

**FOOD SECURITY IN CHANGING DIETARY PATTERN IN
NAGARJUN MUNICIPALITY OF KATHMANDU DISTRICT**

**A Thesis Submitted to
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ABSTRACT

This study was carried out to assess the food security in changing dietary pattern of people currently living in Nagarjun Municipality of Kathmandu district. A representative sample of 120 was taken for the study using convenience sampling method. Sample was selected from those population residing in Nagarjun, Municipality, Kathmandu in 2016. Descriptive study design was applied in which 120 respondents were interviewed by using semi structured interview schedule. Data was analyzed by using SPSS and various tests were administered such as frequency distribution and chi-square. Besides, group discussion was also conducted to draw senior citizen 's views on changing dietary pattern of people.

Socio-demographic information shows that out of 120 respondents, most of the respondents were between the age group of 40-60 years. Regarding sex, 66.7 percent were male whereas 33.3 percent were female. Concerning the area of residence 58.3 percent of respondents were from mid-hill whereas 36. percent were from Terai. Regarding the ethnic group of respondents, 60 percent of respondents were Brahmin/Chhetri followed by Adibasis/Janajatis and Dalits. Concerning the main occupation of household head, 40 percent were in service followed by business and agriculture. Regarding, education level of the respondents where 40 percent were just literate followed by college level and up to SLC level study.

Overall finding of the study revealed that rice was most preferred food; however, maize (aanto and dhido) was in the first position in terms of consumption followed by millet (dhindo) and rice (bhat) in the past especially in hilly regions. For few years, it has been found that rice is in the first position in terms of consumptions as major staple food followed by bread (wheat/oat), Dhido/Anto (maize) and dhido (millet).

Respondents preference on staple food is statistically significant with age of respondents however, statistically insignificant with gender, area of residence, ethnicity, occupation of household head, and level of education. It clearly gives the message that age factor significantly influence the food habit and preference of food.

Nepalese food habit has changed along with the rise in living standard due to which national-wide preference of rice consumption has been increased for few years creating the import need. Today's need is focusing more resources on important non-staple foods, locally grown indigenous foods, nutrient-dense foods and integrated production systems including cereal grains, fruits and vegetables, livestock, poultry, fishery and forestry, to promote food security situation from dietary perspective. Thus, it seems that food security is associated with dietary habit of the people as rice based food is becoming the preference of the majority of people limiting the production and consumption of diverse food. Promote dietary diversity along with the promotion of indigenous, underutilized food resources through advocacy, research and extension is very crucial. So, due attention should be given for crop diversification with productivity increment and food diversification for import substitution of rice in Nepal ensuring the food security.

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ABBREVIATION

ADS	:	Agriculture Development Strategy
APP	:	Agriculture Perspective Plan
DADO	:	District Agriculture Development Office
FAO	:	Food and Agriculture Organization
INGO	:	International Non-Governmental Organization
MDG	:	Millennium Development Goals
MoAD	:	Ministry of Agricultural Development
MT	:	Metric tons
NeKSAP	:	Nepal Food Security Monitoring System
NFC	:	Nepal Food Corporation
NGO	:	Non-Governmental Organization
NLSS	:	Nepal Living Standard Survey
NPC	:	National Planning Commission
SPSS	:	Statistical Package for Social Sciences
SDGs	:	Sustainable Development Goals
SLC	:	School Leaving Certificate
TYIP	:	Three Year Interim Plan
VDC	:	Village Development Committee

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Food is a basic need for survival of human beings. Food security has emerged as a major global concern to end the hunger, poverty and malnutrition. Approximately two-thirds of the Nepalese people are engaged in the food and agriculture sector which occupies 28 percent of the land area. Due to topographic, climate and infrastructural reasons, cereal production is highly concentrated in the Terai plains, while some hill and mountain districts are deficit in edible cereal balance. Difficult terrain with limited connectivity through road to the food deficit areas makes food security a spatial problem. Besides, lack of storage and preservation facilities make food surplus areas also insecure throughout all seasons (MoAD, 2015).

Sustainable Development has been a global agenda since the last 25 years. Maintaining and promoting food security is focused by sustainable goal agenda globally. Nepal's efforts for the successful implementation of the MDGs have also opened new avenues for the implementation of SDGs planned for 2016-2030. Poverty has fallen not just nationally but across all of its major dimensions. Poverty is targeted to decline from 23.8 percent to 5 percent by 2030. SDG proposes ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture (NPC,2015).

Sustainable agricultural growth is crucial to ensure food and nutrition security in a country like Nepal. Expenditure on food commands a major share of the total consumption expenditure of the Nepalese people – from 49 percent in the central region to around 60 percent in other regions. Third National Living Standards Survey mentions that the poorest 10 percent of the population spends as much as 72 percent of the total expenditure on food. Access to adequate food supplies at affordable cost on a regular basis is critical to achieving food security and nutrition of Nepalese people (CBS, 2011).

Ensuring food security has been a continuing priority of the government of Nepal through its different policies, plans and legal provisions. These have been integral part of the country's Five-Years Plans starting from 1956. The strategy has been to increase food production, distribute subsidized food (mainly rice in food deficit districts in the Hills and Mountains) and carry out public works programmed and nutrition specific interventions for women and children. In addition, food items are distributed to population affected by natural disasters and in food emergencies due to crop failures. In the last 25 years, as the demand for food increased with the growing population, higher disposable income because of remittance inflows, and enhanced access to large parts of Hills and Mountains and as information and data on food consumption and nutrition in different parts of the country became available, food and nutrition issues have received greater attention of the country's policy makers. In 1995, Nepal launched a 20-year Agriculture Perspective Plan (APP, 1995) with the objective of accelerating agricultural growth, alleviate poverty through transformation of a largely subsistence-based agriculture to a commercial one through diversification and widespread realization of comparative. Regarding Constitutional provision of Nepal Constitution clearly express the State's commitment to food security assuring the fulfillment of the right to food and the right to food sovereignty as provided for in law (ADS, 2015)

Nepal is a party to the International Covenant on Economic, Social and Cultural Rights and other international human rights instruments. It has pledged its support to a number of international declarations and outcome statements of inter-governmental conferences on food security, including the 1996 World Food Summit Declaration and Plan of Action, the 2000 Millennium Declarations and 2015 Millennium Development Goals, the 2012 Rio+20 Conference on Sustainable Development and the 2030 Sustainable Development Agenda and has committed to their targets through actions at national level. The government reiterates its commitment to ensure food security for all Nepalese at all times. The Agriculture Development Strategy (ADS) has clearly mentioned to achieve food and nutrition security leading to food sovereignty in its vision statement (MoAD, 2016).

