test shows the significant relationship between the institutional delivery and the socio-economic status. The chi-square value for work status 48.56; ethnic group 63.26; the Kathmandu Valley 127.71, ecological zone 79.45, residence, 34.86; and indicates that there was high significant relationship between the institutional delivery and the socio-economic status with observed $p < 0.001$.

Socio-economic Status and Postnatal Care (Mother)

As shown in Table 32, postnatal care (mother) practised by pregnant women was found varied in accordance with their socio-economic background. As expected, the

greater percentage of women from the richest quintile visited a health facility for postnatal check up than women did from the poorest quintile (82% vs. 50%).

Table 32
Postnatal Visits by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	Postnatal care for mother				
Independent variables	Yes (N=237)	No (N=147)	Total (N=384)	x^2	P value
Wealth status					
Poorest	72(50)	72(50)	144(100)	33.65	P<0.001***
Second	10(59)	7(41)	17(100)		
Third	43(67)	21(33)	64(100)		
Fourth	24(46)	28(54)	52(100)		
Richest	88(82)	19(18)	107(100)		
Work status				9.92	P<0.001***
Agriculture	140(56)	110(44)	250(100)		
Non-agriculture	97(72)	37(28)	134(100)		
Ethnicity				20.52	P<0.001***
Brahmin	45(58)	32(42)	77(100)		
Janajatis	78(50)	77(50)	155(100)		
Dalits	19(70)	8(30)	27(100)		
Other Caste	95(76)	30(24)	125(100)		
Kathmandu valley				46.59	P<0.001***
Outside	126(50)	128(50)	254(100)		
Inside	111(85)	19(15)	130(100)		
Ecological					
Mountain	2(7)	27(93)	29(100)	39.912	P<0.001***
Hill	114(66)	59(34)	173(100)		
Terai	121(66)	61(34)	182(100)		
Residence				10.70	P<0.001***
Urban	60(78)	17(22)	77(100)		
Rural	177(58)	130(42)	307(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.1% the number in Parenthesis indicates the percentage*

In addition, the lowest (46%) percentage of women from fourth quintile, additionally over than one-half (59%) from second and more than two-thirds of women from third quintile visited a health facility for PNC. Similar pattern was found with work status and this indicates that both wealth and work status were the determinant of maternity care.

The study found that majority (85%) of women in the Kathmandu Valley, two - third (66%) of hilly women and more than three- quarters (78%) women from urban areas visited to a health facility for PNC checkup. This indicates that urban women as well as women in the Kathmandu Valley were more benefited from PNC checkup than rural women due to higher accessibility of health professional as well as better education. Pearson chi-square test was applied to test the independency between the seven individual covariate and found statistically significant difference between these variables and PNC visit. The chi-square value for wealth, 33.65; work status 9.92, ethnicity 20.5 the Kathmandu Valley 46.59; ecological zone 39.92; residence 10.70 and observed $P < 0.001$.

Socio-economic Status and Visits to a Doctor.

Association between seven independent variables such as wealth, work, ethnicity, place of residence (Kathmandu Valley, ecological zone, rural vs. urban) and the visit to doctor is presented in Table 33. Firstly, the greater percentage of women were from the richest quintile were visited medical doctors than women from the poorest quintile (43% vs. 6%). In addition, more than one -third (41%) from second quintile, 14 % from the third- quintile and 25% were from fourth quintile visited doctor rather than other staff. This indicates that women from the richest quintile visited doctors than women from the poorest quintile. In contrast, higher the percentage of women from poorest quintile visited paramedical staff than did women from the richest quintile (22% vs 18%). There was no difference between the poorest

and the richest quintile for maternal and child health workers. Over all, the study indicates that women from the poorest quintile were never visitors, if they have visited a health services point, they have only visited either MCHW or PMS.

Table 33

Visited Doctor by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	Visit Doctor						
Independent variables	Doctor (N=84)	PMS (N=78)	MCHW/ FCHV (N=75)	No (N=147	Total (N=384)	x^2	P value
Wealth status						83.87	P<0.001***
Poorest	9(6)	31(22)	32(22)	72 (50)	144(100)		
Second	7(40)	2(12)	1(6)	7(41)	17(100)		
Third	9(14)	24(38)	10(16)	21(32)	64(100)		
Fourth	13(25)	2(4)	9(17)	28(54)	52(100)		
Richest	46(43)	19(18)	23(21)	19(18)	107(100)		
Work status						44.42	P<0.001***
Agriculture	31(12)	63(25)	46(18)	110(45)	250(100)		
Non-agriculture	53(40)	15(11)	29(22)	37(27)	134(100)		
Ethnicity						71.45	P<0.001***
Brahmin	23(30)	4(5)	18(23)	32(42)	77(100)		
Janajatis	17(11)	42(27)	19(12)	77(50)	155(100)		
Dalits	3(11)	14(52)	2(7)	8(30)	27(100)		
Others Caste	41(33)	18(14)	36(29)	30(24)	125(100)		
Kathmandu valley						146.77	P<0.001***
Outside	15(6)	72(28)	39(15)	128(51)	254(100)		
Inside	69(52)	6(5)	36(28)	19(15)	130(100)		
Ecological zone						143.31	P<0.001***
Mountain	1(3)	1(3)	0(0)	27(94)	29(100)		
Hill	71(41)	6(4)	37(21)	59(34)	173(100)		
Terai	2(7)	71(39)	38(21)	61(33)	172(100)		
Residence						45.51	P<0.001***
Urban	36(47)	20(26)	4(5)	17(22)	77(100)		
Rural	48(16)	58(19)	71(23)	130(42)	307(100)		

**=significant at 5%; **= significant at 1%; **= significant at 0.1% the number in parenthesis indicates the percentage.*

Similar pattern was found with work status. In the context of ethnic groups, the study did not find as our expectation 30% of the Brahmin women and 33% from other caste visited the doctor respectively.This indicates that the visit to paramedical staff was made (52%) by *dali*t and the lower (9. 5%) percentage was accounted for Brahmin women due to the cultural accessibility.

As our expectation, the significant difference was found on the visitors to doctor between the Kathmandu Valleys (52 % vs. 6%). Additionally, the visited to doctors as well as MCHW was higher in the Kathmandu Valley rather than other districts but the visit to paramedical staff was higher in outside in the comparison to the Kathmandu Valley. This indicates that Paramedical staffs as well as MCHW were the contributing factors for maternity care especially in outside Kathmandu Valley rather than inside Kathmandu Valley.

Among the visitors, the study indicates that more women from dalits and Janajatis visited to paramedical staff. Similarly, visiting to the doctors in Terai districts was lower than the hilly districts (7 % vs 41%).The possible reason were that lower affordability for postnatal care and traditional practice for postnatal care.

The test of significance between all covariates was carried out by the application of Pearson chi- square test. The chi-square value for wealth quintile was 83.87, work status, 44.42 the Kathmandu Valley 146.77, ecological zone 143.31, and residence was 45.51 observed with $P < 0.001$ and indicates statistically significant between visit to doctor by socio-economic background characteristics.

Socio-economic Background and Postnatal Care (NBC)

Association between BCG injections by socio-economic background like wealth, work, and ethnicity has been presented in Table 34. PNC check up for

newborn child was examined on the basis of the data immunized by BCG injection for newborn child within three days. Cross- tabulation found that greater percentage of those women who were from the richest quintile agreed with the statement that the service providers visited at their home and immunized by the BCG injection to her new born child within three days than those women who were from the poorest quintile (39% vs.15%). In additional, this percentage increased from second quintile and fluctuates with third and fourth -quintile. Similar pattern was found with work status. In the context of ethnicity, as our expectation, the greater percentage of Brahmin women were agreed that the service providers visited at their home and immunized the BCG injection within three days as compared to the women from Janajatis and dalits (49% vs16 and 37% ,respectively).

As expected ,the study found that the greater percentage of women in the Kathmandu Valley were agreed with the statement that the service providers made home visit and immunized BCG injection to their newborn child within three days than women did outside the Kathmandu Valley (39% vs. 22%). Similar pattern was found with those women who lived in the hilly and urban areas. The possible reasons for this phenomenon were the access of health especially paramedical staff, MCHW, FCHV, and AHW in rural areas. These staff organized outreach mobile clinic in each ward for the immunization program. Moreover, the value of children in Nepalese society was high and thus, everybody has concerned to immunize BCG injection for their newborn child. The test of independence between six variables and BCG injection was the test by applying the Pearson chi-square test and the test shows the statistically significant between these variables. The chi- square value for wealth quintiles was 26.78, ethnicity, 38.25; work status 13.18;the Kathmandu Valley 11.82, ecological zone 25.40 and residence was 6.48 with $P<0.001$.

Table 34

BCG Injection for NBC within 3 days by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	BCG injection					
Independent variables	A (N=107)	U (N=12)	D (N=265)	Total (N=384)	χ^2	P value
Wealth status					26.78	P<0.001***
Poorest	22(15)	6(4)	116(81)	144(100)		
Second	7(41)	0(0)	10(59)	17(100)		
Third	16(25)	4(6)	44(69)	64(100)		
Fourth	20(39)	0(0)	32(61)	52(100)		
Richest	42(39)	2(2)	63(59)	107(100)		
Ethnicity					38.25	P<001***
Brahmin	38(49.4)	1(1.3)	38(49.4)	77(100)		
Janajatis	25(16)	9(6)	121(78)	155(100)		
Dalits	10(37)	2(7)	15(56)	27(100)		
Other Caste	34(27)	0(0)	91(73)	125(100)		
Work status					13.18	P<0.001***
Agriculture	55(22)	10(4)	185(74)	250(100)		
Non-agriculture	52(38)	2(2)	80(60)	134(100)		
Kathmandu valley					11.82	P<0.001***
Outside	57(22)	10(4)	187(100)	254(100)		
Inside	50(39)	2(1)	78(60)	130(100)		
Ecological zone					25.40	P<0.001***
Mountain	5(17)	0(0)	24(83)	29(100)		
Hill	68(39)	2(1)	103(60)	173(100)		
Terai	34(19)	10(6)	138(75)	182(100)		
Residence					6.48	P<0.001***
Urban	30(38)	1(1)	46(59)	77(1000		
Rural	77(25)	11(4)	219(71)	307(100)		

*significant at 5%; ** = significant at 1%; *** = significant at 0.1% the number in parenthesis indicates the percentage. A= agree, U= undecided, D =disagree.

Socio-economic Status and the Age of Mother at Child birth

Table 35 presents the relationship with the age of mother at child birth in accordance with respondent's socio-economic background like wealth, work ethnic group and the place of residence. The age of mother at child birth varies in accordance with the level of income. The greater percentages of women from the richest group were < 25 years old age at the child birth than those women who were from the poorest group (65% vs. 46%). Perhaps, due to early marriage and reluctance in the use of contraceptives measures unless having one child. The chi- square value of 25.82, observed $P< 0.001$ indicates that significance relationship existence between the wealth status and the age of mother at child birth.

Another, indication of this study was that the highest percentage of women from the poorest quintile was more than 30 years of mother at child birth as compared to the women from the richest quintile (33% vs. 9%). This indicates that women from the poorest quintiles are always in high risk for maternal mortality and morbidity. The possible reasons were: (a) preference to son (b) lack of money to buy contraceptives (c) wants more children to substitute's death or sick child. Concerning within Kathmandu Valley, the greater percentage of women less than 25 years were the age of mother at child birth in the Kathmandu Valley as compared to the women from outside the Kathmandu Valley (60% vs. 53%), and this was in the against of our expectation.

Lower percentage of women with the age of mother at first child birth were more than 30 years in the Kathmandu Valley rather than outside from the Kathmandu Valley (16% vs. 29%) . Similar pattern was found in rural-urban differences.

Table 35

Mother's Age at Child Birth by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	The age of the mother at child birth					
Independent variables	<25years (N=212)	25-29 yrs (N=77)	>30 yrs (N=95)	Total (N=384)	x^2	P value
Wealth status					25.82	P<0.001***
Poorest	66(46)	30(21)	48(33)	144(100)		
Second	10(59)	2(12)	5(29)	17(100)		
Third	36(56)	7(11)	21(33)	64(100)		
Fourth	30(58)	11(21)	11(21)	52(100)		
Richest	70(65)	27(25)	10(9)	107(100)		
Work status					3.70	P>0.05
Agriculture	142(57)	43(17)	65(26)	250(100)		
Non-agriculture	70(53)	34(25)	30(22)	134(100)		
Ethnicity					6.60	P>0.05
Brahmin	47(61)	13(17)	17(22)	77(100)		
Janajatis	89(57)	27(17)	39(25)	155(100)		
Dalits	17(63)	4(15)	6(22)	27(100)		
Other caste	59(47)	33(27)	33(26)	125(100)		
Kathmandu valley					8.08	P<0.001***
Outside	134(53)	46(18)	74(27)	254(100)		
Inside	78(60)	31(24)	21(16)	130(100)		
Ecological zone					5.97	P>0.05
Mountains	13(45)	8(28)	8(27)	29(100)		
Hills	102(9)	37(21)	34(20)	173(100)		
Terai	97(53)	32(18)	53(29)	182(100)		
Residence					0.82	P> 0.05
Rural	167(54)	61(20)	79(26)	307(100)		
Urban	45(58)	16(21)	16(21)	77(100)		

*significant at 5%; ** = significant at 1%; *** = significant at 0.1% *and, the number in parenthesis indicates the percentage.*

Over than one -half (59%) of the women the age of mother at child birth were less than 25 yrs from hill areas. In contrast, lower the numbers of women inside the Kathmandu Valley were more than 30 years .Similar trend was found with the women with age 25-29 cohort.This indicates that most of the women's age of mother at child birth was less than 30 years. The possible reasons were: (b) women from the Kathmandu Valley understood the age of mother at child birth more than 30 years was risk to give birth (b) education provides the knowledge of risk to give birth after 30 years.

The test of independence between six independent covariates and the age of mother at child birth was carried out by the application of Pearson chi-square test and the test showed statistically significance between wealth, quintiles and the age of mother at child birth. However, the study did not find significant relationship between the covariates in work status, and ethnic groups, ecological zone, residence and the age of mother at child birth.

Socio-economic Status and the Number of Children

Table 36 presents the relationship between the number of children and respondent's socio-economic background like wealth, work ethnicity and the place of residence. The number of children varies in accordance with the income level of pregnant women. The study found that the greater percentage of those women who have 1 to 2 children were from the richest quintile with the comparison of women from the poorest quintile (84% vs. 50%). In contrast, lower percentage of the mother with >3 children were from the richest quintile with the comparison of those women who were from the poorest quintile (8% vs. 26%). This indicates that the women from

Table 36

The Number of Children by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	The number of children					
Independent variables	1 to 2 child (N=253)	3 child (N=61)	>3child (N=70)	Total (N=384)	x^2	P value
Wealth status					33.78	P<0.001***
Poorest	72(50)	34(24)	38(26)	144(100)		
Second	13(76)	1(6)	3(18)	17(100)		
Third	42(66)	11(17)	11(17)	64(100)		
Fourth	36(69)	7(14)	9(17)	52(100)		
Richest	90(84)	8(8)	9(8)	107(100)		
Work status					7.24	P<0.001***
Agriculture	155(62)	40(16)	55(22)	250(100)		
Non-agriculture	98(73)	21(16)	15(11)	134(100)		
Ethnicity					6.64	P<0.001***
Brahmin	58(75)	9(12)	10(13)	77(100)		
Janajatis	98(63)	28(18)	29(19)	155(100)		
Dalits	18(67)	6(22)	3(11)	27(100)		
Other Caste	79 (64)	18(14)	28(22)	125(100)		
Kathmandu valley					23.43	P<0.001***
Outside	147(58)	46(18)	61(24)	254(100)		
Inside	106(82)	15(11)	9(7)	130(100)		
Ecological zone					5.97	P<0.001***
Mountains	15(52)	6 (21)	8(28)	29(100)		
Hills	131(76)	20 (12)	22(13)	173(100)		
Terai	107(59)	35(19)	40 (22)	182(100)		
Residence					0.82	P>0.001***
Urban	58(75.)	12(16)	7(9)	77(100)		
Rural	195(64)	49(6)	63(20)	307(100)		

*significant at 5%; ** = significant at 1%;*** = significant at 0.1% and*, the number in parenthesis indicates the percentage.*

the richest quintile have lower number of children than that the women from the poorest quintile. The possible reasons were:(a) access of financial resources for medication (b) guaranteed the life of the children (c) better caring for sick children. The chi square value of 33.78, with observed, P<0.001conformed the significant relationship between the level of income and the number of children.

Regarding the ethnicity, the studies found the greater percentage of those women who have 1 to 2 children were from the Brahmin community with the comparison of those women from Janajatis (75% vs. 63%). The chi- square value of 6.64, with observed P <0.001, indicates that women from the Brahmin community have lower the number of children as compared to dalit, Janajati, and others. The possible reason were the preference of quality of children rather than quantity of children and higher the knowledge of benefit from the lowering the number of children. In the context of the Kathmandu Valley, greater percentage of (82% vs. 58%) women from the Kathmandu Valley have 1to 2 children than those women who resides outside from the Kathmandu Valley. This percentage is remaining more than one- half with those women who lived in urban areas and was lower than in mountain region. The possible reasons were: (a) the lower access of contraceptives measure (b) early marriage and teenage pregnancy (c) child survivals and disability of the child.

The test of significance between the two covariates was carried out by the application of Pearson Chi- square value of wealth quintile 6.64, work status, 7.24, Ethnicity 6.76, Kathmandu Valley 23.43, Ecological zone 5.97, and the place of residence 0.82 with observed P <0.001 significant level. The study found statistic significant difference between all variables and the number of children as our expectation.

Socio-economic Status and Distance to the Nearest Health Facility

Table 37 presents the relationship between socio-economic related variables like wealth, work, ethnicity, place of residence and distance to a health facility. Variation was found in the distance of health facility in accordance with the level of income of the pregnant women. The study showed that the greater percentage of women's traveling time was less than 30 minutes in the richest quintile than did women from the poorest quintile (50% vs. 7%). This indicates that income was the determinants for the distance of the health facility. The possible reasons were: (a) rich people were able to live near by the hospital (b) poor people who lived nearby the hospital were able to rise their income by running some small business. The chi-square value of 73.86, with observed, $P<0.001$ indicates the significant differences existed between the wealth status and the nearest distance of the health facility.

Similarly, the study found that the percentage of women was double with non-agriculture sector who resided less than 30 minutes as compared to those women who resided more than 30 minutes (38 % vs. 16%). With the chi-square value of 3.70 with observed $P<0.001$ indicates the significant relationship between work status and the distance of the health facility. Since, the pregnant women from non-agricultural sectors could be able to manage their residence near by a health service point, able to hire or use the mode of transportation. As expected, the study result shows that higher percentage of Dalits women travelled more than 30 minutes in the comparison of Brahmin women (63% vs. 29 %). In addition, nearly one-half (48%) janajati women and 4 % of other caste women travelled more than 30 minutes to a health facility for medical care. However, the value of the women outside the Kathmandu Valley has increased fifteen times (45% vs. 3%) more than the women inside the Kathmandu Valley.

Table 37

Distance to the Nearest Health Facility by Respondent's Wealth, Work, Ethnicity and Place of Residence.

Distance to the nearest health facility						
Independent variables	<30 M (N=91)	Exact 30 (N=175)	>30 M. (N=118)	Total (N=384)	x^2	P value
Wealth status					73.86	P<0.001
Poorest	10(7)	86(60)	48(33)	144(100)		
Second	4(24)	7(41)	6(35)	17(100)		
Third	8(13)	33(51)	23(36)	64(100)		
Fourth	16(31)	15(29)	21(40)	52(100)		
Richest	53(50)	34(32)	20(18)	107(100)		
Work status					49.56	P<0.001***
Agriculture	40(16)	105(42)	105(42)	250(100)		
Non-agriculture	51(38)	70(52)	13(10)	134(100)		
Ethnicity					94.08	P<0.001***
Brahmin	25(33)	30(39)	22(29)	77(100)		
Janajatis	13(8)	68(44)	74(48)	155(100)		
Dalits	2(7)	8(30)	17(63)	27(100)		
Other caste	51(42)	691(55)	5(4)	125(100)		
Kathmandu valley					220.94	P<0.001***
Outside	3(1)	137(54)	114(45)	254(100)		
Inside	88(68)	38(29)	4(3)	130(100)		
Ecological zone					16.97	P<0.001***
Mountains	1(3)	6(21)	22(76)	29(100)		
Hills	89(51)	46(27)	38(22)	173(100)		
Terai	1(1)	123(67)	58(32)	182(100)		
Residence					0.14	P>0.05
Urban	18(23)	34(44)	25(33)	77(100)		
Rural	73(24)	141(46)	93(30)	307(100)		

significant at 5%; ** = significant at 1%;* = significant at 0.1% and, the number in parenthesis indicates the percentage, M= minutes.*

This indicates that travelling time to a health facility in the Kathmandu Valley is shorter than of outside the Kathmandu Valley. The study found almost similar trends between rural and urban women who traveled to a health facility from their house. The test of significance between the two covariates was carried out by the application of Pearson chi- square test. The chi- square value of wealth was 73.86, work 49.56; ethnicity 94.08, Katmandu Valley 220.94, ecological zone 162.97. The test shows statistic significant relationship between these variables and to the nearest health facilities. However, the chi-square value for residence was 0.14 observed $P > 0.05$ levels and did not find significant relationship between the residence and the nearest distance from their home to a health facility.

Socio-economic Status and Heard of Family Planning Method

The relationship between wealth, work, ethnicity, the Kathmandu Valley residence, and ecological zone and heard about family planning is presented in Table 38. The study found that the greater percentage of the women from the richest quintile heard about family planning as compared to women from the poorest quintile (93% vs. 63%). This indicates that there exists inequality in the use of contraceptives measure between the richest and the poorest group of the women. The possible reasons were: (a) lack of money to obtained contraceptives devices (b) lower affordability of pregnant women (c) long distance of the health facility (d) desire of more children.

The study did not find so much difference between those who worked in agriculture and non-agriculture sector. In the context of ethnic group, higher was the percentage (78%) of heard about the family planning methods in Brahmin women than Janajatis and Dalits did as our expectation. In regards the Kathmandu Valley, the

majority (89%) of women heard about family planning in the Kathmandu Valley where as the lower percentage were from outside the Kathmandu Valley.

Table 38
Heard about Contraceptives Measures by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	Heard about contraceptives measures				
Independent variables	Yes (N=296)	No (N=88)	Total (N=384)	x^2	
Wealth status				40.72	P<0.001***
Poorest	90(62)	54(38)	144(100)		
Second	11(65)	6(35)	17(100)		
Third	57(89)	7(11)	64(100)		
Fourth	38(73)	14(27)	52(100)		
Richest	100(93)	7(7)	107(100)		
Work status				0.48	P<0.001***
Agriculture	190(76)	60(24)	250(100)		
Non-agriculture	106(79)	28(21)	134(100)		
Ethnicity				0.37	P>0.05
Brahmin	60(78)	17(22)	77(100)		
Janajatis	121(78)	34(22)	155(100)		
Dalits	21(78)	6(22)	27(100)		
Other caste	94(75)	31(25)	125(100)		
Kathmandu valley				16.42	P<0.001***
Outside	180(71)	74(29)	254(100)		
Inside	116(89)	14(11)	130(100)		
Ecological zone				8.55	P<0.001***
Mountain	16(55)	13(45)	29(100)		
Hill	137(79)	36(21)	173(100)		
Terai	143(79)	39(21)	182(100)		
Residence				6.87	P<0.001***
Urban	68(88)	9(12)	77(100)		
Rural	228(74)	79(26)	307(100)		

significant at 5%; ** = significant at 1%;* = significant at 0.1% and, the number in parenthesis indicates the percentage.*

This indicates that women from Kathmandu were more benefited from family program. The possible reasons were: (a) more audio visual programs in the Kathmandu Valley (b) higher literate rate (c) and availability of media exposure were higher in the Kathmandu Valley. Women from the mountain areas listening to radio was in low ratio compared to the women from the Terai and the hilly areas. The chi-square value for wealth quintile for heard about family planning was 40.72 work status; 0.48, the Kathmandu Valley 16.42, and residence 6.87, ecological zone 8.55, was observed $P < 0.001$ significant level. This indicates the positive relation between these covariates and heard about family planning method.

Socio-economic Status and the Use of Family Planning Method.

Table 39 presents the relationship between wealth, work, ethnicity, the Kathmandu Valley residence, and ecological zone and used about family planning method. The study found that more than two- thirds (65% vs. 32%) of the women from the richest quintile used family planning devices as compared to women from the poorest quintile. In addition, that the highest (55%) percentage of the women with poorest quintile were non-user group of contraceptives devices. This indicates that poorest group of the women were deprived in the use of family planning devices. The possible reasons were: (a) unmet need for family planning (b) husband were outside from theirs' house (c) baby may be in her lab (d) misconception about the use of contraceptives measures (f) fear of side effects.

The study did not find so much difference in the use of family measures between those who worked in agriculture and non-agriculture sector. In the context of ethnic group, higher was the percentage of women from Bhramin community than did Dalits women (47% vs 26%) as our expectation.

Table 39

Contraceptives Measures Used by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	Use contraceptives measure				
Independent variables	Yes (N=177)	No*** (N=119)	Total (N=384)	x^2	
Wealth status				33.67	P<0.001***
Poorest	46(32)	98(68)	144(100)		
Second	9(53)	8(47)	17(100)		
Third	35(55)	29(45)	64(100)		
Fourth	17(33)	35(55)	52(100)		
Richest	70(65)	37(35)	107(100)		
Work status				0.70	P>0.05
Agriculture	114(46)	136(54)	250(100)		
Non-agriculture	63(47)	71(53)	134(100)		
Ethnicity				7.148	P>0.05
Brahmin	36(47)	41(53)	77(100)		
Janajatis	76(49)	79(51)	155(100)		
Dalits	7(26)	20(74)	27(100)		
Other caste	58(46)	67(54)	125(100)		
Kathmandu valley				29.86	P<0.001***
Outside	93(37)	161(63)	254(100)		
Inside	84(65)	46(35)	130(100)		
Ecological zone				19.33	P<0.001***
Mountain	3(10)	26(90)	29(100)		
Hill	91(53)	82(47)	173(100)		
Terai	83(46)	99(54)	182(100)		
Residence				6.68	P>0.05
Urban	40(52)	37(48)	77(100)		
Rural	137(45)	170(55)	307(100)		

significant at 5%; ** = significant at 1%;* = significant at 0.1% and, the number in parenthesis indicates the percentage. **** Among the respondent* who said *no , the non-applicable group are also included .*

There was no surprising that janajatis used more contraceptives than Bhramin. This indicates that janajatis used more contraceptives than other castes. The possible reasons were: (a) cultural value (b) misconception in Bhramin community (c) influence of education (e) access of more *Lahure (Gorkha army)* in janajatis. .

In regards the Kathmandu Valley, the study found that contraceptives measures user group of women were greater inside (65% vs. 37 %) from the Kathmandu Valley than the women outside from the Kathmandu Valley. Similarly, the use of contraceptives measure was more than four times with Terai women than did the Mountain women (46% vs 10 %.) This indicates that women from the Kathmandu Valley were more benefited from the family planning program. The possible reasons were: (a) more access of contraceptives devices in the Kathmandu Valley (b) more educated women were in the Kathmandu Valley (c) women inside the Kathmandu Valley were more benefited from the non-formal /informal education (d) more exposure with service providers. The chi-square value for user group in wealth quintile was 33.67, work status 0.70 ethnicity 7.15, ecological zones 19.33, and the Kathmandu Valley 29.86 also indicates that there is significant relationship between these variables and the use of contraceptive measures.

Socio-economic Status and Cost Coping Strategy for Maternity Care

Table 40 presents the coping strategy for cost of maternity care in accordance with socio-economic determinants like wealth, work, ethnic, and place of residence (rural vs. urban, inside the Kathmandu Valley vs. outside the Kathmandu Valley and ecological zone). It was generally believed that women from the richest quintile, job with cash, women in the Kathmandu Valley and urban areas have been influenced positively on cost coping strategy for the maternity care.

Regarding the wealth status, the study found mixed result. For instance, the highest (94%) percentage of women from second quintile managed their cost themselves whereas the lowest (60%) were from the poorest quintile. In addition, more than three quarters (87%) of the women from the richest quintile did similar practice. In contrast, the highest (40%) percentage of women from the poorest quintile borrowed the money for maternity care. This indicates that the richest groups of the women were benefited from cost coping strategy rather than the poorest group. The possible reasons were: (a) they have good social net work with their neighbors (b) social support from the community and (c) better exposure with the service providers. The chi-square value of 27.28 with observed $P < 0.001$ indicates that there is statistic relationship between the wealth status and the cost coping strategy for maternity care..

The study found the greater percentage of the women from non-agricultural sectors; self- managed their cost than did women from agriculture sectors (84% vs. 68%). In addition, nearly one-third (32%) of the pregnant women from agriculture sectors borrowed money for maternity care. This indicates that women's job with cash income plays significance role for maternity care. The possible reasons were: (a) they could save their income for maternity care (b) they could fulfill their desire (c) higher income leads higher saving (c) quick decision to visit a health facility (c) better earning from their job (d) quick decision making (e) exchange cash rather than commodity.

Concerning the ethnic group, the highest (84%) percentage of women from Brahmin community and the lowest (67%) were from Janajatis self- managed their cost. In contrast, the study found nearly one -third (33%) of Janajatis borrowed the cost either from their relatives or bank .This indicates that the women from Brahmin have greater access of cost coping strategy for maternity care than janajatis and dalits.

Table 40.

Cost Coping Strategy for Maternity Care by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	Cost coping strategy for maternity care				
Independent variables	Borrowed (N=100)	Self-managed (N=284)	Total (N=384)	χ^2	P value
Wealth status				27.28	P<0.001***
Poorest	57(40)	87(60)	144(100)		
Second	1(6)	16(94)	17(100)		
Third	17(27)	47(73)	64(100)		
Fourth	11(21)	41(79)	52(100)		
Richest	14(13)	93(87)	107(100)		
Work status				11.49	P<0.001***
Agriculture	79(32)	171(68)	250(100)		
Non-agriculture	21(16)	113(84)	134(100)		
Ethnicity				8.87	P<0.001***
Brahmin	12(16)	65(84)	77(100)		
Janajatis	51(33)	104(67)	155(100)		
Dalits	8(30)	19(70)	27(100)		
Other caste	29(23)	96(77)	125(100)		
Kathmandu valley				15.18	P<0.001***
Outside	82(32)	172(68)	254(100)		
Inside	18(14)	112(86)	130(100)		
Ecological zone				28.51	P<0.001***
Mountains	15(52)	14(48)	29(100)		
Hills	24(14)	149(86)	173(100)		
Terai	61(14)	121(86)	182(100)		
Residence				10.39	P<0.001***
Urban	9(12)	68(88)	77(100)		
Rural	91(30)	216(70)	307(100)		

*significant at 5%; ** = significant at 1%; *** = significant at 0.1% *and, the number in parenthesis indicates the percentage.*

The possible reasons were: (a) Brahmin community properly save their income (b) better socio-economic status of Brahmin (c) obtained donation so called

Pewa from their parents or relatives. Regarding the place of residence, greater percentage of urban women self-managed their cost than did rural women (88%vs 70%). Similarly; the study found that majority (86%) of the women in the Kathmandu Valley self- managed their cost for the maternity care. Similar practice was found with the women from Terai region. This indicates that women in rural areas have practiced for cost coping strategy than urban women and women inside Kathmandu. The possible reasons were: (a) urban have better job with cash (b) they could make decision by themselves on their resources (c) better knowledge for saving and cost coping strategy (d) household level cost coping strategy for maternity care has not introduced though it has been managed individually.

Pearson chi-square test was adopted to test the significance between all independent covariates and the test shows association between all covariates and the cost coping strategy for maternity care. The chi-square value for work status was 11.49, ethnicity 8.8, Kathmandu Valley 15.18, ecological zone 28.51 and the place of residence 10.39 with observed $P < 0.001$ significant level.

Socio-economic Status and the Use of Available Health Service for Other Medical Problems

Table 41 presents the relationship between wealth, ecological zone, and the use of health care services for general medical problems. Out of six variables, two variables were related with the socio-economic, the study found significant relationship between the ecological zone and the use of available health services for other medical problems. The chi -square value of 12.04 which has an observed $P < 0.001$, suggested the high significant association between the ecological zone and the use of health services of other medical problems.

Table 41.

Utilization of available Health Services for other Medical Problems by Respondent's Wealth, Work, Ethnicity and Place of Residence.

	Utilization of health services for other medical problems					
Independent variables	Never (N=35)	Sometimes (N=288)	Frequently (N=61)	Total (N=384)	x^2	P value
Wealth status					17.24	P>0.05
Poorest	18(13)	114(79)	12(8)	144(100)		
Second	1(6)	14(82)	2(12)	17(100)		
Third	6(9)	41(64)	17(27)	64(100)		
Fourth	5(10)	39(75)	8(15)	52(100)		
Richest	5(5)	80(75)	22(21)	107(100)		
Work status					5.28	P>0.05
Agriculture	17(7)	195(78)	38(15)	250(100)		
Non-agriculture	18(13)	93(70)	23(17)	134(100)		
Ethnicity					6.01	P>0.05
Brahmin	5 (7)	65(84)	7(9)	77(100)		
Janajatis	16(10)	110(71)	29(19)	155(100)		
Dalits	2(7)	19(70)	6(23)	27(100)		
Other Caste	12(10)	94(75)	19(15)	125(100)		
Kathmandu valley					4.84	P>0.05
Outside	29(11)	185(73)	40(16)	254(100)		
Inside	6(5)	103(79)	21(16)	130(100)		
Ecological zone					12.04	P<0.001***
Mountains	7(24)	18(62)	4(14)	29(100)		
Hills	10(6)	139(80)	24(14)	173(100)		
Terai	18(10)	131(72)	33(18)	182(100)		
Residence					2.82	P>0.05
Urban	9(12)	52(68)	16(21)	77(100)		
Rural	26(9)	236(77)	45(15)	307(100)		

*significant at 5%; ** = significant at 1%;*** = significant at 0.1% and*, the number in parenthesis indicates the percentage.*

The study did not find significant difference between wealth status, work status, ethnicity, the Kathmandu Valley, and the place of residence and the use of available health care services for other medical problems. It can be concluded that bivariate analysis was observed to show the relationship of 6 independent variables with all indicators 7 depended as well as 7 intermediate variables. Logistic regression was fitted linking between wealth, work, ethnicity, residence, and ecological zone and the Kathmandu Valley with all 7 dependent variables. However, the two independent variables like wealth status and the Kathmandu Valley were selected to test hypothesis and is presented in chapter IX.

CHAPTER VII

INTERMEDIATE VARIABLES AND MATERNITY CARE

Introduction

Previous chapter has analyzed how education and other socio-economic factors influenced the maternity care but this chapter deals with how intermediate variables directly influenced on the maternity care. Three dimensions of intermediate variables were: (a) reproductive behavior (b) access to and (c) utilization of available health services. Among these variables access is related to supply side and other factors are related to demand side.

Descriptive Analysis

Reproductive Behavior and Maternity Care

Description part of the age of mother at childbirth and the number of children is presented in Table 42. Two queries were made with women through "how old were they when their first child was born?" The study found that over one -half (55 %) of women reproduced a child less than twenty-five years, one -fifth (20 %) of women were from the age group 25-29 years and 25% of women were more than 30 years. Another dimension of reproductive behavior was the number of children. How many surviving children do they have? was asked with the women to know the total number of children. The study found that two- third (66%) of the pregnant women have 1 to 2 children and one -fifth (18%) have more than 3 children.

Utilization of Available Health Care Services and Maternity Care

The Table 42 shows the distribution of respondents by utilizing available health care services for other medical problems, heard and the use of family planning method. Research question: 40 "how often do you visit to a health facility for general medical problem" was related with the utilization of health services for other medical problems. The study found that more than three quarter (75%) of women and in addition, nearly one fifth (16%) of the women visited to a health facility for their other medical problems.

Research questions 41 "have you ever heard about family planning method "and research questions 42 have you ever used family planning methods" were related with the heard and the use of family planning services. Oral test was adopted to examine how much you heard the name of contraceptives measures with the assumptions that they would spell out if they have used contraceptives measures. The study found that more than three -quarter (77 %) of women heard about family planning where as nearly one - half(46%) of women used the contraceptive measures. In addition, nearly one third of the pregnant women has heard but did not use the contraceptive methods.

Access to Health Care Services and Cost Coping Strategy for Maternity Care

Table 42 presents the distribution of respondent by the cost coping strategy of an individual along with her family member and the distance to the nearest health facility. Research questions: 25 "how did you manage the cost of maternity care? was asked with the women to measure the adopted strategy to cope the cost of maternity care. The study found that three -quarter (74%) of women answered that they have managed by themselves to cope with the cost of maternity care.

Table 42

Distribution Pattern of Women by their Reproductive Behavior, Access to and Utilization Status of Available Health Care Services.

Intermediate variables	(N=384)	%
Age of mother at child birth		
<25 yrs	212	55
25-29 yrs	77	20
>30 yrs	95	25
Number of children		
1 to 2 child	253	66
3 child	61	16
More than 3 children	70	18
Utilized health services for other medical problems		
Never	35	9
Sometimes	288	75
Frequently	61	16
Heard about family planning methods		
No	296	77
Yes	88	23
Use family planning method		
Yes	177	46
No	119	31
Not applicable	88	23
Cost coping strategy for maternity care		
Borrowed	100	26
Self- managed	284	74
Distance to the nearest health facility		
<30 minutes	91	24
30 minutes	175	46
>30 minutes	118	

N = Frequency number.

Additionally, nearly one-fifth (19 %) of the women borrowed money on some interest with local money- lender and relatives. Only 6% of the pregnant women replied that they have sold their grain and cattle or household assets to cope the cost of maternity care. Another dimension of access to health care services was distance to a healthy facility. The study found that nearly one-half (46%) of the women reported that they needed exactly 30 minutes, nearly one-fourth (24 %) of women reported the need < 30 minutes and nearly one -third of women replied that the travelling time to a health facility was > 30 minutes.

Bivariate Analysis

Previous section has shown the result of descriptive part and this section presents the association between several intermediate variables like the age of mother at child birth, the number of children, the utilization of available health services, the heard and the use of family planning, the cost coping strategy for maternity care and the distance to a health facility and all components of dependent variables. The results are presented in three sections: (a) antenatal care (b) delivery care (c) postnatal care.

Intermediate Variables and the Number of ANC Visit.

The relationship between the number of ANC visit to a health facility , the age of mother at child birth, the number of children, the use of health services, the heard, use of family planning method the distance to a health facility and the cost coping strategy of the pregnant women for maternity care is presented in Table 43. The age of mother at child birth as intermediate variable, the study found that greater percentage of women with > 30 years old less likely visited at least four times to a

Table 43
Visit to a Health Facility for Antenatal Care Services by Respondent's Reproductive Behavior, Access to and Utilization Status.

	Number of ANC visit					
Intermediate variables	Never (N=40)	1 to 3 (N=156)	4 visit (N=188)	Total (N=384)	x^2	P Value
Age of mother at child birth						
<25 year	18(9)	77(36)	117(55)	212(100)	20.69	P<0.001***
25-29 year	3(4)	35(45)	39(51)	77(100)		
>30 years	19 (20)	44 (46)	32(34)	95(100)		
Number of children					36.50	P<0.001***
1 to 2 child	15(6)	91(36)	147(58)	253(100)		
3 child	8(13)	29(48)	24(39)	61(100)		
>3 child	17(24)	36 (52)	17(24)	70(100)		
Use of available health service for other medical problems					85.67	P<0.001***
Never	19(54)	9(26)	7(20)	35(100)		
Sometime	18(6)	129(45)	141(49)	288(100)		
Frequently	3(5)	18 (29)	40(66)	61(100)		
Heard of family planning method					38.52	P<0.001***
Yes	21(7)	106(36)	169((57)	296(100)		
No	19(22)	50(56)	19(22)	88(100)		
Used family planning method					27.59	P<0.001***
Yes	11(6)	54(31)	112(63)	117(100)		
No ****	29(14)	102(49)	76(37)	207(100)		
Cost coping strategy for maternity care					3.43	P<0.001***
Borrowed	12(12)	47(47)	41(41)	100(100)		
Self- managed	28(10)	109(38)	147(52)	284(100)		
Distance to the nearest health facility					51.99	P<0.001***
<30 minutes	4(4)	14(16)	73(80)	91(100)		
Exact 30 minute	15(9)	79(45)	81(46)	175(100)		
> 30 minute	21(18)	63(53)	34(29)	118(100)		

significant at 5%; ** = significant at 1%; * = significant at 0.01% and, the number in parenthesis indicates the percentage, **** Among the respondent* who said *no, the non-applicable group are also included.*

health facility with the comparison of those women who were < 25 years old (55% vs. 34%, P<0.001). In addition, slightly over than one -half (51%) of women with age cohort 25-29 group, and more than one -third (34%) of women with >30 years at least visited four times to a health facility for ANC. In contrast, the greater percentage of the women with more than 30 years did not visit for ANC with the comparison of those women who were less than 25 years. This indicates that as increase the age of mother at child birth decrease the number of visit to a health facility for ANC services. The chi-square value of 20,693 with observed P <0.001, indicates younger women visited the health facility more than older women due to the understanding the relationship between the stock of knowledge and the stock of health. In addition, education and health programmatic factors motivated to younger one to use the available health care services rather than the old women.

The number of children was another dimension of reproductive behavior. The study found that greater percentage of women with 1 to 3 children visited at least four time to a health facility for ANC checkup than did women with >3 children (58% vs. 24 %, P <0.001). In addition, the discontinue rate for antenatal care visiting was highest (51%) with those women who have >3 children. This indicates that dropout rates increases as increase the number of children. The possible reasons were: (a) the applications of the law of diminishing marginal utility as well as marginal returns in health care services (b) prefer to go on job rather than ANC visit to earn more money for feeding and clothing to her new born child.

The utilization of the health care services was the third dimension of the intermediate variable. Bivariate result showed that two –thirds (66%) of women were frequently visitors. In addition, nearly one -half (49%) were sometime users of

available health care services for other medical problems, at least four visit and nearly one- half (45 %) visited for 1 to 3 time to a health facility for ANC care. This indicates that the positive relationship between the number of visiting to a health facility for other medical problems and number of visiting to a health facility for other medical problems. The possible reasons were: (a) pregnant women adopted one-door policy as well as integrated strategy for ANC services (b) knowledge of economic efficiency in health care services. The chi- square value of 65.67, with $P<0.001$ suggested that significance difference exists between the use of available health care services for other medical problems and at least four time visiting to a health facility for ANC services.

