ASSESSMENT OF VISUAL FUNCTIONING OF CATARACT OPERATED CASES AND FINDING BARRIERS USING EYE CARE SERVICES

(A CASE STUDY OF RURAL SECTOR IN RAUTAHAT DISTRICT)

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Mohan Kumar Sunuwar

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ACRONYMS

24HTV	24Hour Television Charity Committee
AOCA	Association for Ophthalmic Cooperation to Asia
CBS	Central Bureau of Statistics
CSR	Cataract Surgery Rate
DST	Diagnosis Screening and Treatment
GEH	Gaur Eye Hospital
HMG	His Majesty's Government
HP	Health Post
INGO	International Non-governmental Organization
IOL	Intraocular lens
LE	Left Eye
MOH	Ministry of Health
NBS	Nepal Blindness Survey
NECP	Narayani Eye Care Project
NGO	Non-governmental Organization
NNJS	Nepal Netra Jyoti Sangh
OA	Ophthalmic Assistant
OPD	Out-Patient Department
PHC	Primary Health Care
QOL	Quality of Life
RE	Right Eye
SEAR	South East Asia Region
SHP	Sub-Health Post
SWC	Social Welfare Council
VDC	Village Development Committee
VA	Visual Acuity
VF	Visual Functioning
WHO	World Health Organization

Abstract

Cataract blindness is widely recognized as a major eye problem in developing countries and this is considered as one of the major public health problems in Nepal. Despite the fact that comprehensive services of cataract have been established surgery up taking by the people is still low. Many people are reluctant to go up to the treatment centers due to various barriers and restrictions. This study tries to examine the barriers and quality of cataract surgery in Rautahat district. The study was conducted in two Village Development Committees (VDCs), Mithuawa and Simra Bhawanipur of Rautahat district. Total 11 wards (6 from Mithuawa and 5 from Simra Bhawanipur) included in the study. A population-based, cross-sectional household survey with a sample size of 222 (about 16% of 1402) eligible respondents was conducted. People of age 50 years and above are included in the study. Both qualitative and quantitative data were collected from primary and secondary sources. The primary data was collected through field survey interview using semi-structured questionnaire.

The study found that cataract is the major cause of blindness in the study area as out of total blindness about 42 percent of people are being blind due to cataract. Aged people and women are highly suffered by cataracts. Cataract prevalence rate is higher among females by 3 percent than that of their counterparts. Study result revealed that despite the comprehensive cataract surgery services have been established for sight restoration, its coverage is low. Large number of curable blinds residing in remote and rural areas are beyond the reach of eye care services. Only 26 percent of the people had gone through surgery out of 273 cataract patients. Among the total cataract people, 68 percent are bilateral cataracts requiring immediate surgery at least in one eye. Quality of the service being provided in the study area is also needed to be improved. Among the cataract operated people only 43 percent of them had good vision which indicates that the outcome of the surgery is not so satisfactory. Forty eight percent people

are facing vision disparity and 9 percents are totally blind even after they got operated.

Knowledge and awareness level among the people is quite high and it is not barrier as it was assumed. Study found attitudinal barrier as the principle barrier as 43 percent people did not go for surgery due to this barrier. Similarly, economic reason also found to be one of the major barriers. Visual disorder significantly deteriorates the quality of life (QOL) of the people. About 27 percent people are suffered from extreme difficulties and their quality of life is significantly deteriorated. They are compelled to live with painful and humiliated conditions as they suffer from mental and psycho-social problems.

Establishment of hospitals and development of service is not enough but making service accessible to the rural people is most important. Service providers especially eye hospital, besides its curative services, should conduct massive outreach (community based) programs that can provide treatment at their door steps mainly focusing to poor, aged and women. Free eye camps and subsidized services can be provided as immediate measure, however, It would be impossible to offer free services to everyone every time. Therefore, income generating schemes and awareness raising programs mainly focusing to change attitudes of people should be executed for sustainable solution. People need to be prepared themselves financially and mentally so that they can avail eye health facilities to their maximum benefit. For this, any single efforts of any single institution is not sufficient rather it requires strong and collaborative actions. Enhancing local people's participation and establishing partnership with other local level organizations, national and international development organizations would be effective in this process.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Blindness and severe visual impairment remain leading causes of suffering and disability in the world. In 1995 World Health Organization (WHO) made a global estimate that there are over 37 million persons bilateral blind and another 124 million persons with low vision who are at great risk of becoming blind (Bulletin of world Health Organization;82:844 – 851), with ninety percent of them distributed in the developing countries. It is estimated that over 0.84% (200,000 of the 25 million) of the Nepalese are blind* of which over 70% are due to cataract (year 2005 projection). More than half of the remaining 15% are also either preventable or curable with the available technology.

Cataract blindness is widely recognized as a major eye problem in developing countries (Pokharel et al., 1998). The World Health Organization (WHO 2004) estimated that Asia alone holds 58 percent of the world's blinds. In South-East Asian Region (SEAR) 15 million people are blind and out of which 9 million are blind from cataract.