Nepal is an ethnically and culturally diverse country resulting it to have an impressive variety of local food. Rice is the principal staple food accounting for about 65 percent

of the total cereal production. In Nepal, there is the general understanding that food is rice. Combination of pulse, rice and vegetable (Dal-bhat-tarkari) is common food throughout Nepal. Food distribution by national and international agencies in subsidized rate has created the increasing dependency on rice limiting the production in the country. Subsidized rice is cheaper than other local food (uwa, oat, wheat, buckwheat, potato), consumers in the remote district where paddy is not produced are getting habit of increased rice consumption abandoning the local landraces. Traditional habit of food and dietary diversity has been changed (Dahal and Khanal, 2010).

1.2 Statement of the Problem

Ensuring food security to all citizens of the country is a national priority of Nepal. With increasing urbanization and the dependence on markets and imported products for meeting household food consumption needs, ensuring adequate quality food has emerged as a problem. Availability of adequate food is a necessary condition for the achievement of food security. The food producing agriculture sector, therefore, has a paramount role in this regard. However, other sectors play important roles in ensuring economic and physical access to food on a sustained basis and optimal utilization of food to achieve the nutritional objectives.

Food security policy, therefore, needs to identify relevant inter-sectoral linkages and sensitize these sectors to incorporate food security consideration in their sector plans and programmes. Nepal's dependency on food imports to meet local needs has steadily increased. It imports cereal grains, oils and fat, fruits and vegetables, livestock and dairy products, sugar, tea, coffee and spices, tobacco products as well as animal feed. Most imports are from India, but a number of food item are also imported from third countries. Increasing import dependency for cereals and non-cereal foods is a matter of concern as the country's capacity to import. High level of malnutrition is a major food security problem in Nepal mostly due to poor dietary diversity as 70 percent of the dietary energy supply is derived from staples.

Adequate food availability, though admittedly necessary, is not a sufficient condition for ensuring national food security. Despite adequacy of food at national level, because of the existence of different forms of geographical, economic and

demographic disparities, ensuring food security for all remains a major challenge for Nepal. There are serious problems in the access, utilization and stability aspects of food security. As a result, not all people in Nepal have access to sufficient, safe and nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life. Food security is also associated with dietary habit of the people as rice based food is becoming the preference of the majority of people limiting the production and consumption of diverse food.

Few studies were carried out about food security in relation with dietary pattern of the people. Under these circumstances a continuous assessment of food security situation in relation with dietary pattern is required to assure the progress of food security. Keeping these points in view a descriptive study is designed to find out food security in changing dietary pattern in Nargarjun Municipality of Kathmandu District.

1.3 Research Questions

Nepal has made increasing efforts to adopt policies appropriate to promote food security. Generally, food security is also associated with dietary pattern of the people as rice based food is becoming the preference. Specifically, the findings of the study are in line with the research questions.

- a) What was the dietary preference pattern in the past?
- b) What are the current preferred dietary patterns?
- c) What are the significant factors influencing the dietary pattern?

1.4 Objectives of the Study

The general objective of this study was to find out food security in changing dietary pattern of the people in Nargarjun municipality of Kathmandu District. The specific objectives were:

- a) To compare the change in dietary pattern
- b) To identify the major causes of dietary preference
- c) To find out the relation between respondents' change in dietary pattern with socio-demographic variables.

1.5 Significance of the Study

The findings of the study might be useful to the district level policy makers DADO, INGOs and NGO to plan policy and program related to food security along with dietary diversification and their management. The finding might also be useful to the planner, education specialist and health professionals to improve food security through crop and food diversification to some extent. It might be equally useful to the researcher for further study in this area who will interest to conduct large scale study regarding food security situation.

1.6 Limitation of the Study

The study was limited to the respondents of Nagarjun Municipality of Kathmandu district. It only assessed the food security situation in relation to changing dietary pattern. The study was conducted selecting citizens who are currently living in Kathmandu district. The findings of this study may not be rationale to generalize for other particular area of country and for the country as a whole. The finding of this study is helpful only just for understanding food security situation in relation with changing food habit and dietary pattern.

1.7 Definition of the Terms Used

Food Security: Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and their food preferences for an active and healthy life.

Food Sovereignty: Food sovereignty is the “right of nationals and people to control their own food systems, including their own markets, production modes, food cultures and environments. Food sovereignty also emphasizes on control over territory, land, grazing, water, seeds, livestock, and fish populations for local food providers and indigenous people.

Right to Food: right to food is a legal right entitling every individual to demand fulfillment

CHAPTER II

LITERATURE REVIEW

Various literatures related field to the food security and dietary pattern such as books, journals, magazines, and research reported from the government and various non-government organizations are reviewed. Very few researches have been done in the field of dietary pattern and food security in Nepal. However, researcher tries to review some of the related national and international previous study reports and publication including different website regarding concept food security, right to food, food sovereignty along with changing food habit and dietary pattern of Nepalese people which ultimately support this research.

2.1 Theoretical review

Food security, Food sovereignty and Right to food has emerged as a major global concern to end the extreme hunger, poverty and malnutrition, all of which are interrelated. Food security deals more with production and distribution whereas right to food is a legal right entitling every individual to demand fulfillment. Similarly, food sovereignty is considered as more political which mainly advocates for the rights of people to define their own food and agriculture production and promotes the formulation of ecologically sustainable trade policies and practices.