Heard / and the use of contraceptives measure for family planning was sub-dimension of the utilization of health care services. The study showed that greater percentage of those women who heard about the family planning method visited to a health facility for ANC service than the women who did not hear about these services (57% vs.22%). In addition, more than one- third (36%) of the pregnant women were visited 1 to 3 times and only seven percentages of women who heard about family method but did not visit to a health facility for ANC checkup. The possible reasons were: (a) high willingness to use but lower affordability for contraceptives devices (b) may not allow for the use of contraceptives (c) fear of side-effects (d) inappropriate time for outreach mobile clinic for family planning. The chi-square value of 38.51, with $P<0.001$) suggested that there was significant difference between heard about family planning and at least four times visiting to a health facility for ANC services. Among the women those who heard about the family planning method, nearly two third (63%) of the pregnant women who used family planning method made four visits, in addition, one - third (31%) of the pregnant women visited 1 to 3 times to a

health facility for ANC checkup. Out of 207 non-user groups, more than one -third (42 % not shown in table) of the pregnant women were not applicable group due to the newborn child in their lap or undesired in the use of contraceptives measures.

The cost coping strategy of an individual for maternity care and the distance to a health facility were considered variables under the dimension of access to a health care service. Bivariate result shows that greater the percentage of women with cost coping strategy for maternity care visited more i.e. at least four times than the women who did not have to cope with coping strategy (52%vs 41%, P<0.001). One in ten women with self-managed group never visited to a health facility for ANC services and nearly one -half (47%) of the pregnant women with borrowed category visited 1 to 3 times to a health facility for ANC care services. This indicates inadequate in ANC was higher with the pregnant women those who borrowed to cope her cost for maternity care. The possible reasons were: (a) high interest rate charged by local money lenders (b) not coverage by insurance (c) lower social network the distance to the nearest health facility was the final dimension of the intermediate variable. The study found that greater is the percentage of women who travelled < 30 minutes visited to a health facility at least four times to a health facilities than the women who travelled >30 minutes (80 % vs. 29%, P<0.001). In addition, more than one -half (53%) of the pregnant women those who travelled more than 30 minutes discontinued to visit a health facility for ANC services. This indicates that inadequate in ANC services. The possible reasons were: (a) the service providers might manipulate the demand of patients to advance their own economic interest (b) pregnant women ignored for the continuation of ANC services.

Intermediate Variables and Used Package of Antenatal Care Service

Table 44 presents the age of mother at child birth, used available health care services, heard about family planning, used family planning method, cost coping strategy for maternity care and the distance to the nearest health facility. The study found that the greater percentage of women with age < 25 years old used the full package of antenatal care services than those women who cross 30 years old (59% vs. 40%, P<0.05).

The non-user group of the women with < 25 years were less than one deciles (9%) where as this number was double (18%) than the women those who were > 30 years. This indicates that older age group of women did not use the full package of ANC services. The possible reasons were: (a) the access of formal and non -formal /informal education of young women (b) the job opportunity in younger one (c) more exposure capacity in younger women. The chi-square value of 14.30, with observed P<0.005, indicates that there is a significant relationship between the age of mother child birth and the use package of ANC services.

The other variable of reproductive behavior is the number of children. As expected, the study found that the women who have lower i.e.1 to 2 children were more likely to use the full package of ANC services as compared to those women who have more than three children (61% vs. 24%, P<0.001). In addition, nearly one-half (43%) of the pregnant women with 3 children were partially utilized the package of ANC services. This indicates that there is negative relationship between the number of children and the use package of ANC services. The possible reasons were: (a) pregnant women understood the package has some nutritious foods, and that could contribute to increase the cognitive skills of newborn child but lower affordability for that package (b) financial accessibility was lower.

Table 44

Package of ANC Services Used by Respondent's Reproductive Behavior, Access to and Utilization Status.

	The use package of ANC services					
Intermediate variables	Full (N=203)	Partial (N=143)	None (N=39)	Total (N=384)	x^2	P Value
Age of mothers' at child birth					14.30	P<0.001*
<25 years	124(59)	70(33)	18 (8)	212(100)		
25-29 years	41(53)	32(41)	4 (5)	77(100)		
>30 years	38(40)	40(42)	17(18)	95(100)		
Number of children					30.21	P<0.001***
1to 2 child	153(61)	86(33)	14(6)	253(100)		
3 child	26 (43)	26 (43)	9 (14)	61(100)		
>3 child	17(24)	29(41)	17(24)	70(61)		
Use of available health service for other medical problems					56.66	P<0.001***
Never	10(29)	9(25)	16(46)	35(100)		
Sometimes	154(54)	111(39)	22(8)	288(100)		
Frequently	39(64)	21(34)	1(2)	61(100)		
Heard about family planning method					41.75	P<0.001***
Yes	181(61)	96(33)	19(6)	296(100)		
No	22(25)	46(52)	20(23)	88(100)		
Used family planning method					16.36	P<0.001***
Yes	111(63)	57(32)	9(5)	177(100)		
No ****	92(44)	85(41)	30(15)	207(100)		
Cost coping strategy for maternity care					15.68	P<0.001***
Borrowed	36(36)	49(49)	15(15)	100(100)		
Self- managed	167(58)	93(33)	24(9)	284(100)		
Distance to the nearest health facility					80.27	P<0.001***
<30 minutes	82(90)	7(8)	2(2)	91(100)		
30 minutes	87(50)	72(41)	16(9)	175(100)		
> 30 minutes	34(29)	63(53)	21(18)	118(100)		

*significant at 5%; ** = significant at 1%; *** = significant at 0.1% *and, the number in parenthesis indicates the percentage.* **** *Among the respondent* who said *no, the non-applicable group are also included.*

The chi- square value of 30.21 with observed, P<0.001, indicates that there is a highly significant association between the number of children and the ANC package services. The use of available health services for other medical problems, heard about family planning method, used family planning method were the components of utilization of the available heath care services. The study found that the greater percentage of the women who frequently visited a health facility for other medical problems than did the women who did not visit to a health facility for ANC services (64% vs. 29%, P< 0.001).

In addition, more than one- third (34%) of the pregnant women used partially and remaining two percentage were never visitors for the use package of ANC services. This indicates that the positive relationship between the visiting to a health facility and the use package of ANC services. The study shows that the greater percentage of the pregnant women who heard about the name of contraceptives measures utilize the full package of ANC services in comparison to those women who did not hear about the name of contraceptives measure (61% vs. 25%, P <0.001). The study found that nearly two -thirds (63%) of the pregnant women those who used family planning method were benefited from the full package of ANC services. In-addition, one -third (32%) of the women were partial user group to the package of ANC services. Out of 207 non-user groups, more than one -third (42 % not shown in table) of the pregnant women were not applicable group due to the newborn child in their lap or undesired for the use of contraceptives measures.

Similarly, the study found that the greater percentage of women, who resided near by the healthy facility used the full package of antenatal care services than those women who lived far from the heath facility (90% vs. 29%, P<0.001). This indicates

that the used package of the ANC service is depended on the distance of the health facility. The possible reasons were: (a) lower transportation cost (b) good relationship between service providers and patients (c) convenient to reach the health service points.

The study found that the greater percentage of women with self -managed group used the full package of ANC services than those women who have borrowed their cost (58% vs. 36%). This is because these women borrowed the money purposefully for maternity care. The study found that one- half (50%) of the pregnant women used the full package of ANC services who needed exactly 30 minutes to travel a health facility. The possible reasons were the supply of the health institution creates the demand of health care services. The chi- square value of 80.27, with observed, $P<0.001$, indicates that there is a highly significant relationship between the nearest distance of the health facility and the use package of ANC services.

Intermediate Variables and Immunized TT injection.

Table 43 presents the percentage distribution of the women immunized TT injection by the age of mother at child birth, the number of children, the use of health services, the heard about family planning, the used family planning method, the cost coping strategy for maternity care and the distance to the nearest health facility. The study found that the greater percentage of the pregnant women with 1 to 2 children immunized TT injection as compared to those women with more than 3 children (77% vs. 56%). In contrast, the higher percentage of women with > 3children never immunized TT injection as compared to those women with 1 to 2 children. The chi-square value of 23.289, with observed $p< 0.001$, indicates that there is highly significant relationship between the number of children and immunized TT injection.

Table 45.

Immunization of TT injection by Respondent's Reproductive Behavior, Access to and Utilization Status.

	Immunized Tetanus toxiod injection					
Intermediate variables	No (N=72)	1st dose (N=43)	2nd dose (N=269)	Total (N=384)	x^2	P value
Age of mother at child birth					9.49	P >0.05
<25 years	34(16)	27(13)	151(71)	212(100)		
25-29 years	11(14)	6(8)	60(78)	77(100)		
>30 years	27(28)	10(11)	58(61)	95(100)		
Number of children					23.29	P<0.001***
1 to 2 child	34(13)	24(10)	195(77)	253(100)		
3 child	14(23)	12(20)	35(57)	61(100)		
>3 child	24(34)	7(10)	39(56)	70(110)		
Use of the available health service for other medical problem					18.99	P<0.001***
Never	16(46)	2(5)	17(49)	35(100)		
Sometimes	48(17)	33(11)	207(72)	288(100)		
Frequently	8(13)	8(13)	45(74)	61(100)		
Heard about Family Planning Method					0.95	P >0.05
Yes	53(18)	35(12)	208(70)	296(100)		
No	19(22)	8(9)	61(69)	88(100)		
Used family planning method					3.95	P >0.05
Yes	27(15)	19(11)	131(74)	177(100)		
No ****	45(22)	24(11)	138(67)	207(100)		
Cost coping strategy for maternity care					21.74	P <0.01***
Borrowed	32(32)	16(16)	52(52)	100(100)		
Self- managed	40(14)	27(10)	217(76)	284(100)		
Distance to the nearest health facility					25.54	P<0.001***
<30 minutes	11(12)	3(3)	77(85)	91(100)		
30 minutes	32(18)	16(9)	127(73)	175(100)		
> 30 minutes	29(25)	24(20)	65(55)	118(100)		

*significant at 5%; ** = significant at 1%; *** = significant at 0.1% *and, the number in parenthesis indicates the percentage **** Among the respondent* who said *no , the non-applicable group are also included.*

Similarly, the study found that the positive relationship between the use of health service for other medical problems and immunized TT injection in the arm of the pregnant women. The study found that the greater percentage of women who frequently visited immunized twice as compared to those women who have not visited frequently for other medical problems. The study found that the proportion decreased as there was an increase of frequent visit due to the application of the law of diminishing returns. The chi- square value of 18.99, with observed P< 0.001, suggested that there is a relationship between the use of health services and immunized TT injection.

Similarly, the greater percentage of women with self- manage group immunized TT injection as compared to those women who have borrowed money (76% vs 52%) . The chi squared value of 21.74, with observed, P <0.001, suggested that there is a relationship between the cost coping strategy for maternity care and the immunized TT injection. The possible reasons were: (a) sound relationship with their neighbors (b) strong social network, (c) relatives and family member were prepared to cope the cost of pregnancy.

In regard to the distance, there is a greater percentage of those women who have travelled to health facility less than 30 minutes were immunized Tetanus injection more than 2 dose as compared to those women who needed more than 30 minutes (85 % vs. 55%, P< 0.001) for walk. This indicates that the nearest distance of the health facility makes them convenience to access for health care services. The possible reasons were (a) women may have the knowledge about the importance of TT injection (b) nearest distance induced to create the demand for available health care services (c) health workers supplies the information of the importance of TT injection

The women who have frequently utilized the available health care services for other medical problems were more likely immunized by tetanus injection than the women who did not visit (74% vs. 49%, P<0.001) to a health facility for other medical problems. Similarly, frequently utilize group of 2nd dose TT injection were greater than never visitors (74% vs 13%).This indicates that frequently visitors to a health facility motives to immunized TT injection. The possible reasons were: (a) exposure powers of health patients (b) service provided information to the patients (c) they understood that the concept of cost efficiency in health care services.

Intermediate Variables and Institutional Delivery

The relationship between the age of mother, the number of children, the access to and the utilization of available health care services and institutional delivery is presented in Table 46. The study found that the greater percentage of women who have more children practiced home delivery as compared with the women those who have 1 to 2 children (83% vs. 56%).On the other hand, institutional delivery was more likely to be done by the women who have 1 to 2 children than women with more than 3 children (39% vs.13%, P< 0.001).

Majority (84%) of those women who have three children have practiced home delivery as compared to women with 1 to 2 children. This indicates that greater the number of children is lower the practice of institutional delivery. The possible reasons were: (a) the pregnant women did not perceive the need of institutional delivery (b) shortage of money (c) long distance of the health service point (d) care givers behaviors towards pregnant women (f) raises opportunity cost from frequent pregnancy. The chi -squared value of 29.47, with observed, P <0.001, suggested that

there is a relationship between the number of children and practiced institutional delivery.

The study assumed that those women who have heard the name of the contraceptive measures were more likely to deliver their baby in the hospital than those women who did not hear about family planning methods. The study found that more than one -third (36%) of the pregnant women who heard about family planning delivered the baby in a health facility than those women who did not hear about family planning. In contrast, more than one -half (59 %) of the pregnant women practiced home delivery and in addition, 5 % of the pregnant women used health post or health centers. This indicates that still home delivery is higher rather than health facility base delivery though they have heard about family planning methods. The possible reasons were: (a) recognized the low risk to deliver the baby at home (b) long distance of the health facility. The chi -square value of 23.06, with observed, $P<0.001$, indicates that there is a relationship between heard about family planning and institutional delivery.

As our expectation, the studies found that the greater percentage of women who used the family planning method have practiced hospital delivery as compared those women who did not use family planning methods (38% vs. 34%). In contrast, home delivery was lower with those women who did not use contraceptives measures. The chi square value of, 11.41, with observed $P<0.001$, indicates that there is a strong relationship between used the family planning method and the practiced health facility base delivery. The possible reasons were: (a) used contraceptives leads lower pregnancy as well as lower fertility (b) understood the high risk from more frequency of pregnancy.

Most of the women have individual strategy to cope the cost for maternity care and such strategy plays significance role to increase institutional delivery and ultimately increase maternity care and reduced maternal mortality and morbidity. Hospital delivery was greater with the women those who have cost coping strategy for maternity care than the women who did not have cost coping strategy (36% vs. 13%).

More than three -quarters (80%) of the women have practiced home delivery though they have cost coping strategy for maternity care. This indicates that institutional delivery is not only function of cost coping strategy for maternity care. The possible reasons were: (a) they have arranged money for home delivery but may not be affordable for hospital delivery (b) social network; social support has advised to deliver the baby at home. The chi-square value of 19.71, with observed P <0.001, indicates that there is a relationship between the cost coping strategy for maternity care and institutional delivery. The women, who reported that geographic or economic accessibility was a "big problem were significantly less likely to practice institutional delivery. For instance, the greater percentage of women who needed less than 30 minutes to travel were more likely to have practiced hospital delivery than those women who needed more than 30 minutes (69% vs. 11%, P< 0.001) for travelling.

The study shows that the greater percentage of the women those who travelled more than 30 minutes have practiced home delivery of than those women those who travelled less than 30 minutes (79 % vs. 31%). This indicates that distance to the health facility is the determinants of institutional delivery. The possible reasons were: (a) higher in transportation cost (b) difficulty in access to a health facility (c) long waiting time in the health facility (d) opportunity cost of health care services. The chi-square value of 99.24, with observed p <0.001, indicates that there is a relationship between the distance to the nearest health facility and institutional delivery.

Table 46.

Institutional Delivery by Respondent's Reproductive Behavior, Access to and Utilization of Available Health Care Services.

	Institutional delivery					
Intermediate variables	Home (N=251)	HP/C (N=17)	Hospital (N=117)	Total (N=384)	χ^2	P value
The age of mother at child birth					10.40	P>0.05
<25 yrs	129(61)	12(6)	71(33)	212(100)		
25-29yrs	49(64)	1(1)	27(35)	77(100)		
>30yrs	73(77)	4(4)	18(19)	95(100)		
Number of children					29.47	P<0.001***
1 to 2 child	142(56)	12(5)	99(39)	253(100)		
3 child	51(84)	2(3)	8(13)	61(100)		
>3 child	58(83)	3(4)	9(13)	70(100)		
Use of available health service for other medical problems					5.99	P>0.05
Never	28(80)	1(3)	6(17)	35(100)		
Sometimes	189(66)	12(4)	87(30)	288(100)		
Frequently	34(56)	4(6)	23(38)	61(100)		
Heard about family planning method					23.06	P<0.001***
Yes	175(59)	14(5)	107(36)	296(100)		
No	76(87)	3(3)	9(10)	88(100)		
Used family planning method					11.41	P<0.001***
Yes	100(57)	10(5)	67(38)	177(100)		
No ****	151(73)	7(3)	49(34)	207(100)		
Cost coping strategy for maternity care					19.71	P<0.001***
Borrowed	80 (80)	7(7)	13(13)	100(100)		
Self- managed	171(60)	10(4)	103(36)	284(100)		
Distance to the nearest health facility					99.24	P<0.001***
<30 minutes	28(31)	0(0)	63(69)	91(100)		
30 minutes	130(74)	5(3)	40(23)	175(100)		
> 30 minutes	93(79)	12(10)	13(11)	118(100)		

*significant at 5%; ** = significant at 1%; *** = significant at 0.1%, *the number in parenthesis indicates the percentage. **** Among the respondent* who said *no, the non-applicable group are also included.*

Intermediate Variables and Postnatal Care

Table 47 presents the relationship between visiting to a health facility for PNC checkup and the age of mother at child birth, access to and the utilization of available health care services. The greater percentage of the pregnant women who were less than 25 years was more likely visited to a health facility for postnatal checkup than those women who were more than 30 years (66%.vs 53%). On the contrary, the study found that lower percentage of the women with less than 25 years visited to a health facility for postnatal care than did the women who were more than 30 years old (53 % vs. 66%). This indicates that as increase the age of the pregnant women decreases the number of visits to a health facility for other medical problems. The possible reasons were: (a) that the pregnant women understood the importance of postnatal care (b) adopted one door policy for health care services. The chi-square value of 5.01, with observed, $P<0.05$, indicates that there is a significant association between the age of mother and visiting to a health facility for postnatal care. As expected, the greater percentage of the pregnant women with 1 to 2 children visited to a health facility for postnatal care than did the women with more than 3 children (68 % vs. 40%).

In addition, the study found that nearly two -third (61%) of the pregnant women visited for postnatal care. This indicates the demands for postnatal care are depended on the number of children. The possible reasons were: (a) greater affordability (b) preferred quality of care rather than quantity of children (c) to reduce illness of children and mothers (d) sex of the child & (e) value of the mother. The chi-square value of women 18.21, with observed, $P<0.001$, suggested that there is a highly significant association between the number of children and visit for postnatal care.

Table 47

Visited to the Health Facility for PNC by Respondent's Reproductive Behavior, Access to and Utilization Status.

	Postnatal care.				
Intermediate variables	Yes (N=237)	No (N=147)	Total (N=384)	x^2	P value
Age of mother at child birth				5.01	P<0.05*
<25 years	140(66)	72(34)	212(100)		
25-29 years	47(61)	30(39)	77(100)		
>30years	50(53)	45(47)	95(100)		
Number of children				18.21	P<0.001***
1to 2 child	172(68)	81(32)	253(100)		
3 child	37(61)	24(39)	61(100)		
>3 child	28(40)	42(60)	70(100)		
Use of available health service for other medical problems				8.03	P < 0.05*
Never	14(40)	21(60)	35(100)		
Sometimes	182(63)	106(37)	288(100)		
Frequently	41(67)	20(33)	61(100)		
Heard about family planning method				28.34	P<0.001***
Yes	204(69)	92(31)	296(100)		
No	33(38)	55(63)	88(100)		
Used family planning method				33.17	P<0.001***
Yes	131(74)	46(26)	177(100)		
No ****	106(51)	101(49)	207(100)		
Cost coping strategy for maternity care				1.27	P<0.001***
Borrowed	57(57)	43(43)	100(100)		
Self- managed	180(63)	104(37)	284(100)		
Distance to the nearest health facility				39.48	P<0.001***
<30 minutes	75(82)	16(18)	91(100)		
30 minutes	114(65)	61(35)	175(100)		
> 30 minutes	48(41)	70(59)	118(100)		

*significant at 5%; ** = significant at 1%; *** = significant at 0.1% *and, the number in parenthesis indicates the percentage. **** Among the respondent* who said *no , the non-applicable group are also included .*

In regard to the utilization of available health services for other medical problems, women who frequently visited the health facility due to other medical problems were more likely to visit for PNC checkup than those women who did not visit a health facility (67% vs. 40%,P <0.05).Out of 296, more than two -thirds (69%) of the pregnant women heard about family planning method. In addition, 38 % were non-user group. Among the non-user group more than one –third (42% not shown in table) of the pregnant women were not applicable group. Almost similar pattern was found with those women who used contraceptives measure. The study believed that nearly two -thirds (63%) of the pregnant women with self- managed group have the strategy of self-managed to cope the cost of postnatal care and over than one -half (57%) of women have borrowed the cost to visit PNC. The chi-square value of, 18.208, with observed, P<0.001, indicates that there is a significant association between the cost coping strategy for maternity care and visiting to a health facility for postnatal care. The possible reasons were that the pregnant women might understand the importance of postnatal care.

The longer travelling time which lowered the number of visits to health facilities for PNC service was found true for women taking a time of more than 30 minutes (82% vs. 41%, P <0.001) to the health service points from their house. In addition, nearly two- thirds (65%) of the pregnant women with exact 30 minutes visited for postnatal care service. The possible reasons were: (a) lower in travelling cost (b) rises opportunity cost (c) not available transportation mode (d) delay in decision making process (e) not allowed by household members (f) moreover, motivate by the suppliers.

Intermediate Variables and Visit Doctor

Table 48 presents the distributing percentage of women who have visited doctor by the age of mother at child birth, the number of children, use of health services, the heard and the use of contraceptives measures, the cost coping strategy for maternity care and the distance to a health facility. Regarding the reproductive behavior, the study did not find significant differences between the ages of mother at child birth while the study found different result found with variable the number of children. The study found that more than one -fourth (29%) of the pregnant women with 1 to 2 children visited doctor while only 3 % of the pregnant women with more than 3 children did similar practice.

The study found that more than one- fifth (21 %) of this group of women visited PMS and nearly one-fifth (18%) visited to MCHW and nearly one -third (32%) of the women were never visitors. This indicates women with lower the number of children visited doctors where as women with greater the number of children visited either PMS or MCHW. The possible reasons were: (a) due to the higher charge of doctors (b) higher access of PMS and MCHW in rural areas (c) convenient to access PMS or MCHW (d) women with lower children may have greater access of formal and non -formal/informal education (c) job opportunity of the pregnant women (d) medical doctors reluctant to work outside the Kathmandu Valley. The chi square value of 33.01, with observed $P < 0.05$, indicates that there is relationship between the number of children and the visited doctor.

Regarding the utilization of available health service for other medical problems, the study found that the percentage of frequently visitor to the doctors for postnatal care was greater than never visitor group (26% vs. 3%). In addition, nearly one -fourth (23%) of the pregnant women with sometimes visitors were for either

doctors or PNC services. Almost similar pattern was found with the visitors of paramedical staff. The chi- square value of 14.64, with observed $P < 0.001$, indicates the variance among women with frequently visitors, and never visitors. The possible reasons were: (a) women do not visit the doctor unless the critical stage during postnatal period and (b) the higher charges for their service (c) rough behaviors of the service providers (d) cultural accessibility.

Concerning the family planning service, the greater percentage of women who heard about family planning method visited doctor for PNC as compared to those women who did not get an opportunity to hear about family planning (27 % vs. 5%) method. Similar trends were found with the women visiting to PMS and MCHW. This indicates that number of visitors to doctors were more than other health professional for family planning method.

The possible reasons were: (a) understood the quality of service for family planning (b) one door strategy of pregnant women to check up health and the family planning services (c) they realized that quality of service would be better than other staff. Almost similar relationship was found between the women who used the family planning method and visiting to the doctors. The study found that the greater percentage of women with self- managed group visited doctor more than the women with borrowed (21 % vs. 7%) On the other hand, the study found that the greater number of women with borrowed group visited to the PMS and MCHW as compared than those women who managed their cost by themselves. This indicates that self-managed group visited more doctors than other groups, the possible reasons were :(a) able to pay the user charges for doctors (b) family advice to visit the doctors.The chi square value of 18.00 with observed $P < 0.001$ indicates the variance among women with self- managed category and women with borrowed group.

Table 48
Visited to Doctor for Postnatal Care by Respondent's Reproductive Behavior, Access to and Utilization Status.

	Visit doctor						
Intermediate variables	Doctor (N=84)	PMS (N=78)	MCHW/ FCHV (N=75)	(N=147)	Total (N=384)	x^2	P value
Age of mother at child birth						6.56	P>0.05
<25 years	51(24)	48(23)	41(19)	72(34)	212(100)		
25-29 years	18(23)	14(18)	15(20)	30(39)	77(100)		
>30years	15(16)	16(17)	19(20)	45(47)	95(100)		
Number of children						33.01	P<0.05*
1to 2 child	73(29)	54(21)	45(18)	81(32)	253(100)		
3 child	8(13)	11(18)	18(30)	24(39)	61(100)		
>3 child	3(4)	13(19)	12(17)	42(60)	10(100)		
Use of available health service for other medical problems						14.64	P<0.001***
Never	1(3)	8(23)	5(14)	21(60)	35(100)		
Sometimes	67(23)	54(19)	61(21)	106(39)	288(100)		
Frequently	16(26)	16(26)	9(15)	21(32)	61(100)		
Heard about family planning method						5.48	P<0.01***
Yes	80(27)	68(23)	56(19)	92(31)	296(100)		
No	4(5)	10(11)	19(22)	55(62)	88(100)		
Used family planning method						25.65	P<0.001***
Yes	52(29)	45(25)	34(19)	46(26)	117(110)		
No ****	32(16)	33(16)	41(20)	101(47)	207(100)		
Cost coping strategy for maternity care						18.00	P<0.001***
Borrowed	7(7)	26(26)	24(24)	43(43)	100(100)		
Self- managed	77(27)	52(18)	51(18)	104(37)	284(100)		
Distance to the nearest health facility						118.80	P<0.001***
<30 minutes	49(54)	2(2)	24(26)	16(18)	91(100)		
30 minutes.	25(14)	44(25)	45(26)	61(35)	175(100)		
> 30 minutes	10(9)	32(27)	6(5)	70(59)	118(100)		

*significant at 5%; ** = significant at 1%; *** = significant at 0.1% *and, the number in parenthesis indicates the percentage. **** Among the respondent* who said *no, the non-applicable group are also included.*

This indicates that self managed group with richer groups visited doctors and poorer group and women with lower access visit PMS /MCHW. In regard to the distance to the health facility, the women who needed less than 30 minutes visited more to the doctor than those who needed more than 30 minutes (54% vs. 9 %, P<0.001).

Variance was found among the women those who met paramedical staff and MCHW. The study found that more than one- fourth (26%) of the women those who travelled < than 30 minutes visit MCHWs while only 2% of the pregnant women PMS. This indicates that women prefer to MCHW for postnatal care. The possible reasons were: (a) convenient to express their problems (b) reduced cultural accessibility (c) MCHW and pregnant women both of them have common problems. The test of significance between all covariates and women who visited to a health facility for postnatal care was carried out by the application of Pearson chi-square test and the test showed statistic significant between all covariates except the age of mother at child birth and visited to the doctor.

Intermediate Variables and Immunized BCG Injection

The background information of the number of children ever born, the use of health services, the heard about family planning, the ever used family planning, the coping strategy for MC and the distance to the nearest health facility showed association with immunized BCG injection in Table 49. In regards the number of children, nearly one- third (32%) of the women with 1 to 2 children of the women immunized their newborn child within the three days. Similarly, less than one -fifth (18%) of the women with 3 children, and in addition, more than one- fifth (21%) of

the women with more than three children immunized BCG injection to their newborn child within three days. This indicates that vaccination of BCG injection depends on the number of children. The possible reasons were :(a) lower opportunity cost (b) women preferred quality rather than quantity of children.

The study found significant relationship the between cost coping strategy of pregnant women and immunized BCG injection (66% vs. 32%). The chi- square value of 11.99, with observed P <0.001, indicates that the self- managed group immunized BCG injection for their newborn child within three days as compared to the women with borrowed money. The possible reason was that the women developed social network to collect the money for maternity care.

The study found that longer the distance to a health facility is lower the use of BCG injection for new born child. The possible reasons were: (a) the higher the opportunity cost (b) greater the cost for transportation mode and (c) user charge was high for medication. The chi- square value of 13.23, observed p < 0.001, indicates that the negative relationship between the distance to a health facility and visiting to health facility for maternity care.

It can be concluded that bivariate analysis was observed to show the relationship of 7 intermediate variables likewise age of mother at child birth, number of children, utilization of available health services for other medical problems, the heard / family planning with all indicators of 7 dependent variables. Among these variables, 4 variables like the age of mother at child birth, the number of children, the utilization of available health service for other medical problems and travelling time to a health facility were selected for hypothesis testing and have been presented in chapter IX with some selected indicators of dependent variables.

Table 49
BCG Injection for the Newborn Child within three days by Respondent's Reproductive Behavior, Access to and Utilization Status.

	Immunized BCG injection					
Intermediate variables	Agree (N=107)	Undecided (N=12)	Disagreed (N=265)	Total (N=384)	x^2	P value
The age of mother at child birth						
<25 years	62(29)	7(3)	143(168)	212(100)	0.67	P>0.05
25-29 years	21(27)	2(3)	54(70)	77(100)		
>30years	24(25)	3(3)	68(72)	95(100)		
Number of children					7.88	P<0.05*
1to 2 child	81(32)	8(3)	164(65)	253(100)		
3 child	11(18)	3(5)	47(77)	61(100)		
>3 child	15(21)	1(1)	54(77)	70(100)		
Use of available health service for other medical problems					2.74	P>0.05
Never	8(23)	1(3)	26(74)	35(100)		
Sometimes	77(27)	9(3)	202(70)	288 (100)		
Frequently	22(36)	2 (3)	37(61)	61(100)		
Heard about family planning					2.17	P>0.05***
Yes	85(29)	11(4)	200(68)	296(100)		
No	22(25)	1(1)	65(74)	88(100)		
Used family planning					7.61	P>0.05
Yes	50(28)	10(6)	117(66)	177(100)		
No ****	57(27)	2(1)	148(72)	207(100)		
Cost coping strategy for maternity care					11.99	P<0.001***
Borrowed	16(16)	6(6)	78(78)	100(100)		
Self- managed	91(32)	6(2)	187(66)	284(100)		
Distance to the nearest health facility					13.23	P<0.001***
<30 minutes	37(41)	0(0)	54(59)	91(100)		
30 minutes	44(25)	6(3)	125(72)	175(100)		
> 30 minutes	26(22)	6(5)	86 (73)	118(100)		

*significant at 5%; ** = significant at 1%; *** = significant at 0.1%, *the number in parenthesis indicates the percentage. **** Among the respondent* who said *no, the non-applicable group are also included.*

CHAPTER VIII

DESCRIPTION OF NEW INDEX VARIABLES

Introduction

Previous chapter has discussed about the influence of intermediate variables but this sections deals with description of new index variables. Both the original and new index variables were organized into five main headings: women empowerment, equity, satisfaction, plan for maternity care and responsibility. Initially, 51 likert scales were used to measure the attitudes of the pregnant women due to the large number of variables. Factor analysis was used for data reduction and 14 new variables were generated for further analysis through factor analysis. Cross -tabulation analysis was illustrated analytically in this chapter to identify independent variable having significant association with each dependent variable and then was explored the most influential factors on maternity care through logistic regression and has been presented in chapter IX. The following steps were adopted for selecting and creating new variables from Likert scales and performing logistic regression analysis.

Step one: Descriptive analysis of original Likert statements.

Step two: Data reduction by factor analysis and identification of new variables.

Step three: Description of new generated variables (Reliability - alpha value)

Step four: Cross- tabulation between new generated variables with all dependent variables.

Step five: Correlation analysis to select the variables for logistic regression analysis.

Description of the Original Likert Statement

Descriptive analysis of the original likert statement has been presented in Table 50. As noticed earlier collected information through Likert statement was organized into five main headings: women empowerment, equity, satisfaction, plan for maternity car and responsibility.

Women Empowerment and Maternity Care

Research questions 51:1-51:8 (eight main questions) were used to measure the empowerment status of women and further six sub questions were also used for clarification of these variables. Research question: 51.1 was related with capability of women to purchase daily consumable food items, cosmetic goods, clothes and candy for herself and her children" The survey result showed that more than one -third (43%) of women responded positively and more than one -half (55%) of the women were disagreed with this statement. This indicates that most of the family members still did not allow them to go out of their home for marketing due to security problems as well as heavy pressure of household work.

Second Likert questions was related with initiating power of the pregnant for discussion with her husband and family members on (a) antenatal care (b) children's education (c) birth spacing, birth number and the postnatal care (e) the plan for maternity care. The study shows the highest (80%) percentage of women replied positively that they could initiate discussion with their husband and family member about the education of their children. In addition, over than one- half (58%) of the pregnant women replied that they could discuss with their family for "antenatal care" birth spacing, birth number, and the plan for maternity care.

Table 50
Empowerment Status of the Pregnant Women by their Purchasing, Initiating, Decision Making, Walking, Voting and Sharing Power.

Item no	Empowerment status	A	U	D	M	Total
51.1	I can purchase daily consumable food items	164	9	211	0	384
	cosmetic goods, and candy for kids and myself.	(43)	(2)	(55)	(0)	(100)
51.2(a)	I can initiate discussion with my husband and	306	17	57	4	384
	family member in children education.	(80)	(4)	(15)	(1)	(100)
51.2 (d)	I can initiate discussion with my husband and	246	21	117	0	384
	family member in ANC	(64)	(6)	(30)	(0)	(100)
51.2(e)	I can initiate discussion with my husband and	224	45	113	2	384
	family member in birth timing or spacing,	(58)	(12)	(29)	(1)	(100)
	birth number and PNC					
51.2(f)	I can initiate discussion with my husband and	268	39	72	0	384
	family member for making the plan for MC.	(70)	(10)	(20)	(0)	(100)
51.3(a)	I can make decision in the harvesting	215	44	121	4	384
		(56)	(12)	(29)	(1)	(100)
51.3(b)	I can make decision to repair and construction	198	40	142	4	384
	of my house.	(52)	(10)	(37)	(1)	(100)
51.4	I can walk alone to a health facility for	266	16	98	4	384
	medical check up	(69)	(4)	(26)	(1)	(100)
51.5	Male people think superior to women	227	27	129	1	384
		(58)	(7)	(34)	(1)	(100)
51.6	I am fully independent for voting	205	65	112	2	384
		(53)	(17)	(29)	(1)	(100)
51.7	I know the place where to go, how to go and	211	34	139	0	384
	when to go to check up the health	(55)	(9)	(36)	(0)	(100)
51.8(a)	There is common practice to do together and	240	21	123	0	384
	have breakfast lunch and dinner.	(63)	(6)	(31)	(0)	(100)
51.8(b)	There is common practice to do the dish	144	21	219	0	384
		(38)	(6)	(56)	(0)	(100)
51.8(c)	There is common practice to clean the house	145	8	230	1	384
	and to washes the cloth	(38)	(2)	(60)	(0)	(100)

Note: The figure inside the brackets denotes the percentage A= agree, U= undecided, D=disagree, M=missing value, MC =maternity care.

The study found that more than two -third (64%) of women have capability for discussion with their husband and family members about the use and the importance of ANC services. This indicates that couples were ready and willing to talk and share information and made joint decision due to formal and non-formal/informal education. Decision making power for harvesting as well as constructing and repairing the house were considered the other dimension of empowerment. The study measures the participatory practice in that household for harvesting and they may have social support and network as well. The study found that over than one- half (56 %) of women answered positively for harvesting and this percentage was lowered by 4 points in those women who have capability for construction and repairing their house. The difference of disagreement between these two statements was by 8 %t (Table 48). Freedom of movement could be a potential indicator measuring for the status of empowerment. Unlikely, the study found that more than one -fourth (26 %) of women answered negatively that they were not able to walk alone to a health facility. This indicates the higher status in the freedom of walking in Nepal due to the access of education.

Feeling of superiority by male people is common in Nepal and this may either hinder or support to maternity care. The study found that more than one -half (59 %) of women answered that the male people think superior themselves than women. Political activism involves in one question i.e. whether a woman is fully independent to vote the election in their sample relating to their involvement or empowerment for election. More than one -half (53%) of women answered that they were fully independent to vote for the local election. This indicates the right for women is an increasing trend due to the activism of political party.

By using various items i.e. practice on sharing or doing together to have breakfast, dinner; doing the dish; and cleaning the house and washing the clothes by a male were asked with the pregnant women to measure women attitudes and perception of male people in that household. The lowest (38%) percentage of women responded positively with the statement that there was common practice to do the dish in their house. This indicates that sharing by male to do the dish lower in that house. The possible reasons were: (a) women felt their duties to do the dish (b) normally women were practicing to do the dish from their childhood.

Equity and Maternity Care

Table 51 presents description analysis of equity concerned issue. There were two dimensions in this issues (a) equal opportunity of the pregnant women and (b) exposure capacity of pregnant women with health worker. Research questions 51.34 (a, b, c, d & e) were related with the first dimension. Second dimension of this variable was exposure capacity of the pregnant women and related research question were from 51: 9 to 51:13.

The study made some queries with women to assess how they perceived about an equal opportunity for maternity care services in the reference of rich and poor, rural and urban, educated and uneducated women, higher and lower caste and male and female child. The study found that slightly more than one -half (51%) of women replied that the service providers provided equal opportunity between the educated and the uneducated women. Similarly, more than one -half (56 %) of the pregnant women were found variance between the rich and the poor group, higher and lower caste women, and male and female child. Almost similar pattern was found between the urban and the rural clients.

Table 51
Equity Status of Pregnant Women by their Income, Residence, Caste, Education, Way of dealing and their Exposure Capacity with Service Providers.

Items no	Related with equal opportunity dimension.	A	U	D	M	Total
51.34 (b)	Equality between the rich and the poor	217	22	145	0	384
		(56)	(6)	(38)	(0)	(100)
51.34 (c)	Equality between rural and urban clients	205	36	142	1	383
		(53)	(9)	(37)	(1)	(100)
51.34 (d)	Equality between the educated and the uneducated	197	29	158	0	384
		(51)	(8)	(41)	(0)	(100)
51.34 (e)	Equality between the higher and lower cast	218	29	135	2	384
		(55)	(8)	(35)	(1)	(100)
51.35	Equality between male and female	289	32	63	0	384
		(75)	(8)	(16)	(0)	(100)
	Related with exposure capacity the dimension.					
51.11	Service providers clearly mentioned the method of using of drug and contraception.	289	50	63	0	384
		(75)	(32)	(16)	(0)	(100)
51.12	Caregivers turned round his/her head to other side, when I explained my problem	261	32	73	0	384
		(68)	(8)	(16)	(0)	(100)
51.13	Care givers start to write the prescription after hearing my problems.	302	35	46	1	384
		(78)	(9)	(11)	(1)	(100)
51.9	I can ask any thing with health workers without any fear and service providers listen my problem seriously.	285	27	70	2	384
		(74)	(7)	(18)	(1)	(100)
51.10	Service providers always encourage me to explain my problem in a convenience way and make a inquiry time to time to find out my problem	291	33	60	0	384
		(76)	(8)	(15)	(0)	(100)

Note: The figure number inside the brackets denotes the percentage A= agree, U= undecided, D=disagree. M=missing value, MC =Maternity care.

Another dimension of equity was exposure with health workers. Nearly two - third (74 %) of the women agreed that they could ask any thing whatever they liked

with health workers without any fear and counterpart listened to them carefully and 7% of women were undecided with this statement. Encouragement to explain the problem of pregnant women one by one was replied by 76% of women and 16% of women disagreed with this statement.

Among these statements the highest (78%) percentage of women responded that the caregivers start to write prescription after hearing their problems and only 11 percentage of women disagreed with this statement. Similar trend was found with the statement of anti face towards the pregnant women during the period of medical check-up.

Satisfaction and Maternity Care

Women satisfaction with the household behavior and service provider plays a significance role to upgrade maternity care. Research questions 51:30 to 51.35 (shown in Table 52) were made queries with women to measure their' perception and attitudes towards the service providers, household head in the reference of satisfaction clustering in two aspects: (a) satisfaction in household environment (b) satisfaction with the behaviors of service providers.

Overall, 7 items were used and out of them, three items were household environment and the other were related with the behaviors of service providers. The survey result shows that the highest (75%) percentage of women were satisfied with the household environment and agreed with the statement that the family members practice to wrap from head to toe with other dry soft and clean cloth to kept warm rooming with mother facilities, in the against of 24 % of the respondent. Only 5 % of women were undecided with this statement varies.

Another dimension of the satisfaction was utilization of smokeless and ventilated house and the survey result found that nearly two -third (64%) of the pregnant women answered that they were satisfied with the utilization of smokeless and ventilated facilities to give a birth. The survey result shows that the highest (75%) percentage of women of 384 satisfied with household environment and agreed with the statement that the family members practiced to wrap from head to toe with other dry soft and clean cloth to keep warm rooming with mother facilities. In against of 24 % of the respondent. Only 5 % of women were undecided with this statement varies. Another dimension of the satisfaction was utilization of smokeless

Table 52
Satisfaction Status of Pregnant Women by theirs' Household Environment, Intra-familial Relationship and Quality of Health Care Services.

Item No	Satisfaction	A	U	D	M	Total
51.30	Household head encouraged me to increase my intake according to my choice and reduced my workload for rest.	270 (70)	20 (5)	94 (25)	0 (0)	384 (100)
51.31(a)	Utilize smokeless and ventilated facilities to give birth.	246 (64)	9 (2)	127 (33)	2 (1)	384 (110)
51.31(b)	I utilize clean and new clothes	254 (67)	15 (4)	112 (29)	0 (0)	381 (100)
51.31(C)	The family members practiced to wrap from head to toe with another dry soft and clean clothes to keep warm rooming with mother facilities	286 (76)	12 (4)	86 (20)	0 (0)	384 (100)
51.32	Doctors, nurse and other staff in hospital behave kindly to me and thus increase willingly to seek services, continuation of the utilization of available services	219 (57)	71 (19)	92 (24)	2 (1)	384 (100)
51.34 (a)	Health personal was available in a right time in the right place	205 (53)	97 (25)	76 (20)	6 (2)	384 (100)

Note: The figure inside brackets denotes the percentage A= agree, U= undecided, D=disagree. M=missing value, MC =maternity care.

and ventilated house and the survey result found that nearly two -third (64%) of the pregnant women answered that they were satisfied with the utilization of smokeless and ventilated facilities to give a birth.