Blindness is one of the considerable public health problems in Nepal. Nepal Blindness Survey conducted in 1981 estimated that there were more than 117,000 blind in both eyes (0.8%), over 233,000 blind in one eye (1.7%), and 260,000 with low vision; 92% of these blind resided in rural areas of the country; 80% of these blindness were avoidable (preventable and curable) in the context of a blindness program. NBS 1981 has pointed out that the cataract is the most common cause of blindness in Nepal. Incidence of cataract varies in different geographical regions of Nepal. The NBS 1981 revealed that Tarai region is more prone to cataract compared to hill and mountain regions. It has showed highest prevalence of cataract in Narayani Zone. It has also been assumed that some how incidence rate for cataract in area is one of the highest in the country.

The history of organized eye care services in Nepal is relatively new and begins only in 1980. The eye patients in Nepal had to either travel to India for treatment or were serviced and treated by the Indian doctors in Nepal only when the eye camps were held until 1958. The very first eye camp of the country was conducted in 1947 in Butwal by two Indian doctors of Sitapur Eye Hospital. The first eye camp held in Nepal by Nepali surgeons was in Jaleshwar in 1962 and since then the average of 5-7 eye camps were held each year. Until 1980, the eye care services in Nepal were provided by 7 ophthalmologists (which is approximately 1:2.7 million populations) and they could restore about 1200 eye sights per year. The facilities then available were only 16 beds in Kathmandu and 8 outside Kathmandu for eye patients. Nepal Eye Hospital was originally started with 12 beds as the first Nepali non-governmental organization dedicated for eye care and treatment in Kathmandu in 1974. In 1981, with support from World Health Organization (WHO) and other national and international organizations, a national program for the prevention and control of blindness was established with the following three main objectives: achievement of national self-reliance in ophthalmic care, 90% reduction in the prevalence of curable blindness and 90% reduction in the prevalence of preventable blindness. Under the program, the first ever national eye survey Nepal Blindness Survey (NBS) was conducted in 1980/81.

Based on the NBS survey result, specific program objectives were established, and accordingly Nepal began to build the physical and human infrastructure necessary to address the problem. Primary, secondary, and tertiary care facilities dedicated to the prevention and treatment of eye diseases were established in the areas of the country with greatest need. The program simultaneously implemented a strategy for training eye care professionals at all levels in the hospitals and in the clinics as they become operative. The efforts of a wide range of international and national non-governmental organizations were solicited and coordinated to implement this national strategy for reducing blindness. As a result, within a period of 2.5 decades, Nepal has developed a comprehensive eye care system and services. Considering the seriousness of the blindness problem, several eye hospitals and primary eye care centers have been established in different zones

and regions within the last two decades. Almost every zone has an eye hospital except in Dhaulagiri, Karnali and Mahakali zones. There are now over 120 ophthalmologists, assisted by 350 ophthalmic assistants and supporting administrative staff, working in the country in 18 eye hospitals and 46 district eye clinics. Services are being provided through hospital and field based activities. Many eye screening, DST and mobile camps are organized in the community level every year as 92 percent of the blinds reside in rural areas of the country.

The major effort of the eye care programs in Nepal has been to address the problem of cataract blindness, which accounts for 72% of all blindness. In response to cataract problem, cataract control programs have been established on both local and national levels to reduce the backlog of cataract blindness cases. As a rule of thumb: the incidence of cataract in general population is taken as 1 in 1000 population per year leading to blindness (WHO definition). The National Program performed 167,000 cataract surgeries in 2005. Although, a significant portions of these patients (70%) were from India.

The government of Nepal and World Health Organization have taken a bold step to initiate the national program towards reducing avoidable blindness in Nepal by 2020. The program is more commonly known as 'Vision 2020: The Right to Sight' was launched in 1999.

NECP has been working for blindness reduction in Narayani zone specifically covering Rautahat, Bara and Parsa districts since 1989. As one of the project initiatives, Gaur Eye Hospital (GEH) was established in 1997 and it has been providing its services in Rautahat district and its neighboring districts including many parts of India. Community outreach programs such as screening camp, village health post visit, surgical eye camp, and school health program have been conducted in targeted area extensively. In the year 2005 the hospital and its community service was able to render surgical service to 4500 and more than 90% of them were blind due to cataract.

1.2 STATEMENT OF THE PROBLEM

Blindness is economic and social burden to the people as it creates extra financial liability for treatment and requires care taker and other arrangement for the blind person in the family. A person being blind suffers from humiliation, family burden and loses self-confidence and thus his/her quality of life degrades. Except for the most developed countries, cataract remains the leading cause of blindness in all regions of the world. Associated with ageing, it is even more significant as a cause of low vision (WHO Fact Sheet No. 282, 2004). Cataract though it is avoidable remains as leading cause of blindness in Nepal and this is much severe in the rural areas as 92% of blind people live in rural areas. Cataract blindness rate in central Terai is very high compared to other part of the country. Nepal Blindness survey 1981 Showed highest prevalence of cataract in Narayani zone. It has also been assumed that some how incidence rate for cataract in the area is one of the highest in the country.