The World Food Summit of 1996 defined food security as existing “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”. Food security is based on four pillars: Food availability-ensuring food available in sufficient quantities and on a consistent basis; food accessibility-ensuring the people be able to regularly acquire adequate quantities of food; food stability – ensuring the stability in the food supply from year to year and during different seasons of the year; and food utilization- ensuring consumed food have a positive nutritional impact on people. Basically, availability, accessibility and affordability of food are very important when view from security perspective. Despite planned development and effort, Nepal is one of the vulnerable countries when viewed from food security perspective (Pyakuryal, 2013).

The concept of food sovereignty emerged from ‘La ViaCampesina’ in the mid-1990s as a critique of the concept of food security and corporate food regimes that were controlling local food markets (Wittman et al. 2010; Fairbairn 2010). It is argued that hunger in the world exists because food and resources are not equitably distributed. For this, a rights-based policy to ensure community and peoples control over food systems is the only solution in assuring food for all, especially the poor and marginalized. Food sovereignty advocates the right of peoples, communities and countries to determine their own production systems related to agricultural labor, fishing, food and land and associated policies which are ecologically, socially, economically and culturally appropriate to their unique circumstances. Food sovereignty is the “right of nationals and people to control their own food systems, including their own markets, production modes, food cultures and environments” (Wittman et al. 2010). Food sovereignty manages food production and consumption according to the needs of local communities, giving priority to production for local consumption. Food sovereignty includes the right to protect and regulate national agricultural and livestock production and to shield the domestic market from the dumping of agricultural surpluses and low-priced imports from other countries. Landless people, peasants and small farmers must get access to land, water and seed, as well as productive resources and adequate public services. Food sovereignty thus is a means to achieve the goal of food security through local sustainable production (Adhikari, 2014).

Food sovereignty, to achieve food security, also emphasizes on control over territory, land, grazing, water, seeds, livestock, and fish populations for local food providers and indigenous people. Privatization of such resources, for example through intellectual property rights regimes or commercial contracts, is generally rejected. Food sovereignty rejects technologies, such as genetic engineering, that undermine food providers’ ability to develop and pass on knowledge and skills needed for localized food systems. It maintains production and distribution systems that protect natural resources and reduce greenhouse gas emissions, avoiding energy intensive industrial methods that damage the environment and the health of those that inhabit it (Manandhar, 2014).

2.2 Policy review

2.2.1 Food security in different plan and policies of Nepal

Nepal has made increasing efforts, especially in the past decade, to adopt policies appropriate to addressing food insecurity problems, particularly through the Agricultural Perspective Plan (APP) (1995-2015) and the Ninth Five Year Plan (1997-2002), however, the performance was not satisfactory due to the low investment in agricultural sector and poor coordination as provisioned in APP. The overall performance of APP is mixed. Cereals sector in general did not perform well during APP period which hampered the food and nutritional security (ADS, 2015).

Likewise, the tenth Periodic Plan (2002-2007) has mentioned supporting food nutrition security through raising agricultural production and productivity, and increasing incomes and reducing poverty. The National Agricultural Policy (2004) included various provisions for marginalized and vulnerable groups having less than half a hectare of land to improve food security. It has also mentioned to create food storage provisions, a mobilization network on a local participatory basis and to develop food and nutrition safety nets for poor farmers (MoAD, 2004).

The first three years interim plan (TYIP) (2007/08-2009/10) introduced a long term vision on food security. The second TYIP (2010/11-2012/13) has also included a separate section for food and nutrition security. Current three years interim plan (2012/13-2015/2016) mentioned to attain food security through commercialization, diversification, quality promotion, mechanization and rural infrastructure development. Nepal has expressed its commitment to undertake Zero Hunger Challenge Initiatives introduced by Rio+20 conference on sustainable development, held in Brazil in 2012 in to end hunger, food insecurity and malnutrition by 2025 in a sustainable manner (MoAD, 2016)

National Seed Vision (2013 – 2025) aims to increase crop productivity, raise income and generate employment through self-sufficiency, import substitution and export promotion of quality seeds. The seed vision will contribute significantly in ensuring food security to poor, women and disadvantaged groups. Edible food availability will reach 8 million MT by 2025 equivalent to 200 billion rupees at current price. Implementation of the Seed Vision will have a significant impact in ensuring seed

security, increasing productivity and raising income through seed self-sufficiency, import substitution and export promotion which ultimately leads to food security, employment generation, biodiversity conservation, climate change adaptation, and gender equity as well as social inclusion (SQCC, 2013).

When the prevailing policies and laws are taken synergistically and implemented in combination with, there is a promising legislative framework that can have positive impact on food security leading to food sovereignty in Nepal as mentioned by ADS. However, absence of specialized food security and food sovereignty law makes it difficult to address all aspects of food security.

Nepal Food Corporation (NFC) provides food item to the public at government rates often during festivals and natural disasters. Besides this, NFC supplies subsidized food to 30 districts including 22 remote districts across the country where local production is deficit. It follows the Government's food policy with responsibility of collection, transportation, storage, sale and mobilization of food. It also handles food aid received by the country (FAO-Nepal, 2010).

Basically there are three sources of food supply in Nepal: domestic production, import from neighboring countries and food support from donor agencies like the World Food Programme (WFP). Interventions are carried out by WFP in the food insecure areas identified by Nepal Food Security Monitoring System (NeKSAP) in close collaboration with the Government. This system helps to monitor food security situation up to VDCs level, and prepares quarterly food security phase classification report

2.2.2 Constitutional provision for food security

The Interim Constitution of Nepal (2007) included 'food sovereignty' as a fundamental right for Nepali citizens. It included food sovereignty along with employment, shelter, health and education as the basic rights of people to be established in the policy framework of the state of Nepal.

Constitution of Nepal has enshrined the Right to Food as a fundamental right for its citizens. The right to food, and other related provisions are mentioned in articles 36 and 42 as follows.