Almost similar trend was found with the third statement of satisfaction with the utilization of clean and new clothes for women and newborn child, although the disagreement with this statement was varied. In regard to the service providers aspects, more than one -half (57%) of the pregnant women were found satisfied with the behavior of that Doctor , Nurse, and other Staff during the period of medical checkup and assumed that they were interested for the continuation of services with them. Nearly one- fourth (24%) of the pregnant women disagreed and group of undecided percentage was nearly one-fifth (19%) with this statements.

Plan for Maternity Care and Maternity Care

Plan is a powerful tool that an individual can use to control the future. The study setup the plan of maternity care with the assumption that women can set an action plan both in written and verbal to control the risk from future fertility. Thus, the study set up some statement to measure the perception of women about their individual plan for the regulation of future fertility. Coverage for this was six elements: (a) action plan, (b) additional money, (c) birth spacing, (d) arrange transportation, (e) stock food and fruit, (f) blood donation (g) preparation to visit skilled birth attendant, and (h) buying a kit box. Research questions were asked to respondents as shown Table 53. Nearly two- third (63%) of the pregnant women answered positively that they had food stock for maternity care. The lowest (7%) percentage of women agreed that they have managed three people for blood donation in case of emergencies period. Nearly two- third (61%) of the pregnant women

Table 53
Plan for Maternity Care of Respondents by Medical Record Keeping, Arrangement of Additional Money and Preparation of Basic things for Maternity Care.

Item No	Plan for maternity care	A	U	D	M	Total
51.14	I made an action plan to medical checkup and my husband imposed me to keep all the medical records along with other documents safely	236 (61)	38 (10)	109 (29)	1 (0)	384 (100)
51.15	Arrangement of additional money for MC.	232 (60)	31 (8)	120 (32)	1 (0)	384 (100)
51.16	Use of contraception for birth spacing	173 (45)	24 (6.)	181 (47)	6 (2)	384 (100)
51.17	At least one item arrange for health checkup from the following					
51.17(a)	• Bus/car/ambulance	140 (36)	0	244 (64)	0 (0)	384 (100)
51.17(b)	• *Doko, Tamdan, doli*, stretcher.	13 (3.)	0	371 (97)	0 (0)	384 (100)
51.17 (c)	• Cart/ horse.	73 (19)	2 (.5)	309 (81)	0 (0)	382 (100)
51.18	Food and fruit stock for delivery.	243 (61)	22 (6)	117 (30)	1 (3)	383 (100)
51.19	Three people for blood donation:	27 (7.)	35 (9)	320 (83)	2 (1)	384 (100)
51.20	Preparation to visit a SBA for delivery care	148 (39)	49 (14)	186 (47)	0 (0)	383 (100)
51.21	Buying a kit box, new clothes for mother and newborn child in case of home delivery.	222 (58)	17 (4)	144 (38)	1 (0)	384 (100)

Note: The figure inside brackets denotes the percentage A= agree, U= undecided, D=disagree, M=missing value, MC =maternity care.

answered that they have made an action plan to medical checkup and their husband imposed to keep medical record with other documents safely. More than one-fourth

(28%) of the pregnant women disagreed with this statement. One deciles (10%) of the pregnant women were undecided with this statement.

Another question was asked to assess the arrangement of additional money for emergency care and almost similar result was found with making an action plan. The percentage for the use of contraceptives measures for maternity care was nearly one-half (45%) and six % were undecided with this statement. During the period of survey, the research question (item no 51.17) was asked with women whether they have used bus/ car/ ambulance or *doko/ tamdan/ doli* or cart /horse.

Majority (97%) of the pregnant women answered that they did not use *doko/tamdan/ doli* and more than three- quarter (81%) of women did not use cart/ horse. More than one- third of women answered that they have used bus / car /ambulance to visit a health facility.

Responsibility and Maternity Care

Willingness to monitor the pregnancy status, parenting and bonding skills transfer to women by service providers and life-style patterns adopted by pregnant women influence from generation to generation and thus, information collected how much of individual, household head and services providers were responsible to take care of the pregnant women. In addition, life-style pattern was related with the responsibility of pregnant women to take care for her fetus during pregnancy with an assumption that a better pregnancy outcome will be the result of mother life-style. Based on these pieces of information, various statements were setup to measure the attitudes and perception of the pregnant women's responsibility clustering group into three: (a) responsibility of an individual life-style behavior (smoking, drinking and

washing hand before breastfeeding) (b) authorization of power by household head (c) caregivers responsibility.

The research questions or Likert statements from 51:22 to 51. 29 were related to variable responsibility as shown in Table 54. The study found that highest percentage (79%) of women was found willingness to share their pregnancy complication with their husband and the husband advised them to visit a health facility for their care. Only seven percent of women were undecided with this statement. In regard to the referral system, the lowest (29%) percentage of women agreed with this statement If any major problems identified by service providers during the period of home visit, the mother and the baby are referred to a better health facility for medical checkup.

Another segment of this variable was related with the life style (smoking, drinking and washing) of an individual and three questions (as shown in table, 50) were related and that may influence from generation to generation. The survey result found that more than three -quarter (78 %) of women were very far from smoking and nearly two -third (65 %) were against drinking. Smoker was lowered by 13% than drinker.

Remaining statement of life-style was washing hand and the study found that more than one third (38 %) of the pregnant women washed hands before breastfeeding to the newborn child and seven percentages of women were undecided with this statement. Additional dimension related with the responsibility was household head. The survey result found that more than three -quarters (76%) of women responses positively with the interest to understand the pregnancy status by household head as shown in table 54. Similarly, more than one-half (58%) of the

Table 54
Perception of the Pregnant Women towards Individual, Household head, and Service Provider's Responsibility.

Item No	Responsibility	A	U	D	M	Total
51.22	I always show the willingness to share my pregnancy complication with my husband and he always advised me to visit a health facility when I found any type of complication.	305 (79)	25 (7)	52 (14)	2 (1)	384 (100)
51.23(a)	I am very far from smoking.	298 (78)	4 (1)	82 (21)	0 (0)	384 (100)
51.23(b)	I am very far in drinking habit.	249 (65)	8 (2)	127 (33)	0 (0)	384 (100)
51 (c)	I am very near in washing hands before breastfeeding to the NBC.	145 (39)	27 (7)	211 (55)	1 (0)	384 (100)
51.24	Household members are interested to understand whether I am OK or not. In case of illness, they advised me to visit a health facility**.**	291 (76)	17 (4)	75 (20)	1 (0)	384 (100)
51.25	Household head authorized power to me for the utilization of available health services in this area without any terms and conditions.	222 (58)	31 (8)	1.3 0 (34)	1 (0)	384 (100)
51.26	Service providers visit my home and teach breastfeeding and maternal- infant bonding skills. If, bottle-feeding advice is needed on preparation and sterilization of bottles.	120 (31)	21 (6)	242 (63)	1 (0)	384 (100)
51.27	Service providers recognize my economics status and try to understand where, when and how I present in the health facility and provide proper attention for myself.	149 (39)	46 (12)	189 (49)	0 (0)	384 (100)
51.28	If, any major problems identified by service providers during the period of home visit, refer mother and baby to a better health facility for medical checkup.	112 (29)	25 (7)	247 (64)	0 (0)	384 (100)
51.29	Service providers provide training for good parenting skills, covering issues that will emerge with the increasing mobility of the child, and talk about child safety in the home.	173 (45)	27 (7)	182 (47)	2 (1)	384 (100)

Note: The figure inside brackets denotes the percentage A= agree, U= undecided, D=disagree, M=missing value, MC =maternity care.

pregnant women agreed that their household head authorized power to them for medical checkup without any terms and conditions.

The study found that nearly two- third (63 %) of the pregnant women answered that service providers did not visit their home for teaching and advising for bonding skills. Additional, dimension of responsibility was the recognition of economics status and study result show, nearly one -half (49 %) of women answered that service providers were less responsible. Similarly, the study found that nearly two -third (64 %) answered that service provider did not make any referral to mother and baby to health facility for medical checkup.

Final segments of the responsibility was related with the parenting skills and the study found that nearly one –half of women answered that service providers did not provide training for good parenting skills.

More than three –quarter (of women visit a health facility for medical checkup and nine percentage of women never visited a health facilities for utilization of available services. It can be concluded that Likert statement were used to understand the perception and attitudes of pregnant women to their household's head, service providers and community workers. By descriptive analysis, the study found varied status of various indicators of empowerment, responsibility, satisfaction of pregnant women with household's head, service providers.

Factor Analysis

Factor analysis was used to reduce the vague data collected through the 51 items scale during the period of survey. 14 new generated variables were constructed under the headings of empowerment, equity, responsibility, satisfaction, and plan for maternity care. An initial examination of the entire first version of the questionnaire

(all 51 items) produced a reliability coefficient of 0.89, which was very satisfactory and was conducted with the permission of Papanastasiou, (2005). Communality >70, Eigen value >1 percentage of variance and Scree test criterion were used to extract the influential factors of the above variables. Rotation method was used for the further interpretation of data. Several items of the original version of the questionnaire were removed because they were considered in an inappropriate. Once the inappropriate items were removed, 14 items that remained in the scale were reconstructed under the above said headings.Variables were renamed by summing up the score for common variables and index was constructed for correlation and logistic regression. This method was allowed to use by Aguinis, Nesler, and Quigley Lee and Tedeschi (1996)

Psychometric Properties of the Scale

A psychometric property of scale depicts means standard deviation, and reliabilities estimates the numbers of cases and these have been presented in Table 55. Cronbach's alpha value was observed average inter-item correlation between fourteen items reproduced through factor analysis. Communality >70, Eigen value >1 percentage of variance and Scree test criterion were used to extract the influential variables for factor analysis. Rotating method is used for further interpretation of data. From the list of variables only those which had coefficient of correlation value greater than 0.60 with the dependent variable were selected for factor analysis. This analysis selected 14 items for empowerment, 10 with equity (exposure with health workers), plan for maternity care and responsibility and 6 with satisfaction based statements were run for factors analysis and all together 14 items were extracted for further analysis. Original statements are presented in Annex 15 to Annex 19.

Description of new variables developed after factor analyses are shown in Table 64. Detailed result of cross tabulation of these new variables generated is presented in annex 8 to 14. Total numbers were not same in each variable due to missing value in Table 64.

To measure women's empowerment criterion such as power of initiating discussion on maternity care, shopping power, decision making power on other household issues and supremacy power of male were selected. Similarly, equity was measured by way of dealing with the pregnant women by service provider and encouragement from service providers. To measure satisfaction, two variables were selected: household environment managed by household head and care giver's behavior with women. Equity base information and exposure with health workers were run simultaneously due to limit information of this study. After the factors analysis, a score was calculated for each variable for reliability test. Initial examination of the entire first version of the questionnaire (all 51 items) produced Cronbach's Alpha value 0.90 for a reliability test and was very satisfactory. 87% of the respondents were valid for this test. The mean score with SD, the alpha value and number of cases were presented in table 55.

Plan for maternity care was measured by two variables: (a) arranged at least three people for blood donation at the time of delivery and (b) repairing of basic things needed at the time of delivery. Finally, responsibility was measured by parenting skills transferred to women by service provider, willingness to monitor the pregnancy status and life-style adopted by the pregnant women. The relationship between the above discussed variables and utilization of maternity care services was tested using Pearson-chi-square test. Net effect of the variables showing significant

association with the dependent variables was further analyzed by logistic regression model.

Table 55
Description of New Variables Generated with Mean, Standard Deviations, Cronbach's Alpha Value, and the Number of Respondents.

Description of the new variables generated	Mean	SD	AV	N
Women empowerment			0.73	365
Initiating power of the pregnant women	0.597	0.491		
Job sharing in Kitchen by male people	0.651	0.478		
Shopping power of women	0.746	0.436		
Decision making power of women	0.609	0.489		
Supremacy Power adopted by the male	0.633	0.483		
Equity			0.86	375
Way of dealing with the pregnant by service providers	0.591	0.492		
Encourage to the pregnant women by service providers	0.579	0.494		
Satisfaction			0.72	372
Household environment managed by household head	0.585	0.496		
Care giver behavior	0.615	0.487		
Plan for maternity care			0.67	372
Preparation of basic things for safe pregnancy	0.875	0.332		
Three people for blood donation	0.072	0.258		
Responsibility			0.67	376
Parenting skill transferred to the pregnant women by service providers	0.934	0.2488		
Willingness to monitor the pregnancy status of pregnant women by household head.	0.549	0.4983		
Life-style adopted by the pregnant women	0.400	0.497		

Note: AV= alpha value. Individual items were rated 5 points. Likert type scales ranging from 1 to 5 strongly disagree to strongly agree.

Bivariate Analysis of New Variables Generated

Introduction

As noticed in chapter 3, 51 Likert scale was used to measure the attitude of the pregnant women towards their household head, family members and service providers. Due to the vagueness of data, factor analysis was used for data reduction to bring efficiency in thesis. 14 new variables were generated under the headings of empowerment, equity, responsibility, a plan for maternity care and satisfaction of pregnant women with household head and service providers. Previous section have presented the description of new generated variables but this section deals with the relationship between 14 new generated variables and seven dependent variables. Information has been presented in three clusters: (a) antenatal care (b) institutional delivery (c) postnatal care.

New Variables Generated and the Number of ANC Visit

Table 56 presents the relationship between visit number of ANC services and new generated variables like as women empowerment, equity, satisfaction, plan for maternity care and responsibility. Detailed outputs of these variables have been presented in annex 11. The five items like initiating power of the pregnant women, job sharing by male people in kitchen shopping power of the pregnant women, decision making power and supremacy power adapted by the male consisted under the headings of empowerment variables.

Table 56

Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and 4 visit of ANC Services.

Components	New Generated variable and number of ANC visit	x^2	P value
Empow	Initiating power of the pregnant women	26.28	p <0.001***
erment	Job sharing in kitchen by male people	14.62	p<0.001***
	Shopping power of the pregnant women	32.71	p <0.001***
	Decision making power of the pregnant women	0.16	P>0.05
	Supremacy power adapted by the male	13.80	p<0.001***
Equity	Way of dealing with pregnant women by SP	37.83	p <0.001***
	Encourage the pregnant women by SP	22.87	p <0.001***
Satisfaction	Household environment managed by HH	45.47	p <0.001***
	care givers' behaviors	44.62	p <0.001***
Plan for MC	Preparation of basic things for safe pregnancy	32.46	p <0.001***
	Three people for blood donation	3.64-	P>0.05
Responsibility	Parenting Skills transferred to women by SP	1.59	P>0.05
	Willingness to monitor the pregnancy status of pregnant women by household head.	32.16	P<0.001***
	Life-style adopted by the pregnant women.	4.89	p<0 .05*

significant at 5%; ** = significant at 1%, * = significant at 0.1%, SP = service provider, MC maternity care, HH= household head.*

The findings of this study shows the greater percentage of women with low initiating power have been visited at least 4 visit to a health facility for ANC services as compared to the women with high initiating power (62% vs. 39% , annex 11). This indicates that at least four times visiting to a health facility for ANC checkup is not only the determinant of initiating power of the pregnant women. The possible reasons were: (a) behaviors of the service providers (b) access of formal and non-formal /informal education (c) fairness and responsibility of service providers (d) the

distance of the health facility. The chi square value of 26.28, with observed P <0.001, showed the variance between high and low initiating power of the pregnant women.

A second item of the empowerment was a job sharing in kitchen by male people. The study found a greater percentage of the pregnant women with low status in job sharing in kitchen by male people visited at least 4 times to a health facility for ANC checkup than did the women with higher status (63% vs. 42%,). This indicates that at least four times visiting is not only the determinant of job sharing in kitchen by male people. The possible reasons were: (a) cultural factors, social value, ethics and individual perception were influencing on ANC visit (b) attitudes and perception of the pregnant women (c) relationship between clients and service providers. The chi square value 14.62 with observed, P< 0.001 indicates the variance between the high and low status of women of job sharing in kitchen by male people. A similar type of relationship is found between the items shopping power of the pregnant women and supremacy power adopted by males. However, there is no significance difference between women those who have high and low decision making power for the use of ANC services. The possible reasons were pregnant women can make decision quickly where to go, how to go and when to go for maternity care.

Concerning the equity component, variables way of dealing with the pregnant women and encouragement to pregnant women by service providers were associated with the variables at least four visit for ANC services. This indicates that equity could not be the major factor for ANC visits among those women those who were captured in this study. The possible reasons were: (a) no options for them (b) lower access of information for patients (d) shortage of friendship behavior in service providers. The chi square value of 37.83, with observed P <0.05, indicates variance in the way of

dealing by service providers towards pregnant women. Almost similar trend was found with other items of equity.

Likewise, negative relationship was also found with the satisfactory component measured by variable household environment managed by household head and caregiver's behaviors. Almost similar trend was found with the component plan for maternity care, measured by the variable preparation of basic things for safe pregnancy and three people for blood donation. The responsibility component is associated with ANC and shows similar trend with the variables used to measure responsibility (annex 11).Statistically significance was tested by adopting the Pearson chi-square test and chi-squared value is shown in Table 56.

New Variables Generated and the Use Package of ANC Service.

Table 57 presents the association between the used package of ANC services and new variables generated like women empowerment, equity, satisfaction, and a plan for maternity care, responsibility of pregnant women, household head and service providers. The definitions of the package of ANC services and construction of index method have been presented in chapter 1 and 3 respectively.

The analysis showed that the initiating power of the pregnant women is associated with the package of antenatal care services. Among the women those who have low initiating power used the full package of antenatal care services compared to those women who have high initiating power (67% vs. 47% see annex 12). This indicates that the use of full package of the ANC services is not only the functions of initiating power of the pregnant women and this is confounded by other factors. Almost similar pattern was found with the variables: job-sharing in kitchen by male people, shopping power of the pregnant women and supremacy power adopted by

male people. The women who have higher decision making power are more likely to be benefited by the full package of ANC services than those women who had lower decision making power (54% vs. 51% P >0.05, annex 12). This is due to more exposure power of the pregnant women.

Concerning the equity components, greater percentage of women with high status in way of dealing use the full package of ANC services than those women who have lower status in the way of dealing by the service providers (15%vs 3% ,see annex, 12) . In addition, more than three quarters (78%) of the pregnant women were partial utilize of ANC services. This indicates that women have the higher demand for ANC services but the use of the full package was lower. The possible reasons were: (a) ignorance of service providers or (b) lower exposure capacity of pregnant women and (c) lower level staff, especially in the rural areas. In the context of satisfaction, the study found that greater percentage of women with higher status in household environment managed by household head use the full package of ANC service than those women who have lower the status in household environment (16% vs. 5%) . Similar pattern was found with the variables care givers behavior. The chi - square value of 60.64**,** with observed P value < 0.001 suggested that there is significant relation between the household environment and the use package of ANC services. Similarly, the chi- square value of 53.54 suggested that the significant relation exists between the care givers behaviors and the use package of ANC services. This indicates that use package of ANC services is depended on care givers behaviors. On the other hand, negative association was found with variables like job sharing in kitchen by males, shopping power of women and supremacy power care behaviors, the plan for maternity care and three people for blood donation, parenting skills transferred women by service providers, willingness to monitor the pregnancy

status, and the life style adopted by the pregnant women and the use package of ANC services.

Table 57

Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and Used Package of Antenatal Care Service.

Components	New variables generated and the Used Package of ANC.	x^2	P value
Empow	Initiating power of the pregnant women	31.69	P<0.001***
erment	Job sharing in kitchen by male people	7.51	P<0.001***
	Shopping power of the pregnant women	21.45	P<0.001***
	Decision making power of the pregnant women	0.53	P>0.005
	Supremacy power adapted by the male	10.22	P<.001***
Equity	Way of dealing with pregnant women by SP	30.19	P<0.01***
	Encourage the pregnant women by SP	44.26	P<0.001***
Satisfaction	Household environment managed by HH	60.64	P<0.001***
	care givers' behaviors	53.754	P<0.001***
Plan for MC	Preparation of basic things for safe pregnancy	37.65	P<0.001***
	Three people for blood donation	3.31	P >0.05
Responsibility	Parenting Skills transferred to women by SP	2.55	P >0.05
	Willingness to monitor the pregnancy status of pregnant women by household head.	31.71	P<0.001***.
	Life-style adopted by the pregnant women.	87.59	P >0.05

significant at 5%; ** = significant at 1%; * = significant at 0.1%.%, SP = service provider, MC maternity care, HH= household head.*

Pearson chi-square test showed statistically significance relationship between 10 covariates and utilization of the full package of antenatal care services. (See 57). The significant level was established at 5%, 1%; significance level.

New Variables Generated and Immunized TT injection

Table 58 presents the association between the immunized tetanus injection and new variables generated like women empowerment, equity, satisfaction and plan for maternity care, responsibility of pregnant women, household head environment and service providers. Annex (14) shows the detailed outputs of these variables. The study found that greater the percentage of pregnant women with low initiating power immunized TT injection as compared to those women with high initiating power (79 % vs. 64%) . This indicates that immunized TT injection is confounded by other factors than initiate power of the pregnant women. The chi- square value of 11. 37 with observed, P <0. 001 indicates the relationship existed between initiating power of the pregnant women and immunized TT injection. Similar trends were found with variables like job sharing in kitchen by the male people, shopping power of the pregnant women, and supremacy power adopted by the male people.

Regarding equity, Table 58 presents the relationship between the way of dealing with the pregnant women and the immunized TT injection. The study found that greater percentage of the pregnant women with lower status in way of dealing by service providers used two dose of TT injection as compared to those women with higher status (76% vs. 66%, see annex 13). This indicates that use of The TT injection is depended on other factors rather than the way of dealings. The possible reasons were: (a) monopoly power of the service providers (b) no options for the patients to check up her health (c) The chi-square value of 17.35, with observed, P < 0.001 indicates that the significant relationship exist between these two variables. Almost similar pattern was found with other variables: encourage to pregnant women by service providers. A third component of new variables generated was satisfaction and the relationship of two items was observed with immunized TT injection. The

greater percentage of women with high status in household environment managed by household head seems lower as compared to those women who have higher status in high environment (62% vs. 82%, annex 13).However, positive relationship was found with the variables: caregiver's behaviors and number of tetanus toxied injection.

Table 58

Association between New Generated Variables by Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and Tetanus Toxied Injection.

	New generate variables and TT injection	x^2	P value
Empow	Initiating power of the pregnant women	11.37	P<.0.001***
erment	Job sharing in kitchen by male people	4.77	P<.0.001
	Shopping power of the pregnant women	8.77	P >0.05.
	Decision making power of the pregnant women	0.34	P >0.05
	Supremacy power adapted by the male	0.23	P >0.05
Equity	Way of dealing with pregnant women by SP	17.35	P<0.001***
	Encourage the pregnant women by SP	8.21	P<0.001***
Satisfaction	Household environment managed by HH	18.68	P<0.001***
	care givers' behaviors	12.37	P<0.001***
Plan for MC	Preparation of basic things for safe pregnancy	12.25	P<0.001***
	Three people for blood donation	2.52	P >0.05
Responsibility	Parenting Skills transferred to women by SP	0.49	P >0.05
	Willingness to monitor the pregnancy status of pregnant women by household head.	12.60	0.001***
	Life-style adopted by the pregnant women.	3.42	P >0.05

*significant at 5%; ** = significant at 1%;*** = significant at 0.1%.*%, SP = service provider, MC maternity care, HH= household head.*

Preparation of basic things for safe pregnancy and three people for blood donation are being main variables of the component of plan for maternity care. Negative relationship was found between this variables and immunized tetanus toxied injection. The chi- square value of 12.25, with observed, P<0.001 indicates that

relationship existed between preparation of basic things for safe pregnancy and immunized TT injection.

Finally, positive relationship was found between parenting skills transferred to the pregnant women by services providers and immunized TT injection .The study found that greater percentages of women with high status in parenting skills immunized TT injection two doses as compared to those women who have lower status in parenting skills (70 % vs. 65%). This indicates that transferred of the parenting skills provides the knowledge about the importance of four ANC visit. The possible reasons were: (a) service providers provide the knowledge of basic skills of readings i.e. reading, writings and arithmetic (b) self- care skill for mother and newborn child. The chi- square value of 12.60, observed, $P < 0.001$ indicates that significance difference exist between the willingness to monitor the pregnancy status and the immunized TT injection.

New Variables Generated and Institutional Delivery

Table 59 presents the association between the immunized tetanus injection and the new generated variables like women empowerment, equity, satisfaction, and a plan for maternity care, responsibility of pregnant women, household head and service providers. Detailed outputs of those variables have been presented in Annex 14.The analysis shows that greater the percentage of women who have low initiating power have practiced more institutional delivery than those women who have high initiating power (44 % vs. 20%, see, Annex 14). Another indications was that greater the percentage of women with high initiating power have practiced home delivery as compared women with low initiating power. This indicates that initiating power is not

only the determinants of institutional delivery. Perhaps other factors were influencing on institutional delivery.

Almost similar trend was found with the variables for job sharing in the kitchen by male people, shopping power of women, and supremacy power adopted by the male. However, the decision making power of pregnant women has been found positively associated with the institutional delivery. This indicates that she can make quicker decision for visiting, reaching the hospital than those women who have lower decision making power.

Table 59

Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and Institutional Delivery.

	New generate variables and institutional delivery	x^2	P value
Empower	Initiating power of the pregnant women	24.70	P<0.001***
ment	Job sharing in kitchen by male people	23.67	P<0.001***
	Shopping power of the pregnant women	30.22	P<0.001***
	Decision making power of the pregnant women	1.26	P >0.05
	Supremacy power adapted by the male	22.05	P<0.001***
Equity	Way of dealing with pregnant women by SP	22.96	P<0.001***
	Encourage the pregnant women by SP	17.43	P<0.001*
Satisfaction	Household environment managed by HH	103.99	P<0.001***
	care givers' behaviors	73.45	P<0.001***
Plan for MC	Preparation of basic things for safe pregnancy	52.59	P<0.001***
	Three people for blood donation	1.47	P >0.05
Responsibility	Parenting Skills transferred to women by SP	4.91	P >0.05
	Willingness to monitor the pregnancy status of pregnant women by household head.	31.00	P<0.001***
	Life-style adopted by the pregnant women.	4.34	P >0.05

*significant at 5%; ** = significant at 1%; *** = significant at 0.1%. *%, SP = service provider, MC maternity care, HH= household head.*

Concerning the equity components, the way of dealing with the pregnant women and encouragement to pregnant women by service providers was found negatively associated with the institutional delivery. Among the women those who have lower environment status managed by household head was seemed better compared to those women with appropriate environment. Similar trend was found with the variables caregivers behaviors. The hospital delivery was lower with the women those who have high status in the plan for maternity care as compared to those women who have lower status (23% vs. 75 % see annex 14). This indicates that home delivery was greater to those women who have made a plan for maternity care. The possible reasons were: (a) long distance of a health facility (b) lower affordability for the hospital delivery (c) women may not go to the hospital delivery unless being a serious complication.

The study found that greater percentage of the pregnant women with high status in parenting skills transferred to the pregnant women by services providers in hospital delivery as compared to those women who have lower status (32% vs. 12%, $p < .001$, see annex 14) This indicates the positive relationship between the parenting skills transferred to the pregnant women by service providers and the institutional delivery. However, the lower percentage of the women who used institutional delivery has higher status than in regards the variable willingness to monitor the pregnancy status. Similar pattern was found within the remaining variable life-style adopted by the pregnant women. Pearson chi-square test was adopted to show the relationship between all covariates and the institutional delivery and test showed statistically significance relationship between all variables except decision making power, three people for blood donation, parenting skills transferred to women service providers , and life-style adopted by the pregnant women. The chi-square value has been presented in Table 58

New Variables Generated and Visit Postnatal Care

Table 60 presents the association between the visit to PNC and new variables generated like women empowerment, equity, satisfaction, and plan for maternity care, responsibility of pregnant women, household head and service providers. Detailed outputs of these variables have been presented in Annex 15.The definition and a component of postnatal care was presented in chapter 1.

The study found that the greater percentage of women those who were in lower status in initiating power visit more for postnatal care with the comparison of women from higher status (78% vs. 50%, see annex 15), though the study found significance difference between initiating power of the pregnant women and visit PNC services. This indicates that other multiple factors like satisfaction, equity, plan for care, knowledge and cultural value were influencing on PNC services. The possible reason were: (a) the husband who actually provides the money for PNC visit (b) Household family motivates to her to visit PNC services (c) critical stage in the signs of pregnancy complication (d) appropriate in household environment. The chi-square value 30.95 with observed, $p<0.001$ indicates that the variance between the high and low status of initiating power of the pregnant women.

Almost similar pattern was found with the variables job sharing in kitchen by male people, shopping power of the women, and supremacy power of women. However, no differences seem between the high and low in decision making power. This indicates that decision making power has positively associated with visit to postnatal care. The detailed output of this result has been presented in annex 15. Concerning the equity components, the chi- square value of 46.99 with observed, $P< 0.001$ indicates that relationship existed between way of dealing with the pregnant women by service providers and the visit to PNC.

Similar relationship was found within the household environment managed by household head, care givers behaviors, plan for maternity care willingness to monitor the pregnancy status by household head and life style adopted by the pregnant women. However, different result was found with the variables which was prepared by three people for blood donations and parenting skills transferred for the women by service providers.

Table 60

Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and Visit Postnatal Care.

	New generate variables and postnatal care	x^2	P value
Empowe	Initiating power of the pregnant women	30.95	P<0.001***
rment	Job sharing in kitchen by male people	18.82	P<0.001***
	Shopping power of the pregnant women	8.44	P<0.001***
	Decision making power of the pregnant women	0.01	P >0.05
	Supremacy power adapted by the male	3.10	P >0.05
Equity	Way of dealing with pregnant women by SP	46.99	P<0.001***
	Encourage the pregnant women by SP	5.71	P >0.05
Satisfaction	Household environment managed by HH	41.80	P<0.001***
	care givers' behaviors	22.02	P<0.001***
Plan for MC	Preparation of basic things for safe pregnancy	15.02	P<0.001***
	Three people for blood donation	0.18	P >0.05
Responsibility	Parenting Skills transferred to women by SP	6.67	P >0.05
	Willingness to monitor the pregnancy status of pregnant women by household head.	4.44	P >0.05
	Life-style adopted by the pregnant women	4.48	P<0.001***

significant at 5%; ** = significant at 1%; * = significant at 0.1% , %, SP = service provider, MC maternity care, HH= household head.*

The study found that the greater percentage of pregnant women with high status to prepare three people for blood donation were visited more for PNC check up

than did the women with lower status. This indicates that appropriate viewed for postnatal care. The possible reasons were: (a) heavy bleeding (b) appropriate viewed at each postnatal contact (c) transfer of knowledge to the pregnant women that she should assess immediately after giving birth by a suitable qualified member of birth team. Similarly, greater percentage of the women with parenting skills obtained by service providers visited more for postnatal checkup with comparison of women with lower status in parenting skills to the pregnant women (62% vs. 57%). This indicates that transfer the knowledge of parenting skills motivates to the pregnant women for postnatal visit. The possible reasons were: (a) They understood the importance of parenting skills (b) understand mother -child relationship (c) both mother and father were motivated to learn parenting skills.

New Variables Generated and Visit Doctor

Table 61 presents the association between the visit to a doctor and variables new generated like women empowerment, equity, satisfaction, and plan for maternity care, responsibility of pregnant women, household head and service providers. Detailed outputs of these variables have been presented in Annex 16.The definitions of postnatal care have been presented in chapter 1.

Regarding the variable visiting to doctors, the analysis shows that greater the percentage of the women being low initiating power visited more doctors than those women who were in high initiating power. This indicates that other factors were influencing the postnatal visit than initiating power of the pregnant women. The chi square value of 33.93 with observed $P < 0.001$ indicates that significant relationship existed between these two variables though the findings of the study was negative.

Table 61

Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and Visit Doctor.

	New generate variables and visit doctor	x^2	P value
Empower	Initiating power of the pregnant women	33.93	P<0.001***
ment	Job sharing in kitchen by male people	30.72	P<0.001***
	Shopping power of the pregnant women	21.62	P<0.001***
	Decision making power of the pregnant women	1.07	P >0.05
	Supremacy power adapted by the male	8.78	P<0.001***
Equity	Way of dealing with pregnant women by SP	51.84	P<0.001***
	Encourage the pregnant women by SP	12.23	P<0.001***
Satisfaction	Household environment managed by HH	71.92	P<0.001***
	care givers' behaviors	39.23	P<0.001***
Plan for MC	Preparation of basic things for safe pregnancy	43.64	P<0.001***
	Three people for blood donation	6.90	P >0.05
Responsibility	Parenting Skills transferred to women by SP	10.77	P >0.05
	Willingness to monitor the pregnancy status of pregnant women by household head.	12.94	P<0.05*
	Life-style adopted by the pregnant women.	6.06	P >0.05

*significant at 5%; ** = significant at 1%, *** = significant at 0.1% . *%, SP = service provider, MC maternity care, HH= household head.*

The study shows that the highest percentage (29%) of those women who have low initiating power visited paramedical staff. In contrast, the highest percentage of the women with high initiating power visited Maternal Child Health Workers (MCHW) more than frequently visit to the medical doctors. Likewise negative relationship was found between the jobs sharing in the kitchen by male people, shopping power of women, supremacy power adopted by the male people. Concerning the equity components, both variables the way of dealing to pregnant women, and encouragement to pregnant women, by services provider were found to

be negatively associated with the visit to doctors and the result obtained was also significant. It can be concluded that equity could not be a major factors for visiting doctors for postnatal care. Likewise negative relationship was found between visit to a doctor and the satisfaction components measured by the variables, household environment managed by household head and caregivers behaviors. In regard the components of the plan for maternity care, the women with low status for preparation of basic things for the safe pregnancy plan for maternity care seems negatively associated with variables of the visit to a doctor. Greater the percentage of women with higher status to prepare three people for blood donation have visited more to doctors than those women who have lower status to prepare three people for blood donation (22% vs. 17%) with observed significant level at 5%.

New Variables Generated and Immunized BCG Injection

Table 62 presents the association between immunized BCG injection and new variables generated like women empowerment, equity, satisfaction, and the plan for maternity care, responsibility of pregnant women, household head and service providers. Detailed outputs of these variables have been presented in Annex 17.The definition of immunized BCG injection is presented in chapter 1.The greater percentage of women with lower status job sharing by male people in kitchen immunized BCG injection for newborn child than those the women with high status in job sharing by male people in kitchen (38 % vs. 23%.).

The chi-square of 9.84 with observed P <0.001 indicates that significance relationship existed between the variables of job sharing by male people in kitchen and immunized BCG injection within three days The findings shows that 72% of the pregnant women with high initiating power disagreed that BCG injection was

immunized to their newborn child within three days. This indicates that BCG injection was immunized after three day of baby's birth. Perhaps, pregnant women cannot walk to a health facility for BCG immunization due to the physical weakness and cultural accessibility. Service provider's reluctance to visit pregnant women's house to immunized BCG injections.

Table 62

Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and BCG Injection for New born Child within Three Days.

Variables	New generate variables and BCG injection	x^2	P value
Empower	Initiating power of the pregnant women	2.84	P >0.05
ment	Job sharing in kitchen by male people	9.84	P<0.001***
	Shopping power of the pregnant women	8.54	P<0.001***
	Decision making power of the pregnant women	2.93	P >0.05
	Supremacy power adapted by the male	0.86	P >0.05
Equity	Way of dealing with pregnant women by SP	7.91	P >0.05
	Encourage the pregnant women by SP	1.60	P >0.05
Satisfaction	Household environment managed by HH	18.20	P<0.001***
	care givers' behaviors	19.88	P<0.001***
Plan for MC	Preparation of basic things for safe pregnancy	8.19	P >0.05
	Three people for blood donation	0.47	P >0.05
Responsibility	Parenting Skills transferred to women by SP	6.49	P >0.05
	Willingness to monitor the pregnancy status of pregnant women by household head.	0.59	P >0.05
	Life-style adopted by the pregnant women.	9.94	P<0.001***

*significant at 5%; ** = significant at 1%; *** = significant at 0.1. *%, SP = service provider, MC maternity care, HH= household head.*

Similar trend was found in job-sharing in the kitchen, shopping power of women, decision making and supremacy power by the male people. Concerning to the equity component, the way of dealing with the pregnant women by service providers

and encouragement to pregnant women by service providers and preparation of basic things for safe pregnancy and three people for blood donation. In the component of responsibility, two variables parenting skills transferred women by service providers, and willingness to monitor the pregnancy status did not find significant relationship with BCG injection immunized within three days for new born child. The test of independence between all covariates was carried out by the application of Pearson chi-square test and chi-square value and significance level was presented in <0.05 confidence level.

In bivariate analysis, 14 new generated variables were observed under various components like empowerment, equity, plan for maternity care, responsibility and satisfaction of pregnant women with household head and service provider. Again, all 14 new variables generated were fitted in logistic regression to observe the effect in all indicators of 7 dependent variables. However, new variables generated likewise household environment, care givers behaviors, willingness to monitor pregnancy status were selected in chapter IX for hypothesis testing linking with some selected indicators of dependent variables.

CHAPTER IX

MULTIVARIATE ANALYSIS

Introduction

Hypothesis set for the study are presented in Chapter I. Bivariate analysis have already presented in chapters V, VI, VII and VIII to explore the gross relationship between several backgrounds and other health care related variables (intermediate variables) as well as new variable generated such as mother and her husband's education, training, recreational programs, counseling and media exposure with all dependent variables, all intermediate and new variable generated in this study. In those chapters chi-square tests are used to test the significance of association. As the effects of some variables on the dependent variables are confounded by some other variables and gross analysis cannot depict it, multivariate analysis is performed.

The study has developed a series of multivariate logistic regression models. Such analysis will help to explore the net effect of each independent variable such as women's education, socio-economic status on at least 4 times visiting for ANC, the use package of ANC service, TT injection, institutional delivery, the visit to a health facility for PNC, doctor and the BCG injection for NBC. Similar analysis was performed to evaluate the effect of intermediate and new generated variables with all dependent variables to explore the net effect the maternity care.

All the independent variables, formal, non-formal/ informal education status, wealth , work status, ethnicity, residence of independent variables, other intermediate and new variables generated were recorded as categorical or ordinal variables. Odds ratio is used to discuss the gross and the effect of selected variables on the dependent

variables. In calculating the odds ratio for each category of independent, intermediate and new generated variables, the first group was taken as the reference group/category. If any other group rather than the first group is taken as reference category, it is mentioned in the relevant table. It should be noted that for the analysis of the net effect gross effect of the concerned variables is also estimated from logistic regression analysis which is depicted in the tables presented in this chapter.

All dependent variables are coded as: 0 = no, 1= yes. The odds ratio for reference category is 1. The odds ratio less than 1 means the chances of happening of the event in the concerned category compared to the reference category. On the other hand, the odds ratio more than 1 means chances are greater than in the reference category. Odds ratios close to 1.0 indicated that the odd happening the event in the particular category are given in the reference category. That means the changes in that independent variable do not affect on the dependent variable significantly.

Multicolinearity between the independent variables was checked to explore the independency of independent variables. If the independent variables were found to have a strong correlation between them the two correlated variables were not used in the same logistic regressing. The net effect of socio-economic factors was observed after controlling the effect of selected variables which were found to have significant association with chi-square test performed in previous chapters. Similar process was applied for intermediate and new generated variables as well. The hypothesis is tested using the finding of net effect of the independent variable on the dependent variable. The purpose was to analyze the net effect on the dependent variables. The results of the analysis are presented separately for three types of maternity care services (a) antenatal care (b) delivery care and (c) postnatal care. Hypothesis sets are presented in Table 1 of chapter 1. They are classified into four: (a) The first is related with formal

and non-formal/ informal education , (b) The second sets are related with socio-economic related variables, (c) The third sets are related with reproductive health, access to and the utilization of available health care services and (d) The fourth sets are related with new generates variables.

Effect of Formal and Non-formal /Informal Education on the Use of Antenatal Care

Table 63 presents the gross and adjusted odds ratios to measure the effect of formal and non formal/informal education, at least four ANC visits and the use of ANC package as well as TT injection for pregnant women by respondent's background characteristics. The gross effects presents effect of only educational variable while the net effect or adjusted odds ratios present of educational variables after controlling other socio-economic variables. The net effects were observed to explore the most influential factor on maternity care.

The first hypothesis of this study is, "there is no relation between women's formal education and at least four times visiting for ANC". The use of ANC varies with the level of education. The gross odds ratio of primary education of women was 1.84 times (CI= 1.20-2.81) higher compared to illiterate women, and the effect increases by the level of education. The odds ratio for SLC and above education is 47 (CI= 6.27-352.53, Table, 63). This means the chance of four visits to the health facility for ANC checkup as compared to those women who were illiterate women is almost 47 times higher.

The net effect of women's education on ANC use is still significant but the primary level of education does not have significant net effect. Only the SLC plus has the net effect on the use of ANC. The net odds ratio of SLC plus education is 21 times

higher (CI=1.70-261.84) as compared to those women who were illiterate. The hypothesis that there is no relation between mother's formal education and at least four times visit to a health facility for ANC checkup is rejected and its alternative hypothesis is accepted. That means at least four times visit for ANC service is higher among those who have SLC plus education.

The second hypothesis of the study is "there is no relationship between women's formal education and the use package of ANC services". The gross effect of education on this variable was significant (odds ratio 21, CI= 4.93-91.88). That means the educated women have 21 times higher chances to use the package of ANC services with compared to illiterate women. After controlling the effect of all other variables, effect of mother's education was reduced (Odds Ratio 18, CI =1.76- 184.2) as compared with women those who have no education .This indicates that the use of ANC services are confounded by other factors. However, the effect was significant. Thus, the null hypothesis was rejected and the alternative hypothesis of the use of ANC package depends on education is accepted.