Past studies have revealed that despite the increased availability of sight restoring services in Nepal, cataract remains to be major cause of blindness. Though, high quality surgical services has been established cataract surgical rate (CSR) is very low (Sapkota et al., 2004). Large number of curable blinds and eye patients residing in remote and rural areas are beyond the reach of eye care services. Despite the availability of utilities and services, people are not so much interested to receive the services. There are multidimensional barriers which have been preventing curable eye patients from receiving eye care.

A regional surveys conducted in western Nepal at Lumbini and Bheri in 1995, concluded that the rate of blindness remained challengingly high: the cataract surgery outcome was poor with 30% under 6/60, and surgical coverage was low, only 40%.

1.3 OBJECTIVES OF THE STUDY

The main objective of the study is to assess the prevalence of vision impairment, blindness and to evaluate the eye care program in Rautahat District with a strong focus on the cataract services. The specific objectives are stated as:

- to assess visual functioning and quality of the life of cataract operated people to evaluate the outcome of surgery;
- to identify the barriers to uptake the cataract surgery;
- to assess the magnitude of visual impairment due to cataract in the age group of 50 year and above population in Rautahat district; and
- to examine cataract surgical coverage in the study area

1.4 RATIIONALE AND EXPECTED BENEFITS OF THE STUDY

NECP has been working for blindness reduction in Narayani zone specifically covering Rautahat, Bara and Parsa districts since 1989. As one of the project initiatives, Gaur Eye Hospital (GEH) was established in 1997 and providing its services in Rautahat district. Now, after working more than 17 years it is assumed that enough service development has been made and targeted beneficiaries are well served. However, since any study and research could not take place, it has been still unknown about the prevalence and magnitude of the blindness in the project area. The service coverage and impact also has not been accessed yet. It has been still unknown in what extent people could be served? Is the service is sufficient and accessible to the people? How effective is the service in the context of its coverage and quality? Is the magnitude of the blindness in the project area could be reduced? Many such questions are remained unanswered. Again, any baseline survey was not conducted prior to the project inception so that the outcomes of the program intervention could be measured or compared. Thus, it has become a matter of urgency to conduct a study so that it can provide the information about the present blindness scenario in the area and can assess the

impact of the services that have been established. Furthermore, the finding would be helpful to plan the future cataract program to achieve desirable CSR level.

This study will have many fold benefits as outlined below:

- The outcome of the study will be useful to the policy makers, planners, concerned organizations and stakeholders in making the future policy and programs on eye care service development.
- The study provides the present magnitude of blindness and its causes in the study area. Thus, depending on the information, effective and specific programs could be planned for future interventions.
- Service providers' contribution and effectiveness in providing eye care services can be accessed and find the areas of improvement in eye care service modality.
- It could be the baseline (which is lacking at present) for Rautahat and other similar districts i.e. Bara, Parsa and many other Tarai districts.
- Data and information with regard to blindness in Nepal are very much scanty and some of them need to be updated. For example, we still have to depend largely on the survey data from Nepal Blindness Survey which was conducted in 1980-81. In such context, findings of this study, being latest and scientific, will provide recent and most up-to-date information regarding the blindness of Rautahat district.
- Findings and information could be the integral part of other studies conducted in different geographical areas zonal, regional level in the country. Thus, it can help to generate national information in the related field.

1.5 LIMITATIONS OF THE STUDY

Study was conducted at a specific site, focusing only in two VDCs of Rautahat with a limited sample. Thus, the findings of this study may not be generalized to the other parts or in other cases of the country.

1.6 ORGANIZATION OF THE STUDY

This project report is organized into seven chapters. The first chapter presents the introduction of the study including background, statement of the problem, objectives of the study, rationale, expected benefits of the study and organization of the study. The second chapter sheds light into the relevant literatures reviewed while designing the study, developing questionnaire and analyzing the data. The third chapter introduces the study area, Rautahat district and available eye care services. Fourth chapter describes the methodology of the study which was used for the information collection and the process of data analysis and interpretation. Chapter five is the core chapter of the report which deals with the results of the study and their interpretation. Likewise, chapter six presents major findings and discussion of the study results. Final chapter concludes the study by providing conclusions of the study and recommendations for the further actions.

Different tables, figures and photographs are presented when they are more appropriate and relevant to make the report more comprehensive and illustrative. In addition to the main text, other useful information is presented in the annex pages.

CHAPTER II

REVIEW OF LITERATURE

This chapter sheds lights into the available literatures relevant to the study which have highlighted some of the pertinent issues related to the cataract blindness and eye care services. Basic information regarding blindness, cataract and other relevant matters are also discussed in the chapter. There are few literatures with regard to blindness in Nepal and some of them need to be updated. For example, Nepal Blindness Survey was conduced in 1980-81 and we still have to depend largely on the same survey data. Literatures were reviewed while designing the research, developing questionnaire and analyzing the data. Available books, journals, reports, profiles in the form of printed or electronic, published or unpublished and websites were reviewed.

2.1 THEORITICAL ASPECTS

2.1.1 Introduction to Blindness

Blindness is the condition of not being able to see. It is the state of not being able to see or being sightlessness. Blindness is the partial or complete loss of sight. By the 10th Revision of the WHO International Statistical Classification of Diseases, blindness is defined as visual acuity of less than 3/60 corresponding visual field loss to less than 10 degrees, in the better eye with best possible correction. In general WHO has defined blindness as the inability to count fingers at a distance of 3 meters.