Article 36 (1) ensures right to food for every citizen,

- Article 36 (2) ensures that every citizen have right to be protected against food scarcity that may cause threat to life,
- Article 36 (3) ensures that every citizen have right to food sovereignty as provided by law,
- Article 42 - right to social justice - includes provision on food

2.2.3 Agriculture Development Strategy and Food Sovereignty

The ADS has clearly mentioned to achieve food and nutrition security leading to food sovereignty in its vision statement. The ADS also recognized the critical importance that farmers' access and control of the means of production – primarily land – has for the success of the strategy which is the prerequisite of food sovereignty. Critical land issues such as tenancy, fragmentation, degradation, land use planning need to be resolved over the course of the ADS and their resolution will require the participation of the farmers' organizations, cooperatives, and private sector in order to find equitable and efficient mechanisms for enhancing land productivity as mentioned in ADS. The ADS has provisioned farmers' participation in different institutional mechanisms to ensure their functional involvement in center and local level.

Moreover, the ADS promote the formulation of legislation related to food rights and food sovereignty consistently with the principles of the Interim Constitution. Specific initiatives to deepen the understanding of farmers' rights, promoting these rights, monitoring them, and protect them will be formulated as part of the activities under the Governance component of the ADS. Farmers' rights ensured and strengthened through legislation on Rights to Food and Food Sovereignty along with formation of farmers commission. The ADS envisages food and nutrition security program as prioritized national program under ADS flagship programs with sufficient consensus, resources, and effective management.

2.2.4 Food-related legislation in Nepal

According to international law, every human being has rights to be freed from hunger and rights to have safe and nutritious food. Universal declaration on human rights, Conventions on Child Rights and other international legal documents have ensured

the rights of food. Nepal has also enacted and updated a number of legislation concerning food security (www.lawcommission.gov.np).

Nepal does not have a comprehensive food security policy addressing the different dimensions of food security including crop and food diversification; however, food security and nutrition have been included in different policy document. Because of national-wide preference of rice consumption in Nepal, domestic production has not been enough to meet the rice demand. The demand for rice is increasing by 10 per cent each year. However, as the local production of rice is not enough to meet growing demand, the country relies on India for both paddy and rice imports. In Nepal percapita rice consumption is 100 kilograms annually (The Himalayan Times, 2015).

2.3 National Cereal Food Availability

Nepal has diversified climatic conditions which are suitable for growing a large number of cereal crops. In Nepal, the total edible cereals production and requirement illustrating the trend of maintaining an edible cereal surplus above the national requirement for the past few years. However, it is interesting to note that there is the misunderstanding of many people to place Nepal as food deficit country calculating only the import aspects of fine milled rice basically from India. But it is not true when analyzed by total edible cereal availability to the total population nationally. MoAD estimated the total cereal production for 2014/15 at 9.26 million MT. After the deduction of losses and other usage (seed and feed), the quantity of cereals available for human consumptions has been recorded at 5.5 million MT whereas national requirement is 5.53 million MT It clearly shows that there is a national surplus of 0.15 million mt in the food balance sheet. The utilization of locally available food through product diversification will be effective to reduce the overdependence on imported rice (MoAD, 2015)

2.4 Conceptual Framework

In general, socio-economic factors affect the food habit and dietary pattern. This conceptual framework is about the socioeconomic factors affecting the dietary pattern with special food security. The socio-cultural factors such as age, gender, age group, ethnicity, occupation and education, which are considered as independent variables,

have effect on change in dietary pattern ultimately affecting the food security situation.

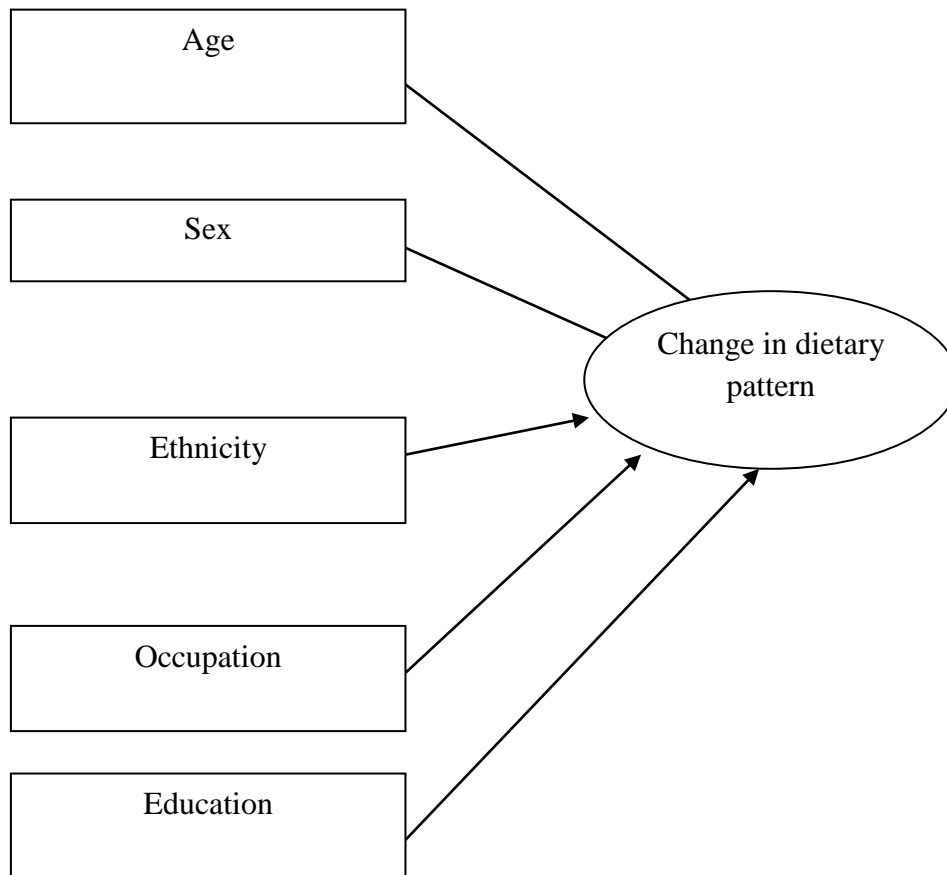


FIGURE 2.1
Different Factors Affecting Changing Dietary Pattern

CHAPTER III

RESEARCH METHODOLOGY

The result of a research depends on the careful selection of most appropriate research methods. Various research methods were adapted to carry-out this study which is presented below. It includes research design and method of the study, population, sample and sampling strategy, study area , data collection tools and technique, data collection procedure and data analysis and interpretation procedure.