The third hypothesis is "there is no relation between mothers' formal schooling and immunized TT injection". The study indicates positive association between mother's schooling and immunized TT injection evidence in Table 62. But the effect is not significant. The net odds ratio for the SLC and above declined compared to gross odds ratio (Gross OR 7.05 times, CI=1.63-30.53; Net OR 2. 88 times, CI= 0.5 16.63). In this case, the hypothesis was true that the women's education has no strong net effect on TT uptake. Thus, null hypothesis is accepted and alternative hypothesis TT injection is depended mother's education is rejected.

The fourth hypothesis is related with training: “there is no relation between women’s training and at least four times visit to a health facility for ANC services”. The gross OR was estimated from logistic regression using only training variable as independent variable. The gross odds ratio was 4 (CI=2.37-7.19) which is statistically significant. This shows almost 4 times greater chances for visiting to a health facility for ANC checkup by trained women compared to untrained women. On the other hand, while controlling all other factors (shown in Table 63) the gross effect of training has been reduced to1.84 (0.89-381) and is no more significant. This indicates that the training of the women is not an important factor for the promotion of the use of maternity care. Therefore, null hypothesis is accepted. That means at least four times visit to a health facility for ANC services does not have strong/significant net effect on mother’s training. Thus, null hypothesis is accepted and alternative hypothesis at least four time visit to a health facility is depended on training is rejected.

The fifth hypothesis is related to non formal/informal education. The null hypothesis is set as “there is no relation between recreational programs and at least 4 times visit to a health facility for ANC service”. The study findings support the null hypothesis and thus, reject alternative hypothesis and immunized the TT injection is depended on recreational program. The gross odds ratio for women who received recreational training is 2 (CI=1.34 -3.01). This is significantly higher when compared to odds ratio of those who have not received recreational training. But the net odds ratio has decreased and was not statistically different from the odds ratio for reference category. Thus, null hypothesis is accepted and alternative hypothesis at least four time visit to a health facility is depended on recreational program is rejected.

The sixth hypothesis is set as “there is no relation between the counseling and at least four times visit to a health facility for ANC services”. Both the gross and net odds ratio indicated that the effect of counseling on, at least, four times visit to a health facility for ANC services are not significant. As a consequence, the null hypothesis is accepted and the alternative hypothesis that at least four times visit to a health facility is depended on counseling program is rejected.

The seventh hypothesis was related with media exposure. This variable also has not significant net effect on the use of 4 ANC visits. Thus, the null hypothesis is accepted and the alternative hypothesis that at least four times visit to a health facility is depended on media exposure is rejected.

Table 63
Gross and Adjusted Odds Ratios to Measure the Effect of Educational Variables on the Use of Antenatal Care services

	Number of visiting for ANC Services					
	4 ANC Visit (OR, 95% CI)		Used Package(OR, 95% CI)		Immunized TT Injection(OR, 95% CI)	
	Gross	Net	Gross	Net	Gross	Net
Women's education						
Illiterate ®	1	1	1	1	1	1
Primary Level	1.84 (1.20-2.81)*	0.78 (0.40-1.53)	2.40 (1.56-3.69) *	2.59 (1.20-5.58)	1.18 (0.75-1.85)	0.90 (0.47-1.73)
SLC and Above	47.03 (6.27-352.53)*	21.10 (1.70-261.84)*	21.27 (4.93-91.88) *	17.99 (1.76-184.2)*	7.05 (1.63-30.53) *	2.88 (0.5-16.63)
Husband's education						
Illiterate ®	1	1	1	1	1	1
Primary Level	0.1 (0.05-0.21) *	1.79 (0.91-3.51)	0.12 (0.05-0.26) *	0.47 (0.22-1.00)	0.38 (0.17-0.83) *	1.29 (0.67-2.49)
SLC and Above	0.23 (0.11-0.45) *	2.74 (0.95-7.96)	0.16 (0.08-0.34) *	1.26 (0.37-4.29)	0.39 (0.19-0.82) *	1.68 (0.59-4.81)
Training						
No ®	1	1	1	1	1	1
Yes	4.13 (2.37-7.19) *	1.84 (0.89-3.81)	3.11 (1.81-5.39) *	1.33 (0.6-2.94)	1.36 (0.78-2.39)	0.81 (0.41-1.6)
Recreational program						
No ®	1	1	1	1	1	1
Yes	2.00 (1.34-3.01) *	1.0 (0.55-1.82)	1.59 (1.06-2.37) *	0.71 (0.36-1.42)	1.15 (0.74-1.78)	1.10 (0.61-1.99)
Counseling program						
No ®	1	1	1	1	1	1
Yes	1.12 (0.75 -1.68)	1.50 (0.80-2.82)	0.82 (0.55-1.23)	1.68 (0.84-3.38)	1.05 (0.68-1.63)	1.20 (0.67-2.14)
Media exposure						

	Number of visiting for ANC Services					
	4 ANC Visit (OR, 95% CI)		Used Package(OR, 95% CI)		Immunized TT Injection(OR, 95% CI)	
	Gross	Net	Gross	Net	Gross	Net
Not listen ®	1	1	1	1	1	**1**
Listen	0.34 (0.22-0.52)	0.96 (0.51-1.81)	0.37 (0.24-0.58)	0.64 (0.31-1.33)	0.82 (0.52-1.28)	1.23 (0.67-2.28)
Wealth status						
Poorest ®	1	1	1	1	1	1
Second	0.08 (0.04-0.14)*	3.14 (0.79-12.52)	0.10 (0.06-0.19)*	2.02 (0.38-10.57)	0.38 (0.21-0.69)*	2.54 (0.65-9.98)
Third	0.23 (0.08 -0.67)*	1.28 (0.6-2.73)	0.33 (0.11-0.97)*	1.13 (0.48-2.63)	0.75 (0.18-0.72)*	0.85 (0.41-1.77)
Fourth	0.16 (0.08- 0.32)*	2.43 (0.92-6.39)	0.23 (0.12-0.46)*	2.5 (0.72-8.63)	0.36 (0.34-1.72)	2.97 (1.13-7.8)
Richest	0.16 (0.08- 0.34)*	4.45 (1.86-10.65)*	0.29 (0.14-0.60)*	1.03 (0.38-2.78)	0.77(0.34-1.72)	1.38 (0.59-3.23)
Work status						
Agriculture ®	1	1	1	1	1	1
Non-agriculture	2.87 (1.85-4.44)*	1.25 (0.67-2.33)	3.38 (2.15-5.30)*	1.03 (0.53-2.02)	2.81 (1.68-4.71)*	1.34 (0.71-2.53)
Ethnicity						
Brahmins ®	1	1	1	1	1	1
Janajatis	0.89 (0.50-1.60)	0.76 (0.33-1.75)	0.89 (0.49-1.63)	0.48 (0.18-1.23)	0.79 (0.38-1.65)	0.31 (0.14-0.69)*
Dalit	0.35 (0.22-0.57)*	0.31 (0.08-1.21)	0.22 (0.13-0.37)*	0.79 (0.19-3.23)	0.23 (0.13-0.40)*	0.36 (0.11-1.19)
Others	0.21 (0.08-0.54)*	1.19(0.51-2.8)	0.57 (0.38- 1.65)	0.97 (0.35-2.69)	0.38 (0.15-0.97)*	0.98 (0.42-2.32)
Residence						
Rural ®	1	1	1	1	1	1

	Number of visiting for ANC Services					
	4 ANC Visit (OR, 95% CI)		Used Package(OR, 95% CI)		Immunized TT Injection(OR, 95% CI)	
	Gross	Net	Gross	Net	Gross	Net
Urban	0.47 (0.28-0.79)*	0.68 (0.32-1.45)	0.18 (0.10-0.35)*	0.18 (0.08-0.45)*	0.31 (0.18-0.51)*	0.51 (0.24-1.09)
Ecological zone						
Mountain ®	1	1	1	1	1	1
Hill	3.43 (1.48-7.98)*	0.13 (0.02-0.66)*	5.94 (2.47-14.27)*	0.10 (0.02-0.58)*	2.31 (1.03- 5.18)*	0.34 (0.1-1.13)
Terai	1.52 (0.66-3.53)*	1.69 (0.54-5.25)	1.84 (0.77-4.37)	2.34 (0.68-8.08)*	2.31 (1.03-5.17)*	1.66 (0.63-4.4)
Kathmandu valley						
Inside ®	1	1	1	1	1	1
Outside Kathmndu	6.29 (3.88-10.19)*	21.74 (5.35-88.35)*	15.90 (8.62-29.33)*	222.61 (43.41-1141.54)*	2.45 (1.48-4.11)*	3.44 (1.27-9.32)*

significant at 5%; ** = significant at 1%; * = significant at 0.1%, ®= reference group.*

Effect of Formal and Non-formal /Informal Education on Institutional Delivery

Table 64 depicts the gross and adjusted odds ratios to measure the effect of educational variables on the practice of institutional delivery and postnatal care services by respondents' background characteristics. This analysis was used to test the hypothesis related to the use of delivery care and post natal care services.

The eighth hypothesis is set as "there is no relation between mother's education and institutional delivery" The gross effect of women's education was significant. For example, OR for SLC and above education of women is about 22 (CI 7.13-64.93). That means the chance to deliver their baby in the institution by women who have passed SLC and above education as compared to those women who were illiterate was 22 times higher. After controlling the effect for all other independent variables the effect of mothers' education has been reduced from 21.52 (7.13-64.93) to 3 (CI=0.67-14.41) but it is not statistically significant. Thus, the hypothesis "there is no relation between women's formal education and institutional delivery" is accepted.

The ninth hypothesis of this study was related with training and the use of institutional delivery and PNC services. The study established a null hypothesis that "there is no relation between the training and the use of institutional delivery". The gross effect was significant (OR=3, CI= 1.78- 4.89) but the net effect has been reduced and is not significant (OR=1.16, CI =0.58 – 2.33). The null hypothesis is accepted and the alternative hypothesis that institutional delivery is depended on training of women is rejected.

The tenth hypothesis of this study is set as "there is no relation between recreational program and the use of institutional delivery" The gross effect was significant (OR=2.23 CI=1.45-3.44), but the net effect has been reduced and is not

significant (OR=1.61, CI=0.86=3.02).The null hypothesis is accepted and the alternative hypothesis that institutional delivery is depended on training of women is rejected.

The eleventh hypothesis is set as, “there is no relation between women’s counseling program and the use of institutional delivery”. The gross effect and net effect did not find significance relationship between the women’s counseling program and the use of institutional delivery. The odds ratio was (OR=0.72,CI=0.47-1.09) but increased odds ratio to 1.06 (CI= 0.54-2.05) though the study found non-significant relationship between counseling program and the use of institutional delivery. Therefore, the null hypothesis is accepted and the alternative hypothesis that institutional delivery is depended on counseling program is rejected.

The twelve hypotheses are set as, “there is no relation between women’s media exposure program and the use of institutional delivery. The gross effect was significance (OR=0.31, CI=0.19-0.50) but, the net effect has been increased to OR 0.75 (CI=0.37-1.55) there was no significance relationship between media exposure and the use of institutional delivery. Therefore, the null hypothesis is accepted and the alternative hypothesis that institutional delivery is depended on media exposure is rejected.

Effects of Formal and Non-formal /Informal Education on Postnatal Care

The thirteenth hypothesis of the study that “there is no relation between women’s formal education and the visit to a health facility for PNC services” was tested to explore the influence of mother’s education on postnatal care services. Both the gross and net effects found significant relationship between women’s education and the visit to PNC services. The net OR increased indicates that gross effect was

confounded negatively. The gross odds ratio for women with SLC and above was 3.98 (CI=1.46-10.84) while to the net OR has increased to 11.19 (CI=2.02-61.94, see, Table 63). Because of this the null hypothesis is rejected and alternative hypothesis that "visit to health facility for PNC check up is depended on women's formal education" is accepted.

The fourteenth hypothesis of this study was "there is no relation between the training and the visit to health facility for postnatal care". The gross OR showed that there is a significant effect of training on the use of PNC services but the net effect does not support this. Thus, the null hypothesis was accepted and alternative hypothesis was rejected (Table 64).

Moreover, there is no significant relation between participation in recreational program and the visits to a health facility for PNC check up was the fifteenth hypothesis of this study. The gross odds ratio for women who participated in counseling program was 2.56 times (CI= 1.67-3.91. The net odds ratio for women who participated in recreational program was 2.09 times (CI=1.1-3.98) that means about 2 times greater chance to visit postnatal care as compared with those women who did not participate in recreational program. These odds ratio has decreased from 2.56 to 2.09 which indicates that single recreational program was not influencing other confounded factors were influencing on postnatal visit. Therefore, the null hypothesis is rejected; the alternative hypothesis that PNC visit is affected by the participation on recreational program is accepted.

The sixteenth hypothesis was set as, "there is no relation between participation in counseling program and postnatal care''. The gross odds ratio for women with who participated in counseling program was 1.00 (CI=0.66-1.52). The net odds ratio was 0.73 (CI=0.37-1.4) women with who participated in counseling program .The odds

ratio is declined from 1.00 to 0.73 and that indicates that PNC visit to a health facility was confounded by other factors . Thus, the null hypothesis accepted and PNC visit is depended on the counseling is rejected.

The seventeenth hypothesis set of this study was “there is no relation between media exposure and PNC services. The gross odds ratio for those women who listen radio/ TV was 0.55 (CR= 0.36-0.84) while the net odds ratio increase to 1.12 (CR=0.56-2.21) though the study found non-significant relationship between media exposure and postnatal visit. Thus, the null hypothesis is accepted and alternative hypothesis postnatal visit is depended on media exposure is rejected (see Table 64).

It should be noticed that in total 17 different hypotheses were tested. Out of them 13 null hypothesis were accepted and 4 null hypothesis were rejected. Among the variables tested, mothers’ formal education was the strongest predicators of at least 4 times visiting to a health facility for ANC, use package of ANC and visit postnatal care services. Moreover, recreational program was strongest predictors for postnatal visit. Other variables related with non-formal/informal education were not important predictors for maternity care.

Table 64
Gross and Adjusted Odds Ratios to Measure the Effect of Educational Variables on the Use of Institutional Delivery and PNC Services

	Delivery care		PNC Care					
	Institutional Delivery [OR, 95% CI]		PNC Visit [OR, 95% CI]		Visit Doctor [OR, 95% CI]		BCG injection [OR, 95% CI]	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Women's education								
Illiterate ®	1	1	1	1	1	1	1	1
Primary Level	2.10 (1.32-3.32)*	0.87 (0.43-1.75)	1.48 (0.96-2.28)	1.54 (0.76-3.15)	1.58 (0.93-2.69)	0.79 (0.33-1.88)	1.46 (0.90-2.36)	0.77 (0.39-1.51)
SLC and Above	21.52 (7.13-64.93)*	3.10 (0.67-14.41)	3.98 (1.46-10.84)*	11.19 (2.02-61.94)*	6.01 (0.27-13.56)	1.05 (0.25-4.45)	4.59 (2.07 - 0.20)	1.54 (0.48-4.98)
Husband's education								
Illiterate ®	1	1	1	1	1	1	1	1
Primary Level	0.08 (0.04-.0.17)*	1.23 (0.55-2.73)	. 0.59 (.0.31-1.14)	0.98 (0.48-2.01)	0.21 (0.10-0.45)	0.42 (0.14-1.22)	0.37 (0.18-0.74)	0.85 (0.41-1.78)
SLC and Above	0.19 (0.10-0.36)*	2.46 (0.85-7.13)	0.78 (0.43-1.41)	0.27 (0.09-0.82)*	0.33 (0.18-0.59)*	0.66 (0.18-2.42)	0.54 (0.30-0.96)*	0.79 (0.28-2.21)
Training								
No®	1	1	1	1	1	1	1	1
Yes	2.95 (1.78-4.89)*	1.16 (0.58-2.33)	3.03 (1.67 -5.48)*	1.20 (0.56-2.57)	2.04 (1.18-3.53)*	1.05 (0.49-2.29)	1.65 (0.98-2.78)	1.28 (0.67-2.46)
Recreational program								
No ®	1	1	1	1	1	1	1	1

	Delivery care				PNC Care			
	Institutional Delivery [OR, 95% CI]		PNC Visit [OR, 95% CI]		Visit Doctor [OR, 95% CI]		BCG injection [OR, 95% CI]	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Yes	2.23 (1.45-3.44)*	1.61 (0.86-3.02)	2.56 (1.67-3.91)*	2.09 (1.1-3.98)	1.95 (1.19-3.22)*	1.64 (0.78-3.42)	1.12 (0.72-1.75)	1.12 (0.63-1.99)
Counseling program								
No ®	1	1	1	1	1	1	1	1
Yes	0.72 (0.47-1.09)	1.06 (0.54-2.05)	1.00 (0.66-1.52)	0.73 (0.37-1.4)	0.44 (0.27-0.71)	0.95 (0.44-2.08)	0.83 (0.53-131)	1.22 (0.69-2.16)
Media exposure								
Not listen ®	1	1	1	1	1	1	1	1
Listen	0.31 (0.19-0.50)	0.75 (0.37-1.55)	0.55 (0.36-0.84)	1.12 (0.56-2.21)	0.44 (0.26-0.77)	0.65 (0.25-1.68)	0.44 (0.26-0.77)	1.72 (0.88-3.35)
Wealth status								
Poorest ®	1	1	1	1	1-	1	1	1
Second	0.07 (0.04-0.14)*	1.6 (0.42-6.72)	0.07 (0.12-0.39)*	2.77 (0.49-15.49)	0.09 (0.04-0.19)*	9.43 (1.77-50.12)	0.28 (0.15-0.51)*	3.37 (0.96-11.87)
Third	0.27 (0.09-0.78)*	1.35 (0.55-3.31)	0.27 (0.10-0.91)*	1.2 (0.54-2.66)	0.93 (0.33-2.62)	1.61 (0.44-5.87)	1.08 (0.38-3.07)*	2.46 (1.02-5.94)
Fourth	0.19 (0.10-0.37)*	1.69 (0.61-4.68)	0.19 (0.22-0.91)*	1.49 (0.45-4.88)	0.22 (0.10-0.48)	2. (0.54-7.47)	0.52 (0.26-1.02)	2.9 (1.13-7.43)
Richest	0.26	2.36	0.26	2.14	0.44	2.28	0.97	3.07

	Delivery care				PNC Care			
	Institutional Delivery [OR, 95% CI]		PNC Visit [OR, 95% CI]		Visit Doctor [OR, 95% CI]		BCG injection [OR, 95% CI]	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
	(0.13-0.52)*	(0.94-5.91)	(0.09-0.39*	(0.82-5.59)	(0.21-0.92)*	(0.67-7.73)	(0.49-1.91)	(1.21-7.82)*
Work status								
Agriculture ®	1	1	1	1	1	1	1	1
Non-agriculture	3.60 (2.30-5.62)*	1.53 (0.81-2.9)	2.06 (1.31-3.24)*	0.73 (0.37-1.43)	3.24 (4.62-2.77)*	1.58 (0.75-3.33)	2.25 (1.42-3.56)*	1.74 (0.97-3.13)
Ethnicity								
Brahmins ®	1	1	1	1	1	1	1	1
Janajatis	1.36 (0.77-2.40)	0.5 (0.22-1.14)	0.44 (0.24-0.62)	1.11 (0.47-2.65)	0.29 (0.14-0.58)	1.47 (0.51-4.19)	2.61 (1.44-4.73)	0.35 (0.17-0.72)*
Dalit	0.27 (0.16-0.47)*	0.48 (0.12-1.89)	0.32 (0.19-0.54)*	2.36 (0.61-9.11)	0.29 (0.08-1.07)	1.19 (0.22-6.48)	0.51 (0.29-0.92)*	0.95 (0.32-2.81)
Others	0.34 (0.13- 0.90)*	0.73 (0.32-1.64)	0.75 (0.30-1.89)	2.2 (0.88-5.52)	1.15 (0.62-2.12)	1.17 (0.5-2.77)	1.57 (0.66-3.78)	0.41 (0.2-0.81)*
Residence								
Rural ®	1	1	1	1	1	1	1	1
Urban	0.31 (0.18-0.51)*	0.39 (0.19-0.82)*	0.39 (0.22-0.69)*	0.57 (0.24-1.32)	0.21 (0.12-0.36)*	0.12 (0.05-0.3)*	0.97 (0.31-0.89)*	0.76 (0.4-1.47)
Ecological zone								
Mountain ®	1	1	1	1	1	1	1	1

	Delivery care				PNC Care			
	Institutional Delivery [OR, 95% CI]		PNC Visit [OR, 95% CI]		Visit Doctor [OR, 95% CI]		BCG injection [OR, 95% CI]	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Hill	5.45 (1.99- 14.95)*	0.51 (0.1-2.74)	26.08 (6.16-116.34)*	0.70 (0.09-5.23)	19.49 (2.59-1.46)*	3.0 (0.2-45.49)	3.11 (131-8.55)*	2.44 (0.65-9.23)
Terai	5.45 (1.99-14.95)*	1.33 (0.35-5.04)*	26.08 (6.00-113-48)*	27.64 (5.61-136.24)*	1.98 (0.25-15.80)	3.11 (0.32-30.51)	1.10 (0.39-3.10)	0.98 0.3-3.17
Kathmandu valley								
Outside ®	1	1	1	1	1	1	1	1
Inside	9.15 (5.63-14.86)*	9.48 (2.69-33.45)*	5.93 (3.44-10.24)*	89.01 (19.44-407.62)*	18.02 (9.65-33.68)*	19.46 (3.46-109.56) *	2.16 (1.36-3.42)*	0.60 (0.23-1.53)

***significant at 5%; ** = significant at 1%; *** = significant at 0.1%, ®= reference group.*

Effects of Socio -economic Variable on the Use of ANC Services

Table 63 also presents the gross and net effect of socio-economic variables such as, wealth, work status, ethnicity and the place of residence (rural and urban, ecological zones and the Kathmandu Valley) on maternity care. This analysis will help to explore the net effect of these variables even after controlling the effect of education. In total, six hypotheses related to the variables from the socio-economic cluster were tested.

The first hypothesis set in this section is "there is no relation between wealth and at least four times visiting for ANC services". At least 4 ANC visits to a health facility vary by the income of respondents. Taking the poorest category as reference category, the gross odds ratio for the rich category is 0.16 (CI=0.08-0.34, see Table 63). That means rich women are less likely to visit a health facility for ANC checkup as compared to those women from the poorest quintile. On the other hand, while controlling all variables the effects the net OR increased to 4.45 (CI=1.86-10.65, see Table 63). This indicates that effect of wealth status was confounded by many other factors and the gross effect was seen negative. Thus, the null hypothesis was rejected, and the alternative hypothesis that at least four ANC visit is depended on income of the respondent is accepted. This result indicates that not only the wealth is the major determinant for ANC visit, but also other socio-economic factors which are controlled in this analysis plays an important role for such visits.

The second hypothesis is related to the place of residence. The null hypothesis was "there are no differences in at least 4 ANC visit among the women in the Kathmandu Valley and outside it". The gross odds ratio for women in Kathmandu is 6.29 (CI= 3.88-10.19, see Table 62). That means women residing in the Kathmandu

Valley have almost 6 times higher chance of, at least 4 ANC visits compared to women outside the Kathmandu Valley. Moreover, while controlling the effect of other variables, the net OR has increased to 21.74 (CI=5.35-88. 35 see Table 62), indicating a very powerful predictor of the 4 times ANC visits. Because the null hypothesis was rejected and the alternative hypothesis that at least 4 ANC visits services is depended on the place of residence is accepted.

Effects of Socio -economic Variable on Institutional Delivery

The third hypothesis was related to institutional delivery. The null hypothesis set is: "there is no difference between wealth status and institutional delivery" The gross effect of women's wealth was significant. For example, OR for women is about 0.26 (CI= 0.13-0.52, see Table 40). That means the chance of institutional delivery by women who were in the rich category as compared to those women who was in the rich category. After controlling the effect for all other independent variables effects of mother's wealth status increased to 2.36 (CI= 0.94-5.91, see Table 63), The result shows that mother's economic condition has a positive impact on delivery care, however, the result is not statistically significant. Thus, the null hypothesis is accepted and an alternative hypothesis the use of institutional delivery is depended on wealth status is rejected.

The fourth hypothesis set was "there is no relationship between the place of residence (the Kathmandu Valley) and institutional delivery". Both the gross and the net effects found significant relationship between the women inside and outside the Kathmandu Valley. The net increase in odds ratio indicates that the gross effect was confounded negatively. The gross odds ratio for women inside the Kathmandu Valley

was about 9.15(CI= 5.63-14.86, Table 63). That means the chance of delivering their babies in the institution that had residence inside the Kathmandu Valley was 9.15 times higher as compared to those women who resided outside the Kathmandu Valley. After controlling the effect for all other independent variables, the effect of mothers' among Kathmandu slightly increased to 9.48 (CI=0.67-14.41) and found statistically significant. Thus, the null hypothesis is rejected and alternative hypothesis that the institutional delivery depends on the place of residence in the Kathmandu Valley is accepted.

Effects of Socio -economic Variable on Postnatal Care

The fifth hypothesis was related with postnatal care. The null hypothesis set is "there is no difference between wealth status to do postnatal visit." The gross effect of women's wealth was significant. For example, OR for women with richest quintile is 0.26 (CI= 0.13-0.52, see Table 63). That means the chance of delivering their baby in the institution by women in the rich category as compared to those in the poor category. After controlling the effect for all other independent variables, the effect of mother's wealth status has increased to 2.14 (CI= 0.94-5.91, see Table 63), but it is not statistically significant. Thus, the null hypothesis is accepted and alternative hypothesis postnatal care is depended on wealth status is rejected.

The sixth hypothesis was related to the place of residence. The null hypothesis set is "there are no differences in PNC visits among the women in the Kathmandu Valley and outside the Kathmandu Valley". The gross odds ratio for women in the Kathmandu is 5.93 (CI= 3.44-10.24, see, Table 63). That means women residing in the Kathmandu Valley had about 5.93 times higher chances for PNC visit as

compared to the women outside the Kathmandu Valley. After controlling all other socio economic variables, the effect of other variables, the net OR has increased to 89.01 (CI=19.44-407, see Table 63), indicating very powerful predictors for the variable the Kathmandu Valley. Because the null hypothesis was rejected and alternative hypothesis PNC is dependent and the place of residence inside the Kathmandu Valley was accepted.

Finally, the seventh hypothesis was related to Immunized BCG injection. The null hypothesis set is "there are no differences in immunized BCG injection among the newborn child inside and outside the Kathmandu Valley". The odds ratio of immunizing BCG injection for newborn child is 2.16 (CI=1.36 -3.42 see Table 63). That means women who reside in Kathmandu Valley had 2.16 higher chance of immunizing their children by BCG injection to her newborn child as compared to those women who reside outside Kathmandu. After controlling all variables other than the Kathmandu Valley the gross effect was declined to 0.60 times (CI=0.23 -1.53. see Table, 0.23-1.53) and did not find significant difference in the use of immunized BCG injection. This indicates that the variable the Kathmandu Valley was not predicators for PNC services. This was because most MCHW involved providing BCG injection, especially in rural areas and thus significant relationship did not find between these variables. Thus, the null hypothesis, there is no relation among the women who immunized BCG injection for their newborn child inside the Kathmandu Valley was true.

It should be noticed that in total 7 different hypotheses were tested. Out of them 5 were accepted and 2 were rejected. Among the variables tested women who reside in the Kathmandu Valley was strongest predicators of at least 4 times visiting to a health facility for ANC, the use package of ANC, institutional delivery, and the

visit to the postnatal care services, visit doctor but it was not the strongest predicators for immunized BCG injection for new born child. Perhaps, BCG injection service was provided by paramedical staffs which were access in each VDC of Nepal.

Effect of Intermediate Variable on the Use of ANC Services

Table 65 presents the gross and net effects of intermediate related variables like the age of mother at child birth, the total number of children, visiting to the health facility for other medical problems, the heard ,the use of family planning, cost coping strategy for maternity care and the distance to a health facility for antenatal care. This analysis will help to explore the net effect of these variables even after controlling the effect of intermediate variables. In total, twelve hypotheses related to the variables from the intermediate were tested.

The first hypothesis set in this section was "there is no relation among the age of women at child birth and at least 4 times visiting to a health facility for ANC services." The gross odds ratio for the women of age group more than 30 years is 0.41(0.25-0.68). That means the women of this category were less likely to visit a health facility for ANC checkup as compared to those women who were < 25 years. While , controlling all intermediate variables other than the age of mother at child birth the effect was increased to 0.83 (CI= 0.40 -1.69) but did not find significant relation between mother's age at child birth and at least 4 times visit for ANC checkup. Thus, the study accepted null hypothesis "there is no relation between the age of mother at child birth and at least 4 times visit to a health facility for ANC care".

The second hypothesis set in this section is "there is no relation between the number of children and at least 4 times ANC visits". The gross odds ratio for with the category more than 3 children is 0.23 (CI=0.13-0.42). That means women more than 3 children were less likely to visit facility 4 times to a health facility for ANC care as compared to those women who had 1 to 2 children. While controlling all variables the net effect OR was increased to 0.39 (CI= 0.18-0.88) and found significant relationship between these two variables. Thus, the null hypothesis "there is no relationship between the number of children and at least four times visiting to a health facility for ANC services rejected". This result indicates that having more children causes less possibility to have 4 ANC visit, controlling variables may have slightly positive impact on 4^{th} ANC visit. More children will get born in higher ages, so that the women might be reluctant to do such visit due to their past experience of childbearing.

Third hypothesis was related to the utilization of available health care services for maternity care. The hypothesis is set as "there is no relation between the uses of available health services for other medical problems and at least four times visiting for ANC services" The gross OR with category women of sometime visitors is 3.84 (CI=1.62-9.07), the odds ratio for women in frequently visited category increases to 7.62 (CI=2.85-20.35) the dependent variables, at least, 4 times visit to a health facility for ANC service as compared to those women who were never visited to a health facility. This indicates the positive relationship between the use of available health service for other medical problems and at least 4 times visiting to a health service for ANC services. While controlling all intermediate variables other than this variable, the effects of this variable has reduced to 2.72 times (CI=1.05-7.03) women with sometime visitor and 4.47 times (CI=1.48-13.51) women with frequent visitors

as compared to that reference group (never visitors). This indicates that other multiple factors rather than visiting to a health facility for other medical problems are influencing at least 4 times visiting to a health facility for ANC check up. Thus, the null hypothesis there is no relation between the uses of available health services for other medical problems and at least, 4 times visiting for ANC services is rejected.

The fourth hypothesis set was related with an access of health services for maternity care. The hypothesis is set as "there is no relation between traveling time to a health facility and at least 4 times visiting to a health facility for ANC services". The gross OR presented that the women travelled more than 30 minutes is 0.10 times (CI=0.05 -0.19). That means women from that category is less likely visited at least four times for ANC services than those women who travelled less than 30 minutes. While controlling all variables, the effect of travelling time women with that category increased to 0.13 (0.06-0.25). This indicates that women from more than 30 minutes are less likely visited at least four times for ANC services. Therefore, the null hypothesis is rejected and at least 4 times visit to a health facility for ANC services is depended on the distance of a health facility was accepted.

Table 65.
Gross and Adjusted Odds Ratios to Measure the Effect of Reproductive Behavior, Access to and Utilization of Health Service on the Use of ANC services.

	Antenatal care					
	ANC Visit (OR, 95% CI)		Package (OR, 95% CI)		TT Injection (OR, 95% CI)	
	Gross	Net	Gross	Net	Gross	Net
Age of mother at child birth						
<25 Years®	1	1	1	1	1	1
25 to 29 Years	0.83 (0.49-1.41)	1.20 (0.62-2.31)	0.81 (0.48-1.37)	1.08 (0.55-2.13)	1.43 (0.77-264)	2.09 (1.00-4.38)
>30 Years	0.41 (0.25-0.68)*	0.83 (0.40-1.69)	0.47 (0.29-.0.77)*	0.81 (0.39-1.67)	0.63 (0.38-1.05)	1.41 (0.67-3.02)
Total number of children						
1to 2 Children®	1	1	1	1	1	1
3 Children	0.47 (0.26-0.83)*	0.46 (0.23-0.94)*	0.49 (0.28-0.86)*	0.54 (0.26-1.10)	0.40 (0.22-0.72)*	0.39 (0.18-0.75)*
>3 Children	0.23 (0.13-0.42)*	0.39 (0.18-0.88)*	0.34 (0.20-059)*	0.75 (0.34-1.65)	0.37 (0.21-0.65)*	0.37 (0.16-0.83)
Visiting to the health facility for other medical problem						
Never ®	1	1	1	1	1	1
Sometimes	3.84 (1.62-9.07)	2.72 (1.05-7.03)*	2.87 (1.33-6.20)*	2.02 (0.85-0.84) *	2.71 (1.33-5.51)*	3.54 (1.55-8.08) *
Frequently	7.62 (2.85-20.35)	4.47 (1.48-13.51)*	4.43 (1.80-90.91)*	2.44 (0.86-6.94)	2.98 (1.24-7.14)*	3.68 (1.33-10.23)
Heard about family planning						
No ®	1	1	1	1	1	1
Yes	0.21	0.50	0.21	3.16	0.96	2.06

	Antenatal care					
	ANC Visit (OR, 95% CI)		Package (OR, 95% CI)		TT Injection (OR, 95% CI)	
	Gross	Net	Gross	Net	Gross	Net
	(0.12-0.36)*	(0.25-1.00)	(0.12-0.36)*	(1.57-6.36)*	(0.57-1.60)	(1.02-4.13)
Use of the family planning						
No ®****	1	1	1	1	1	1
Yes	0.34 (0.22-0.51)*	0.56 (0.33-0.96)*	0.48 (0.32-0.72)*	1.00 (0.58-1.74)	0.70 (0.45-1.09)	0.74 (0.43-1.28)
Cost coping strategy for maternity care						
Borrow ®	1	1	1	1	1	1
Self Manage	1.54 (0.97-2.54)	0.92 (0.54-1.59)	2.54 (1.58-4.07)*	1.93 (1.11-3.34) *	2.99 (1.85-4.82)*	2.54 (1.50-4.31)
Distance to the nearest health facility						
<30 minutes ®	1	1	1	1	1	1
30 minutes	0.21 ((0.12-0.39)*	0.31 (0.16-0.58) *	0.11 (0.05-0.23)*	0.15 (0.07-0.33) *	0.48 (0.25-0.93)*	0.26 (0.13-0.54) *
> 30 minutes	0.10 (0.05-0.19)*	0.13 (0.06- 0.25)*	0.04 (0.02-0.10)*	0.06 (0.24-0.13) *	0.22 (0.11-0.44)*	0.26 (0.13-0.54)*

*Note: Significant at 0.05 % level. ® =reference group,**** Among the respondent* who said *no , the non-applicable group are also included .*

Effect of Intermediate Variable on Institutional Delivery

Table 66 presents the gross and net effects of intermediate related variables like the age of mother at child birth, the total number of children, visiting to the health facility for other medical problems, the heard, the use of family planning, cost coping strategy for maternity care and the distance to a health facility for institutional delivery to postnatal care.

The fifth, hypothesis was related with the institutional delivery. The hypothesis set is "there is no relation between the age of the mother at child birth and the institutional delivery". The gross odds ratio for the women with the category more than 30 years is 0.47 (CI= 0.27-0.81). That means mothers' age those who were more than 30 years less likely visited to the institutional delivery than did women less than 25 years. After controlling all intermediate variables, the effect of the net OR was increased to 1.46 (CI= 0.66 -3.21) but, it is not statistically significant. Thus, there is no relation between the age of the mother at child birth and the institutional delivery however; socio economic variables may cause positive impact on it.

The sixth hypothesis is set as "there is no relation between the number of children and the institutional delivery" .The gross odds ratio of the women with more than 3 children was 0.26 (CI=0.14-0.52). That means the women with more than three children is less likely to use the institutional delivery than those women who have 1 to 2 children. While controlling all variables others than number of children the effect of the net OR has increased 0.39 times (CI=0.16-0.94) less likely practiced the institutional delivery as compared to women 1 to 2 children. Thus, the null hypothesis there is no relation between the number of children and institutional delivery rejected and alternative hypothesis institutional delivery is depended on the number of

children was accepted. The seventh hypothesis is set as “there is no relation between the use of available health services for other medical problems and the use of institutional delivery”. The gross OR presented women with frequent visitors for other medical problems category was 3.18 (CI= 1.20-0.8.38). This means that women who frequently visited for other medical problem used institutional delivery as compared to those women who belonged to never visiting category. After controlling all variables other than this variable, the effect has reduced and did not find significant relationship between the use of available health services for other medical problems and institutional delivery. This indicates that institutional delivery is confounded other multiple variables. Therefore, the null hypothesis is accepted and the use of institutional delivery is depended on visiting to a health facility for other medical problems are rejected.

The eighth hypothesis is set as, “there is no relation between the distance to the health facility and institutional delivery”. The study found that there is negative relationship between the distance to the health facility and the institutional delivery. The gross OR presented women with 30 minutes category is 0.15 times (CI= 0.09-0.27,) and this has reduced to 0.12 (CI= 0.06-0.022) women with more than 30 minutes. This indicates that longer the distance of the health facility is lower the use of the institutional delivery. After controlling all intermediate variables other than the distance to a health facility, the net effect showed the negative relationship between travelling time to a health facility and the use of institutional delivery. Thus, the null hypothesis is rejected and the use of institutional delivery is depended on the distance to the health facility is accepted.

Effect of Intermediate Variable on Postnatal Care

The ninth hypothesis is set as "there is no relation between the age of mother at child birth and PNC visit". The OR presented the women aged more than 30 years category is 0.57(CR=0.35-0.94). That means that women aged more than 30 years is less likely to visit a health facility, for postnatal care as compared to women less than 25 years. While as, controlling this variable with other variables than that variable OR the net effect has increased to 0.92 (CI=0.46-1.85) but did not find significant relationship between these variables. This indicates that the age of mother at child birth is confounded by other multiple factors. Thus the null hypothesis was true and the alternative hypothesis postnatal care visit is depended on the distance to the health facility was false.

The tenth hypothesis is set as, "there is no relation between the number of children and PNC visit". The gross OR presented that the women with more than three children was 0.31 (CI= 10.18-0.54). That means that women with more than 3 children have less likely visited to health facility for postnatal care as compared with the women have 1 to 2 children. While controlling all intermediate variables other than this variable the net OR (odds ratio) has increased to 0.44 (CI =0.21-0.93) and indicates that women more than three children less likely visited to a health facility for PNC checkup than that women with 1 to 2 children category. This indicates that PNC visit is confounded by other multiple factors .Thus, null hypothesis is rejected and alternative hypothesis postnatal care visited in the number of children is accepted.

The eleventh, hypothesis was related with the use of available health services for other medical problems. The hypothesis is set as "there is no relation between the women who used available health services for other medical problems and for PNC visit. The gross odds ratio presents that the women who frequently visited to a health facility for other medical problems category is 3.07 (CI=1.30-9.07). That means the

women with frequent visitors to a health facility for other medical problems were more likely visited to a health facility for PNC checkup as compared to those women who did not visit to a health facility for other medical problems. On the other hand, while controlling all intermediate variables other than this variable, the net effect of OR has reduced to 1.75 (CI= 0.65- 4.72). That indicates that postnatal care is confounded by other multiple factors other than the use of available health care services for other medical problems. Therefore, accepted the null hypothesis and alternative hypothesis postnatal care visit is depended on the use of the available health services for other medical problems rejected.

The twelfth hypothesis is set as, "there is no relation between the nearest distance to a health facility and PNC visit. The gross OR presents that the women travelled more than 30 minutes category is 0.12 (CI=0.06 - 0.22). That means the chance visit for PNC is less likely for PNC services as compared to those women who travelled less than 30 minutes. After controlling all intermediate variables other than that variable, the net effects of OR slightly increased to 0.16 (CI=0.08-0.31) and indicates that the nearest distance to a health facility is most important predicators for PNC. Thus, null hypothesis rejected and postnatal care is depended on the nearest distance of a health facility was accepted.

It should be noticed that in total 7 different hypotheses were tested. Out of them 5 were accepted and 2 were rejected. Among the variables tested woman who resides in the Kathmandu Valley was the strongest predicator; of at least, four times visiting to a health facility for ANC, the used package of ANC, the institutional delivery, and the visit doctor but it was not the strongest predicator for immunized BCG injection for new born child. Perhaps, BCG injection service was provided by paramedical staffs that were access in each VDC of Nepal.