Wikipedia, a free encyclopedia defines blindness as the condition of lacking visual perception due to physiological or psychological factors.

2.1.2 Visual Acuity (VA)

Visual acuity (VA) is the quality of human eye's vision. It is one of many components of the visual perception sense and is defined as the eye's ability to resolve fine details. VA is a quantitative measure to see an in-focus image at a certain, standardized distance. VA is the most common measurement of visual function.

VA is measured to determine whether a patient complains of visual disturbance or not. The usual method of testing VA is with Snellen's test type or a modification of it in which a series of black letters of graduated sizes is printed on a white card/drum. For those who can not read letters, Landolt's rings are substituted and for pre-school children, the 'E' test type may be used. While measuring the VA, a patient is asked to read as far down the chart as possible. If the patient can read only top letter, it is expressed as 6/60. If patient can read the second line then it is /36. Similarly, for 3rd, 4th, 5th, 6th and 7th line, it is expressed as 6/24, 6/18, 6/12, 6/9 and 6/6 respectively. The numerator refers to the distance at which the letters are read that is 6 means 6 meters while the denominator is the number of line that the patient can read. For example 6/18 means s/he could read at a distance of 6 meter when a person with normal sight could read at a distance of 18 meters. A person should have a visual acuity of 6/6 to be normal. (Karmacharya et al.).

2.1.3 Introduction to Cataract

A cataract is a clouding of the lens in the eye that may reduce vision. The lens becomes more opaque and is therefore less able to transmit light rays onto the retina. The image on the back of the eye is then blurred. The structure of the lens also changes as the lens becomes less transparent. A cataract is a clouding of the eye's lens. The vast majority of cataracts are related to age. Most people do not even realize they have a cataract, as cataracts grow very slowly and may not impede vision early on. After a number of years vision will likely be affected. When the cataract has become so dense that it compromises the patient's quality of life

In ophthalmology, a cataract is any opacity which develops in the crystalline lens of the eye or in its envelope.

Cataract form for a variety of reasons, mostly it develop as people get older. Other causes include long-term ultraviolet exposure, secondary effects of diseases such as diabetes. Genetic factors are often a cause of congenital cataracts and may also play a role in predisposing someone to cataracts.

Any opacity in the lens is defined as cataract. The word cataract means waterfall. The ancients took the white appearance behind the pupil to a cataract of 'bad humors' falling down from the brain above.

Types of cataracts

There are two types of cataract-acquired and congenital. Acquired cataract is mainly divided into senile, complicated and traumatic. The most common type of cataract is senile (age related). Half of all people between the ages of 65 and 74 and about 70% of those over 75 have some cataract formation. Less common types of cataract include damage to the lens by injuries, drugs (steroid) and systemic diseases like diabetes mellitus. Cataracts may also be produced by eye injury or physical trauma. Cataracts may be partial or complete, stationary or progressive, hard or soft (Wikipedia, the online free encyclopedia).

Between a fifth and a third of people aged 65 to 74 years will develop lens opacities over a five-year period. The prevalence of decreased visual acuity (less than 6/9) due to cataract in the US National Health and Nutrition Survey for people aged 45 to 74 years was 14.7% (NHS Centre for reviews and dissemination, Management of cataract, 1996).

The majority of people with cataract in one eye will develop cataract in the second eye. A few studies have shown that patients derive significant benefits having both cataracts removed. A study by Javitt et al compared the outcomes of 426 patients who had surgery in one eye with 164 patients who had cataract surgery in both

eyes. Whereas both groups showed significant improvements, the group with both eyes operated showed greater improvements in all three outcomes measured: 61% showed improvement in the VF-14 score, 27% showed less “trouble with vision” and 24% had improvement in satisfaction with vision during the 12 month follow-up period Javitt et al., 1995).

Symptoms

Typically patients will experience blurry vision, double or multiple images vision, sensitivity to light, glare, colors that appear washed out, and frequent changes to eyeglass prescription. It may make patient's vision cloudy, fuzzy or filmy, spots, glare and halos from lights or the sun. Cataract is painless and progressive diminution of vision.

Treatment

There is no medical treatment of cataract. Surgery is the only available treatment. Surgical removal of cataracts and replacement with an artificial lens, called an intraocular lens (IOL) is the most successful treatment method. An artificial lens made of polymethylmethacrylate is inserted into the posterior chamber of the eye in the capsular bag or ciliary sulcus following extra capsular cataract extraction. Intraocular lens can also be implanted in the anterior chamber.

Treatment Techniques/Surgery

The current techniques available include planned extra capsular cataract surgery with posterior chamber lens implant (ECCE and IOL) and phacoemulsification with foldable IOL (phacoemulsification and IOL) are the two main techniques in current use. Either technique may be used.

Phaco-emulsification is the latest technique for removing cataractous lens. The principle is to break up the cataractous lens into pieces by a special ultrasonic vibrating instrument and to aspirate the lens matter. Phacoemulsification and IOL

requires more expensive equipment but the small wound allows immediate physical and visual rehabilitation a day or two after surgery.