3.1 Research Design

The research design contains the overall research plan providing the guideline to the researcher to answer the research questions. The type of research design depends on the nature and objective of the study. The research design adopted for this study is the descriptive research.

3.2 Nature and Sources of Data

The nature of the study was basically qualitative and quantitative. The study was based on both primary and secondary sources of data and information to fulfill the specific objectives of the study. The analysis was mainly based on primary data. The primary data was obtained from interview schedule schedules, and focus group discussion with. The secondary data was collected from various published and unpublished materials such as research articles, books, journals, seminar papers, case studies, research reports, and previous theses.

3.3 Selection of the Study Area

This study aims to examine the food security in changing dietary pattern of the people in Nagarjun Municipality of Kathmandu District. Kathmandu was purposively selected as study area as it is capital city of Nepal having diverse population from different parts of the country with the objective of getting information representing different areas.

3.4 Sample Size

Kathmandu is one of the developed and populated districts of Nepal and major destination for higher education, health care and transportation. Sample was selected from those population attending Nagarjun, Municipality Office, Kathmandu in 2016. Approximately 300 numbers of clients attend the Nagarjun, Municipality Office per day. The study population was 20 and above age group attending Municipality for official work. A representative sample of 120 was taken for the study using convenience sampling method. This represents the 40 Percent of the total clients. Descriptive study design was applied in which selected respondents were interviewed by using semi structured interview schedule.

3.5 Data Collection Tools and Techniques

3.5.1 Interview Schedule

Semi structured interview schedule was developed by researcher after reviewing of related literature, consultation with subject experts and research advisor. The final version of instrument includes two parts.

Part I Consists of question related to socio demographic characteristics.

Part II Consists of question related to Dietary preference with five point Likert's scale

3.5.2 Focus group discussion

Besides using interview schedule, focus group discussion was also conducted to draw senior citizen view on changing dietary pattern of people as they have long experience to tell the food security situation in relation to changing dietary pattern.

3.6 Data collection procedure

After taking approval from all the concerned authorities including the respondents, the primary data was collected by interviewing the selected respondents administering the semi-structured interview schedule in 2016. Besides, a group discussion with senior citizen was made to gather the information about preference food with reference to dietary pattern from past to present relating the food security. The relevant information was collected from the secondary sources. During the study period all

ethical considerations were maintained and precaution was taken to provide confidential right of all participants of the study. According to the expectation of the researcher, respondent offered necessary co-operation in collecting the required information. The duration for the data collection took four weeks. Completed forms were collected by researcher for further analysis and report writing.

3.7 Data analysis and interpretation procedure

Through the available data from the primary and secondary sources, basically following step was adopted for processing and analyzing of the data. The data and information collected was coded, tabulated and analyzed through statistical method such as percentage and chi-square by using Statistical Package for Social Sciences (SPSS) program. Likewise, the qualitative data such as preference on food was processed and analyzed using Scale (Indexing). Effort was made to maintain the objectivity of the data and avoid data error by comparing them with different data collection from different sources.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF THE RESULTS

This chapter deals with the analysis and interpretation of data concerning food security in the context of changing dietary pattern in Kathmandu District. The data were tabulated and kept in sequential order according to the purpose of the study. It is divided mainly into three parts consisting socio demographic characteristics, knowledge and attitude regarding legalization of abortion.

The findings of the study are presented into two parts.

4.1 Socio-demographic information

4.2 Comparison of Dietary preference during past (childhood period) and present

4.1 Socio-demographic conditions of the respondents

Demography is the study of the population based on factors such as age, gender, ethnicity, economic status and educational characteristics. In this segment, the socio demographic characteristics such as age, gender, area of residence, ethnic group, occupation and level of education were discussed

4.1.1 Age of respondents

Age of study population is an important part of demography. It helps the planner and policy maker in formulation effective plans and polices related food habit. In general the age level of the students influences the preference on food habit. The total respondents categorized into three groups.

Table 4.1: Distribution of respondents on the basis of age group

Age group	Frequency	Percentage
20 -40	28	23.3
40 -60	60	50
More than 60	32	26.7
Total	120	100

Source: Field Survey, 2016

Table 4.1 shows age group of respondents which are given below. Out of 120 respondents 50 percent was between the age group of 40-60 followed by more than 60 and between 20-40 years.

4.1.2 Sex of the respondents

Generally sex different may have a little bit choice of food habit.

Table 4.2: Distribution of respondents on the basis sex

Gender Status	Frequency	Percentage
Male	80	66.7
Female	40	33.3
Total	120	100

Source: Field Survey, 2016

The table 4.2 shows the sex status of respondents where majority of the respondents (66.7%) were male where as 33.3 percent were female.

4.1.3 Area of residence during childhood

Spatial variation causes the different in production and availability food. It is mainly due to different geographical setting and transport network.

Table 4.3: Distribution of respondents on the basis of area of residence during childhood period

Area	Frequency	Percentage
High hill	6	5.0
Mid hill	70	58.3
Terai	44	36.7
Total	120	100

Source: Field Survey, 2016

Concerning the area of residence, Table 4.3 shows that out of 120 respondents 58.3 percent of respondents were from mid-hill whereas 36.7% were from Terai followed by high hill.

4.1.4 Ethnicity of respondents

Nepal is multi-language, multi –religion and multi-ethnic society. Ethnicity plays an important role in structure of socio-cultural setting.