Table 66
Gross and Adjusted Odds Ratios to Measure the Effect of Reproductive Behavior, Access to and Utilization of Health Service on Institutional Delivery to Postnatal Care

	Delivery care		PNC					
	Institutional Delivery (OR, 95% CI)		Visit PNC (OR, 95% CI)		Visit Doctors (OR, 95% CI)		BCG Injection (OR, 95% CI)	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Age of mother at child birth								
<25 Years ®	1	1	1	1	1	1	1	1
25 to 29 Years	089 (0.52-1.52)	1.71 (0.86-3.40)	0.81 (0.47-1.38)	0.97 (0.51-1.87)	0.96 (0.52-1.78)	2.00 (0.90-4.45)	0.91 (0.51-1.62)	1.23 (0.64-2.35)
>30 Years	0.47 (0.27-0.81)*	1.46 (0.66-3.21)	0.57 (0.35-0.94)*	0.92 (0.46-1.85)	0.59 (0.31-1.12)	2.88 (1.15-7.24)*	0.82 (0.49-1.42)	1.56 (0.75-3.22)
Total number of children								
1 to 2 Children ®	1	1	1	1	1	1	1	1
3 Children	0.25 (0.12-0.52)*	0.20 (0.08-0.48)*	0.73 (0.41-1.29)	0.77 (0.39-1.52)*	0.37 (0.17-0.82)*	0.28 (0.11-0.76)*	0.47 (0.23-0.94)	0.45 (0.21-1.00)
>3 Children	0.26 (0.14-0.52)*	0.39 (0.16-0.94)*	0.31 (0.18-0.54)*	0.44 (0.21-0.93)	0.11 (0.03-0.36)*	0.12 (0.03-0.48)*	0.58 (0.31-1.09)	0.63 (0.28-1.43)
Visiting to the health facility for other medical problem								
Never ®	1	1	1	1	1	1	1	1
Sometimes	2.10 (0.88-4.97)	1.04 (0.40-2.70)	2.58 (1.26-5.28)*	1.91 (0.85-4.31)	10.31 (1.38-76-72)	4.63 (0.57-37.44)	1.23 (0.54-2.83)	1.12 (0.46-2.72)
Frequently	3.18	1.31	3.07	1.75	12.09	4.36	1.90	1.73

	Delivery care		PNC					
	Institutional Delivery (OR, 95% CI)		Visit PNC (OR, 95% CI)		Visit Doctors (OR, 95% CI)		BCG Injection (OR, 95% CI)	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
	(1.20-8.38)*	(0.43-3.95)	(1.30-7.28)	(0.65-4.72)	(1.53-95.69)	(0.49-38.75)	(0.74-4.90)	(0.61-4.91)
Heard about family planning								
No ®	1	1	1	1	1	1	1	1
Yes	0.23(0.12-0.44)	2.90 (1.30-6.45)*	0.27 (0.16-0.44)*	0.53 (0.28- 1.00	0.13 (0.08-0.36)*	0.25 (0.08-0.81)*	0.83 (0.48-1.43)	1.02 (0.51-2.02)
Use of the family planning								
No ®****	1	1	1	1	1	1	1	1
Yes	0.48 (0.31-0.74)*	0.88 (0.51-1.52)	0.37 (0.24-0.59)*	0.60 (0.35-1.01)	0.44 (0.27-0.72)	0.96 (0.51-1.79)	0.97 (0.62-1.51)	1.19 (0.70-2.03)
Cost coping strategy for maternity care								
Borrow®	1	1	1	1	1	1	1	1
Self -Manage	2.64 (1.53-4.56)*	1.70 (0.93-3.12)	0.31 (0.82-2.08)	0.91 (0.53-1.55)	4.94 (2.20-11.13)	3.27 (1.35-7.94)*	2.48 (1.37-4.46)	2.06 (1.11-3.82)
Distance to the nearest health facility								
<30 minutes ®	1	1	1	1	1	1	1	1
30 minutes	0.15 (0.09-0.27)*	0.19 (0.10-0.35)*	0.40 (0.21-0.74)	0.58 (0.30-1.12) *	0.14 (0.08-0.26)	0.20 (0.10-0.39)*	0.49 (0.29-0.84)	0.55 (0.31-0.98) *
> 30 minutes	0.12 (0.06-0.22)*	0.16 (0.08-0.31)*	0.15 (0.08-0.28)*	0.20 (0.10-0.39)*	0.08 (0.04-0.17)	0.11 (0.05-0.26)*	0.41 (0.23-0.75)	0.46 (0.24-0.86)

Note: Significant at 0.05 % level. ® =reference group, **** *Among the respondent* who said *no , the non-applicable group are also included* .

Effect of New Variables Generated on Maternity Care.

Introduction

It was generally believed that empowerment, equity, satisfaction, a plan for maternity care, and the responsibility of an individual, household head, and the service providers play a significant role to increase maternity care and reduce the symptoms of pregnancy complication and ultimately reduce the poverty by utilizing the available health care services. By looking at the Pearson correlation, the study confirmed that all new generated variables exist independent and therefore viable to observe both the gross and net effects on all dependent variables.

As mentioned earlier, as of 14, only 6 items or variables were selected for hypothesis testing and all together, 17 items were hypothesis tested. Tables 66 and 67 presented the gross and adjusted odds ratios to measure the effect of empowerment, equity, satisfaction, the plan for maternity care and the responsibility of an individual, household head, and the service providers on maternity care. The analysis was presented dividing on antenatal, delivery and postnatal care.

Effect of New Variables Generated on Antenatal Care.

The first hypothesis of the new generated variables was "There is no relationship between the shopping power of the pregnant women and at least four times visiting to a health facility for ANC". The gross odd ratio for shopping power was 0.23 (CI = 0.14 – 0.39). This means the women with higher shopping power were less likely to make at least four ANC visits to the health facility as compared to women with lower shopping power. After controlling with all variables / items, the net effect of this item /variables had increased to 0.41 times (CI=0.21-0.78) less likely to visits at least 4 times for ANC services as compared to those women who

have lower status in shopping power. It indicates that there was confounding effect by other items. There is no relationship between the shopping power of the pregnant women and at least four times visit to a health facility for ANC, hence the hypothesis was rejected.

The second hypothesis was related to the way of dealing with the pregnant women by service providers. The hypothesis was set as "there is no relation between the ways of dealing with the pregnant women by service providers and at least 4 times visit to a health facility for ANC services". The gross odds ratio of women with higher status in the way of dealing to pregnant women by service provider was 0.27(CI= 0.18-0.42). That means that the women who have higher status in the way of dealing with the pregnant women by service providers has less chance to visit health facility for four ANC visits as compared to those women with lower status in the way of dealing. After controlling all items or variables other than this items the effect increased to 0.44 times (CI=0.25 -0.75). This means that the women with higher status in the way of dealing still less likely to visit, at least four times to a health facility for ANC service as compared to those women who had lower status in the way of dealing. Thus, the null hypothesis is rejected and at least four ANC services are depended on the way of dealing to the pregnant women by service providers is accepted.

The third hypothesis was related with the household environment managed by household head. The hypothesis set is as "there is no relation between the women's satisfaction from household environment managed by the household head and at least 4 times visit to a health facilities for ANC". The OR presents with higher status of household environment managed for the pregnant women was 0.24(CI= 0.15 - 0.37). That means the women who has higher status in the household environment are less

likely to visit health facility for 4 ANC visits as compared to those women with lower status in the household environment. After controlling all items, other than this items OR increased to 0.45 (CI=0.25-0.81) and the pregnant women with higher status still is less likely to visit to a health facility than those women who have the lower status in the household environment. The net effect was found stronger than gross effect since at least four time visiting to a health facility for ANC check up is not only the function of single household environment variable but it was confounded by other multiple factors . Thus, there is no relation between women's satisfaction on household environment managed by the household head and at least 4 times visiting to a health facilities for ANC, hence the hypothesis was rejected.

The fourth hypothesis was related to the care givers behaviors. The hypothesis set is as "there is no relations between care giver's behavior and at least four times visit to a health facility for ANC checkup". The OR of the women with higher status of care givers behaviors was 0.24 times (CI=0.15-0.37). That means that the women who has higher status in care givers behavior are less likely to visit health facility for four times ANC visits as compared to those women with lower status in care givers" behavior. After controlling all items /variables other than this items, the OR increased to 0.42 (CI= 0.24 - 0.74).This indicates that the effect of OR increased but 4 times visiting for ANC check up is less likely than those women who has lower status in the way of dealings. The possible reasons were that at least four times visiting is not only influenced by the care givers' behavior but this was confounded by other several factors. Thus, the null hypothesis "there is no relation between the care givers behavior and at least four times visit to a health facility for ANC checkup" is rejected.

The fifth hypothesis was related to the items/variables preparation of basic things for safe pregnancy. The hypothesis set is as "there is no relation between the

preparation of basic things for safe pregnancy and at least four times visit the health facility for ANC" .The presented odds ratio of gross effect was 0.11(0.05-0.27). This means women who has higher status in preparation of basic things for safe pregnancy is less likely visit to health facility for four times as compared to those women with lower status in preparation of basic things for safe pregnancy. After controlling this items the odds ratio increased to 0.37 (0.12-1.14) but did not find significant relationship between these two variables. This indicates that the gross effect is stronger than the net effects. Thus, the null hypothesis "there is no relation between preparation of basic things for safe pregnancy and at least four times visiting to a health facility for ANC" was rejected.

The sixth hypothesis was related with willingness to monitor pregnancy status by the household head. The set hypothesis is as; there is no relation between willingness to monitor the pregnancy status by the household head and at least four times visiting to health facility for ANC checkup. The odds ratio presented the women with higher status of willingness to monitor the pregnancy status by household heads was 0.34 (CI=0.22-0.52). This means that women who have higher status willingness to monitor the pregnancy status by household heads are less likely visit the health facility for 4 times ANC visits as compared to those women with lower status in willingness to monitor the pregnancy status by the household heads After controlling all items or variables other than this item or variables the OR increases to 0.48 times (CI= 0.27 - 0.83) and still that women less likely visited at least 4 times to a health facility for ANC check up than those women who have lower status in willingness to monitor the pregnancy status by the household heads . Thus, there is no relation between willingness to monitor the pregnancy status by the household heads and at least four times visiting to health facility for ANC checkup.

Table 67

Gross and Adjusted Odds Ratios to Measure the Effect of Empowerment ,Equity, Satisfaction, Plan for Maternity Care and Responsibility of an Individual , Household Head , Service Providers on Antenatal Care.

	4 ANC visit (OR, 95% CI)		Package (OR, 95% CI)		TT Injection (OR, 95% CI)	
	Gross	Net	Gross	Net	Gross	Net
Empowerment						
Initiating power of the pregnant women						
Low®	1	1	1	1	1	1
High	0.39 (0.26-0.6)*	1.18 (0.64-2.15)	0.37 (0.24-0.56)*	0.83 (0.45-1.52)	0.46 (0.29-0.73)*	0.88 (0.49-1.59)
Job sharing in Kitchen by male people						
Low ®	1	1	1	1	1	1
High	0.43 (0.28-0.67)*	0.83 (0.46-1.53)	0.55 (0.35-0.85)*	1.40 (0.74-2.64)	0.60 (0.37-0.98)*	0.98 (0.54-1.76)
Shopping power of the pregnant women						
Low ®	1	1	1	1	1	1
High	0.23 (0.14-0.39)*	0.41 (0.21-0.78)*	0.31 (0.19-0.52)*	0.89 (0.46-1.72)	0.43 (0.24-0.77)*	0.70 (0.36-1.36)
Decision making power of the pregnant women						
Low®	1	1	1	1	1	1
High	1.08 (0.71-1.62)	1.21 (0.70-2.08)	1.12 (0.74-1.69)	1.00 (0.58-1.72)	0.89 (0.57-1.4)	0.91 (0.54-1.51)
Supremacy power adopted by the male						
Low®	1	1	1	1	1	1

	4 ANC visit (OR, 95% CI)		Package (OR, 95% CI)		TT Injection (OR, 95% CI)	
	Gross	Net	Gross	Net	Gross	Net
High	0.45 (0.29-0.69)*	0.72 (0.41-1.27)	0.5 (0.32-0.77)*	0.84 (0.47-1.51)	0.98 (0.61-1.55)	1.29 (0.74-2.25)
Equity						
Way of dealing with pregnant women by service provider						
Low®	1	1	1	1	1	1
High	0.27 (0.18-0.42)*	0.44 (0.25-0.75)*	0.34 (0.22-0.52)*	0.52 (0.30-0.92)*	0.62 (0.4-0.99)*	0.90 (0.53-1.55)
Encourage to the pregnant women by service providers						
Low®	1	1	1	1	1	1
High	0.44 (0.29-0.67)*	0.81 (0.47-1.41)	0.25 (0.16-0.39)*	0.38 (0.22-0.67)*	0.58 (0.36-0.91)*	0.68 (0.39-1.51)
Satisfaction						
Household environment managed by household head						
Low®	1	1	1	1	1	1
High	0.24 (0.15-0.37)*	0.45 (0.25-0.81)*	0.18 (0.11-0.28)*	0.33 (0.18-0.60)*	0.36 (0.22-0.58)*	0.66 (0.37-1.18)
Care givers behavior						
Low®	1	1	1	1	1	1
High	0.24 (0.15-0.37)*	0.42 (0.24-0.74) *	0.21 (0.13-0.33)*	0.37 (0.21-0.66)*	0.42 (0.26-0.69)*	0.71 (0.40-1.27)
Plan for maternity care						
Preparation of basic things for safe pregnancy						
Low®	1	1	1	1	1	1
High	0.11	0.37	0.06	0.13	0.13	0.30

	4 ANC visit (OR, 95% CI)		Package (OR, 95% CI)		TT Injection (OR, 95% CI)	
	Gross	Net	Gross	Net	Gross	Net
	(0.05-0.27)*	(0.12-1.14)	(0.02-0.19)*	(0.03-0.59)*	(0.04-0.43)*	(0.08-1.07)
Three people for blood donation requested by household head						
Low®	1	1	1	1	1	1
	1.55	1.81	1.32	1.26	1.53	1.12
High	(0.7-3.43)	(0.68-4.82)	(0.6-2.93)	(0.49-0.33)*	(0.6-3.9)	(0.41-3.03)
Responsibility						
	Gross	Net	Gross	Net	Gross	Net
Parenting skills transferred to women by service provider						
Low®	1	1	1	1	1	1
	0.69	1.48	1.34	2.19	1.26	1.41
High	(0.31-1.53)	(0.54-4.10)	(0.6-2.97)	(0.79-6.12)	(0.54-2.91)	(0.52-3.85)
Willingness to monitor the pregnancy status by household head						
Low®	1	1	1	1	1	1
	0.34	0.48	0.35	0.74	0.52	0.88
High	(0.22-0.52)*	(0.27-0.83)*	(0.23-0.53)*	(0.42-1.31)	(0.33-0.81)*	(0.52-0.09)*
Life-style adopted by the pregnant women						
Low®	1	1	1	1	1	1
	0.76	1.03	0.69	1.02	0.68(	0.81
High	(0.5-1.14)	(0.60-1.80)	(0.46-1.05)	(0.58-1.77)	0.44-1.06)	(0.49-1.35)

Note: *Significant at 0.05 % confidence level. ® =reference.

Effect of New Variables Generated on Institutional Delivery.

The seventh hypothesis was related with shopping power of the pregnant women. The hypothesis set is as "there is no relation between shopping power of the pregnant women and institutional delivery practiced by pregnant women". The gross odds ratio presents with the women who had higher shopping power status were 0.32 (CI=0.2- 0.52). This means that the women who have higher status in shopping power of the pregnant women is less likely to use institutional delivery as compared to those women with lower status in shopping power of the pregnant women .After controlling all variables /items other than this variables the odds ratio increased to 0.68 times (CI=0.35- 1.32) but did not find significant relationship between these two variables. This indicates that gross effect is powerful variables for institutional delivery rather than net effects. Thus, accepted null hypothesis that "there is no relation between shopping power of the pregnant women and institutional delivery practiced by pregnant women".

The eighth hypothesis was established to test the way of dealing with the pregnant women by service providers. The hypothesis was, "there is no relation between the way of dealing with the pregnant women by service provides and the use of institutional delivery". The odds ratio of women who had higher status way of dealing with the pregnant women by service provider was 0.32 (CI=0.25- 0.59). This describes that the women with higher status are less likely to practice institutional delivery than did the women with lower status in the way of dealing by service providers. After controlling all items / variables other than this variables odds ratio increased 0.44 times (CI=0.44- 0.50) less likely practised institutional delivery than that of reference group. In this stage net effect found stronger than gross effect. Thus, the hypothesis is there is no relation between way of dealing with the pregnant women

by service providers and use institutional delivery" was false. It means that the dealing or behavior of health providers plays a notable role in seeking delivery in the health institution.

The ninth hypothesis was related with the household environment managed by the household head. The hypothesis set is as "there is no relation between the household environment managed by the household head and the use of institutional delivery. The gross of OR for the women with higher status in the household environment managed by the household head was 0.13 times (CI =0.08-0.2). This means the women who have higher status in the household environment managed by the household head are less likely used in institutional delivery as compared to those women with lower status than that of reference group. After controlling all variables/items rather than this items /variables, the odds ratio increased to 0.24 times (CI= 0.13-0.45). This indicates that the household environment is a more powerful factor for household environment. Thus, rejected null hypothesis and the alternative hypothesis use of institutional delivery are depended on household environment managed by household head" accepted.

Another hypothesis is that, there is no relation between care givers behaviors and at least four times visiting to a health facility. It is the tenth hypothesis of this study. The gross of OR present the women with higher status in care givers' behaviors was 0.14 (CI =0.09-0.22). This means that women who have higher status in care givers behaviors is less likely used in the institutional delivery as compared to those women with lower status in the care giver behaviors. After controlling all variables rather than this variables, the effect of odds ratio increased to 0.21 (CI= 0.12-0.38). This indicates that care giver behavior is the strongest predicators for the

use of institutional delivery. Thus, the hypothesis there is no relation between care givers behaviors and at least four times visiting to a health facility was false.

The eleventh hypothesis was related with the preparation of basic things for safe pregnancy; the hypothesis set is as "there is no relation between preparations of basic things for safe pregnancy and at least four times visiting to a health facility for ANC." The gross odds ratio presented the women with higher status in preparation of basic things for safe pregnancy care was 0.12(CI= 0.06-0.24). This means that the women who have higher status in preparation of basic things for safe pregnancy care have less chance to visit health facility for institutional delivery than that of reference group. The presented odds ratio of gross effect was found stronger than the odds ratio of net effects. Thus the null hypothesis the relationship between preparation of basic things for safe pregnancy care and institutional delivery was accepted.

The twelfth hypothesis was related with willingness to monitor the pregnancy status. The hypothesis is set as "there is no relation between willingness to monitor the pregnancy status by the household head and institutional delivery". The gross odds ratio presents the women with willingness to monitor pregnancy status was 0.29 (CI =0.19 -0.46). This means the women who have higher status of willingness to monitor the pregnancy status have less chance to visit health facility for institutional delivery than the women of lower status in pregnancy status. After controlling all items, new generates variables the effect of odds ratio increased to 0.45 (CI= 0.24 - 0.82). This indicates that willingness of pregnancy status is the most important predicator for institutional delivery. Thus, the hypothesis there is no relation between willingness to monitor the pregnancy status by the household head and the institutional delivery was rejected.

Effect of New Variables Generated on Postnatal Care

The thirteenth hypothesis was related with the shopping power of the pregnant women. The hypothesis is set as; there is no relation between the women with shopping power and visit for postnatal care". The gross OR presents women with higher status of shopping power of the pregnant women was 0.38 (CI=0.25- 0.59). This means women with higher status of shopping power is less likely visited to a health facility for PNC checkup as compared than those women who have lower status women in shopping power. After controlling all items or variables other than this items, the odds ratio increased to 0.81 (CI= 0.44- 0.50). This indicates that the shopping power of pregnant women is a powerful predicator for postnatal visit. Thus, the hypothesis there has no relation between the women of shopping power and the visit to the postnatal care was accepted.

The fourteenth hypothesis was related with the way of dealing towards the pregnant women by service providers. The hypothesis set is as "there is no relation between the items /variables, the way of dealing to the pregnant women by service providers and visit for postnatal checkup". The gross odds ratio presents women with higher status in the way of dealing by service provider was 0.38 (CI=0.25- 0.59).This means that the women with higher status in the way of dealing with the pregnant women by service providers is less likely visit a health facility for PNC check up as compared to those women who were in lower status. After controlling all item or the variables other than this item/ variables the odds ratio increased to 0.81(CI= 0.44-0.50). This indicates that the way of dealing with the pregnant women by service providers is an influential factor for postnatal visit. Thus, the null hypothesis there is no relation between the way of dealing with pregnant women by service providers and PNC visit is rejected.

The fifteenth hypothesis was related with the items/ variables and the household environment managed by the household head. The hypothesis set is as, "there is no relation between household environment managed by household head and PNC visit". The gross OR presents the women with higher status on household environment managed by the household head was 0.22 (CI=0.14-0.36). This means women with higher status in household environment to the pregnant women are less likely to visit for postnatal care as compared to those women with lower status in household environment. After controlling this variables with all item other than this items net odds ratio increased to 0.35 (CI= 0.19-0.65). This indicates that the household environment is most important factor for PNC visit. The net effect seems more powerful than gross effects. Thus, the postnatal care for the pregnant woman is depended on household environment managed by the household head accepted. .

The sixteenth hypothesis is set as "there is no relation between the care givers behaviors and the visit to postnatal care". The gross OR presents with high status on the care givers behavior to the pregnant women was 0.34 (CI=0.21-0.54). This means that the women with higher status are less likely to visit the postnatal check up as compared to those women who have lower status on care givers behavior. After controlling all items/variables other than this item /variable the net odds ratio increased to 0.35 (CI= 0.19-0.65) .That indicated that care givers behaviors are important factors for PNC visit. Thus, hypothesis has no relation between the care givers behaviors and the visit to postnatal care was accepted.

The seventeenth hypothesis is set as "there are no relation between preparation of basic things for safe pregnancy and the visit to postnatal care". The gross OR is presented 0.14 (CI=0.08-027). That means women with higher status are less likely visit for PNC to visit postnatal check up as compared to women those who have lower

status. After controlling all variables other than this variable, the net effect is increased to 0.44 (CI=0.18-1.07) but did not find a significant relationship among these variables. Thus, the null hypothesis there has no relation between the preparation of basic things for safe pregnancy and the visit to postnatal care" was accepted.

The eighteenth hypothesis is set as "there is no relation between the willingness to monitor the pregnancy status by household head and the visit of PNC checkup". The OR presents the women with higher status in willingness to monitor the pregnancy status were 0.58 (CI =0.38 -0.88). This means women higher status are less likely to visit PNC other than those women who have lower status in willingness to monitor the pregnancy status by household head. After controlling all variables than this variable the net odds ratio increased to 0.91(CI= 0.51 – 1.64). This indicates that the women who were in higher status is less likely to visit PNC services as compared women than those who have lower status in willingness to monitor pregnancy status by household head. Thus, the null hypothesis "there is relation between willingness to monitor the pregnancy status by household head and the visit PNC checkup is accepted.

In total, 7 different hypotheses were tested. Out of them, 5 were accepted and 2 were rejected. Among the variables tested, the women who reside in the Kathmandu Valley was the strongest predicators, of at least four times visits to a health facility for ANC, the used package of ANC, institutional delivery, and the visit to postnatal care services, doctor but it was not the strongest predicators for immunized BCG injection for a new born child. Perhaps, BCG vaccination service was provided by paramedical staffs that were access in each VDC of Nepal.

Table 68
Gross and Adjusted Odds Ratios to Measure the Effect of Empowerment, Equity, Satisfaction, Plan for Maternity Care and Responsibility of Individual , House Hold Head, and Service Provider on Institutional to Postnatal Care .

	Delivery Care				PNC Care			
	Institutional Delivery (OR, 95 % CI)		PNC Visit (OR, 95 % CI)		Doctor Visit (OR, 95 % CI)		BCG Injection (OR, 95 % CI)	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Empowerment								
Initiating Power of the pregnant women								
Low®	1	1	1	1	1	1	1	1
High	0.36 (0.23-0.55)*	1.35 (0.69-2.61)	0.28 (0.18-0.44)*	0.54 (0.29-1.01)	0.54 (0.33-0.88)*	1.48 (0.72-3.04)	0.7 (0.45-1.11	1.28 (0.70-2.33)
Job sharing in Kitchen by male people								
Low ®	1	1	1	1	1	1	1	1
High	0.44 (0.28-0.69)*	1.23 (0.62-2.42)	0.35 (0.22-0.57)*	0.62 (0.33-1.18)	0.36 (0.22-0.59)*	0.82 (0.41-1.63)	0.48 (0.3-0.77)*	0.67 (3.77-1.21)*
Shopping power of the women								
Low®	1	1	1	1	1	1	1	1
High	0.32 (0.2-0.52)*	0.68 (0.35-1.32)	0.47 (0.28-0.79)*	1.07 (0.53-2.12)	0.32 (0.19-0.53)*	0.52 (0.27-1.03)	0.32 (0.19-0.53)*	0.73 (0.40-1.33)
Decision making power of the women								
Low®	1	1	1	1	1	1	1	1
High	1 (0.65-1.54)	1.11 (0.61-2.03)	1.01(0.66-1.54)	1.25(0.72-2.17)	0.97(0.59-1.6)	0.88(0.88-0.46)*	0.72(0.46-1.13)	0.68 (0.40-1.11)
Supremacy power adopted by the male								

	Delivery Care		PNC Care					
	Institutional Delivery (OR, 95 % CI)		PNC Visit (OR, 95 % CI)		Doctor Visit (OR, 95 % CI)		BCG Injection (OR, 95 % CI)	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Low®	1	1	1	1	1	1	1	1
High	0.45 (0.29-0.71)*	0.77 (0.41-1.34)	0.67 (0.43-1.05)	1.04 (0.57-1.89)	0.53 (0.33-0.88)*	0.97 (0.50-1.89)	0.8 (0.5-1.3)	1.18 (0.67-2.08)
Equity								
Way of dealing with the pregnant women by service provider								
Low®	1	1	1	1	1	1	1	
High	0.38 (0.25-0.59)*	0.81 (0.44-0.50)*	0.2 (0.12-0.32)*	0.23 (0.13-0.42)*	0.33 (0.2-0.55)*	0.70 (0.36-1.36)	0.57 (0.37-0.9)*	1.01 (0.58-1.78)
Encourage the pregnant women by service providers								
Low®	1	1						
High	0.40 (0.26-0.62)*	0.68 (0.37-1.23)	0.59(0.39-0.91)*	0.76(0.42-1.38)	0.49 (0.3-0.8)*	0.77 (0.40-1.47)	0.96 (0.61-1.52)	1.30 (0.74-2.29)
Satisfaction								
Household environment managed by household head								
Low®			1	1	1	1	1	
High	0.13 (0.08-0.2)*	0.24 (0.13-0.45)*	0.22 (0.14-0.36)*	0.35 (0.19-0.65)*	0.13 (0.07-0.23)*	0.21 (0.10-0.43)*	0.38 (0.24-0.6)*	0.52 (0.29-0.94)*
Care givers behavior								
Low®	1	1	1	1	1	1	1	
High	0.14 (0.09-0.22)*	0.21 (0.12-0.38)*	0.34 (0.21-0.54)*	0.71 (0.39-1.32)	0.24 (0.14-0.4)*	0.44 (0.22-0.88)*	0.36 (0.23-0.57)*	0.41 (0.20-0.72)*
Plan for maternity care								
Preparation of basic things for safe pregnancy								
Low®	1	1	1	1	1	1	1	

	Delivery Care		PNC Care					
	Institutional Delivery (OR, 95 % CI)		PNC Visit (OR, 95 % CI)		Doctor Visit (OR, 95 % CI)		BCG Injection (OR, 95 % CI)	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
High	0.12 (0.06-0.24)*	0.44 (0.17-1.14)	0.2 (0.08-0.49)*	0.53 (0.15-1.91)	0.14 (0.08-0.27)*	0.44 (0.18-1.07)	0.42 (0.23-0.79)*	1.04 (0.46-2.36)
Three people for blood donation requested by household head								
Low®	1	1	1	1	1	1	1	
High	1.57 (0.71-3.45)	1.48 (0.55-3.96)	2.93 (1.09-7.93)*	3.70 (1.10-12.38)*	1.01 (0.4-2.6)	1.41 (0.45-4.43)	1.31 (0.57-3.02)	1.22 (0.48-3.07)
Responsibility								
Parenting skills transferred to women by service provider								
Low®	1	1	1	1	1	1	1	
High	2.35 (0.87-6.38)	0.37 (1.12-12.50)*	1.19 (0.53-2.67)	4.07 (1.38-12.03)*	0.08 (.000- NA)	0.01 (0.00-0.00)	1.31 (0.51-3.36)	1.14 (0.40-3.25)
Willingness to monitor the pregnancy status by household head								
Low®	1	1	1	1	1	1	1	
High	0.29 (0.19-0.46)*	0.45 (0.24-0.82)*	0.58 (0.38-0.88)*	0.91 (0.51-1.64)	0.45 (0.27-0.74)*	0.87 (0.45-1.68)	0.86 (0.55-1.36)*	1.33 (0.40-3.25)
Life-style adopted by the pregnant women								
Low®	1	1	1	1	1	1	1	
High	0.65 (0.42-1.02)	0.77 (0.41-0.14)*	0.64 (0.42-0.97)*	0.86 (0.50-1.49)	1.05 (0.64-1.72)	1.46 (0.75-2.81)	0.63 (0.39-1.01)	0.65 (0.38-1.11)

Note: *Significant at 0.05 % confidence level. ® =reference group, NA = Not available

Discussion of Findings

The study presented the discussion in two chapters. Previously chapter 4 has presented the finding related with maternity care status. However, this sections deals with the findings of the result of the remaining chapter in V to IX.

In general, there is good news that maternal mortality is in declining trends in Nepal due to increased of ANC services, institutional delivery, and immunized BCG injection. The government of Nepal has recently introduced the incentive programs for ANC, PNC and institutional delivery. However, Nepalese women are facing so many problems of public health such as maternal morbidity, high level of unwanted pregnancy, early marriage, and illness of new born child, home delivery, and dropout in schooling as well as antenatal care services from the demand side.

Due to the expansion of education, many women are being capable to discuss the use of contraceptives measures, the childbearing the number of children to give birth, children education, and choose and use of contraceptive measures, with her husband increase of self confidence, and women empowerment as a result increases visiting to a health facilities .However, existed imbalanced distribution of health workers and health infrastructures as well as outcomes. The possible reasons were: (a) inequality in health outcomes (b) geographical distribution of physicians rather than density of population (c) location of medical school (d) recruitment methods, and nursing home (e) the reluctance of the health workers to work outside the Kathmandu Valley and (f) the absence of clinical governance such as empowerment, equity responsibility, and satisfaction with service providers were contributing factors for lower maternity care status in Nepal.

In response, the governmental, private party, and non -governmental, CTEVT and civil society have implemented formal /non formal /informal education to transfer

the knowledge of problem to the mother about these problems and to promote healthier behaviors through schooling program. Additionally, non –formal/ informal education has been conducted through adult education, radio and television (IEC) program like, *chetanaka swarharu, Ghati heri had nilnu, Thorai bhaya pugi sari Jeevan Chakra, as well as* posters, pamphlet and, booklets, and other advertisements from electronic and press media are informing and disseminating the message of antenatal to postnatal care services. The logistic regression model suggested that the utilization of available health care services, for maternity care services is in the increasing trend as the spirit of the level of education. However, the demand for the available health care services didn't use as the expectation of planners and thus, the study felt a need to explore the influential factors on maternity care.

There were several limitations of this study. Although it was an opportunity to bring the two sets of findings together, substantial integration of qualitative and quantitative data during the analysis was exercised very rarely. Moreover, questionnaires were lengthy, unclear, and shortages of uniqueness in questions since some of these have multiple responses and some has a single response as well as Likert scale. Because of these limitations some of the women were reluctant to be interviewed in depth during the period of data collection.

Despite these limitations, the study revealed several relevant findings, Variation was found in the utilization of respondents' background characteristics. The study examined the hypothesis that the mother's formal education influences on the maternity care (4 ANC visit, the used package of ANC services, immunized TT injection, institutional delivery, visit PNC). By investigating a sequential set of equations the study explored the degree to which maternal schooling effects are attenuated by the other socio-economic determinants which is also believed to

influence the use of available health care service in Nepal. The focus on mothers' formal education was warranted on several grounds.

Previously, many studies have found strong associations between mothers' education and child mortality (Elo, 1992, Abedin, et al; 2008, Bhatia & Cleland). Some studies suggest that schooling enhanced the women's knowledge of modern health care facilities, improve her ability to communicate with service providers and, by increasing the value that she placed on good health. As a results, high demand for available health care services (Caldwell, 1979; 1990; Elo, 1992) .However, the effect of formal, and non-formal education on maternity care was remain incomplete task.

Education is generally measured in terms of years of schooling. In this sample, most women had no schooling and therefore literacy was used as independent variables. The study compare between the finding in gross and net effect. The gross – effects of mothers' education and at least four times visiting for ANC services and the used package of ANC services as well as immunized TT injection , institution delivery, visit to a health facility for PNC check up were found statistically significant. These effects attenuated among women and newborn child when non-formal /informal as well as socioeconomic variables were controlled. This indicates that education alone is not the most important factor on the maternity care. Other factors like, income and occupation of the mother as well as the place of residence were influencing on maternity care. The possible reasons were that higher the level of income with job opportunity of pregnant women higher the increment of the empowerment status and reduced heavy dependency with her husband. Similar study was carried out by Caldwell, 1979; 1990; Levine, 1980; Elo, 1992, Anwar, et al.; 1996, Abedin, et al; 2008, Bhatia & Cleland.

The study found this relationship between the mother's education and the visit doctor along with immunized BCG injection for a newborn child within three days. The possible reasons were that normally women did not realize the need of care services even they have felt; serious types of obstetric complication to them, due to the lower quality of services. Furuta and Salway (2006) revealed that women do not visit to a health facility due to the lower quality of services and higher charge of price and thus the lower affordability of patients (Santerre and Neun, 1996).

Due to the programmatic factors, immunization programs for a newborn child even in the rural area, Nepal has made significance progress and reach 92 % (NDHS, 2006) and thus, the study did not find significant differences in the utilization of BCG injection between educated and illiterate women. This indicates the story of succession BCG immunization program in Nepal due to the access of paramedical staff as well as expansion of formal, non formal/ informal education. However, the level of service providers was lower.

As noticed earlier , there is no doubt that the increase of formal education contributes to the maternity care but in reality formal education is a necessary condition but not sufficient condition for development because sometimes there would be negative impact of formal education on the maternity care as well as industrial development. Since, degree holders of doctors, nurse, and public health officers, engineers and son on migrated to developed countries from less developed countries. Similarly education is not a sufficient condition to reproduce a child and people reproduce a child by learning by doing and participating in sexual activities. Thus, five hypothesis were established to test the relationship between Non-formal/ informal education and maternity care. However, non-of these hypotheses were found significant relationship with all indicators of maternity care. There were some

questions why of these hypotheses were not related with all the indicators of the maternity care.

Turning to the training related hypothesis, there is no relationship between the women's training and maternity care (4 ANC visit, institutional delivery, visit PNC). The cross tabulation and gross effect through logistic regression revealed that training is most important predicators for ANC visit at least 4 times to a health facility, used package of ANC, institutional delivery and PNC visit. However, after controlling with all variables as well as socioeconomics, the hypothesis was contrary our expectations. There are some questions why such hypothesis was false? The possible reasons were, as of 384 sample size only 20 percent respondents responded that they have opportunity of training more than 15 days. The subjects of training program were painting, computer skills, hair dresser, Sudeni and vasectomy for animals but they were not satisfied with the curriculum and content of training. Since one of the respondents responses is like this:

Case study 6: Inclusion the Message of Maternity Care in Training Program

One of the respondents in Nepalgung Municipality responded that that was an opportunity for me that I got training in vasectomy for animals but it was sapless in the absence of the message of maternity care. Therefore, it needs the inclusion of some message of maternity care into vasectomy for animals. This would be useful to ensure the reproductive health of an individual.

This argument supports that training is an important factor for maternity care since, inclusion of training program can contribute to generate the incomes and then support to buy contraceptives. Therefore, the need of inclusion of special training program for pregnant women including 9 skills such as absenteeism skill in sexual

activities (including withdraw method of family planning), baby holding skills, breastfeeding skills, bonding skills, caring skills, parenting skills, self caring skills, oil massage skills, transferring the vocabulary skills can contribute to ensure maternity care. Some of the European countries such as Norway, Australians and UK have been recognized the similar type of training for pregnant women to ensure the maternity care. Thus, national health training center, which is providing various types of training should adopted integrated approach in training programs for the pregnant women linking with Ministry of Agriculture and Ministry of Education and Culture for the support of nutrition program.

There is no surprising that the cross tabulation and gross effect through logistic regression showed; positive effect of recreational program in institutional delivery and visit PNC but after controlling with all variables other than this variable the odds ratio was further declined and did not find any significant relationship between the recreational program and the maternity care. The possible reason was that still MOHP has not been successful to introduce that many recreational program like explaining both the positive and negative sides of the cultural story of *Siva - Parvati*, and *Krishna Lila* and *Teej* song *as well as religious story* would be potentials intervention to ensure the maternity care. Thus, being an urgent need ethnographic studies that how traditional culture could transfer the knowledge of the maternity care. Sri Lanka has the story of succession which showed equitable use of health professionals for birth across quintiles (Koblinsky, 2006), encouraging the patients by the priest all over the country.

There were some questions why the media exposure program did not find significant relationship with all indicators of maternity care. This is because other confounding factors like busy in harvesting, barriers of language, and permission of

mother -in- law, are directly influencing the maternity care rather than media exposure. In addition, FCHW are being the main actors of counseling program but in the absence of effective training their capacity is being questionable for counseling.

Regarding the socio economic factors like wealth, work, ethnicity, residence, and geographical disparities are playing a significant role for the utilization of available health care services. Therefore, two hypotheses relating with the wealth and the Kathmandu Valley were tested in this study. There is no relation between the wealth and the maternity care (4 visit ANC, immunized TT injection, institutional delivery, and PNC visit)

As cited by Santerre (1996) the impact of income on health care is clear. Auster, Leveson and the Sarachek (1969) uncovered the negative relation between the income and the health which Gross men (1972 as cited Santerre) found no relation about them. As cited the same authors Hadley (1982), on the other hand, observed a weak relationship between the income and the health as measured by adult mortality rate. Specifically, Hadley found that a 10% increase in income leads to a one –half of 1 % reduction in the adult mortality rate. Similarly, this study revealed a strong relationship between the income and at least four visiting for ANC services, however, the net effects showed thin relationship between the wealth status and the used package of ANC, institutional delivery and all the indicators of PNC. This indicated that the demand for maternity cares was high but due to the affordability of women supply was low. However, this may not true in all circumstance since the demand for institutional delivery may depend on minimum needs of the patients and they use available health care to complete their need .In some circumstances, the demand for institutional delivery depends on other factors rather than price or income or wealth.

It would not be wonderful to know that there was no significant difference in immunized BCG injection between inside the Kathmandu Valley and outside the Kathmandu Valley. Since, BCG injection can be provided by Maternal and Child Health Workers, The Auxiliary Nurse Midwives (ANM), Female Community Health Volunteers (FCHV) and thus access all of all these workers are playing a significant role in providing BCG injection through outreach mobile clinic. The female child health workers are expected to visit every household at least once in two months. She enrolls all the pregnant women in her area (ward wise of each VDC) and provides antenatal care, supervise domiciliary services and also provide post-natal service for the mother and the child (Bhatia &Cleland as cited Navaneetham & Dharmalingam). Place of residence was observed on the basis of rural and urban differences and the study found that urban women were much more benefited than rural women. Logistic regression revealed that significant relationship the between ecological zone and the maternity care services.

The nearest distance to the health facility was measured by looking at time cost and that would affect on the maternity care services. It would not be surprising that the nearest distance of the health facility has been found as a more powerful predicator for all indicators of the maternity care. The cross tabulation and adjusted odds ratio revealed the positive relationship between the distance of the health facility and at least four times visiting to a health facility, immunized TT injection, institutional delivery , visit PNC and immunized BCG injection for newborn child. The possible reasons were that the travelling cost and time cost was lower for the women those who have the nearest distance of the health facility, immunized TT injection, institutional delivery, visit PNC and immunized BCG injection for a newborn child. The possible reasons were: (a) the higher opportunity cost (b) lower

affordability of money (c) and superstition. This finding as a consistence with the study of Anwar et al.; (2005) carried out in the reference of Bangladeshi women.

By using 51 Likert scales, from strongly agree to disagree; the perception of the pregnant women was observed as unidentified variables under the headings of empowerment, equity, satisfaction, responsibility and the plan for maternity care. The main objective of this scale was to capitalize the perception of pregnant women towards the household head and service provider's .Factor analysis was used to reduce the data collected by Likert scale and constructed 14 variables. The effect of these new variables was observed one by one with all indicators of dependent variables.

Overall, six items were selected for testing hypothesis from new generated variables. Among these variables, both the cross tabulation and net effects revealed that the household environment managed by the household head has been seen powerful predicators for maternity care. Significant relationship was found between these items and all indicators of maternity care excluding immunized TT injection. Similarly, the net effect revealed that the way of dealing with the pregnant women by service provider is also being most powerful predicator's to at least four times visiting ANC check up, the used package of ANC services, institutional delivery, PNC visit and BCG injection immunized for newborn child within three days . The possible reasons were: (a) that household environment creates better understanding among the family members (b) they may have sound inter household relationship and (c) frequently visited to a health facility.

The gross effect showed positive relationship between the willingness to monitor the pregnancy status by the household head and all indicators of antenatal, delivery and postnatal care. However, the net effect did not show the similar

relationship except at least four times visiting for ANC. The possible reason were the lack of knowledge about postnatal care and ignored condition by the household head and after having the baby the situation may lead poor monitoring for postnatal care and other confounding factors were influencing the willingness to pregnancy status. The gross effects show negative relationship between life style adopted by the pregnant women with all variables of antenatal care, delivery and postnatal care except postnatal care visiting. However, after controlling all variables other than this variable, the net effect was limited only within the institutional delivery. This indicated that other confounding factors are influencing rather than this items. In the line of the previous research some of the items were introduced by Pitt et al, (2006) and used on the reference of micro credit in Bangladesh and, thus this is difficult to compare and contrast the findings of this study with the findings of others.

Some of the findings of qualitative research showed that one of the case study showed that one of the mother -in -law did not allow her daughter-in –law to consume iron tablets due to the long distance of a health facility and unbearable of the cost of the private hospital located at *Prithivi high way*. Moreover, gender base violence is common in Nepal due to sexual behavior and for the favor of the son and still commonly says *"no heaven without son"*. It is quite wonderful to see a woman who still denied taking her picture indicates the lower empowerment status. Finally, an eye opening picture indicates that the demand for education is high but the result of SLC examination is suspected due to the reproductive behavior (see annex 2)

Over all, 54 specific statements were established for hypotheses testing. Among these statements, the net effect found significant relationship with 43 statements, at least one indicator of dependent variables. Regarding the Likert scale many of these items of this study did not find significant relationship with all indicators of

dependent variables. If found, were partially, the possible reasons were smaller sample size as well as lower the number of Likert items. Moreover, the study adopted multiple tools and thus, the time consumed and less efficiency in study too also. Thus, needed similar study to confirm the findings of this study to greater size with more number of Likert scale.

It can be concluded that at least four times visiting to a health facility for ANC services, the used package of ANC, PNC visit are depended on mother's formal education. Similarly, the wealth status found most important factors for at least 4 times visiting for ANC services. The maternity care services are depended on the nearest distance of a health facility. Regarding the Likert statements, the household environment managed by the household head, care givers behaviors, willingness to monitor pregnancy status by household head are being the most important predicators for, at least 4 times visiting for ANC, the used package of ANC, institutional delivery, postnatal visit. According to another most important finding there is no difference between in the access of BCG injection in rural areas due to the access of paramedical staff, and in other lower services in the absence of health professionals are being critical challenges for maternity care services in the selected districts of Nepal.

CHAPTER X

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter first presents the summary of this study and then presented the summary result of the tested hypothesis. In addition, theoretical contribution, proposed conceptual framework, policy recommendation as well as conclusion of this study has been presented in this chapter.