2.1.4 Vision 2020: The Right to Sight

In order to reduce the global burden of blindness, the World Health Organization (WHO) and a broad coalition of international , nongovernmental and private organizations launched, a global initiative “Vision 2020: The Right to Sight, in Geneva on 18th February 1999. VISION 2020 aims to eliminate avoidable blindness by the year 2020. WHO together with the more than 20 international non-governmental organizations involved in eye care and prevention and management of blindness that comprise the International Agency for the Prevention of Blindness (IAPB) initiated the VISION 2020 as a partnership that provides guidance, technical and resource support to countries that have formally adopted its agenda. Similarly, the South East Asia Region (SEAR) declared on 30th September 1999 for member countries to come forward with strategies and guidelines for the elimination of avoidable blindness from the region by 2020. They also decided to commemorate 2nd Tuesday of October as the “World Sight Day” to make people around the world, aware of the importance of vision and share ideas in eliminating the blindness.

2.1.5 Eye Care Services in Nepal

The eye care services in Nepal started through eye camps. With establishment of Bir Hospital, Nepalese ophthalmologists started providing eye care services. For the first time in its kind, Nepal Eye Hospital (NEH) was established in 1974 in Kathmandu. In 1979, Nepal Prevention and Control of Blindness project was established jointly by the Ministry of Health (MOH) and WHO with objective of developing eye care services in Nepal. The project conducted National Blindness Survey in 1980/81. NBS was the first of its kind ever conducted at national level. Result of the survey helped to develop national eye care programs and strategies. Many national and international non-governmental organizations are involved in the eye health service development. For the prevention and control of the blindness in the country, three level programs have been implemented:

Primary level: Primary Health Care (PHC) personals are trained in primary eye care management at health post and sub health post level. They deliver health message and treat simple cases and refer the complicated cases to district level hospitals or eye care centers.

Secondary level: At district level, medical doctors from health center and general hospitals provide eye care services. They treat common eye diseases such as conjunctivitis, blepharitis, chalazion and diagnose and refer cataract, glaucoma, uveitis and posterior segment diseases to nearby eye hospital.

Tertiary level: There are well-established eye hospitals and eye centers nearly in all zones. Those hospitals are providing eye care services periphery areas of the country. Only those patients needing special services are referred to Kathmandu. In addition to static eye care services, eye camps are also organized in the remote areas to serve the people in rural areas.

At present, the number of served people has been increasing significantly in the country. In the early days e.g. in 1980, the total surgery was approximately 800 cases a year including from eye camps. By the end of 2004, 1,449,920 OPD were seen and 168,436 surgeries (85.4% cataract) have been performed in the country; however a significant number of patients were from India since most of the eye hospitals are located in Indo-Nepal border areas.

2.1.6 Inclusion of Government Programs

The Nepal Government in its tenth five-year plan (2059-2064) has not specifically set any target for eye treatment. However, continuation of eye camps in community level, diagnostic treatment, education camps and school screening programs along with research based activities are placed in third priority program in tenth five year plan. The plan also spelled for program to develop Nepal eye hospital as a sustainable specialized institution and mobilization of INGOs and NGOs through NNJS as committed by WHO and the Government.

2.1.7 Nepal Government's Contribution to Achieve the Vision 2020: The Right to Sight

In September 1999, then HMG showed its commitment to adopt the VISION 2020. An “Apex Body for Eye Health” was established on 6th October 1999 under the aegis of the Ministry of health in Nepal. The body's function is to assist in national policy formulation and it is conceived as the coordination platform for and among HMG/MOH and other governmental and non-governmental agencies working in the sphere of health system. This body has formulated a National Plan of Action (NPA) for Eye Care Services in Nepal (2002-2019) in context of the VISION 2020 campaign.

There has been a lot of progress in regard to implementing actions fighting against the blindness in Nepal. Hence, Vision 2020: The Right to Sight, program has been declared at the VI Ophthalmologic Congress of SAARC countries, held in November 1999 at Kathmandu. Similarly, in September 2001, the Apex body for Eye Health launched National Plans of Action (Strategic plans for 2002-2019) for Eye Care Services in Nepal which was implemented from January 2002. The objectives of this plan are to eliminate avoidable blindness by 2020, by developing an integrated approach to disease control, human resource development as well as infrastructure and technology development at various levels of the health system.

2.1.8 Nepal Netra Jyoti Sangh (NNJS)

NNJS is a non-governmental welfare oriented social organization recognized to represent government of Nepal and the Social Welfare Council (SWC) of Nepal in the sphere of eye care activities. The main aims and objectives of NNJS include establishing eye hospitals, organizing training for eye specialist and paramedical, establishing eye-bank, extending relationship with national and foreign line agencies and specialists, and educating general public on eye health.

Established in 1978, the NNJS extends its co-operation towards the application and fulfillment of national programs and policies of government aimed at the well

being of the eye- patients. After the National Blindness Survey 1980/81, NNJS has developed a master plan for developing physical facilities for development, expansion, and delivery of eye care services in Nepal in a planned manner with the support of various international NGOs in close cooperation with Nepal government/WHO Blindness Program. The nation wide eye care network of NNJS comprises 12 well–equipped eye hospitals (out of 18) and 27 primary eye care centers scattered over all the 14 zones of Nepal.