Table 4.4: Distribution of respondents on the basis of ethnicity

Ethnic group	Frequency	Percentage
Dalit	8	6.7
Adibasi/Janajatis	40	33.3
Brahmin/Chhetri	54	60.0
Total	120	100

Source: Field Survey, 2016

Table 4.4 shows that most of the respondent (60%) were from Brahmin/ Chhetri community followed by Adibasi/Janajatis and Dalit. These ethnic groups have a little bit different socio-cultural setting having different food culture.

4.1.5 Main occupation of the household head

Generally, occupation determines the level of incomes which ultimately affect the affordability for food and other necessary items. For this study occupation has been categorized into three groups.

Table 4.5: Distribution of respondents on the basis of occupation

Occupation	Frequency	Percentage
Agriculture	28	23.3
Service	48	40.0
Business	44	36.7
Total	120	100

Source: Field Survey, 2016

Table 4.5 shows the main occupation of household head where most of the respondents (40.0 %) were in service followed by business and agriculture.

4.1.6 Education level of respondents

Education is the foundation of socio economic development. It is basic human right. The society can progress only when the people of society are educated. It is believed that educational status of the respondents would play the significant role in adoption of scientific knowledge food better food habit.

Table 4.6: Distribution of respondents on the basis of education level

Education level	Frequency	Percentage
6 class to school leaving certificate (SLC)	34	28.3
College level (11 class and above)	38	31.7
Just literate (Informal education to up to 5 class)	48	40.0
Total	120	100

Source: Field Survey, 2016

Table 4.6 shows education level of the respondents where 40 percent were just literate followed by college level and upto SLC level study.

4.2 Dietary preference

4.2.1 Different dietary preference and its position past (childhood period)

Literatures show that in Nepal rice comes in preference traditionally, however, due to different reasons there was individual difference on preference.

Table 4.7: Common preferred food at home during childhood period

Major food	5	4	3	2	1	Total	Index	Ranking
Rice	16	18	26	14	46	120	2.15	III
Dhido/ Bread (Millet)	60	20	14	14	12	120	3.85	II
Dhido/Aanto (Maize)	84	18	10	4	4	120	4.45	I
Bread (Wheat/Oat)	8	14	18	24	56	120	2.11	IV

Source: Field Survey, 2016

Table 4.7 shows the major preferred food on the common food. Indexing has been done using Likert scale. The result shows that dhido/aanto (maize) was commonly preferred staple food followed by dhido/ bread (Millet), rice and wheat bread. According to respondents food preference mainly depends on production in the local area, availability and affordability.

4.2.2 Different dietary preference and its position (currently)

Change in socioeconomic setting causes the easily availability and affordability of food item of choice. Following table shows the preference of dietary pattern currently.

Table 4.8: Common preferred staple food at home currently

Major food	5	4	3	2	1	Total	Index	Ranking
Rice	78	16	12	8	6	120	4.26	I
Dhido (Millet)	10	12	16	26	56	120	2.11	IV
Dhido/Aanto (Maize)	24	18	24	12	42	120	2.75	III
Bread (Wheat/Oat)	54	20	14	14	18	120	3.65	II

Source: Field Survey, 2016

Table 4.8 shows that among the different staple food, rice was ranked as most preferred and common food followed by Bread (Wheat/Oat), Dhido/Aanto (Maize) and Dhido (Millet) . Millet is highly nutritious food, however, it is becoming less preferred food.

4.2.3 Association between respondents' staple food preferences with socio-demographic variables

Generally, socio-economic factors affect the food habit and dietary pattern. The socio-

cultural factors such as age, gender, age group, ethnicity, occupation and education have effect on change in dietary pattern ultimately affecting the food security situation. The intensity of the effect may be different.

Table 4.9: Respondents' staple food preferences with socio-demographic variables

Variables	χ^2	p-value
Age group in years <20 21-50 >50	20.912	.000
Gender Male Female	3.974	.137
Area of residence during childhood High Hill Mid Hill Terai	4.5	.342
Ethnic group Dalit Adibasis/Janajatis Brahmin/Chhetri	3.109	.540
Main occupation of household head Agriculture Service Business	8.62	0.071
Educational status Upto SLC College level Just Literate	10.007	0.40

Source: Field Survey, 2016

Table 4.9 shows the respondents preference on staple food is statistically significant with age of respondents ($p < 0.001$), however, statistically insignificant with gender, area of residence ($p > 0.001$), ethnicity ($p > 0.001$), occupation of household head ($p > 0.001$), and level of education ($p > 0.001$). It clearly gives the message that age factor significantly influence the food habit and preference of food.

4.2.4 Causes of changing dietary pattern with rice preference

In the focus group discussion, the senior citizens from hilly areas from their long experience shared that rice was considered as dignified and high status food that only rich can afford to eat regularly whereas finger millet was generally looked down upon poor person's food. Due to this reason rice was preferred food. Besides, they also opined that rice was important food in celebrating festivals like Dashain, Tihar, and life cycle event like naming of baby, rice feeding ceremony, bratabandha, wedding ceremony and funerals. Most of the respondents in group discussion reported that rice was most preferred food; however, maize (aanto and dhido) was in the first position in terms of consumption followed by millet (dhindo) and rice (bhat). The senior citizens from their long experience opined that the first reason was low productivity of local variety of rice in the hilly areas as high yielding improved variety was not introduced. Secondly, the source of income was limited to buy rice as it was comparatively more expensive. Thirdly, there was the much more production of millet and maize which could be produced even in upland with no irrigation facility. Fourthly, Hilly areas were not linked with motorable road to import and carry fine rice from terai and India. It clearly shows that diversified food was consumed in the past in the hilly areas.