Summary of this Study

This study has attempted to observe the influence of formal, non formal /informal education on the maternity care in the selected districts of Nepal. The study adopted the Caldwell interdisciplinary approach and used a framework of maternal mortality and morbidity determinants developed by Mc Carthy,et. al., (1992) to construct the conceptual framework of this study. A Cross sectional study designed with mixed method (triangulation) was employed in a single study to cope with the weakness of one method and to replace the strengths of another method. The nature of study was retrospective and deductive method was used.

The fundamental theory of maternity care is to ensure the life of mother and her newborn child by providing comfort and welfare for an individual, family and community or society along with the policy makers of the country as fully as possible. For this purpose, MOHP has formulated robust sets of policies to ensure maternity care in each corner of the country. But, available of ANC, institutional delivery, and PNC service were not fully utilized as the expectation of planners and health

professional. If, utilized, it was not in an equitable way, resulting variation by background characteristics of the service users. Therefore, the study recommended the need of further understanding and analysis of influential factors for the utilization of maternity care service in Nepal.

Another concerned area of the study is education which has been already recognized as the precondition and the pillar of maternity care. Various policies and programs have been implemented through Ministry of Education and Culture, Ministry of Health and Population. Similarly, Ministry of Local Development (MOLD), Ministry of Youth (MOY), Ministry of Women and Social Welfare (MOWSW), Ministry of Agriculture (MOA) along with I/NGO including CTEVT but integrated mechanisms are being always questionable. Moreover, knowingly or unknowingly people talk about the relationship between "stock of knowledge" Santerre and Neun 1996, Freudenberg and Reglis, 2007) and "stock of health" and again they may not be familiar with this kind of health which is depreciated due to symptoms of pregnancy complications (Henderson 2005; Santerre & Neun 1996). However, such relationship is not fully understood.

Moreover, several researchers Santerre and Neun (1996, Elo, 1992, Caldwell, 1996) revealed that formal education has positive impact on the maternity care but in contrast, Bowmen and Anderson (as cited by Szirmai, 2005; pp. 223) documented that literacy is necessary but not sufficient condition to reproduce a child and particitipating sexual activities in human being. Another researcher Elo, (1992) documented that the income and other factors were confounded for the protection of sex and care of mother and newborn child and in this situation functional alternatives like training, media exposure, distance education, counseling, and recreational

program could be contributing factor for the maternity care but the studies are being very rare and dare.

GON, has already adopted the 'Education for All'(EFA) and set up National Plan of Action(NPA,EFA 2001-2015) has been placed since, 2001.Various documents showed that quantity of education is increased but quality of education remained debatable and thus, felt urgent need to explore, which one was the more influential factors for maternity care. Finally, policy makers and planners recognized that the inclusion of women's empowerment, equity, satisfaction, responsibility and the plan for maternity care were preconditions and pillars for the maternity care but in the absence of potential indicators. The measurements of these variables are always being questionable and thus, further study is needed to carry out research for the construction of indicators in the above mentioned components.

The primary objective of this mixed concurrent method inquiry was to assess the status of maternity care by applying human capital theory and screening theory of education. The study attempted to investigate how formal and non-formal/informal education and others social factors were influencing on maternity care through three set of intermediate variables. Moreover, the study constructed the indicators of empowerment, equity, satisfaction, responsibility and the plan for maternity care. This survey was conducted three months prior to April 2008. All together seventeen females and one male (Tamang) enumerators were employed to collect the data.

Based on the cross- sectional descriptive research design, using a stratified random sampling of 384 household from five districts (*Sindhupalchok, Syangja, Kathmandu, Banke & Kailali*), primary data were collected from those women who had at least one live birth (child) within the last three years. The data was collected by surveying the selected households using structured questionnaire supplemented by in-

depth interview of 10 women within the sample. Descriptive, bivariate, factor analysis, simple logistic regression tools and interpretive qualitative methods were used to interpret the data to arrive at findings, conclusions and recommendations.

Perhaps, the findings of this study would play a significant role to identify the influential factors and tensions between the access to and utilization of available health care services and sketch the pathway to reduce those tensions, develop strategies for curative, preventive and primitive health care intervention. Moreover, it would contribute to redesign the curriculum in formal, non formal/informal education and to build the tools for KIT (knowledge, information, and technology) box. Finally, it can be contributed to bridge the gap between knowledge, attitude and practice (KAP-Gap and develop specific training package for the maternity care).

The maternity care is the dependent variables of this study. There were three dimensions: (a) antenatal care (b) delivery care and (c) postnatal care. The seven indicators are the number of ANC visiting to a health facility for antenatal checkup, package of antenatal care services, immunized tetanus injection, institutional delivery, visits to postnatal check up, and immunized BCG vaccination for a newborn child within three days. Formal, non -formal /informal, education and other socio-economic variables such as wealth, work status, ethnicity, and the place of residence, and inside the Kathmandu vs outside the Kathmandu Valley were independent variables, and reproductive behavior, access to and utilization of available health care services were intermediate variables of this study. Fourteen new generated variables were used indicators under the headings of empowerment, equity, satisfaction, the plan for maternity care and responsibility of an individual, household head and service providers.

Summary and Result of Tested Hypothesis

Description of tested hypothesis has been presented in Table 1 of chapter one and the Table. 69 have presented the summary result of hypothesis. All together 5 research questions such as maternity care status, influence of formal and non-formal/informal education, other variables rather than education, the influence of reproductive behavior, access to and utilization of available health service for other medical problems were used to sketch a pathway between education and maternity care through intermediate variables. Altogether 54 hypotheses have been developed categorizing in four sets of hypothesis for testing.

Description of first set of hypothesis: Altogether 17 specific statements have been developed from the 1st set of hypothesis for testing. Among those hypothesis no 1.1, 1.2, 1.3 are related with formal education. Remaining 14 specific hypotheses statements; 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.6, 1.7, 1.8, 1.9, 1.10, 11, 1.12, 1.13, 1.14, 1.16, and 1.17 are related with non-formal/ informal education.

Table 69

Summary of Tested Hypotheses in accordance with Research Questions

Related Research questions	Hypothesis Tested No	Hypotheses status	
		Ho: Accept	H1: Reject
Set 1: RQ 2	17	14	3
Set 2: RQ 3	7	2	5
Set 3: RQ 4	12	1	11
Set 4: RQ 5	18	4	14
Total	54	21	33

Note: the study did not establish hypothesis, relating with research question: 1

Among those null hypotheses 1.1, 1.2, and 1.13 are rejected and the rest of the null hypotheses are rejected. This indicates that at least four times visiting, the used package of ANC services and visit to PNC care are depended on mother's formal education.

Description of second set of hypothesis: Seven statements have been developed for hypothesis testing. 7 statements 2.1, 2.2, 2.4, and 2.6 have been rejected and hypotheses 2.3 and 2.5 have been accepted. This indicates that at least 4 times visiting to a health facility, the use package of ANC, to visit postnatal care depended on wealth status of women.

Description of third set of hypothesis. All together, 12 specific statements have been developed for hypothesis testing and the hypotheses no 3, 5 there have no relation between the mother's age at child birth and the institutional delivery are accepted. Remaining eleven null hypotheses are rejected. This indicates that the demand for institutional delivery does not depend on the age of mother at child birth since it depends other various multiple factors. Moreover, to some extent health service is not compatible with price and the age of mothers and so on. It depends on time, and the health status of the pregnant women.

Description of fourth set of hypothesis. Eighteen specific statements are developed for hypothesis testing. Among these null hypotheses, all together hypotheses, as stated no 4.1, 4.2, 4.3, 4.5, 4.6, 4.8, 4.9, 4.10 4.11, 4 12, 4.13, 4.14 and 4, 16 are being rejected. There is no significant difference between at least 4 times visitors for ANC checkup of higher status of women with shopping power and While the null hypotheses 4.4, 4.5, 4.7 and 4.15 are accepted. This indicates that at least four times visiting to a health facility is depended on care givers behaviors and three people for blood donation requested by household. Moreover, institutional delivery is depended

on shopping power of the pregnant women. Finally, the finding of the study indicates that education is necessary but, not the sufficient condition to visit at least 4 times to a health facility for ANC. As of 54 specific hypotheses, 21 null hypotheses 33 alternative hypothesis have been rejected.

The strongest factors, for the maternity care. *Table* 68 presents the **s**ummary of logistic regression analysis for listing out the variables with relatively strong net effects on the seven dependent variables. Variables have been presented in accordance with their odd ratio. If the odd ratio is more than 1 assumed strongest factor otherwise weakest factors for maternity care. The strongest and weakest factors are observed on the basis of the result presented in Tables 63 to 68.

At least 4 times visit to a health facility for ANC .The first strongest factor is the variable of the Kathmandu Valley (OR, 21.74). This is because of more access of health workers and quality of health care services in the Kathmandu Valley. Moreover, most of the private hospital and institutions have been established in Kathmandu Valley. If established outside the Kathmandu Valley, they are located in the urban areas. The second strongest factor is mother's education (OR, 21.10). This is because the educated women have understood the importance of the antenatal care services. Not only understood the importance of ANC, they may have better income as well as their husbands with better income, better house and clean environment around her house. In-addition, they may have appropriate sanitation, drinking water and discussions about the number of children, as well as the use of contraceptives measures. The third strongest factor is the visit to a health facility for other medical service. This is because the women may have integrated strategy to check health and antenatal care services. Moreover, the lowering in transportation cost and waiting time's leads at least 4 times visit to a health facility for other medical problems. The

fourth strongest factor is the household wealth (OR, 4.45).This is because of the higher affordability of pregnant women for antenatal care services. This indicates that the income is also another important factor for at least 4 ANC visits to a health facility for antenatal checkup.

Among these twelve variables, ecological zone was the weakest (OR,0.13) influential factors for 4 ANC visit to a health facility was due to the available of Gayau *ghar clinic* organized by MCHW as well as PMS. The Other influential factors are the use of family planning, willingness to monitor pregnancy status, the number of children and the household environment the way of dealing and caregivers' behaviors. However, the net effect is very weak.

Used package of the ANC services. The second strongest influential factor or a variable of the maternity care is the use of package of ANC services. The same number of variables is found an influential factor for the use of ANC package, though the variables were various. Among these variables, the women inside the Kathmandu Valley are the first strongest (OR, 222.61) factor for the use of the antenatal care package of services. This is because of the available of logistic support or equipment to checkup the height, weight of body mass index, blood pressure, and other well equipment to measure shock therapy as well as high qualified health workers for ANC services. Again education seems the second strongest (OR, 17.99) factor for the use package of ANC services. This is because of the women with higher SLC and plus have more exposure power to discuss with health workers about the package of antenatal care services. They may request to offer the full package of ANC service for themselves with health workers due to the prior knowledge about the importance of the use package of ANC services. The third strongest factor for the use package of ANC services is the hearing about family planning (OR, 3.16).The spontaneous

knowledge of contraceptives contributes to ensure better maternity care through birth spacing or limiting needs for family planning. The fourth strongest factor for the use package of ANC services is the involvement of three people for blood donation (OR, 1.26). This is because those people managed for blood donation thinking that there would be low risk from over bleeding during delivery and assure safe pregnancy in the period of obstetric care.

Among the twelve influential factors, again the ecological zone is the weakest (OR, 0.10) influential factor for the use of ANC services. Although, the relationship of other influential factors such as the distance to the health facility, the way of dealing with the pregnant women, encourages the pregnant women, care givers behaviors, the household environment, the place of residence and preparation of basic things for safe pregnancy on the use package of ANC services was weak. The study found a significant relationship among them. The odds ratio is presented in Table 70. Again, the finding of the study is indicated that education is a necessary but not the sufficient condition for the used package of ANC services.

Immunized TT injection. Turning to the immunized TT injection, out of 33 variables, 8 variables are being associated among the women with immunized TT injection. Among these variables, visit to the health facility for other medical problems was the first strongest (OR, 3.68) predicator for immunized TT injection for the pregnant women. This phenomenon occurred due to the integrated strategy adopted by the pregnant women for immunized TT injection and other medical problems. The second strongest factor is the Kathmandu Valley. All the pregnant women have more access for the immunization of TT injection. Moreover, they understood the importance of TT injection. The third strongest factor is the cost coping strategy of pregnant women for TT injection. The pregnant women those who have cost coping strategy for

maternity care may have social support and net work for maternity care. For example, Newar community has culturally *Guthi* and *Guthehara* are mentally prepared to perform the necessary work including funeral ceremony of dead people. Again, she can borrow or discharge as a cost coping strategy for additional work to substitute the lost money from the sick people. The fourth strongest factor for the use of TT injection is the age of mother at child birth. The odds ratio is 2.09 and that indicates that the women those who are less than 25 years and is more likely to use contraception than to those women who are more than 30 years. The fifth strongest factor for the use of TT injection is hearing about family planning. The presented odds ratio is 2.06. That means the women those who have an opportunity to hear about family planning services are more likely using contraception than those women who did not hear about family planning. Other factors likewise willingness to monitor pregnancy status, ethnicity, and distance to the health facility also influences in the use of TT immunization but the effect was very weak.

Institutional delivery. Out of 33 variables, 11 variables are being associated among the women who delivered baby at a health facility. Among these variables, the women in the Kathmandu Valley are the first strongest factor for the institutional delivery. The odds ratio is 9.48 and that means women inside the Kathmandu Valley are more likely delivered their baby in a health facility to those women outside the Kathmandu Valley. The main reasons are (a) available of highly skilled manpower with full of equipments are available including public hospital as well as private hospital.(b) Quality of care is better in the Kathmandu Valley (c) influence of education (d) household environment is better . Similarly, the second strongest factor is to hear about the family planning measure by the pregnant women. The odds ratio is 2.90. This indicates that the women who hear about family planning are more likely to

deliver the baby in the health facility than that of reference group the possible reasons were that women were counseled as in the same time when they have received contraceptive measures

The other nine variables like the way of dealing to the pregnant women, the life-style adopted by the pregnant women, the willingness to monitor the pregnancy status, the parenting skills transferred to the pregnant women by service providers the place of residence, the number of children, the distance to the health facility and household environment managed by household head are also associated with in the use of the institutional delivery though the net effect is very weak.

Visit postnatal care: Out of 33 variables, 11 variables are being associated among the women who delivered baby at the health facility. Among these variables women who live in the Kathmandu Valley is the first strongest factor for the PNC visit. The odds ratio 89.01 indicates that among the women inside the Kathmandu Valley are more likely visit to health service for postnatal care than did the women outside from the Kathmandu Valley. The second strongest factor for PNC is ecological zone. The OR 27.64 indicates that women from the Terai districts visit 27.64 times as compared to those women who live in the mountain areas.

Regarding the education, the third strongest factors for PNC visit is women' formal education and recreational program is the sixth strongest factor. The OR for formal education is 11.19 and 2.00, for recreational program. That means those women who have formal education are more likely 11.19 times visit to a health for postnatal check up. Similarly, those women who have an opportunity for recreational program is more likely 2. 00 times visit to a health facility for PNC as compared to those women who did not participate in recreational program. The fourth strongest factor is the parenting skills transferred to the women by service providers. The OR

presented for parenting skills transferred to the pregnant women is 4.07. That indicates that those women who have higher status in transferred parenting skills to the pregnant women by service providers are more likely to visit PNC as compared to those women who have lower status in parenting skills transferred to women by service providers.

Similarly, the fifth strongest factor for PNC visit is the readiness of the three people for blood donation. The OR that presents three people for blood donation is 3.07 and that means those household head who manages the three people for blood donation are more likely 3.07 times visit to a health facility for PNC check- up than that of the women from reference category. The household environment managed by the household head, husbands education and the way of dealing with the pregnant women are also associated with visit PNC but the net effect was very weak.

Visit Doctor. Out of 33 variables, 10 variables are being associated among the women with the visit doctors. Among these variables, the women inside the Kathmandu Valley are the first strongest factor for the institutional delivery. The OR that presented the women in the Kathmandu Valley are 19.46. That means women in the Kathmandu Valley are more likely (19.46 times) visit to doctor as compared to those women who resides outside the Kathmandu Valley.

Wealth is the second strongest factor to visit doctors. The OR presented is 9.43. That means the women from the richest quintile are more likely 9.43 times visit to doctors as compared among the women from the poorest quintile. This is because of the higher affordability of the pregnant women and has ability to pay the user charges of the doctors. The cost coping strategy for maternity care is the third strongest factor to visit the doctors. The OR presented for cost coping strategy for maternity care is 3.27. That means those women who have cost coping strategy for

maternity care are more likely 3.27 times to visit doctors than those the women who have no cost coping strategy for maternity care. This is because of the social support and strong network in the society.

Decision making power, the care giver behaviors, hearing about family planning, the number of children, the distance to a health facility and the place of residence found significant relationship with the visit to doctor but the net effect of these variables is weak. This study indicates that both the formal and the non formal educations are important but not the sufficient condition to visit doctors. This is confounded many other multiple factors.

***BCG injection*.** Out of 33 variables, 8 variables are being associated with the women delivered baby at a health facility. Among these variables, women from the richest quintile are the first strongest factor for BCG immunization. The OR presented women with BCG immunization is 3.07. That means women from the richest quintiles immunized her new born child is more likely 3.07 times as compared to those women from the poorest quintile. Second strongest factors for BCG injection are cost coping strategy for maternity care. The OR presented is 2.06. That means women those who have the higher cost coping strategy for maternity care is more likely 2.06 times greater chance to immunize BCG injection than that reference group of the women. This is because those cost coping strategies increase the capacity of pregnant women to pay the travelling cost to a health service point. The other strongest factors of this study are job sharing in kitchen, distance to a health facility, household environment managed by household head care givers behaviors, and ethnicity.

It can be summarized that the women in the Kathmandu Valley comprises is the first strongest variable with 5 dependent variables like 4 ANC visit, ANC package, PNC visit, and the visit to doctor is the second strongest variable with TT

injection and not associated with immunized BCG injection. Among them, the odds ratio is the highest (222.61) for the use of package of ANC services and the lowest (3.44) is for immunized TT injection to the pregnant women. Similarly, the mother's education is the second strongest variable associated with 3 dependent variables as 4 ANC visit , the use package of ANC services , and is the third strongest for PNC visit. The highest (27.64) odds ratio is for the second strongest variables with ecological zone and the lowest is for with the cost coping strategy for maternity care.

Table 70

Summary of Logistic Regression Analysis for Listing out the Variables with Relatively Strong Net Effects on the Seven Dependent Variables

Degree of association (First = strongest and 12^{th} = weakest)	4 ANC Visit	ANC package	TT Injection	Institution delivery	PNC Visit	Visit Doc.	**BCG**
First	Kathmandu valley **OR: 21.74**	Kathmandu valley **OR: 222.61**	Visit to a health service for other medical pro. **OR,3.68**	Kathmandu valley **OR ,9.48**	Kathmandu valley **OR, 89.01**	Kathmandu valley **OR,19.46**	Wealth **OR,3.07**
Second	Moth Edu. **OR, 21.10**	Moth Edu. **OR,17.99**	Kathmandu valley **OR, 3.44**	Heard about FP. **OR, 2.90**	Ecological zone **OR, 27.64**	Wealth **OR,9.43**	Cost coping strategy for MC. **OR,2.06**
Third	Visit to a health service for other medical problem **OR,4.47**	Heard about FP **OR,3.16**	Cost coping strategy for MC **OR,2.54**	Way of dealing **OR,0.81**	**Mother Edu. OR,11.19**	Cost coping strategy for MC **OR,3.27**	
Fourth	Wealth	Three people for	Heard about FP	Life-style adopted	Parenting	Decision	Job sharing

Degree of association (First = strongest and 12th = weakest)	4 ANC Visit	ANC package	TT Injection	Institution delivery	PNC Visit	Visit Doc.	**BCG**
	OR, 4.45	blood donation **OR,1.26**	**OR,2.06**	by the pregnant women **OR,0.77**	skills transferred to women by SP. **OR,4.07**	making power **OR, 0.88**	in kitchen **OR,0.67**
Fifth	Use about the FP **OR,0.56**	Distance to the nearest health facility **OR,0.31**	Age of mother at child birth **OR, 2.09**	Willingness to monitor pregnancy status **OR,0.45**	Three people for blood donation **OR,3.70**	Care givers behavior **OR,0.44**	Distance to the nearest health facility **OR,0.55**
Sixth	Willingness to monitor preg. status .**OR,0.48**	Way of dealing to the pregnant Women **OR,0.52**	Willingness to monitor pregnancy. status **OR,0.88**	Parenting skills transferred to women by SP **OR,0.37**	Recreational program **OR,2.09**	Heard about FP. **OR,0.25**	Household environment **OR,0.52**
Seven	Number of	Encourage to the	Ethnicity	Residence	Household	Number of	Care givers

Degree of association (First = strongest and 12th = weakest)		4 ANC Visit	ANC package	TT Injection	Institution delivery	PNC Visit	Visit Doc.	**BCG**
th		Children **OR,0.47**	pregnant women by SP.**OR,0.38**	**OR,0.31**	**OR, 0.39**	environment **OR,0.35**	children **OR,0.12**	behavior **OR,0.41**
	Eighth	Household environment **OR,0.045**	Care givers behavior **OR,0.37**	Distance to the health facility,**OR,0.26**	Number of children ,**OR,0.39**	Husband Edu. **(OR) 0.27**	Health facility distance **OR,0.20**	Ethnicity **OR,0.35**
	Ninth	Way of dealing to the pregnant Women, **OR,0.44**	Household environment **OR,0.33**	-	Health facility distance **OR,0.19**	Way of dealing to the pregnant Women **OR,0.23**	Residence **OR, 0.12**	-
	Tenth	Care givers behavior **OR, 0.42**	Place of Residence **OR, 0.18**	-	Household environment **OR,0.24**	-	Heard about FP. **OR,0.25**	-
nth	Eleve	Heard about FP **OR, 0.21**	Preparation of basic things for	-	Care givers behavior	-	-	-

Degree of association (First = strongest and 12^{th} = weakest)	4 ANC Visit	ANC package	TT Injection	Institution delivery	PNC Visit	Visit Doc.	**BCG**
		safe pregnancy **OR,0.13**		**OR,0.21**			
Twelfth	Ecological zone **OR, 0.13**	Ecological zone. **OR,0.10**	-	-	-	-	-
Total	12variables	12 variables	8 variables	11 variables	9 variables	10 variables	**7 variables**

Moreover, the cost coping strategy for maternity care is the third strongest factor, associated with 3 dependent variables immunized TT injection, visit doctors and is the second with the immunized BCG injection. The highest (11.19) odds ratio is associated with mothers education and the lowest (0.81) is the way of dealings. Additionally, the variable wealth is first the strongest factors for BCG immunization, the second strongest to visit doctor, the third strongest to 4 visit for ANC. Furthermore, the first strongest factor to visit to a health facility for other medical problems is associated with immunized TT injection and is the fourth strongest factors visit to a health service for other medical problems. Additionally, the distance to the health facility is the fifth strongest factors for the ANC package of ANC and the BCG injection, the eighth for TT injection and the visit Doctor and the ninth for delivered the baby in a health facility. Finally, hearing about family is the third strongest factor and is associated with 3 dependent variables for the use package of ANC, fourth strongest factors is for TT injection and the sixth, injection for 4 visits for ANC.

Theoretical Contribution

Maine and McCarthy have started to explain their framework from supply side. They showed the relationship between these supply factors and pregnancy outcomes but omitted demand side factors. This study has completed their incomplete task, starting from demand side with an adjustment of new variables is the first contributing knowledge of this study. Secondly, most of the researchers limited their research themes to a single subject but this study adopted “interdisciplinary” approach and got success to test the hypothesis of human capital and screening theory of education, considering some criteria developed by another researcher Daniels. The third contribution of this study is to sketch a new pathway how formal, non-formal

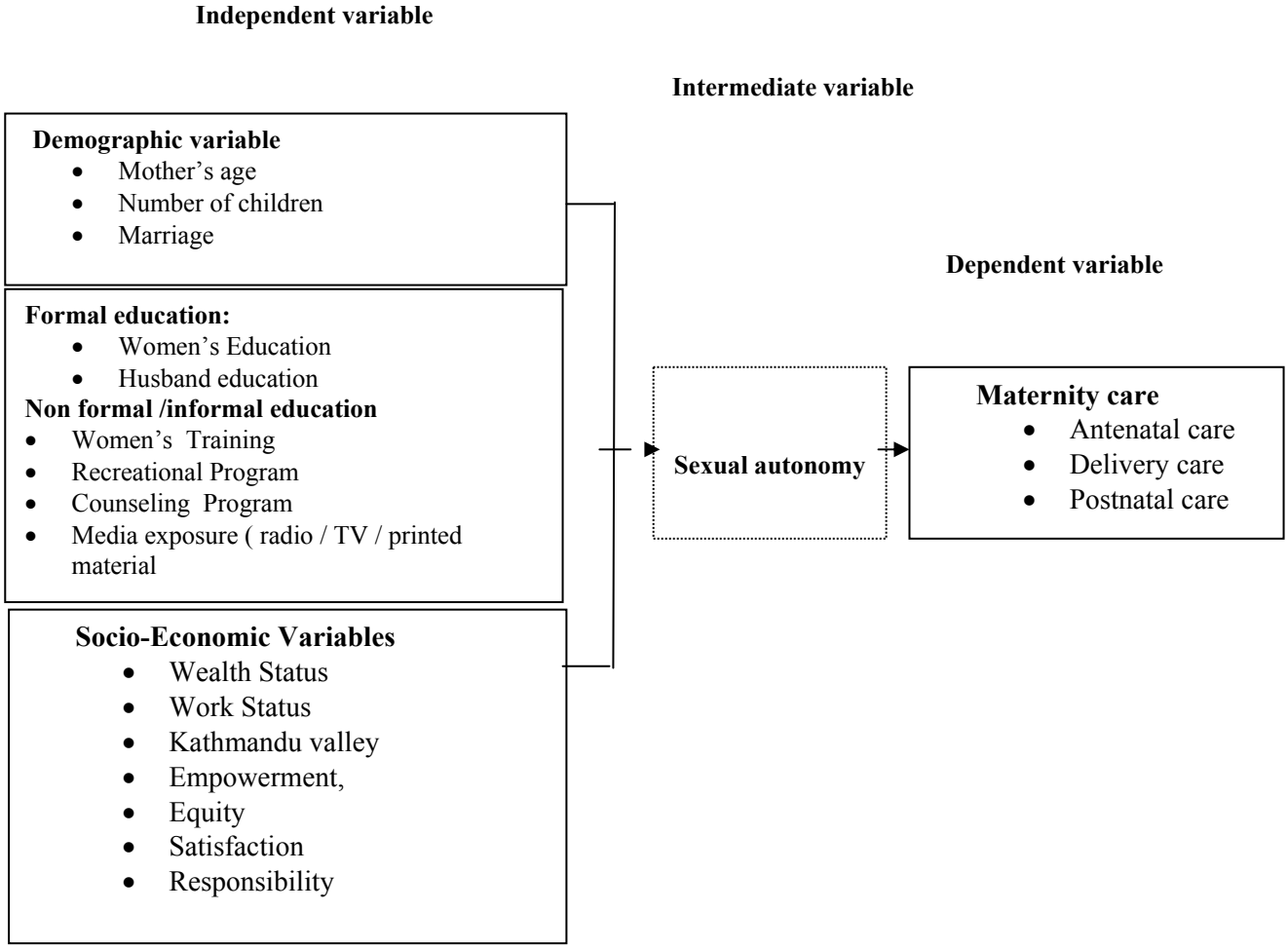
/informal education influence on maternity care through reproductive behaviors, access to and the utilization of available health services. Moreover, the study explores more powerful factors at least 4 visits to a health facility, the use of package of ANC, Immunized TT injection, institutional delivery, postnatal visit, visit doctor, and the immunized BCG injection. Furthermore, the study explores various new indicators under the headings of empowerment, equity, satisfaction, responsibility, and the plan for maternity care for quantitative measurement. Additionally, the study integrated qualitative and quantitative research methods. Findings of the case studies were analyzed in such a way that they could contribute to develop new variables for further research. Finally, this study contributes to the body of research in population /demography utilizing a bio-cultural framework through the integration of anthropological and epidemiological approaches in a comprehensive study of Knowledge related, social, cultural and behavioral determinants of maternity among the pregnant women with reproductive age 15-49 years.

Despite these strengths, various limitations, the study was more ambiguous, complex with the use of more variables and more hypotheses have been established in a single study. As a result; the researcher realized less efficiency, more time consume for data analysis and thus proposed revised conceptual framework for further study. In the proposed frameworks, there are 18 independent variables including 3 dependent variables along with one intermediate variable. In dependent variables, antenatal care, delivery care and postnatal care have been proposed for further study. Moreover, in the maternity care, mothers' participation plays a significance role but it should not be forgotten for the inclusion of male participation and thus, the study suggested including questionnaire for the male. Since, male accompanies their wives to hospital,

prepared to pay treatment when complication arose, and they may have more information about reproductive behavior and accept or reject of contraceptives.

Figure 7

Proposed Conceptual Framework



Due to the limited number of Likert statements, the study felt some limitations especially to rerun in factors analysis and thus recommended at least 100 Likert statements for field test. Finally, personnel and power relationships which exist within the family between the husbands and the wives are clearly important factors for maternity care and thus, the new generated variables like empowerment, equity, satisfaction, responsibility and the plan for maternity care could be applied to understand the knowledge, attitude and perception both male and female on maternity

and thus recommended to manage all of these variables into a single variables as "sexual empowerment" to understand the fertility.

Policy Recommendations

The Based on the findings, the study has made following recommendations to ensure the maternity care.

Broadening the scope of safe motherhood policy. As noticed earlier, there is mushroom growth in policies. As stated earlier, new health policy (1991), of the MOHP of Nepal aims to provide one sub -health post with one AHW, one MCHW for each VDC and one FCHW in each ward of the VDC in the country. Some amount of money has been provided for travelling cost to the health facility as well as nutritious foods for mother. Moreover, government has been successful to formulate safe motherhood policies, but such policies have focused on only home care and hospital care and, rare and dare of self- care policies, autonomy and clinical governance i.e. Clear-cut role and responsibility, accountability of pregnant women, household head, community member, service providers and other concerned stakeholders. Thus, the study recommended the broadening scope of safe motherhood policies including various care as well as clinical governance, and responsibility of the pregnant women with an expectation of the behavior change of both demander and suppliers side .

Net work between different spatial sectors and concerned stakeholders. The study found the huge gap between the women in the Kathmandu Valley and the women outside from the Kathmandu Valley, educated and uneducated women, rural and urban women. The findings revealed that the women in Kathmandu and the educated women have more knowledge and practiced for maternity care and thus recommended to develop maternity care net work between inside the Kathmandu Valley and outside the Kathmandu Valley as well as other concerned agencies.

Reproductive morbidities studies. The study collected self- reported information about the symptoms of pregnancy complication and concluded that morbidity status is still high. There is a gap between the risk from signs of pregnancy complications and the use of available health care services. Thus, this study suggested carrying out the research in morbidity by using both the qualitative and quantitative mixed method to understand their status, targeting two types of women (a) all the pregnant married women of reproductive age and (b) the educated women (with health and non-health background)

Inclusion of the safe motherhood program should be broadening in school program. The study revealed that mother's schooling is directly or indirectly influencing at least four times visiting for ANC care, the use of package of ANC, postnatal visit and other outcome variables. However, the information of maternity care is not sufficient in schooling and non-schooling programs. Thus, the study recommended for Ministry of Education and Culture for the inclusion of sufficient information such as nutrition, childbirth, motherhood and communication, infant health and care, feeding and postpartum women health and contraception in the text book of population and education of each level of education.

Dissemination of pregnancy by pregnant women. Recently, lesson learnt from the European countries, dissemination of pregnancy by pregnant women is being a new program. It is recognized as a part of informal education aiming to increase exposure capacity on them and to reduce psychological cost as well as superstitious feelings towards pregnant women. In addition, appropriate behavior changes communication (BCC) strategies which should be taken to aware for uneducated women and relatively younger- older women about the benefits of the use of available care services and to overcome conservatism and against safe deliveries. Similarly, mass campaign

activities are needed to aware the community people about the dangerous effects of pregnancy complication and maternity deliveries in an unhygienic conditions.

Inclusion of training program. Based on the finding of qualitative part , the inclusion of special training program for pregnant women especially covering 9 skills such as absenteeism skill in sexual activities (including withdraw method of family planning), baby holding skills, breastfeeding skills, bonding skills, caring skills, parenting skills, self -caring skills, oil massage skills, transferring the vocabulary skills which could be contributed to ensure the health of mother and the newborn child and thus recommended to the MOHP for the inclusion community base training..

Need to increase the income of the pregnant women. The level of women's income plays a significant role to increase all types of maternity care services. Therefore, special package programs for income generation activities like micro credit are being necessary to reduce income inequalities and ensure maternity care in Nepal and are thus recommended community base credit program pregnant programs for the pregnant through various financial institution as well as an expansion of health insurance program to cope with the cost of the maternity care services in Nepal. Moreover, *Dhuketi,* popular in *Thakali* and *Guthi* especially popular in *Newar, c*ommunity could be an alternative ways for health care system of Nepalese women.

Establishment of health facilities to increase the access of maternity care services.

The nearest distance to a health facility can create the demand for health services. Thus, need to increase the access of health service points along with highly skilled manpower to fulfill the demand of pregnant women. Therefore, it should be recognized that MOHP as well as Ministry of General Administration and Ministry of Finance for the expansion health service points with appropriate health professional

especially focusing the rural and the targeted areas. Moreover, service delivery mechanism should be conducted through integrated approach rather than isolated approach to create the demand of the available health care services for maternity care.

Fairly allocation of resources is needed to ensure the maternity care services. The study found more women were benefited from the available services in the Kathmandu Valley rather than outside the Kathmandu Valley due to the available of health professional in public hospitals as well as in private hospitals. However, in the other districts, there is demand but in the absence of health care providers it is suspected in the equal opportunity of the quality of service.Therefore, optimum and fair allocation of resources in health care services are being an urgent need to reduce the gap between the rural and the urban areas and thus, it needs to increase the access of medical Doctors, Nurse, Public Health Officer, Demographer and other Health Personnel outside from the Kathmandu Valley.

Need to introduce the cost coping strategy of an individual. According to Borjhi, Samanathan, Lissner, and Mills, (2006) in Nepal, the government responded to find the financial costs of delivery care , particular transport were the both substantial and acts as barriers to their objective of increased skilled birth attendants at birth. However, self care policy as well as cost coping strategy of an individual policy has not been introduce d and thus, need to address the cost coping strategy of an individual and self- care as well as pregnancy governance for safe pregnancy.

Conclusion

By looking at the data from quantitative and qualitative point of view, the study concluded that the risk from the signs of pregnancy complication is higher both

in educated and non-educated women although care programs are in the increasing trends. Moreover, mother's education is necessary but it is not in a sufficient condition for the maternity care. Therefore, the integration of individual, household and community level efforts should be promoted to increase the use of MCH services. The study has a clear indication that program targeted to improve the education of women, income generating activities, as well as support of other family members on pregnancy and delivery care management, nearest distance to a health facility, placement of medical doctors especially outside from the Kathmandu Valley help to improve the use of maternity care services. The study also has recommended that a follow-up study designed to use the path analysis for analyzing effects of the distance and the intermediate factors used in the conceptual framework would be useful. The study provides a new knowledge about how formal and non-formal/informal education has influenced the utilization of maternity care services, the changes in reproductive behaviour and the increase in the access to and utilization of available health care services.

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Appendices A: Descriptive Part

Annex 1

	Summary and Main Thrust of Health, Population and Education Policies
1960	Population policy setup firstly, focusing to family planning program.
1978	Alma –Ata declaration set up the goal "health for all by the year 2000.
1987	The first international conference of Nairobi focus to formulate country specific program of SMP
1990	Targets of MDGs are: universal primary education, reduce two- thirds the under -5 mortality, and three quarters of the MMR throughout improving maternal mortality.
1991	NHP, focus to increase health care & reduce MMR and ensure quality of life.
1994	ICPD focus on universal access of PHC, primary education and full range of RHC.
1994	Bejhing conferences focus in 12 areas.
1994	Formulated country specific SMP aiming to provide reproductive health services
1994	Formulate national Plan of Action for SM, 1994-2017
1997	The Ministry of Health and Population formulated second long term health plan (1997-2017)
2001	Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio
2006	Implementing cost sharing scheme aiming to increase access of skilled birth attendants.
2007	GoN set up the National policy on SBA as the supplementary program of the SMP, 1994.
2007	Budgetary provision has been made to upgrade 25 sub-health posts into health center.
2007	Public hospital and PHC provide concession base medical services to the student those who studies community-based school.
2002	United States, formulated loan repayment programs for nurse.
1961	Addis Ababa, the targets of the long term plan (1961-1980) is that primary education shall be universal, compulsory and free.
1990	Thailand, Jomtien; Conference on "Education for all" expanded vision of basic education.
	Universal access to and completion of primary, education by the year 2000.
2002	DFA, 2000 re- set by the world education forum so that by 2015 all children will have access to and complete free and compulsory primary education
	Scholarship program for girls and launching of the Education for All.
2002	To increase the GRR and reduce droop-pout in schooling by tenth plan.
2007	Continuing in the expansion of less-formal education and vocational training.
2007	Expanded of *Madarasa, Gumba, and Gurukul* to lower and secondary level

Compilation by Researchers, 2007

Annex 2
An Eye-opening Picture Appeared in the Kantipur

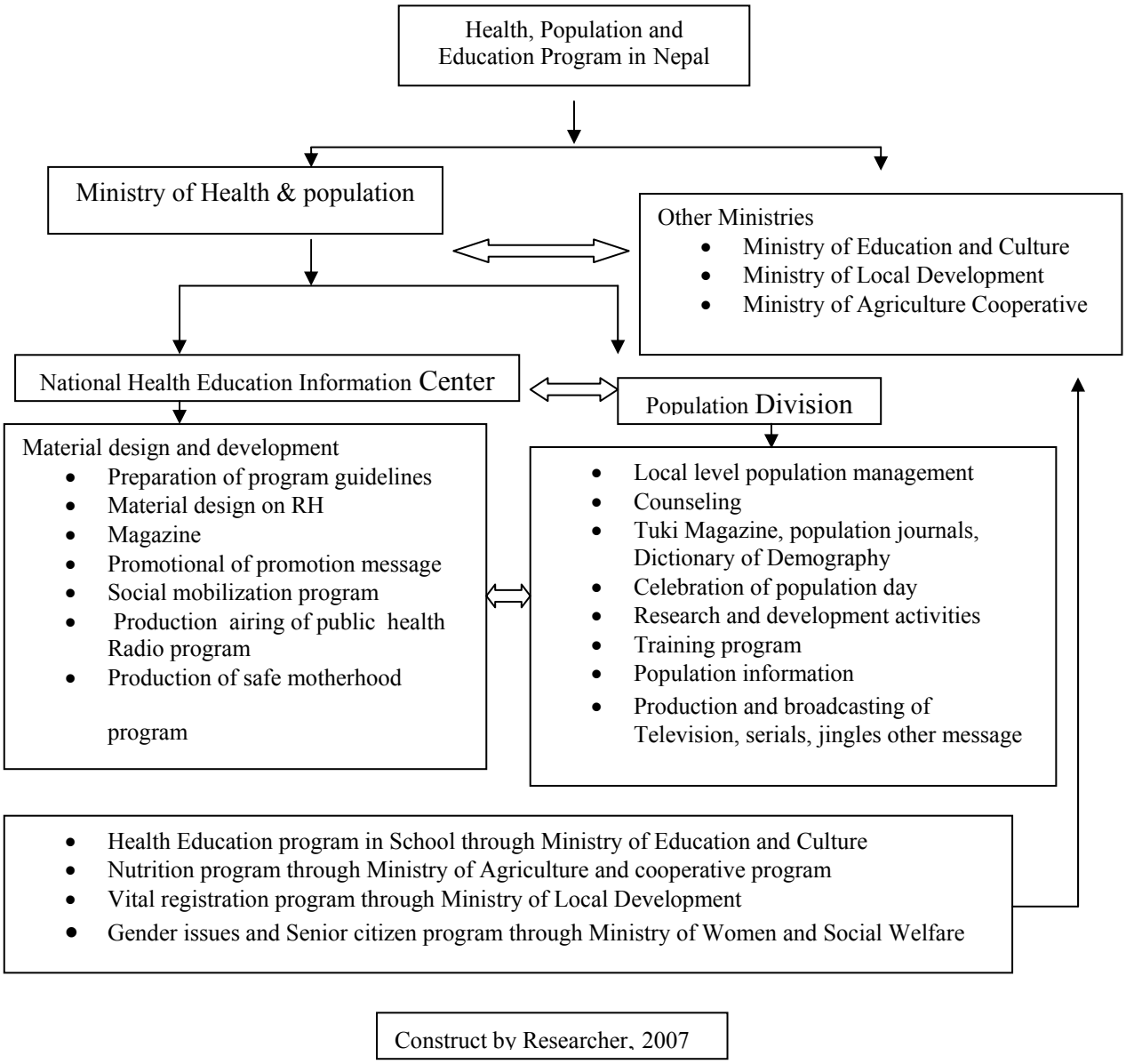
An eye-opening picture appeared in Kantipur (see picture) showing to a child examinees appearing in the SLC examination with their newborn babies. One of them gave birth to a child in the examination hall and another was breast- feeding while writing answers and it is an example of interlinking between the education and the maternity care.

This picture indicates that the demand for education is higher and the access is there but the output of SLC exam was suspected due to the reproductive behavior, disturbance in writing due to the breastfeeding for the newborn child and possibility of extreme tiredness of the mother.

It was funny; one of the newborn child's names was fixed *SLC Prasad Chaudhary*. Superintendent managed separate room during the exam to examine the deliver babies. Such a phenomenon may lead a high risk of death for both mothers and babies.

Educationalists may be on pipeline to explore the influential factors, why the student failed in mathematics, English and Science without any consideration of reproductive behavior? On the contrary, gynecologist or /health professional paid less attention to the dropout in schooling ,absenteeism and repetition of same grade and there is questionable in the output of SLC examination Thus, such factors stimulus me to explore the influential factors for maternity care linking with formal and non-formal/ informal education.