2.1.9 Narayani Eye Care Project (NECP)

Narayani Eye Care Project (NECP) was established in 1989 with the support of two Japanese NGOs, Association for Ophthalmic Cooperation to Asia (AOCA) and 24Hour Television Charity Committee (24HTV). The objective of the NECP program is to reduce blindness in the area by promoting effective and sustainable eye care services. It has developed comprehensive eye care services to serve the people by providing hospital and field based facilities. It executes different programs for the prevention and cure of blindness by supporting and strengthening eye hospitals. Bara, Parsa and Rautahat districts are selected as the program area. Gaur Eye Hospital was established in mid 1997 with the full support of the NECP. Project has also extended its support to Kedia Eye Hospital in Birgunj. NECP has been supporting to the hospitals by providing financial and commodity grants. The main supports consist of infrastructure development, installation of medical and office equipment, human resource development, financial assistance and support for outreach (field based) programs.

2.2 REVIEW OF SELECTED PREVIOUS STUDIES

Blindness is an increasing problem affecting almost 50 million people worldwide. The majority of them live in Asia and Africa, India 23.5%, China 17.6 %, Sub-Saharan Africa 18.8% (Thylefors et al, 1995). The magnitude of blindness problem is high and need of service is obvious. At the same time availability of service is becoming more and more proximal to community. Almost 80% chances of developing these kinds of blindness are either preventable or curable. This

increase is due to increasing life expectancy of human population in the world and due to barriers preventing them seeking eye care service (Sapkota et al., 2004).

Global data on the prevalence of blindness indicate that the developing countries in sub-Saharan Africa, India, and other Asian countries have a higher share of the burden of blindness when compared with the established market economies, the former socialist economies of Europe, and Latin America. Nearly two thirds of the global burden of blindness is in India, China, and Africa (Dandonaa, 2001).

Cataracts are the leading cause of blindness worldwide and the incidence is on the rise with increasing population and longevity. Surveys in developing countries demonstrate few people with visually significant cataracts are getting surgical treatment. In parts of India only half of the population blind from cataracts received surgery; in China and Nepal 46-48% of those in need had cataracts removed. The percentage of curable blindness resulting from cataracts in Nepal is 80%. Several developing countries have very limited medical financial resources and in Nepal a large proportion of the population is located in remote mountainous terrain mostly inaccessible by road (Murchison et. al, 2004).

Cataract is a major cause of blindness in Nepal. About 73% of people of total blindness are being blind due to cataract. Despite the increased availability of sight restoring surgery, cataract remains the single greatest cause of blindness in Nepal. Health seeking behavior is partly determined by the education, socio-economic status, family and social support system (Evans and Stoddard 1994) cited in Measuring Cost as a Barrier to cataract surgery in Nepal: A prospective, controlled trail (Khanal, et al., 2004).

Despite improvements in the availability of blindness preventing and restoring treatment in the developing world, enormous barriers remain to increasing the use of services. The barriers are often different for men and for women. Women have higher rates of blindness from cataract and trachoma and women are less likely to use eye care services.

Measuring the effective coverage of health care service is an important part of a health system performance assessment. Assessing health care utilization, which in turn is affected by health care accessibility and individuals' health-seeking behavior, is a conceptual framework for measuring effective coverage of a health care service (Shengelia et al., 2003).

Even when services are available, however, there are barriers which keep patients from utilizing the services. In countries as diverse as India, Brazil and Malawi it has been shown that 33-92% of cataract blind patients remain cataract blind, even when surgery is available (Lewallen et al., 2000).

Previous studies have shown that, despite an increasing availability of cataract surgery, important socioeconomic barriers exist in the acceptance of surgery in many rural areas of South Asia. Nepal has developed a comprehensive national network of eye hospitals but the surgical coverage for the treatment of cataract blind is still low. Worldwide cataract blindness has been the major cause of all blindness. It is estimated that 41.8% of all global blindness is caused by cataract. In Nepal cataract is still the most important cause of blindness despite the presence of a network of eye hospitals distributed throughout the country (Khanal et al.).

In different parts of the world, several studies concerning the utilization of eye care services and ophthalmic examinations have been carried out. Some studies have focused on particular targets such as the aged and diabetics. Depending on the geographical variation and the target population, different rates of eye care service utilization have been reported. In a study by Nirmalan and colleagues, 64.5% of the target population (rural Indians) never had an eye care visit, while at the other end of the range, Wang et al. have reported a 99% eye care service coverage in an older Australian population. Since these studies are not entirely comparable, it would be difficult to draw logical comparisons.

A considerable proportion of the studied population had never utilized eye care services; even those at risk and in need of eye care visits. Although not all

influential factors were assessed, it is evident that men, the younger age groups, and the less educated are less likely to use these services. These data suggest that efforts have to be made to better understand the causes of eye care service underutilization and to optimize the utilization of the available eye care services in the population (Fotouhi et al., 2006).

Findings from a recent systematic review and meta-analysis at the British Columbia Centre for International and Epidemiologic, Ophthalmology demonstrate that women bear approximately two-thirds of the burden of global blindness. However, most of the world's blindness occurs in non industrialized countries (Lewallen, 2000).