The respondents also said from their personnel experience and judgment that there is the drastic change in food habit compared to past. In the recent years, Nepalese food habit has changed along with the rise in living standard due to remittance, employment, business and growing high value crops as self-reliance and urbanization. Source of income has increased due to remittance, road link with market centre to sell local products such as fruit, goat and other products so that purchasing power of people for rice has increased. Easy accessibility of packed fine rice due to linkage of road network to import. Habitual for steamed fine rice mostly imported from India due to its unique taste. In addition, there is comparatively low productivity of rice and encroachment of productive land for other uses rather than agriculture production

due to poor implementation of land use policy. Due to these reasons, the trend of importing fine and aromatic rice has increased in Nepal for few years resulting the vulnerable situation in domestic food production and food security.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Availability of adequate food is a necessary condition for the achievement of food security. The food producing agriculture sector, therefore, has an important role in this regard. However, other sectors play important roles in ensuring economic and physical access to food on a sustained basis and optimal utilization of food to achieve the nutritional objectives. Change in dietary pattern influence the level of preference of food hampering the availability of food. Changing the dietary pattern is influenced by many socio-demographic changes.

- a. Socio-demographic Information shows that out of 120 respondents, 50% were between the age group of 41-60 years and 26.7% were above 60 years.
- b. Regarding sex, 66.7 % were male whereas 33.3 % were female.
- c. Concerning the area of residence 58.3.0% of respondents were from mid-hill whereas 36.7% were from Terai.
- d. Regarding the ethnic group of respondents, 60.0% of respondents were Brahmin/Chhetri followed by Adibasis/Janajaties and 6.7 % were dalit.
- e. Concerning the main occupation of household head, most of the respondents (40.0 %) were in service
- f. Regarding education level of the respondents, 40% were just literate followed by college level and up to SLC level study.
- g. To identify the common food, indexing has been done using Likert scale. The result shows that dhido/aanto (maize) was common staple food followed by dhido/ bread (Millet), rice and wheat bread.
- h. Currently, rice was ranked as most preferred and common food among the different staple food, followed by Bread (Wheat/Oat), Dhido/Aanto (Maize) and Dhido (Millet) Millet is highly nutritious food, however, it is becoming less preferred food.

- i. Study result shows that respondents preference on staple food is statistically significant with age of respondents ($p < 0.001$), however, statistically insignificant with gender, area of residence ($p > 0.01$), ethnicity ($p > 0.01$), occupation of household head ($p > 0.01$), and level of education ($p > 0.01$). It clearly gives the message that age factor significantly influence the food habit and preference of food.
- j. In the focus group discussion, the senior citizens from hilly areas from their long experience shared that rice was considered as dignified and high status food. Due to this reason rice was preferred food. Most of the respondents in group discussion reported that rice was most preferred food, however, maize (aanto and dhido) was in the first position in terms of consumption followed by millet (dhindo) and rice (bhat). The senior citizens from their long experience opined that the first reason was low productivity of local variety of rice in the hilly areas as high yielding improved variety was not introduced. Secondly, the source of income was limited to buy rice as it was comparatively more expensive. Thirdly, there was the much more production of millet and maize which could be produced even in upland with no irrigation facility. Fourthly, Hilly areas were not linked with motorable road to import and carry fine rice from terai and India. It clearly shows that diversified food consumption habit.
- k. In the focus group discussion, the respondents said from their personnel experience and judgment that there is the drastic change in food habit compared to past. Currently rice is the most common food. In the recent years, Nepalese food habit has changed along with the rise in living standard due to remittance, employment, business and growing high value crops as self-reliance and urbanization. Easy accessibility of packed fine rice due to linkage of road network to import. Habitual for steamed fine rice mostly imported from India due to its unique taste. Due to these reasons, the trend of importing fine and aromatic rice has increased in Nepal for few years resulting the vulnerable situation in domestic food production and food security.

5.2 Conclusion

Nepal has made increasing efforts to adopt policies appropriate to promote food security. Availability of adequate food is a necessary condition for the achievement of food security. Agriculture sector has a paramount role in this regard. However, other

sectors play important roles in ensuring economic and physical access to food on a sustained basis and optimal utilization of food to achieve the nutritional objectives.

Based on the results, it can be concluded that Nepalese food habit has changed along with the rise in living standard. Because of national-wide preference of rice consumption in Nepal, domestic production has not been enough to meet the rice demand resulting need making the vulnerable situation on food security. Due to these reasons, the trend of importing fine and aromatic rice has increased in Nepal for few years, we can conclude that rice is the highly preferred staple food in Nepal and faces a huge and growing demand especially due to its easy accessibility and change in food habit. Additionally, all socio-economic classes consume rice, though the volume, frequency, and quality varies according to income. Food security is associated with dietary pattern of the people as rice based food is becoming the preference of the majority of people limiting the production and consumption of diverse food. The utilization of locally available food through product diversification will be effective to reduce the overdependence on imported rice promoting the food security situation.

5.3 Recommendations

Availability and access to safe, diverse and nutritious food are crucial for human to live. Even when a diversity of food is available in sufficient quantities, disparity in intra-household food consumption patterns has been found from the study with rice preference resulting the negative effect on production and consumption of diverse food. Thus following recommendations are made based on the study.

- a) Improving dietary diversity and utilization of food for better food security.
- b) Availability and access to safe, diverse and nutritious food are crucial for human nutrition, they are not sufficient to address the final nutritional outcome.
- c) Promote indigenous, underutilized food resources through advocacy, research and extension
- d) Promote the improved technology to increase the level of production and productivity major staple food including rice for food security.

5.4 Recommendations for the future researcher

It only assessed the food security in relation with change in dietary pattern of people living currently in Kathmandu district. The findings of this study may not be rationale

to generalize for country as a whole. The finding of this study is helpful only just for understanding change in dietary pattern of people over time. Following recommendation is prepared for the future researcher.

- a) This study is an academic research. The study was limited to people living currently in Nagarjun Municipality of Kathmandu district. Further researcher can be done taking the sample from other general people of different areas so that comparative finding can be obtained for different cases. Further researcher can be done taking the large sample size from different areas so that complete pictures food security with relation to changing food habit can be obtained.
- b) Further research will be helpful comparing the relationship of different variables for development purpose also.