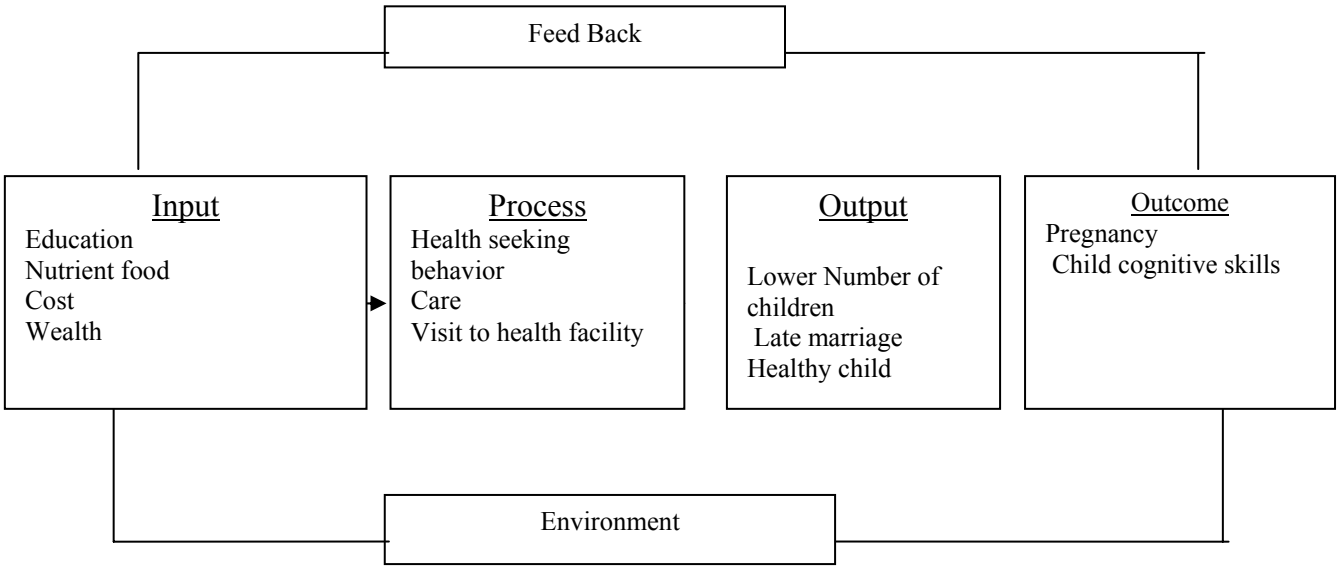
Annex 3
Health Education Program



Construct by Researcher, 2007

Annex 4
Inputs and Outputs System Analysis for Maternity Care

Appropriate care for mother and new born child is the part of the health service industry. The relationship between medical inputs and output can be captured in what economics called a production function in terms of economics and such function simply depends on the quantities of various inputs, such as knowledge, medical care, endowment, life-style, socio-economic status, and environment.



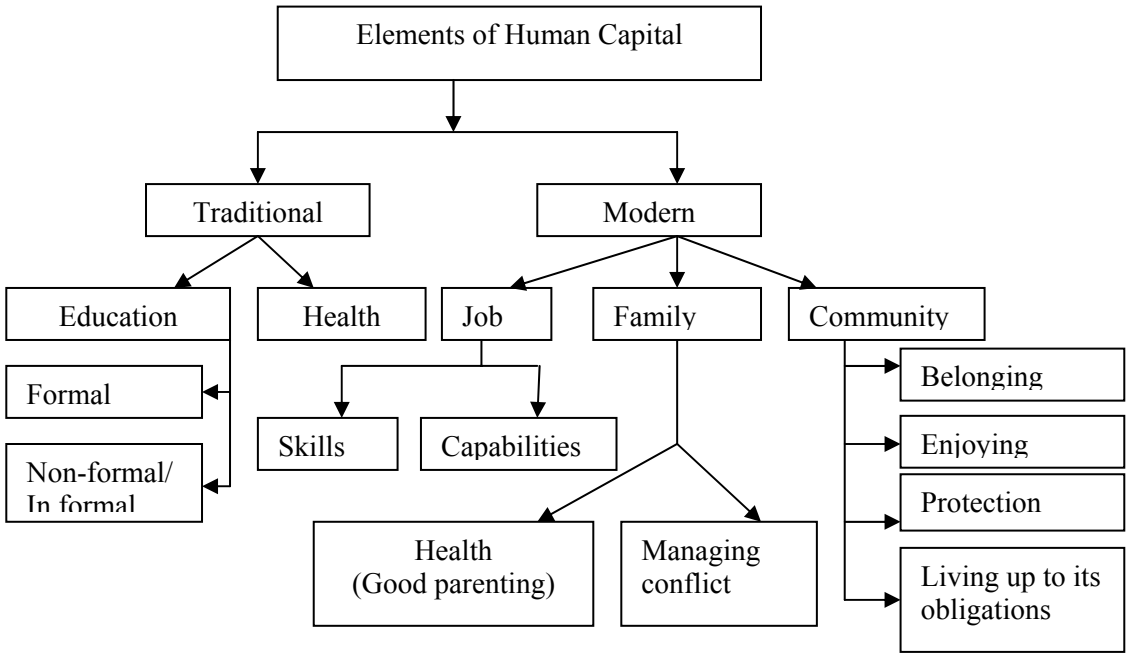
Traditionally, policy makers and planners did not consider the appropriate care as part of industry and ignored health and allocate lower amount of money especially in the less developed countries. In regard this issue, another discipline of the concept of health economics was around the decade of1990' and then after all the international community along with national community recognized health services were as a part of industry. The following table shows the relationship between the input and the output.

Pathway:
A mother those who have appropriate investment in education, nutrient foods, visiting to a health facility have positive influence in health seeking behavior and as a result, late marriage leads the couple to give birth to a healthy child.

Healthy child motivates the parents to lower the fertility, reduces the number of pregnancy and then after reduces the burden of hospitals (community), to lower the demand for medicine, and capital flight and then able to correct the balance of payments of a country .

As there is the balance of payments, it enhances the macro economics, increases employment, income, saving, investment and ultimately change socio-economic status of the society. Moreover, healthy child can earn more, his / her income that per capita of nations will be higher, and there will be positive influence from generation to generation and thus maternity care is recognized as a part of health service industry.

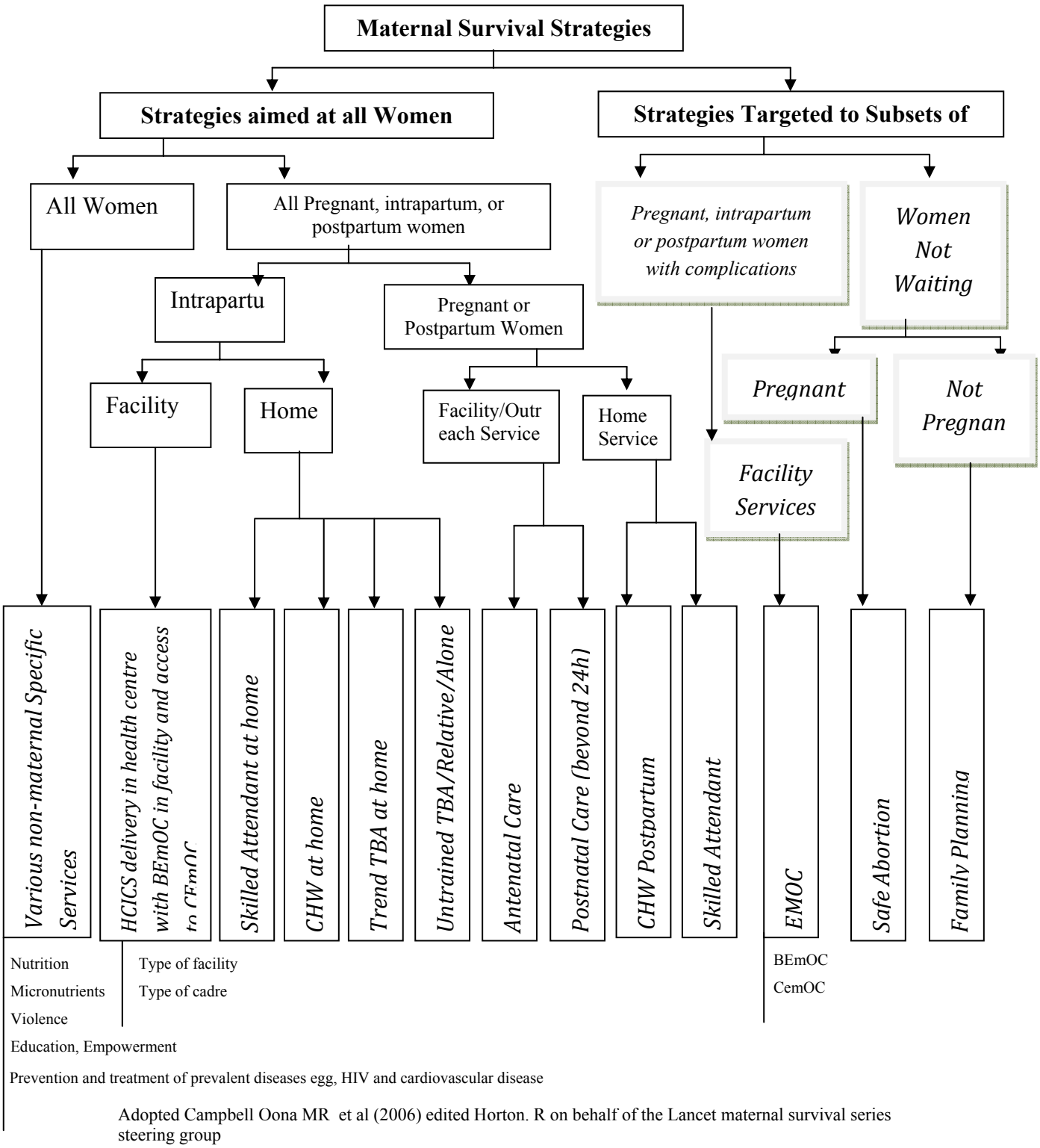
Annex 5
Elements of Human Capital Theory



Constructed by researcher, based on Human Development Report, 2007 and Szirmai A. (2005).

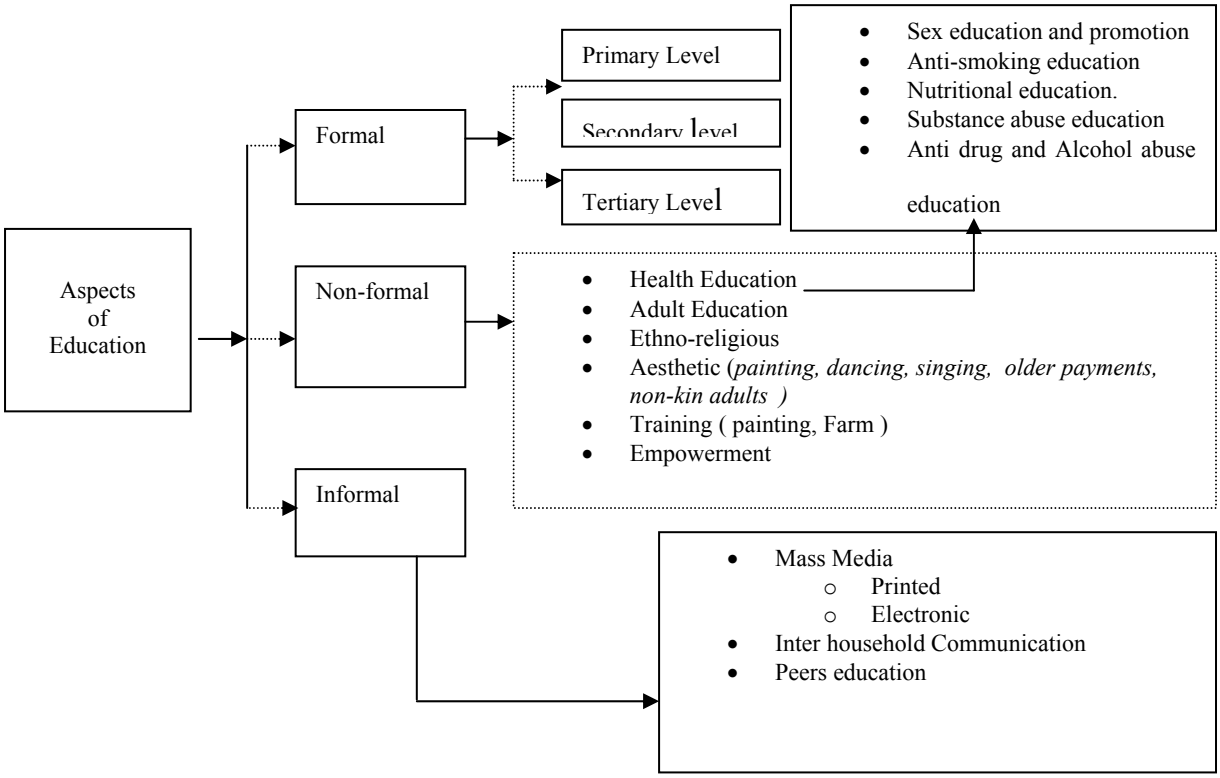
Traditionally, the subject matter of human capital theory of education mainly focuses on education and health but recently it is broaden than that. In modern time, it has become wider such as the study of job, family and community. The components of family are health, managing conflict. Similarly, belonging, enjoining, protection and living up to has been considered as the elements of human capital theory.

Annex 6
Strategy for Maternal Survival



Adopted Campbell Oona MR et al (2006) edited Horton. R on behalf of the Lancet maternal survival series steering group

Annex 7
Aspect of Education



Constructed by researcher, based on the information Szirmai, A. (2005). The Dynamic of Socio-economic Development

Formal education. As officially, registered indicators refer to formal education. It can be classified in primary, secondary and tertiary level.

Non-formal education. Non formal education comprises all forms of organized education that are not included in the regular schooling system: adult education; education for dropouts; literacy project; agricultural extension or information; occupational training; in-firm training program; health education ;education for family planning, and so on (Coombs & Ahmed., 1974)

Informal education. Life long process of accumulation of knowledge and skills through experiences in daily life –at play, at work at home or elsewhere (Coombs ,1985;Coombs & Ahmed., 1974). There is no point in considering informal education as a part of the educational system. But the rapid new mass media and means of communication, such as news papers, radio, cinema, television, books and magazine may serve as mechanism of information transfer. Basically, education can be classified into three terms: formal, non-formal and informal education.

Appendices B: Bivariate Part

Annex 8

Association between Risk Group of Women and Maternity Care (ANC Visit to BCG Injection)

	Number of ANC visit					
	Never (N=40)	1 to 3 (N=156)	4 visit (N=188)	Total (N=384)	x^2	P value
Degree of risk during pregnancy and the number of visiting for ANC					11.11	P <0.05*
High	14(13)	48(46)	43 (41)	105(100)		
Medium	9(5)	68(41)	91(54)	168(100)		
Low	17(15)	40(36)	54(49)	111(100)		
Degree of risk during pregnancy and the use package of ANC					7.78	P >0.05
	Full (n=203)	Partial (n=142)	None (n=39)	Total (n=384)		
High	48(46)	42(40)	15(14)	105(100		
Medium	35(55)	27(42)	2(3)	64(100)		
Low	120(56)	73(34)	22(10)	215(100)		
Degree of risk during pregnancy and immunized TT injection					7.15	P >0.05
	No (n=72)	1st dose (n=43)	2nd dose (n=269)	Total (n=384)		
High	26(24)	10(10)	69(66)	105(100)		
Medium	22(12)	19(11)	127(77)	168(100)		
Low	24(21)	14(13)	73(66)	111(100)		
Degree of risk during pregnancy and institutional delivery					11.87	P<0.001***
	Home (n=251)	HP/C (n=17)	Hospital (n=30)	Total (n=384)		
High	82(78)	1(1)	22(21)	105(100)		
Medium	101 (60)	9(5)	58(35)	168(100)		
Low	68(62)	7(6)	36(32)	111(100)		
Degree of risk during pregnancy and visiting to a health facility for PNC					6.56	P <0.05*
		Yes (n=237)	No (n=147)	Total 384(100)		
High	-	55(52)	50(48)	105(100)		
Medium	-	114(68)	54(32)	168(100)		
Low	-	68(61)	43(39)	111(100)		
Degree of risk during pregnancy and visit doctors for PNC					10.06	P >0.05
	Visit doctor (n=84)	PMS (n=78)	MCHW (n=75)	No visit (n=147)	Total (n=384)	
High	16(15)	18(17)	21(20)	50(48)	105(100)	
Medium	40(24)	36(21)	38(23)	54(32)	168(100)	
Low	28(25)	24(22)	16(14)	43(39)	111(100)	
Degree of risk during pregnancy and immunized BCG injection					5.94	P>0.05
	Agreed (n=107)	Undecided (n=12)	Disagree (n=265)	Total (n=384)		
High	22(21)	5(5)	78(74)	105(100)		
Medium	55(33)	3(2)	110(66)	168(100)		
Low	30(27)	4(4)	77(69)	111(100)		

*Significant at 5%; ** = significant at 1%; *** = significant at 0.1%, Number in the parenthesis indicates that the percentage of cases

Annex 9
Association between Risk Group of Women and Maternity Care (Institutional delivery to BCG injection).

Degree of Risk during delivery and institutional Delivery					x^2	P value
	Home (N=251)	HP/C (N=17)	Hospital (N=116)	Total (N=384)		
High	86(69)	7(5)	32(26)	125(100)	4.05	P >0.05
Medium	126 (64)	9(5)	60(31)	195(100)		
Low	39(61)	1(2)	24(37)	64(100)		

Degree of Risk during delivery and visit to a health facility for PNC					
	Yes (n=237)	No (n=147)	-	Total 384(100)	0.96 P >0.05
High	81(65)	44(35)	-	125(100)	
Medium	119(61)	76(39)	-	195(100)	
Low	37(58)	27(42)		64(100)	

Degree of Risk during delivery and visited to doctor							
	Doctor (n=84)	PMS (n=78)	MCHW((n=75)	Not visit (n=147)	Total 384 (100)	8.76	P >0.05
High	22(18)	27(21)	32(26)	44(35)	125(100)		
Medium	44(23)	38(20)	37(19)	76(39)	195(100)		
Low	18(28)	13(20)	6(9)	27(42)	147(38)		

Degree of Risk during delivery and BCG injection for newborn child				0.95	P >0.05
	Agree (n=107)	Undecided (n=12)	Disagree (n=65)	Total (384)n	
High	35(28)	5(4)	85(68)	125(100)	
Medium	53(27)	6(3)	136(70)	195(100)	
Low	19(30)	1(2)	44(68)	64(100)	

*significant at 5%; ** = significant at 1%; *** = significant at 0.1%,

Annex 10

Association between Risk Group of Women PNC and Maternity Care (PNC to BCG injection for Newborn child within three days)

Degree of risk for women during the period of PNC & visit health facility					x^2	P value
	Yes (N=237)	No (N=147)	-	-	Total (N=384)	0.90	P >0.05
High	88(60)	59(40)	-	-	147(100)		
Medium	118(64)	66(36)	-	-	184(100		
Low	31(59)	22(52)	-	-	53(100)		
Degree of risk for women during the period of PNC and visited to doctor						14.55	P<0.001***
	Doctor (n=84)	PMS (n=78)	MCHW (n=75)	No visit (n=147)	Total (n=384)		
High	20(14)	29(20)	39(27)	59(39)	147(100)		
Medium	50(27)	38(21)	30(16)	66(36)	184 (100)		
Low	14(27)	11(21)	6(11)	22(42)	53(100)		
Degree of risk for women during the period of PNC and BCG injection.						11.53	P.>0.05
	Agree (n=107)	Undecided (n=12)	Disagree (n=205)	Total 384(100)			
High	30(20	3(2)	114(78)	147(100)			
Medium	60(33)	6(3)	118(64)	184(100)			
Low	17(32)	3(6)	33(62)	53(100)			
Degree of risk for NBC and visiting to a health facility for PNC						0.24	P.>0.05
	Yes (n=237)	No (n=147)	-	Total 384(100)			
High	39(61)	25(39)	-	64(100)			
Medium	114(63)	67(37)	-	181(100)			
Low	84(60)	55(40)	-	139(100)			
Degree of risk for NBC and visit doctor for postnatal care						17.39	P<0.001***
	Doctor (n=84)	PMS (n=78)	MCHW (n=75)	No visit (n=147)	Total		
High	6(9)	20(31)	13(20)	25(39)	64(100)		
Medium	37(20)	41(23)	36(20)	67(37)	181(100)		
Low	41(20)	17(11)	26(19)	55(40)	139(100)		
Degree of risk for NBC and BCG injection for newborn child						11.53	P.>0.05
	Agree (n=107)	Undecided (n=12)	Disagree (n=265)	Total (n=384)			
High	9(14)	4(6)	51(80)	64(100)			
Medium	54(30)	7(4)	120(66)	181(100)			
Low	44(31)	1(1)	94(68)	139(100)			

significant at 5%; ** = significant at 1%; * = significant at 0.1%, PMS = Paramedical Staff, MCHW=Maternal and Child Health Workers.*

Annex 11

Association between New Generated Variables e. g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and the Number of ANC Visit.

	Number of ANC visit				x^2	P value
	Never	1 to 3	4 ANC Visit	Total		
Empowerment						
Initiating power of the pregnant women					26.28	P<0.001***
High	34(16)	99(45)	85(39)	218(100)		
Low	5(3)	56(35)	99(62)	160(100)		
Total	40(10)	155(41)	184(49)	378(100)		
Job sharing in kitchen by male people					14.62	P<0.001***
High	30(12)	117(46)	107(42)	254(100)		
Low	10(8)	38(30)	81(63)	129(100)		
Total	40(10)	155(41)	188(49)	383(100)		
Shopping power of women					32.71	P<0.001***
High	36(12)	134(47)	116(41)	286(100)		
Low	4(4)	20(21)	70(75)	94(100)		
Total	40(10)	154(41)	186(49)	380(100)		
Decision making power of women					0.16	P>0.05
High	24(11)	91(40)	110(49)	225(100)		
Low	16(11)	65(43)	72(47)	153(100)		
Total	40(11)	156(41)	182(48)	378(100)		
Supremacy power adopted by the male					13.80	0.001***
High	28(11)	116(47)	104(42)	248(100)		
Low	12(9)	39(29)	82(62)	133(100)		
Total	40(11)	155(41)	186(49)	381(100)		
Equity						
Way of dealing to pregnant women by service provider					37.83	P<0.001***
High	33(15)	107(49)	79(36)	219(1000		
Low	7(4)	45(28)	107(67)	159(100)		
Total	40(10)	152(40)	186(49)	378(100)		
Encourage to pregnant women by service providers					22.87	P<0.001***
High	35((16)	99(44)	90(40)	224(100)		
Low	5(3)	57(36)	95(61)	157(100)		
Total	40(11)	156(41)	185(47)	381(100)		
Satisfaction						
Household environment managed by household head					52.70	P<0.001***
High	33(16)	111(54)	75(30)	219(100)		
Low	7(4)	43(27)	110(68)	160(100)		
Total	40(10)	156(41)	185(49)	381(100)		
Caregivers behavior					44.62	P<0.001***
High	35(15)	112(49)	83(36)	230(100)		
Low	5(3)	38(26)	103(71)	146(100)		
Total	40(10)	150(40)	186(50)	376(100)		
Plan for maternity care					32.46	P<0.001***
High	40(14)	146(48)	141(43)	327(100)		
Low	0(0)	6(17)	41(83)	47(100)		
Total	40(10)	152(40)	187(49)	374(100)		
Three people for blood donation					3.64	P>0.05
High	0(0)	11(49)	16(59)	27(7)		

	Number of ANC visit				x^2	P value
	Never	1 to 3	4 ANC Visit	Total		
Low	11(40)	143(40)	172(49)	355(100)		
Total	40(10)	154(41)	188(49)	382 (100)		
Responsibility of Individual, Household Head and Service providers						
Parenting skills transferred to women by service providers					1.59	P>0.05
High	38(11)	145(41)	171(48)	354(10 0)		
Low	1(4)	10(39)	15(58)	26(100)		
Total	39(10)	155(41)	187(49)	381(100)		
Willingness to monitor the pregnancy status					32.16	P<0.001***
High	34(16)	98(47)	77(37)	209(100)		
Low	6(4)	57(33)	108(63)	171(100)		
Total	40(11)	155(41)	186(49)	380(100)		
Life-style adopted by the pregnant women					4.89	P>0.05
High	22(15)	62(41)	68(45)	152(100)		
Low	18(8)	94(41)	120(52)	232(100)		
Total	40(10)	155(41)	188(49)	384(100)		

**=significance at 5%, **=significant 1.5, Significant at 0.1%*

Annex 12

Association between New Generated Variables e. g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and Used Package of ANC

	Used package of ANC services				x^2	P value
	Full	Partial	Never	Total		
Empowerment						
Initiating Power of the pregnant women					31.69	P<0.001***
High	93((43)	89(41)	36(17)	218(100)		
Low	107(67)	50(31)	3(2)	160(100)		
Total	200(53)	139(37)	39(10)	378(100)		
Job sharing in kitchen by male people					7.57	P>0.001***
High	122(48)	103 (41)	29(11)	254(100)		
Low	81(63)	38(29)	10(8)	129(100)		
Total	203(53)	141(37)	39(10)	383(100)		
Shopping power adopted by male people					21.45	P<0.001***
High	132 (46)	119(42)	35(12)	286(100)		
Low	69(73)	21(22)	4(4)	94(100)		
Total	201(53)	140(37)	39(10)	380(100)		
Decision making power of pregnant women					0.53	P>0.05
High	121(54)	80(35)	24(11)	225(100)		
Low	78(51)	60(39)	15(10)	153(100)		
Total	199(53)	140(37)	39(10)	378(100)		
Supremacy power adopted by male					10.22	P>0.001***
High	116(48)	103(41)	29(11)	248(100)		
Low	85(64)	38(28)	10(8)	133(100)		
Total	201(53)	141(37)	39(10)	381(100)		
Way of dealing to the pregnant women by services providers.					30.19	P>0.05
High	109(67)	45(27)	5(3)	159(100)		
Low	93(43)	92(42)	34(16)	219(100)		
Total	202(10)	122(85)	15(5)	378(100)		
Encourage to pregnant women by services providers.					44.26	P<0.001***
High	88(39)	103(46)	33(15)	224(100)		
Low	113(72)	38(24)	6(4)	157(100)		
Total	201(53)	141(37)	39(10)	381(100)		
Household environment managed by household head					60.64	P<0.001***
High	79(36)	107(49)	33(15)	146(100)		
Low	122(76)	32(20)	6(4)	195(100)		
Total	201(53)	201(86)	39 (10)	376(100)		
Caregivers behavior					53.54	P<0.001***
High	87(38)	106(46)	37(16)	230(100)		
Low	109(75)	35(24)	2(1)	146(100)		
Total	196(52)	141(38)	39(10)	376(100)		
Plan for maternity care					5765	P<0.001***
High	150(46)	138(42)	39(12)	327(100)		
Low	44(94)	3(6)	0(0)	47(100)		
Total	196(52)	141(38)	39(10)	382(100)		
Three people for blood donation					3,31	P>0.05
High	16(59)	11(41)	(0)0	27(100)		
Low	186(52)	130(37)	39(19)	355(100)		
Total	202(53)	141(37)	39(10)	382(100)		

	Used package of ANC services				x^2	P value
	Full	Partial	Never	Total		
Parenting skills transferred women by services providers					2.555	P>0.05
High	189(53)	128(36)	37(11)	354(100)		
Low	12(44)	13(50)	1(4)	26(100)		
Total	201(53)	141(37)	38(100)	380(100)		
Willingness to monitor the pregnancy status					31.71	P<0.001***
High	86(41)	89(43)	34(16)	209(100)		
Low	114(67)	52(30)	5(3)	171(100)		
Total	200(53)	141(37)	39(10)	380(100)		
Life-style adopted by the pregnant women					7.59	P>0.05
High	72(47)	57(38)	23(15)	152(100)		
Low	131(57)	85(36)	16(7)	232(100)		
Total	203(53)	141(37)	39(10)	384(100)		

**=significance at 5%, **=significant 1.5, ***Significant at 0.1%*

Annex 13
Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and Immunized TT injection.

	Tetanus Injection					
	No	1st dose	>2nd dose	Total	x^2	P value
Empowerment						
Initiating power of the pregnant women					11.37	P<0.001***
High	52(24)	27(12)	139(64)	218(100)		
Low	19(12)	14(9)	127(79)	160(100)		
Total	71(19)	41(11)	266(70)	378(100)		
Job sharing in kitchen by the male people					4.77	P<0.001***
High	55(22)	30(12)	169(66)	254(100)		
Low	17(13)	13(10)	99(77)	129(100)		
Total	72(19)	43(11)	268(70)	383(100)		
Shopping power of women					8.77	P<0.001***
High	60(21)	37(13)	189(66)	286(100)		
Low	12(13)	5(5)	77(82)	94(100)		
Total	72(19)	42(11)	266(70)	380(100)		
Decision making power of women					0.34	P>0.05
High	45(20)	25(11)	155(69)	225(100)		
Low	27(18)	17(11)	109(71)	153(100)		
Total	72(19)	42(11)	264(70)	378(100)		
Supremacy power adopted by male					0.23	P>0.05
High	47(19)	27(11)	174(70)	248(100)		
Low	23(17)	16(12)	94(71)	133(100)		
Total	70(18)	43(12)	268(70)	381(100)		
Way of dealing to the pregnant women by service providers					17.35	P<0.001***
High	56(26)	19(9)	144(65)	219(100)		
Low	15(9)	24(15)	120(76)	159(100)		
Total	71(19)	43(11)	264(70)	378(100)		
Encourage to the pregnant women by service providers					8.21	P<0.001***
High	53 (24)	25(11)	146 (65)	224(100)		
Low	19 (12)	18(12)	120(76)	157(157)		
Total	72 (19)	43(11)	266(70)	381(100)		
Household environment managed by household head					18.68	*** P<0.001
High	54(25)	30(14)	135(61)	219(100)		
Low	16(10)	13(8)	131(82)	160(100)		
Total	70(19)	43(11)	266(70)	379(100)		
Caregivers behavior					12.37	P<0.001***
High	54(25)	31(8)	145(82)	230(100)		
Low	18(10)	11(8)	117(80)	146(100)		
Total	70(19)	43(11)	266(70)	379(100)		
The plan for maternity care					12.25	P<0.001***
High	71(22)	41(13)	215(66)	327(100)		
Low	1(2)	2(4)	44(94)	47(100)		

	Tetanus Injection					
	No	1st dose	>2nd dose	Total	x^2	P value
Total	72(19)	43(11)	259(90)	374(100)		
Three people for blood donation					2.52	
High	2 (7)	4(15)	21(78)	27(100)		
Low	69(19)	39(11)	247(70)	355(100)		
Total	71(19)	43(10)	268(70)	382(100)		
Parenting skills transferred to the pregnant women by services providers						
High	66(21)	39(11)	249(70)	354(100)	0.49	P<0.001***
Low	5(19)	4(16)	17(65)	26(100)		
Total	71(19)	43(11)	266(70)	380(100)		
Willingness to monitor the pregnancy status					12.60	P<0.001***
High	53(25)	23(11)	133(64)	209(100)		
Low	19(11)	20(12)	132(77)	171(100)		
Total	72(19)	43(11)	269(70)	380(100)		
Life-style adopted by the pregnant women					3.42	P<0.001***
High	35(23)	18(12)	99(65)	152(100)		
Low	37(16)	25(11)	170(73)	232(100)		
Total	72(19)	43(11)	265(70)	384(100)		

**=significance at 5%, **=significant 1.5, Significant at 0.1%*

Annex 14

Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and Institutional Delivery.

	Institutional delivery				x^2	P Value
	Home	HP/C	Hospital	Total		
Empowerment						
Initiating power of the pregnant women					24.70	P<0.001***
High	164(75)	10(5)	44(20)	218(100)		
Low	83(52)	7(4)	70(44)	160(100)		
Total	247(65)	17(5)	114(30)	378(100)		
Job sharing in Kitchen by male power					23.69	P<0.001***
High	182(72)	15(6)	57(22)	254(100)		
Low	68(53)	2(2)	59(46)	129(100)		
Total	250(65)	17(4)	116(30)	383(100)		
Shopping power of women					30.22	P<0.001***
High	207(72)	15(5)	64(22)	286(100)		
Low	43(46)	2(2)	49(52)	94(100)		
Total	250(66)	17(5)	113(30)	380(100)		
Decision making power of women					1.26	P>0.05
High	147(65)	8(4)	70(31)	225(100)		
Low	100(65)	9(6)	44(29)	153(100)		
Total	247(65)	17(5)	114(30)	378(100)		
Supremacy power adopted by the male					22.05	P<0.001***
High	179(72)	14(6)	55(22)	248(100)		
Low	72(54)	2(2)	59(44)	133(100)		
Total	251(66)	16(4)	114(30)	381(100)		
Way of dealing to the pregnant women by service providers					22.96	P<0.001***
High	162(74)	11(5)	46(21)	219(1000		
Low	83(52)	6(4)	70(44)	159(100)		
Total	245(65)	17(5)	116(31)	378(100)		
Encourage to pregnant women by service providers					17.43	P<0.001***
High	166(74)	8(4)	50(22)	224(100)		
Low	84(40)	9(6)	64(53)	157(100)		
Total	250 (65)	17(5)	114(30)	381(100)		
Household environment managed by household head					103.99	P<0.001***
High	184(84)	14(6)	21(10)	219(100)		
Low	64(40)	3(2)	93(58)	160(100)		
Total	248 (65)	17(5)	114(30)	379(100)		
Caregivers behavior					82.51	P<0.001***
High	189(82)	11(5)	30(13)	230(100)		
Low	57(39)	6(4)	83(57)	146(146)		
Total	246(65)	17(5)	113(30)	376(100)		
Plan for maternity care base criterion					52.59	P<0.001***
High	236(72)	16(5)	75(23)	327(100)		
Low	11(23)	1(2)	35(75)	47(100)		
Total	247(66)	17(5)	110(29)	374(100)		
Three people for blood donation					1.47	
High	15(55)	2(7)	10(37)	27(100)		

	Institutional delivery				x^2	P Value
	Home	HP/C	Hospital	Total		
Low	235(66)	15(4)	105(30)	355(100)		
Total	250(65)	17(5)	115(30)	382(100)		
Parenting skills transferred women by service providers					4.91	P<0.001***
High	227(69)	15(4)	112(32)	354(100)		
Low	21(81)	2(8)	3(12)	26(100)		
Total	248(65)	17(5)	115(30)	380(100)		
Willingness to monitor the pregnancy status					31.00	P<0.001***
High	163(78)	5(2)	41(20)	209(100)		
Low	87(51)	12(7)	72(42)	171(100)		
Total	250(66)	17(5)	113(30)	380(100)		
Life-style adopted by the pregnant women					4.34	P<0.001***
High	108(71)	4(3)	40(26)	152(100)		
Low	143(62)	13(6)	76(32)	232(100)		
Total	251(65)	17(5)	116(30)	384(100)		

**=significance at 5%, **=significant 1.5, Significant at 0.1%*

Annex 15
Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and Visit PNC.

	Visit PNC			x^2	P value
	Yes	No	Total		
Empowerment					
Initiating power of the pregnant women				30.95	P<0.001***
High	109(50)	109(50)	218(100)		
Low	125(78)	35(22)	160(100)		
Total	234(62)	144(38)	378(100)		
Job sharing in kitchen by male people				18.87	P<0.001***
High	137(54)	117(46)	254(100)		
Low	99(77)	30(23)	129(100)		
Total	236(62)	147(38)	383(100)		
Shopping power adopted by the male				8.44	P<0.001***
High	165(58)	121(42)	286(100)		
Low	70(75)	24(25)	94(100)		
Total	235(62)	145(38)	380(100)		
Decision making power to women				0.01	P>0.5
High	140(62)	85(38)	225(100)		
Low	95(62)	58(38)	153(100)		
Total	235(62)	143(38)	378(100)		
Supremacy power adopted by the male				3.10	P<0.001***
High	145(58)	103(42)	248(100)		
Low	90(68)	43(32)	133(100)		
Total	235(62)	146(38)	381(100)		
Way of dealing to the pregnant women by service providers				46.99	P<0.001***
High	103(47)	116(53)	219(100)		
Low	130(82)	29(18)	159(100)		
Total	233(62)	145(38)	378(100)		
Encourage to pregnant women by service providers				5.71	P<0.001***
High	127 (57)	97 (42)	224(100)		
Low	108 (69)	49(31)	157(100)		
Total	235(62)	146(38)	381(100)		
Household environment				41.80	P<0.001***
High	105 (48)	114(52)	219(100)		
Low	129(81)	31(19)	160(100)		
Total	234(62)	145(38)	379(100)		
Caregivers behavior				22.02	P<0.001***
High	121(53)	109(47)	230(100)		
Low	112(77)	34(23)	146(100)		
Total	233(62)	143(38)	376(100)		
Plan for maternity care				15.04	P<0.001***
High	189(58)	138(42)	327(100)		
Low	41(87)	6(13)	47(100)		
Total	230(62)	144(38)	374(100)		
Three people for blood donation				4.89	P<0.001***
High	22(82)	5(19)	27(100)		
Low	213(60)	142(40)	355(100)		

	Visit PNC			x^2	P value
	Yes	No	Total		
Total	235(62)	147(139)	382(100)		
Parenting skill transferred women by service providers				0.18	P<0.001***
High	219(62)	135(38)	354(100)		
Low	15(57)	11(43)	26(100)		
Total	234(61)	146(39)	380(100)		
Willingness to monitor the pregnancy status by household head				6.67	P<0.001***
High	116(56)	93(45)	209(100)		
Low	117(68)	54(32)	171(100)		
Total	234(61)	147(39)	381(100)		
Life-style adopted by the pregnant women				4.48	P<0.001***
High	84(55)	68(45)	152(100)		
Low	153(66)	79(34)	232(100)		
Total	237(62)	147(38)	384(100)		

**=significance at 5%, **=significant 1%, significant at 0.1%*

Annex 16
Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and Visit Doctor.

	Visit Doctor					x^2	P Value
	Doctors	PMS	MCHW/ FCHV	No visit	Total		
Empowerment							
Initiating power of the pregnant women						33.93	P<0.001***
High	38(19)	31(15)	40(18)	109(50)	218(100)		
Low	45(28)	46(29)	34(21)	35(22)	160(100)		
Total	83(22)	77(20)	74(20)	144(38)	378(100)		
Job sharing in kitchen by male people						30.72	P<0.001***
High	40(16)	56(22)	41(16)	117(46)	254(100)		
Low	45(34)	21(16)	34(27)	30(24)	130(100)		
Total	84(22)	77(20)	75(20)	147(38)	383(100)		
Shopping power of women						21.61	P<0.001***
High	47(16)	58(20)	60(21)	121(42)	286(100)		
Low	36(38)	19(20)	15(16)	24(26)	94(100)		
Total	83(22)	77(20)	75(20)	145(38)	380(100)		
Decision making power of women						1.07	P >0.05
High	49(22)	43(19)	48(21)	85(38)	225(100)		
Low	34(22)	34(22)	27(18)	58(38)	153(100)		
Total	83(22)	77(20)	75(20)	143(38)	378(100)		
Supremacy power adopted by the male						8.78	P<0.001***
High	45(18)	55(22)	45(18)	103(42)	248(100)		
Low	39(29)	22(17)	29(22)	43(32)	133(100)		
Total	84(22)	77(21)	74(19)	146(38)	381(100)		
Way of dealing to the pregnant women by service providers						51.84	P<0.001***
High	31(14)	32(15)	40(18)	116(53)	219(100)		
Low	53(33)	43(27)	34(21)	29(18)	159(100)		
Total	84(22)	75(20)	74(20)	145(38)	378(100)		
Encourage to pregnant women by service providers						12.23	P<0.001***
High	38(17)	50(22)	39(18)	97(43)	224(100)		
Low	46(29)	27(17)	35(22)	49(31)	157(100)		
Total	84 (22)	77(20)	74(19)	146(38)	224(100)		
Household environment managed by household head						71.92	P<0.001***
High	18(8)	47(22)	40(18)	114(52)	219(100)		
Low	66(41)	30(19)	33(21)	31(19)	160(100)		
Total	84(22)	77(20)	73(19)	145(38)	379(100)		
Caregivers behavior						39.23	P<0.001***
High	28(12)	45(20)	48(21)	109(47)	230(100)		
Low	54(37)	31(21)	27(19)	34(23)	146(100)		
Total	82(22)	76(20)	75(20)	143(38)	376(100)		
Plan for maternity care						43.64	P<0.001***
High	53(17)	70(21)	66(20)	138(42)	327(100)		
Low	27(57)	6(13)	8(17)	6(13)	47(100)		
Total	83(22)	77(20)	75(20)	146(38)	381(100)		
Three people for blood donation						6.09	P>0.05
High	6(22)	9(33)	7(26)	5(19)	27(100)		

	Visit Doctor					x^2	P Value
	Doctors	PMS	MCHW/ FCHV	No visit	Total		
Low	78(22)	69(19)	66(19)	142(40)	355(100)		
Total	84 (22)	78(78)	73(19)	147(39)	382(100)		
Parenting skill transferred women by service providers						10.77	P>0.05
High	83(23)	67(19)	69(20)	135(38)	354(100)		
Low	0(0)	10(39)	5(19)	11(32)	26(100)		
Total	83(22)	7 7(20)	74(20)	146(39)	380(100)		
Willingness to monitor the pregnancy status						12.94	P<0.001***
High	32(13)	40(23)	44(20)	93(44)	209(100)		
Low	49(28)	38(22)	30(18)	54(32)	171(100)		
Total	81(21)	78(21)	74(20)	146(39)	380(100)		
Life-style adopted by the pregnant women						6.06	P>0.05
High	34(22)	24(16)	26(17)	68(45)	152(100)		
Low	50(22)	54(23)	49(21)	79(34)	232(100)		
Total	84(22)	78(20)	75(20)	147(38)	384(100)		

=significance at 5%, **=significant 1.%,* significant at 0.1%*

Annex 17

Association between New Generated Variables e.g. Women Empowerment, Equity, Satisfaction, Plan for Maternity Care, Responsibility and PNC Visit and Immunized BCG Injection for new born child within three days.