According to Nepal Blindness Survey cataract is responsible for almost 72% of over all causes of blindness (Brilliant et al, 1981). In last two decades there has been rapid development of eye care services in terms of human resources, physical infrastructures and cataract surgical outputs in the country. The cataract surgical rate has improved to 1500 cataract surgeries per million population and annual output of cataract surgery has exceeded 120,000 in 2003 (NNJS annual report). Various strategies have been initiated after launching of global initiative: Vision 2020: the right to sight. The number of cataract surgery needs to be increased from 7 million at present to 32 million per year by the year 2020 to reach the goal of VISION 2020 (WHO Fact sheet No 214 Blindness).

The prevalence of cataract is higher in developing countries and in both developed and developing countries more females than males are blind from cataracts. In Nepal cataract is still the most important cause of blindness despite the presence of a network of eye hospitals distributed throughout the country. One may therefore assume that one of the reasons for the high cataract blindness prevalence is the low utilization of the services (Snellingen, 1998).

Previous studies have shown that, despite an increasing availability of cataract surgery, important socioeconomic barriers exist in the acceptance of surgery in many rural areas of South Asia. Nepal has developed a comprehensive national

network of eye hospitals but the surgical coverage for the treatment of cataract blind is still low (Khanal et al., 2004).

A study conducted in Karnataka India (Vaidyanathan et al, 1997) found that changing trends in barriers to cataract surgery in India. They suggested that the trend is changing from earlier found barriers such as poverty, lack of transport felt need, sex related, rural access lack of awareness difficult access and cost etc to bad case selection and poor service provision. This statement was further explained by the population based study conducted in Korea among the leprosy resettlement found the barriers to acceptance of available surgical service were immaturity of cataract as informed to patients by doctor and patient's perception that no surgery is needed (Courtwright et al., 2001). Another population base study conducted by Melese (Melese et al, 2004, Orbis International Ethiopia) revealed the primary reason for failure to use available eye care services were indirect cost (40%) associated with accessibility of service. The same study suggests significant difference higher service utilization rate for male and persons with binocular vision loss. However another population based cross sectional survey conducted in rural community of Nigeria, Africa (Mansur, 2004) revealed that the main barriers to seeking cataract surgery were cost of service (61%) and non availability of information and place of treatment even they could afford it (10%). Virtually people with unilateral cataract reported that they see with one eye will not seek cataract surgery service.

The cost of cataract surgery varies widely and may be more than poor people, with little or no disposable income, can afford. It would be a mistake to assume, however, that providing free cataract surgery automatically leads to high cataract surgical coverage. In addition to the surgery itself, there are other costs such as transportation or the care taker accompanying the patient, and living expenses for the care taker while the patient is in the hospital. In Nepal, these non-surgical costs alone were estimated to be one-fifth of the annual income of a rural patient.

The economic dimension is not the only one that influences health inequalities. The other important dimensions are sex, ethnic, and regional inequalities. The

other aspects of health inequalities, health service use and financing, measure the inequality in the use of and spending on health services between various populations groups (Dandonaa, 2001).

A study conducted in mid Western Nepal (Snellingen et al, 1998) has found reasons for not accepting the available cataract surgical services. The reasons are economical in 48% and logistical in 44.8% followed by fear of surgery 33.3% and lack of time18.8%. A cross sectional survey for willingness to pay for cataract surgery (Shrestha et al, 2004) among the cataract blind, conducted in the vicinity of Kathmandu valley revealed patients with bilateral cataract were more willing to pay than unilateral cases. Poverty (44.4%) was the main barrier for unwillingness to pay for cataract surgery.

Community based education about cataract has not been undertaken in most areas; when it is, the demand for surgery will increase. Not only must patients be made aware of the existence of the service, but they need to know what to expect (Lewallen, 2000).

Many of Nepal eye care programs especially in hilly area are facing low acceptance of cataract surgical service by the needy population. This is evident that there are barriers for the needy people to avail services which prevent them to undergo cataract surgery. The finding of this study will be able to guide the providers to take appropriate measures in appropriate directions and focus their eye care program in the country (Sapkota et al., 2004).

A regional surveys conducted in western Nepal at Lumbini and Bheri in 1995, concluded that the rate of blindness remained challengingly high: the cataract surgery outcome was poor with 30% under 6/60, and surgical coverage was low, only 40%. Another survey with similar protocol, conducted in a adjacent zone “Gandaki”, in 2005, showed a slight reduction on prevalence of blindness, an increase in cataract surgical coverage within 35 km radius of hospital, and a better visual outcome after cataract surgery, compared to the 1995 Lumbini survey.

At least 90% of patients undergoing cataract surgery should achieve a best corrected visual acuity of 6/12 or better in the absence of any other ocular pathology (Yeo et al., 1991 and Tan et al., 1991).

The survey conducted in western and mid western part of the country in 1994 shows that the magnitude of problem is still challengingly high due to inadequate coverage and low quality of surgical outcome (Pokharel et al). The Gandaki survey conducted in 2002 (Sapkota et al.) shows that surgical outcome has improved in recent years but the prevalence of blinding cataract and surgical coverage is not adequate in all sections of community.