REFERENCES

- Adhikari, J. (2014). Seed Sovereignty: Analysis the debate on hybrid seeds and GMOs and bringing about sustainability in agricultural development. *Journal of Forest and Livelihood* 12 (1). Retrieved from [http://www.forestation.org/app/webroot/tinymce/editor/plugins/filemanager/files/JFL%20VOI%2012%20\(1\)/Adhikari.pdg](http://www.forestation.org/app/webroot/tinymce/editor/plugins/filemanager/files/JFL%20VOI%2012%20(1)/Adhikari.pdg)
- Agriculture Development Strategy. 2015. (2015-2025). Ministry of Agricultural Development. Singhadurbar, Kathmandu.
- CBS (2011). Nepal Living Standard Survey Report. *Central Bureau of Statistics*. Kathmandu.
- Constitution of Nepal (2015). Retrieved from [http:// www.lawcommission.gov.np](http://www.lawcommission.gov.np)
- Dahal, H. and D.R. Khanal (2010). *Food Security and Climate Change Adaptation Framework Issues and Challenges*. Paper Presented in the Second Stakeholders workshops on NAPA in Agriculture Sector, Kathmandu. Retrieved form www.nepjol.info/index.php/AEJ/.../6153
- FAO, (2015). *Zero Hunger Challenge Initiatives Launched in Nepal*. Food and Agriculture Organization Nepal, FAO Nepal News Bulletin, Kathmandu.
- Interim Constitution of Nepal (2007). Retrieved from <http://www.lawcommission.gov.np>
- Manandhar, P. (2014). Food Security: Key Terms and Debates. In: B.R. Upreti, S.R. Sharma and S. B. Paudel (eds.), *Food Security in Post Conflict Nepal: Challenges and Opportunities*. Kathmandu University and Nepal Centre for Contemporary Research, Kathmandu.
- MoAD (2004). National Agricultural Policy. *Ministry of Agricultural Development*, Kathmandu.
- MoAD (2015). Food and Agriculture Organization and World Food Programme 2015. Crop Situation Update. *Ministry of Agricultural Development*, Nepal.

- MoAD (2016). Zero Hunger Challenge National Action plan (2016-2025). *Ministry of Agricultural Development*, Nepal.
- NPC (1995). Agriculture Perspective Plan (APP). *National Planning Commission Secretariat*, Singadurbar, Kathmandu.
- NPC, (2015). Sustainable Development Goals, 2016-2030, National (Preliminary) Report. Government of Nepal, *National Planning Commission*, Kathmandu, Nepal. Retrieved from <http://www.np.undp.org/content/nepal/en/home/library/sustainable-development-goals-national-report---nepal.html>
- Pyakukyal, B. (2013). *Nepal's Development Tragedy: Threats and Possibilities*. Fine Print Publisher, Kathmandu.
- SQCC (2013). *National Seed Vision*. Seed Quality Control Centre Lalitpur
- The Himalayan Times, (2015) [https:// themimalayantimes.com/business/plagued-by-problems/](https://themimalayantimes.com/business/plagued-by-problems/) Published: September 13, 2015 6:19 pm On: Business
- Wottman, H.K., A.A. Desmarais and N. Wiebe. (2010). *The Origins and Potential of Food Sovereignty*. Halifax: Fernwood Publishing.

APPENDIX I

Interview Schedule

Food Security in Changing Dietary Pattern in Nagarjun Municipality of Kathmandu District

Respondent name:

Respondent no:

Data Collection Date.....

Part I: Socio-Demographic Information

Direction: The researcher is requested to tick (√) on the appropriate answers to these questions according to respondent's viewpoint. .

SN	Questions	Response
	Personal Information	Completed
1.	How old are you?	years.....
2.	Gender a. Male b. Female	<input type="checkbox"/> <input type="checkbox"/>
3	Where did you pass your childhood period ? (Area of residence) a.High hill b.Mid hill c.Terai	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4	What is your ethnicity? a. Dalit b. Adibasi/Janajaties c. Brahmin/ Chhetri	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5	What is the main occupation of your household head? d. Agriculture e. Service f. Business	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6	What is your educational status? a. ----- b. -----	<input type="checkbox"/> <input type="checkbox"/>

PART II –Dietary Preference

Direction: Researcher is requested to indicate the number on the appropriate answer/s to these questions according to respondents' viewpoint. .

7	<p>As per your knowledge, understanding and experience what were the preferred food during your childhood period?</p> <p>(5 for high important, 4 for important, 3 for normal importance, 2 for less importance and 1 for least important do indexing for it)</p> <p>a. Rice</p> <p>b. Dhido/Bread (Millet)</p> <p>c. Dhido/Aanto (Maize)</p> <p>d. Bread (Wheat/Oat)</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
8	<p>As per your knowledge, understanding and experience what are the preferred food currently?</p> <p>(5 for high important, 4 for important, 3 for normal importance, 2 for less importance and 1 for least important do indexing for it)</p> <p>a. Rice</p> <p>b. Dhido/Bread (Millet)</p> <p>c. Dhido/Aanto (Maize)</p> <p>d. Bread (Wheat/Oat)</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Thank you for your kind cooperation

APPENDIX II

Check List for Focus Group Discussion

1. Most preferred food in the past (before 40 years) and present
2. Most common food in the past and present
3. Availability and affordability situation of preferred food in the past and present
4. Availability and affordability situation of most common food in the past and present
5. Causes of preference of different food
6. Causes of being most common food

APPENDIX III

Calculation of Index of Preference in Terms of Being Common Food

Respondents' preference in terms of being common food was measured by five points level of preference comprising high important, important, importance, less importance and least important. Basically that was mainly based on common food used in contemporary time period. Scale value 5, 4, 3, 2, and 1 were assigned for high important, important, normal importance, less importance and least important respectively. The index of preference was computed as follows.

$$I_{pre} = \sum (S_i F_i / N)$$

I_{pre} = Index of preference

\sum = Summation

S_i = Scale value

F_i = Frequency of importance on preference given by the respondents

N = Total numbers of respondents