	BCG injection for new born child				x^2	P Value
	Agree	undecided	Disagree	Total		
Empowerment						
Initiating power of the pregnant women					2.84	P<0.001***
High	54 (25)	6(3)	158(72)	218(100)		
Low	51(32)	6(4)	103(64)	160(100)		
Total	105(28)	12(3)	261(69)	378(100)		
Job sharing in the kitchen by male people					9.84	P<0.001***
High	58(23)	9(4)	187(74)	254(100)		
Low	49(38)	3(2)	77(60)	129(100)		
Total	107(28)	12(3)	264(69)	383(100)		
Shopping power of women					8.54	P<0.001***
High	69(24)	7(2)	210(73)	286(100)		
Low	36(38)	4(4)	54(57)	94(100)		
Total	105(28)	11(3)	264(70)	380(100)		
Decision making power of women					2.93	P >0.05
High	57(25)	9(4)	159(71)	225(100)		
Low	49(32)	3(2)	101(66)	153(100)		
Total	106(28)	12(3)	160(69)	378(100)		
Supremacy power adopted by the male					0.86	P >0.05
High	66(27)	7(3)	175(71)	248(100)		
Low	40(30)	5(4)	88(66)	133(100)		
Total	106(28)	12(3)	263(69)	381(100)		
Way of dealing to the pregnant by service providers					7.91	P<0.001***
High	51(23)	5(2)	163(74)	219(100)		
Low	55(35)	7(4)	97(61)	159(100)		
Total	106(28)	12(3)	260(69)	378(100)		
Encourage to pregnant women by service providers					1.60	P<0.001***
High	61(27)	5(2)	158(71)	224(100)		
Low	44(28)	7(5)	106(67)	157(100)		
Total	105(28)	12(3)	264(69)	381(100)		
Household environment managed by household head					18.20	P<0.001***
High	43(19)	8(4)	138(77)	219(100)		
Low	63(39)	3(2)	94(59)	160(100)		
Total	106(28)	11(3)	262(69)	374(100)		

	BCG injection for new born child				x^2	P Value
	Agree	undecided	Disagree	Total		
Care givers behaviors					19.88	P<0.001***
High	46(20)	9(4)	175(76)	230(100)		
Low	60(41)	3(2)	83(57)	146(100)		
Total	106(28)	12(3)	258(69)	376(100)		
Plan for maternity care					8.19	P<0.001***
High	83(25)	10(3)	234(72)	327(100)		
Low	21(45)	2(4)	24(51)	47(100)		
Total	107(28)	12(3)	262(69)	381(100)		
Three people for blood donation					0.47	P<0.001***
High	9(33)	1(4)	17(63)	27(100)		
Low	98(28)	11(3)	246(69)	355 (100)		
Total	107(28)	12(3)	263(69)	382(100)		
Parenting skills transferred women by service providers					6.49	P<0.001***
High	100(28)	9(3)	245(69)	354(100)		
Low	6(23)	3(12)	17(65)	26(100)		
Total	106(28)	12(3)	263(69)	380(100)		
Willingness to monitor the pregnancy status					0.59	P<0.001***
High	31(55)	6(3)	148(71)	209(100)		
Low	50(29)	6(4)	115(67)	171(100)		
Total	105(28)	12(3)	263(69)	380(100)		
Life-style adopted by the pregnant women					9.94	P<0.001***
High	34(22)	1(1)	117(77)	152(100)		
Low	73(72)	11(5)	148(64)	232(100)		
Total	107(28)	12(3)	265(69)	384(100)		

**=significance at 5%, **=significant 1.5, significant at 0.1%*

Appendices C: Factor Analysis

Annex 18

Factor Loading for Exploratory Factor Analysis With Varimax Rotation of Women Empowerment Scales.

(Factor loading >.60 are in boldface)

	Women Empowerment	Component				
		1	2	3	4	5
51.2(f)	I can initiate discussion with my husband and family member for making plan for maternity care	**.815**	.072	-.013	.070	-.019
51.2 (a)	I can initiate discussion with my husband and family member for children education	**.767**	-.072	.054	.054	.058
51.2(e)	I can initiate discussion with my husband and family member in birth timing or spacing, birth number and postnatal care.	**.758**	.100	.082	-.035	.128
51.2 (d)	I can initiate discussion with my husband and family member in antenatal care	**.656**	.158	.217	.040	-.014
51.8(b)	There is common practice to do the dish	.118	**.914**	.068	-.029	.119
51.8 (b)	There is common practice to clean the house and washes the cloth	.160	**.896**	.058	.022	.159
51.8(a)	There is common practice to do together and have breakfast lunch and dinner	-.026	**.771**	.075	.089	-.085
51.4	I can walk alone to a health facility	.056	.089	**.764**	-.051	.083
51.1	I can purchase daily consumable food items cosmetic goods, and candy for kids and myself.	-.006	.010	**.652**	.082	.068
51.7	I know the place where to go, how to go and when to go to check up the health	.344	.093	**.601**	.063	-.037
51.3(b)	Decision made by respondent to construct & repair house	.060	.142	.123	**.851**	-.069
51.3(a)	I can make decision in the harvesting.	.047	-.061	-.027	**.840**	.201
51.5	Male people think superior to women	-.037	.046	-.059	.045	**.857**
51.6	I am fully independent for voting	.187	.102	.288	.086	**.603**

Note :Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Annex 19

Factor Loading for Exploratory Factor Analysis With Varimax Rotation of Equity concerned Scales.

(Factor loading >.60 are in boldface).

	Equity concerned	Component 1	2
51.34 (c)	Equal opportunity realized by respondent the rural and the urban clients	**.916**	.091
51.34 (d)	Equal opportunity realized by respondent the educated and the uneducated women	**.914**	.121
51.34 (b)	Equal opportunity realized by respondent between the rich and the poor women	**.906**	.105
51.34 (e)	Equal opportunity realized by respondent the lower cast and the higher cast women	**.904**	.155
51.35	Equal opportunity realized by respondent between male and female child	**.870**	.196
51.10	Service providers always encourage me to explain my problem in a convenience way and make an inquiry time to time to find out my problem	.148	.773
51.9	I can ask any thing with health workers without any fear and service providers listen my problem seriously	.124	**.704**
51.13	Caregivers start to write the prescription after hearing my problems	.074	**.649**
51.11	Service providers clearly mentioned the method of using of drug and contraception	.167	**.645**
51.12	Caregivers turned round his/her the head to other side, when I explained my problem	.013	**.623**

Note: Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 3 iterations.

Annex 20

Factor Loading for Exploratory Factor Analysis With Varimax Rotation of Satisfaction Scales.

(Factor loading >.60 are in boldface)

	Satisfaction	Component	
		1	2
51.31(a)	Utilize smokeless and ventilated facilities to give birth.	**.838**	.126
51.31(C)	The family members practice to wrap from head to toe with another dry soft and clean clothes to keep warm rooming with mother facilities	**.833**	.048
51.31(a)	Utilize smokeless and ventilated facilities to give birth.	**.728**	.190
51.30	Household head encouraged me to increase my intake according to my choice & reduced my workload for rest.	.502	.243
51.34 (a)	Health personal was available in a right time in the right place	.063	**.850**
51.32	Doctors, nurse and other staff in hospital behave kindly to me and thus willingly to seek services, continuation of the utilization of available services	.242	**.702**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation Converged in 3 iterations.

Annex 21

Factor Loading for Exploratory Factor Analysis With Varimax Rotation of Plan for Maternity Care Scales.

(Factor loading >.60 are in boldface)

	Plan for Maternity Care	Component		
		1	2	3
51.20	Preparation to visit a SBA for delivery care.	**.738**	-.112	-.040
51.15	Arrangement of additional money for maternity care	**.673**	.092	-.111
51.21	Buying of kit box, new clothes for mother and newborn child in case of home delivery.	**.644**	.071	.081
51.14	I Made an action plan to medical check up and my husband imposed me to keep all the medical records along with other documents safely	.593	-.127	-.129
51.18	Food and fruit stock for delivery.	.582	.059	.375
51.16	Use of contraception for birth spacing	.492	.144	-.375
51.17 (c)	Cart or horse use by respondent for maternity care	-.059	**.770**	-.331
51.19	Three people for blood donation:	.224	**.648**	.170
51.17 (c)	Bus arrange by respondent for maternity care	.535	-.622	-.180
51.17(b)	Doko and tamden use by respondent	-.068	.026	.788

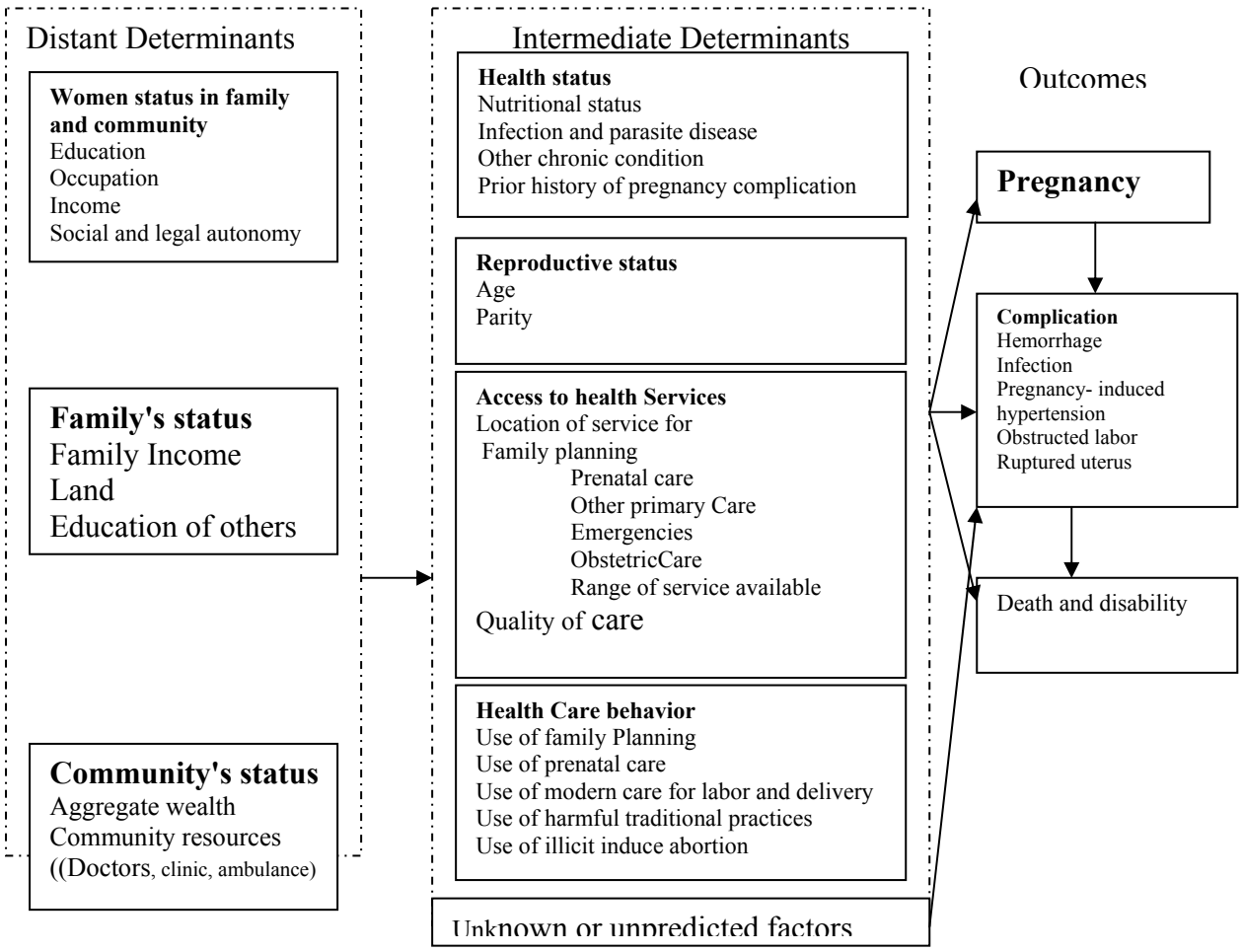
Note : Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation Converged in 5 iterations.

Annex 22
Factor Loading for Exploratory Factor Analysis With Varimax Rotation of Responsibility Scales.
(Factor loading >.60 are in boldface)

	Responsibility	Component		
		1	2	3
51.28	If, any major problems identified by service providers during the period of home visit, refer mother and baby to a better health facility for medical check up	**.822**	.048	-.021
51.26	Service providers visit my home and teach breastfeeding and maternal infant bonding skills. If, bottle-feeding advice is needed on preparation and sterilization of bottles	**.726**	-.185	.094
51.29	Service providers provide training for good parenting skills, covering issues that will emerge with the increasing mobility of the child, and talk about child safety in the home	**.659**	.282	-.013
51.27	Service providers recognize my economics status and try to understand where, when and how I present in the health facility and provide proper attention for myself	.570	.219	-.013
51 (c)	I am very near in washing hands before breastfeeding to the newborn child	.530	.028	.190
51.24	Household members are interested to understand whether I am OK or not. In case of illness, they advised me to visit a health facility.	.023	**.801**	-.074
51.22	I always show the willingness to share my pregnancy complication with my husband and he always advised me to visit a health facility when I found any type of complication	.038	**.716**	.010
51.35	Availability of health personnel in right time and place.	.038	.542	.226
51.25	Household head authorized power to me for the utilization of available health services in this area without any terms and conditions	.203	.481	.186
51.23(b)	I am very far in drinking habit	.116	.059	**.853**
51.23(a)	I am very far from smoking	.022	.159	**.842**

Note: Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. Rotation Converged in 5 iterations.

Annex 23
A Framework for Analyzing the Determinants of Maternal Mortality Developed by Maine and McCarthy



Source: A Framework for Analyzing the Determinants of Maternal Mortality built by McCarthy and Deborah Maine (1992).

Annex 24

Benchmarks of Fairness for Health Care Reforms: Policy Tool for Developing Countries.

Benchmark 1: related with inter sectoral public health. There are three criteria. The first is related with demographic. Second, is related to development information, and third is related with inter-sectoral efforts at local, national and regional level.

Benchmark 2: related with financial barriers to equitable access and this benchmark covers two sectors informal and formal sectors (insurance).

Benchmark 3: covers non-financial barriers to access like as reduction in geographical mal distribution, gender, culture, discrimination by religion, cast and disease including stigmatization of group receiving public care.

Benchmark 4: Comprehensiveness of benefit like as an effective and needed services deemed affordability by all needed providers and reforms for poor

Benchmark 5: equitable financing especially in the principle of ability to pay, out-of pocket and insurance.

Benchmarks 6: related with efficacy, efficiency and quality of care like as primary health care focus, implementation of evidence based practice and measures to improve quality.

Benchmark 7: Is related administrative efficiency like as minimized overheads, cost reducing purchasing, minimizing cost shifting, and minimize inappropriate incentives.

Benchmark 8: democratic accountability and empowerment like as explicit public, detailed procedures for evaluating services, deliberating procedures, handling grievance, adequate privacy protection and strengthening civil society.

Benchmark 9: patient and provider autonomy like as degree consumers' choice, degree of practitioner autonomy.

Annex 25
Themes for In-depth Interview (Qualitative Part)

Main themes	Main questions	Follow up questions	Probes
R Q (1) Maternity care status	Can you tell me about symptoms of pregnancy complication	Did you visit to a health facility	Any things else about ANC, institutional delivery and PNC
RQ (2) Formal Education	Can you tell me the importance of mother's schooling on maternity care	Does your text book inform anything about maternity care?	Any things else about mothers schooling .
Non- formal/informal education	Can you tell me about the importance of training for maternity care?	What types of training did you received and what sort of information did you received from that?	Any things else about this
	Can you tell me about the importance of recreational program	What type of recreational program did you participate	Any things else about this
	Can you tell me about the importance of counseling program	Who counseled you and what sort of information did you receive?	Any things else about this
	Can you tell me about the importance of media exposure /	How often did you listen radio / TV	Any things else about this
RQ 3 Other factors rather than education	Can you tell me about your house hold assets	Are there equal opportunities for the use of your household assets?	Anything eel about this.
RQ 4 Intermediate variables	Can you tell me about your reproductive behavior	Are you interested to make children? If, yes why?	Any thing about this.
	Can you tell me about your visiting status of a health facility for other medical problems?	How often do you integrate your other problems with maternity care?	Any thing else about this.
	Can you tell me about the travelling time to health facility?	Managing the travelling mode	Any thing about this.
	Can you tell me about your strategy for maternity care?	Mechanism of cost coping strategy for maternity care	Any thing about this.
RQ 5 Empowerment	Can you tell me your empowerment	Status of initiating power on the use of contraceptives, education , number of children and decision making	Anything about this.

Equity	Can you tell me about equal opportunity in services?	Any discrimination in service delivery mechanism	Any thing about this.
Satisfaction	Can you tell me about the satisfaction of service /food?	Any dissatisfaction on service delivery feeding practices, mechanism, behavior of service provider.	Any thing about this.
Responsibility	Can you tell me your responsibility?	Fulfillment process of responsibility towards newborn child	Anything about this.
Plan for maternity care	Can you tell me about your plan for maternity care?	Preparation of basic things for safe pregnancy	Anything about this

Annex 26
Measurement Scale of Dependent and Independent, Intermediate Variables as well as New Generated Variables.

Variable	Operational Definition	Measurement Scale
Maternity care	The sum of benefit obtained by pregnant women from medical or non-medical care, before during, and after delivery.	**Binary** 0=No 1=Yes
Antenatal care	at least four-time visiting for ANC services	**Binary** 0=No 1= at least 4 visit
Package of ANC services	As of 8, use 6 types of ANC services by the pregnant women during the period of ANC service.	**Binary** 0=Not use 1= Use full package
TT injection.	Immunized two does of tetanus toxied injection.	**Binary** 0=No 1=Yes
Delivery care	Deliver her baby either in a hospital (either in private or public) or in a health facility.	**Binary** 0=Home delivery 1=Institutional delivery
Postnatal care	Visiting to a health facility by pregnant women for PNC check up.	**Binary** 1=Yes 2= No
	If yes, whom did she visit to a health facility for maternity care?	**Binary** 0=Others 1=Doctors
	BCG immunization obtained by new born child within three days	**Binary** 0=No 1=Yes
	Degree of Risk Assessment	
Risk assessment	Assessment of risk occurred during pregnancy to postnatal period for mother (newborn child) was considered risk assessment in the study.	**Ordinal** 1=High 2=Medium 3= Low
Formal Education (mother & her husband)	The level of education completed by a pregnant woman and her husband. This was systematic teaching in school. The received credits, grade or diplomas – that was recognized and sanctioned by the society's most legitimate formal system of teaching and learning (Thomas, B. 1981)	**Categorical** 1= Illiteracy 2=Primary 3= Secondary & above
Training	Opportunity to mother for skill development like as, knitting, sewing, weaving, gardening, refers training	**Binary** 0= No 1= Yes
Recreational program	Recreational or aesthetic program participated by Respondents ,likewise *Bhajan ,Teej*	**Binary** 0= No 1= Yes

Counseling program	Formal advice obtained by pregnant mother through somebody.	**Categorical** 0=No 1=Yes
Media exposure	Listening Radio and TV by a pregnant women	**Binary** 0= not listen 1= listen
Wealth Index	Accessory of assets and facilities like as Radio, Dwelling, Car, and T.V& so on in their house. Principle component analysis employed to compute wealth index.	**Ordinal** 1 = Poorest 2= second 3= Third 4= fourth 5= Richest
Work –status	Job status of the pregnant women.	**Nominal** 1=Agriculture 2= Non-agriculture
Ethnicity	Various ethnicity or cast	**Categorical** 1 = Brahmin 2= Janajatis 3= Dalits 4= Others
Residence	A state of living in a place. VDC for Rural areas and municipality for urban areas. If, not municipality district headquarters are considering for urban areas.	**Binary** 0=Rural 1=Urban
Kathmandu valley	District Sindhupalchok, Syangja, Banke, Kailali districts were considers other districts than Kathmandu	**Binary** 0=outside Kathmandu Valley 1=Inside Kathmandu Valley
Ecological zone	It refers the mountain, hill and Terai area in this study	**Categorical** 0= Mountain 1=Hill 2= Terai
Age of mother at child birth	Time completed by a women in terms of years at the birth of her baby	**Ordinal** 1= <25 years 2= 25-29 years 3= >30 years
Number of children	Exact number of living children that women have in her lifetime	**Categorical** 0= 1-2 children 1= 2 child 2= **> 3 children**
Use of health service for general health problems	Visit to the health facility by a pregnant women for other problem.	**Categorical** 0=Never 1=Sometimes 2=Frequently
Use/ heard family planning	Use /hear the permanent /temporary method for contraception devices.	**Binary** 0=No 1=Yes
Cost coping	Strategy to cope the cost for maternity	**Binary**

Strategy for maternity care	care	0= Borrowed 1=self managed
Distance to a health facility	Travelling time needed from home to a health facility for the pregnant women	**Nominal** 0=<30 minutes 1=30 minutes 2=>30 minutes
Empowerment	Initiating power of the pregnant women in maternity care children education and use of contraceptives.	**Ordinal** 0=low 1=high
	Job sharing in Kitchen by male people	**Ordinal** 0=low 1=high
	Shopping power of the pregnant women	**Ordinal** 0=low 1=high
	Decision making power of the pregnant women	**Ordinal** 0=low 1=high
	Supremacy power adopted by the male people	**Ordinal** 0=low 1=high
Equity	Fairly treatment or way of dealing to the pregnant women by service providers,	**Ordinal** 0=low 1=high
	Encouragement to explain women's problems one -by-one by service providers and free atmosphere for exposure	**Ordinal** 0=low 1=high
Satisfaction	Household environment managed by household head	**Ordinal** 0=low 1=high
	Care givers behaviors offered by the service providers while giving care.	**Ordinal** 0=low 1=high
Maternity care plan	Preparation of basic things (oral or written action plan) for safe pregnancy.	**Ordinal** 0=low 1=high
	Three people for blood donation requested by household head	**Ordinal** 0=low 1=high
Responsibility	Parenting skills transferred to women by service providers	**Ordinal** 0=low 1=high
	Willingness to monitor the pregnancy status by household head	**Ordinal** 0=low 1=high
	Life style adopted by the pregnant women	**Ordinal** 0=low 1=high

Annex 27
QUESTIONNAIRES FOR HOUSEHOLD SURVEY

My name is Megha Raj Dhakal. I am PhD (2005-2008) student of Kathmandu University. Side by side, I am working in the Ministry of Health and Population, as the destination of Under-secretary. The purpose of this study is to investigate how formal, and non-formal education and other socio-economic factors are influencing to maternity care (antenatal, delivery, and post natal care of women and new born child) through reproductive health status, equity; access to and utilization of health services among the Nepalese women of reproductive age (15-49).Household head, members, an individual, pregnant women, community leader and service providers provide significance contribution to maternity care but this questionnaire is limited within two clusters (a) household head and (b) individual women.

The approximately time for this survey would be two hours. The information would keep secret and your household would not be identified from this survey. The participation in this survey is voluntary and you have liberty not to answer any part of the question or full questionnaires. We hope that you would participate in this survey because your information would be valuable worth to correct the past mistakes of national health policy, care for mother and newborn child and provide information to reduce maternal mortality and morbidity for government of Nepal.

Now you can ask me any questions regarding this survey.

May I start the interview?
The respondent agree to participate---1, the respondent disagree to participate----1 → End

Village Development Committee/ Municipality…...Ward No…. Tole……..

District …. Region ……. Belt: 1 = Mountain

2 = Hill

3 = Terai

Date of interview …. /……./…….. Household No ……

Name of interviewer Name of Household head ……

Write down the time of interview stated … hours … minutes

Questionnaire for household head

General information

The following information will be acquired from the household head. The purpose of this information is to identify women in the household those who have at least one child within the last three years.

S.N	Name and Thar of the household members. After listing the names, ask questions (2.a and b) to be sure that the listing is complete	Relationship With Household head	Sex 1= Male 2=Female	Age	Residence 1=Urban 2=Rural	Marital Status 1 = Married 2 =Divorced 3 = Single	Live birth in last 3 yrs 1=Yes 2=No	Tick in front of the number of eligible women's name
1	2	3	4	5	6	7	8	9
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								

Note: Women who have at least one live birth (child) within the last three years will be eligible for the interview.

(2.a) to conform, I have complete listing. Are there any other persons such as small infants that we have not listed? 1 =Yes, 2 =No, if Yes, added names in Table2.

(2.b) Are there any other people who may not be members of your family? e.g. Domestic servants, lodgers, friends, or relatives who usually live here.
1=Yes, 2=No. if Yes, added names in Table 2.
Total number of eligible women in that household

Please use one questionnaire for one eligible woman.

Name of respondent …… Age …
Household no: _____ Husband name ……

PART A

Instruction

The following 9-28 questions can be answered in two ways. The left hand side information indicates questions and right hand side indicates the possible answer of that questions. From Q. No. 10 to Q. No.13, the respondents may choose only single answer and from Q. No 14 to 31 the respondents may choose two or more than two answers. However, they need to primrose in questions 20, 21, 22 and 24. First interviewer needs to read each statement carefully and please tick ( ) in the appropriate number before all the answer that applies to the respondent.

	Questions and filters	Coding group
10	Which of the following category best describes your educational/literacy status?	1. Illiterate 2. Literate: can read and write 3. Completed primary school 4. Completed lower secondary level 5. Completed secondary level 6. Completed higher secondary level 7. Graduation and more than this
11	If you are currently attending school or college in which class/ level are you studying? …….. (write class /level)	
12	Which of the following category best describes your husbands' literacy status for education	1. Illiterate 2. Literate: can read and write . 3. Completed primary level 4. Completed lower secondary level 5. Completed secondary level . 6. Completed higher secondary level. 7. Graduation and more than this
13	If your husband is currently attending school or college in which class/ level is he studying? …….. (write class completed)	
14	Up to now, have you received any type of vocational or professional training.	1. Not received 2. Knitting 3. Sewing 4. Weaving 5. Traditional Birth attendant training 6. Gardening training Hair dresser training 7. Others please specify.
15	What sort of information have you received about maternity care through the training program?	1. Nothing 2. Preparation of nutrients food both for mother and newborn child 3 Income generating activities e.g. carpeting, knitting, tailoring, printing, gardening, 4 Others please specify.
16	What was the duration of your training?	1. Less than 15 days 2. 15 days to one months

		3. 1 months to 3 months 4. Longer than three months
17.	What type of recreational program did you participated in your leisure time?	1. Never participate 2. Literature(composing poem) 3. Singing 4. Dancing 5. Music 6. Others, please specify
18	Teachers, Female Community Health Workers(FCHW),community members and mothers group can provide formal advice to take care both mother and new born child .In this context what sort of information have you received from counseling ?	1. Never participated in counseling 2. Referral to visit a better hospital, in case of dangerous signs. 3. To have a rest during the period of pregnancy 4. Need and effect of colostrums (*Biguati milk*) to her new born child. 5. Hand washing with shop before taking food, before handling the newborn, before breastfeeding and after toilet. 6. Encourage to continuing School College, during the period of pregnancy. 7. Substance abuse such as, (Cigarette smoking (*Bini, pipe*), Tobacco (*Khain*i), alcohol drinking
19	Which of the following accessories/ facilities are available in your house?	1= Tab water 2= Cycle 3= Motorcycle 4= Car 5= Electricity 6= Radio 7= Television 8= Watch 9= Toilet 10= None
20	Whom did you believe to discuss about your pregnancy complication?	1.Father 2.Mother 3.Mother-in-law 4.Father-in-law 5.Sister-in –Law 6.Husband 7.Others, please specify
21	Have you listen/watches TV/the Radio?	1.News 2.Health program 3.Chetnaka swoarharu 4.Chetnaka swoarharu 5.Janaswatha karyakram 6. Sewa in Dharma ho guan nay Shanty ho 7.Hamro Swathe Radio arrayal 8.Geevan chakra
22	Whom did you visit for antenatal care?	1.Skilled Birth Attendant 2.Doctors/ Midwives/ Nurse 3.Kabiraj/Vaidya 4.Traditional Birth Attendant 5.Maternal and Child Health Worker 6.Traditional Healer 7. Others please specify.

23	What sort of cares/services did you receive during the antenatal check of this last pregnancy?	1.Height 2.Weight 3.Blood pressure 4.Blood test 5.Urine test 6.Abdomenal examined 7.Iron tablet given 8.Deworming given 9. Others please specify.
24	Who assisted you during the delivery	1.No body 2.Skilled Birth Attendants 3.Doctors/ Nurse 4.Traditional Birth Attendants 5.Mother-in-law 6.Kabiraj / Baidya 7.Traditional healer 8.Others, please specify
25	How did you manage the cost of maternity care	1.Self managed (had collected money for the purpose) 2.Borrow from local money lender 3. Borrow from Relatives 4.Loan from the Bank/ finance 5. Selling the grain / cattle. 6. Others please specify.
26	What problems did you have during the period of pregnancy?	1.Any bleeding 2.Swelling of hands / face and severe headache 3.Fever or foul smelling discharge from vagina 4.Fits, or loss of consciousness 5.Fever 6. Severe pain in abdomen or when passing urine.
27	What problems did you have during the delivery?	1.Heavy bleeding before and after delivery 2.Labor longer than 12 hours 3.Convulsions 4. Pushing more than one hour. 5. Male presentation, head not down, or baby head is not coming first. 6.fever, chills 7. Membranes ruptured for more than 12 hours before a birth 8. Swelling of hands and face. 9.Others, please specify
28	What problems did you have during the postnatal period?	1.Heavy bleeding (any amount of continuous bleeding , or large fist- sized clots , or the women has weakens and fainting) 2.Loss of consciousness 3. Placenta not delivered within 30 minutes after delivery. 4.Fever with or without chills 5. Foul smelling discharge. 6.Convulsions /rigidity 7. Headache, visual disturbances. 8.No urine output in first eight hours 9. Severe abdominal pain.

		10.Others, please specify
29	What problems did you have in newborn child after the delivery?	1.Trouble breathing or serve chest In drawing or all. 2.Poor suck or is not able to suck Feels cold or hot 3. Pus or redness any place on the baby: eyes, cord stump, skin. 5.Fits , rigid, stiff, floppy 6.Born to small 7. Poor skin color: pale, blue, yellow. 8.Others, please specify
30	What are the reasons for not using maternity care?	1.Service was not available from female doctor 2.Cost to visit a health facility was not affordable 3.Rough behavior of the service providers 4.Better care at home than a health facility 5.No plan to visit a health facility 6.Hospital is too far 7.No need to visit a health facility 8.No knowledge where to go , how to and when 9.Transportation problem 10.Fear 11.Closed environment (Psychologically refused due to lithotomic position) 12.Skilled birth attendant is not available round this area 13.Skilled birth attendant asked additional money 14.Other:please specify
31	Whether an ambulance or service providers were available in your house. No=1, Yes=2 If not what were the reason for not available	1=Distance of house 2=No invitation 3=No motor able road 4=others

32	Now I would like to ask you whether you or your child had taken at least one of the following items within 24 hours. If you had please tick ( ) 1, otherwise tick 2.		
	Cereals- rice, maize, wheat, barley, millet, Phapar (at least one)	Child: 1= Yes Mother:1=Yes	Child: 2=No Mother:2=No
	Pulse: sya beans, chickpeas, beans, pea etc (at least one)	Child: 1=Yes Mother: 1=Yes	Child: 2= No Mother:2= No
	Fish, meat, egg (at least one)	Child: 1=Yes Mother: 1=Yes	Child: 2= No Mother:2=No
	Milk, yogurt (at least one)	Child: 1=Yes Mother: 1=Yes	Child: 2=No Mother: 2=No
	Fat, butter, oil (at least one)	Child: 1=Yes Mother:1= Yes	Child: 2=No Mother:2= No
	Green vegetables (at least ones)	Child: 1=Yes Mother: 1=Yes	Child: 2=No Mother:2= No
	Yellow and others fruits (at least one)	Child: 1=Yes Mother:1=Yes	Child: 2=No Mother :2= No
33	What are the materials of your house? (Please conform the answers given by observing the house).	Roof : (1) Khar (2) Tin (3) Cemented (4) stone	

		Wall: (1) wooden (2) stone /bricks (3) others Floors: (1) Mud (2) stone/ cemented (3) others
34	What is your occupation?	Please, specify ……..
35	How are you paid in your job?	1 =Cash 2= Kind

36	How old were you when your first child child was born?: …….(age in completed years)			
37	How many surviving children do you have?	Exact number of children 1.Boys 2.Girls		
38	Are you planning to have another child?	1. Yes 2. No 3. Undecided		
39	If yes , please specify reasons for planning to have another child 1)…... 2)…			
40	How often do you visit to a health facility for general health problem?	1=Never 2=Sometimes 3.Frequently		
41	Have you ever heard about family planning methods?		1=Yes	2= No
42	Have you ever used family planning methods?		1=Yes	2= No
	IF Yes, would you mind to tell us the method which you ever used? 1)…… 2)…… 3)…….			
	Probe :Have you used any thing else as contraception 1. = Yes 2. = No If Yes, write the details in the space. …… ……			
43	How far is the health facility from your house? Please, specify an approximate time to reach the health facility …			
44	How many times had you visited health facility/health service provider for antenatal care?	1.Never visited 2.One 3.Two 4.Three 5.More than three		
45	Where did you get antenatal care? Probe: Did you visit the same place every time? 1 = Yes…..2= No… If no, please specify reasons to change : 1)…… 2)…… 3)……..	1.Hospital a. Public b.Private 2.NGO/community base hospital 3.Sub health post,/Health post 4.Primary Health Care Center/ Health center 5.Ayurbedic dispensary 6. Others Please specify.		

46	How many doses of TT injection did you take during the period of antenatal care? Number of doses……..			
47	In what month and year was (name of last child) born?	Months…….. Year ……		
48	Where was this child (name) born?	1.At Home 2.At health post/health center 3.Hospital a) Private/nursing home b) Public c) Non-government organization 4. Others please specify ….		
49	After delivery, have you visited to a health facility for maternity care?		1=Yes	2=No
50	If yes, when did you see? Probe: whom did you visit to check up? 1……. 2……..	1Within 24 hours 2.Within 3 days after delivery 3.After 3 days of delivery 4.After 6 weeks of delivery		

PART B

51	There are 35 statements in this table. Out of 35, 8 are related to your role in the household, 5 are related with exposure to health workers, 8 are related with plan for maternity care, 8 are related with accountable 6 are related with satisfaction. Please express your degree of agreement or disagreement in each statement using the following rating scale. 1= Strongly disagreed 2= Partially agree 3=Undecided 4=Agreed. 5=Fully agreed					
		Agreement level				
	Women empowerment					
1	I can purchase daily consumable food items (rice, pulse, fish, meat, ghee, fruit, milk, butter and yellow fruit), cosmetic goods, and candy for clothes and myself for children.					
2	I initiate to discussion with my husband and other family members in the following (a) antenatal care,					
	(b) birth control method,					
	(c) birth control use,					
	(d) children education,					
	(e) birth timing or spacing, birth number and postnatal care					
	(f) making plan for maternity care.					
3	I can make decision in the following					
	(a) Harvesting.					
	(b) repair and construction of my house					
4	I can walk alone to visit a health facility for antenatal care and other medical checkup.					
5	Male people think superior to women.					

6	I am fully independent to vote for the election.					
7	I know the place where to go how to go and when to go for to check up the health.					
8	There is common practice do together following activities: (a) have breakfast lunch and dinner, (b) to do the dish, (c) to clean the house and washes the clothes					
	Equity concerned issues					
9	I can ask any thing with health workers without any fear and service providers listen my problem seriously.					
10	Service providers always encourage me to explain my problem in a convenience way and make an inquiry time to time to find out my problem.					
11	Service providers clearly mentioned the method use of drug and contraception.					
12	Caregivers turned round his/her head to other side, when I explained my problem					
13	Caregivers start to write prescription after hearing my problems					
	Plan for maternity care					
14	I Made an action plan (what to do, what to store, when to visit and how to visit) to medical checkup and my husband imposed me to keep all the medical records along with other documents safely.					
15	Arrangements (included bank accounts) of additional money for emergencies care.					
16	Use of contraception for birth spacing.					
17	I arrange the following transportation for medical checkup. (a) Bus, car, ambulance,					
	(b) doko, Tamdan, doli , stretcher,					
	(c) cart, horse					
18	Food and fruit stock (ghee, special rice and food) for the period of delivery.					
19	Three people for blood donation, in case of emergencies.					
20	Preparation to visit a skilled birth attendant for delivery care.					
21	Buying kit box, new clothes for mother and new born child in case of home delivery.					
	Responsibility					
22	I always show the willingness to share my pregnancy complication with my husband and he always advised me to visit a health facility when I found any type of complication.					
23	I am very far and near in the following (a) Smoking (b) Drinking habit and (c) Very close washing hands before breastfeeding to the newborn child.					
24	Household members are interested to understand whether I am OK or not. In case of illness, they advised me to visit a health facility.					

25	Household head authorized power to me for the utilization of available health services in this area without any terms and conditions.					
26	Service providers visit my home and teach breastfeeding and maternal infant bonding skills. If, bottle-feeding advice is needed on preparation and sterilization of bottles.					
27	Service providers recognize my economics status and try to understand where, when and how I present in the health facility and provide proper attention for myself.					
28	If, any major problems identified by service providers during the period of home visit, refer mother and baby to sub-health post or primary health care center or ayurbedic dispensary or the better hospital for medical checkup.					
29	Service providers provide training for good parenting skills, covering issues that will emerge with the increasing mobility of the child, and talk about child safety in the home.					
	Satisfaction					
30	Household head encouraged me to increase my intake according to my choice (of food, tiffan or Khaja with some drink or liquid), and reduced my workload for rest.					
31	I Utilize the following facilities to give birth (a) smokeless, (b) clean room, clothes and ventilated house (c) Family members practice to wrap from head to toe with other dry soft and clean clothes to kept warm rooming with mother.					
32	Doctors, nurse and other staff in hospital behave kindly to me and thus increase willingly to seek services, continuation of the utilization of available services.					
33	Health workers contacted for the first Postnatal visit within 3 days (preferably within 24 hours) at the same time newborn child was immunized from BCG.					
	Equity concerned issues					
34	I realized equal opportunity for maternity care between in the following (a) Rich and poor, women					
	(b) Rural and urban women,					
	(c) Educated and uneducated, women					
	(d) Higher and lower cast women					
	(e) Male and female child.					
35	Health personal was available in a right time in the right place.					

Part C

How education influenced to maternity care	
	To scale the utilization of services in the following questions use this scales:
	1=Not utilization 2= partial utilization 3=Undecided 4=Utilized 5=Fully utilized

52	Have you acquired knowledge on care on pregnancy complications from your text books 1= Yes……. 2= No…….. If Yes, have you utilized them? (Please, write the scale as defined above)……
53	Have you acquired knowledge about the important of green vegetables during the period of pregnancy from your text books? 1= Yes……. 2= No…….. If Yes, have you consumed daily? (Please, write the scale as defined above)……
54	Have you acquired some risk behaviors knowledge like as, smoking , drinking, heavy work, from your education which are suggested not taken during the period of pregnancy. 1= Yes……. 2= No…….. If Yes, were you far to avoid such behavior? (Please, write the scale as defined above)……
55	Did your husband obtained information about mother and child care? 1= Yes…….. 2= No…… If yes, how often does your husband shared that information? (Please, write the scale as defined above)…
56	Did you obtain information on pregnancy and delivery care from service providers? 1=Yes…….. 2=No…… If yes, how often have you utilized such information? (Please, write the scale as defined above)…….....
57	Have you acquired some knowledge about the reproductive health status such as, marriage, number of children, other complication of pregnancy and other information from aesthetic or recreational program? 1=Yes…….. 2=No…… If yes, how often have you internalized the above information's? (Please, write the scale as defined above)…….....
58	Have you acquired some knowledge about the method use of contraception, visit to a health facility, and method of breast feeding and other knowledge about mother and child health from counseling program? 1=Yes…….. 2=No…… If yes, how often have you utilized above information? (Please, write the scale as defined above)…….....
59	Have you acquired the knowledge about home care (cover to keep warm clothes , provide warm liquid to drink, rest, ventilated hygiene place, 'rooming in 'and 'baby-friendly' approach) from your education. 1=Yes…….. 2=No…… If yes, how you were satisfied in home care? (Please, write the scale as defined above)…….....
60	Does your education informed breastfeeding (colostrums) initiated within one hours of birth
61	Does your education informed to avoid bath with in the first 24 hours. 1=Yes…….. 2=No…… If yes, how you applied for you new bore care? (Please, write the scale as defined above)…….....

BIO-DATA

1: NAME : Dhakal, Megha Raj
2: *Date of Birth* : 1956
3: *Birth Place* : Shyangja, Nibuwabot, Phaparthum VDC-4
4: *Marital Status* : Married
5: *Children* : 3 (one son and two daughters)
6: *Employee* : Undersecretary, Ministry of Health and Population
7: Email address : megha1956@yahoo.com.

8 ACADEMIC QUALIFICATIONS

Year	Degree	Institution	Division
2010	PhD	Kathmandu University	S
2001	M.A. Population and Reproductive Health Research	Institute of Population and Reproductive Health Research (IPSR) Mahidol, University Thailand.	B+
1985	M.A. Eco.	Tribhuvhan University, Nepal.	IInd
1991	P.G.Diploma in Eco.	Bradford University, England.	Pass
1978	Diploma in Art (Eco)	Tribhuvhan University, Nepal.	Pass
1982	Diploma in Edu. (Eng)	Tribhuvhan University, Nepal.	Pass
1985	Bachelor in Law	Tribhuvhan University, Nepal.	IInd
1974	Intermediate in Arts	Tribhuvhan University, Nepal.	IIIrd
1972	School Leaving in Certificate	SLC Board, Nepal.	IIIrd

S=satisfactory level.

9. RESEARCH EXPERIENCE:

Developing Health Sector Decentralization in Nepal (2001) l. Collaborative Policy Development Research" Jointly Conducted by Government of Nepal and Nuffield Institute for Health, University of Leeds, United Kingdom.

Nepal Demographic Health Survey (NDHS 2006), Member of technical subcommittee.

Nepal Youth and Adolescent Survey, 2009 (on- going).Members of Technical Committee.

Nepal Demographic Health Survey (NDHS, 2011) .Member of Technical Sub-committee

Thesis Guide. Five BPH students were guided being a supervisor.

PUBLICATION OF RESEARCH ARTICLES.

Co-Authors: Developing Health Sector Decentralization in Nepal: Collaborative Policy

---------- *Developing a Programme for Effective Health Sector Decentralization in Nepal* (2003) British Council [BC] Kathmandu, Nepal.

-------- Development *Health Sector Decentralization in Nepal* (2003). [BC] Kathmandu.

-------- Issues of Decentralization in the Context of Nepal (2007). *Health Organization and Management* International Health and the Work of the Nuffield Center for International

---------Health and Development, vol. 2196); ISSN 147-7266.University of Leeds, U.K.

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