In the above context, present study is an attempt to deal with outcome of cataract surgery through examining the visual functioning and quality of life of cataract operated people. Similary, this study also attempted to find the major barriers to uptake the cataract surgery.

CHAPTER III

RESEARCH METHODOLOGY

3.1 SELECTION OF THE STUDY AREA

Rautahat district is known to have a high prevalence rate of cataract. The district is mainly plane land and few parts include hill area with rural settings. The study was conducted in 2 VDCs, Mithuawa and Simra Bhawanipur. A total of 11 wards (6 from Mithuawa and 5 from Simra Bhawanipur) were included. More than 90% of the in-country service recipients of Gaur Eye Hospital are from this district. The Gaur Eye Hospital is only the eye care service provider in this district and another nearest eye hospital from this district is at least 100 KM away. Second reason for selecting Rautahat is that NECP has focused its program to reduce cataract backlog in the district.

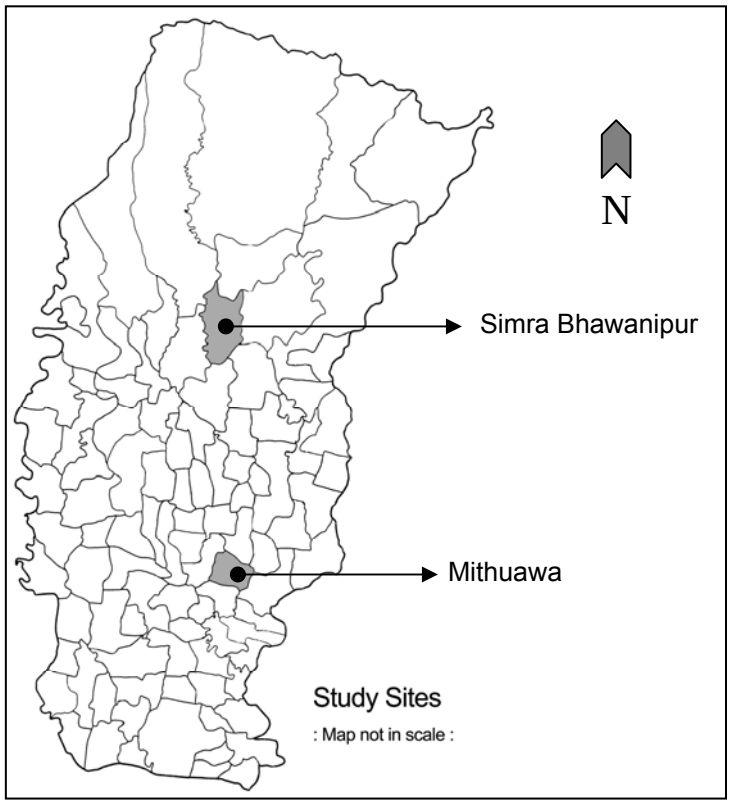

Figure 1: Study VDCs

3.2 RESEARCH DESIGN

A population-based, cross-sectional household survey was conducted. The research design of the study employed descriptive, exploratory and analytical design. Descriptive design was adopted to assess service impact by examining the visual function of the cataract operated people and to explore the barriers accessing the services. Data from the secondary sources were reviewed to describe the concepts, efforts and constraints on blindness and services.

3.3 NATURE AND SOURCES OF DATA

Information for the study was collected from both primary and secondary sources. Nature of the data employed in the study is both qualitative and quantitative. Primary data were collected from the field survey to observe and analyze the barriers and visual function of the people to meet the objectives of the study. Secondary data were gathered from the different relevant documents like reports, journals, books, websites, hospital records, district profiles and other published and unpublished sources. The primary data collected for the study included semi-structured interviews with respondents.

3.4 UNIVERSE AND SAMPLING FRAME

Selected two VDCs for the study consists of total 10786 populations. People of age 50 years and above are included in the study. According to the census 2001, there are about 13 percent with age 50 and above of total populations. Thus, 13 percent of the total populations of the study area estimated to be 1402 (10786x.013). A total of 222 eligible respondents were selected from 655 people. Table 1 below summarizes the total population, estimated study population, selected and eye examined and number of respondents.

Table 1: Universe and Sample Size

VDC	Ward No.	Total Population	Study Population (13%, age 50 or above)	Selected, Enumerated & Examined	Selected & Interviewed
Mithuawa	1 - 3	1144	148.72	-	
	4 - 6	1302	169.26	181	
	7 - 9	955	124.15	168	
Simara Bhawanipur	1 - 3	1183	153.79	157	**Total 222**
	4	930	120.9	-	
	5	1223	158.99	-	
	6	1396	181.48	-	
	7	1406	182.78	-	
	8,9	1247	162.11	149	
		10786	**1402.18**	**655**	

3.5 SAMPLE SIZE AND SAMPLING PROCEDURES

The demographic data of 2001 Census was based for the population and sampling frame of the study. The selection of the study clusters was done with following steps:

- Tables showing population of each ward of the selected VDCs was prepared.
- A total of 9 sampling clusters were created to yield about 100 to 200 persons with age of ≥ 50 years. Thus, the total population in a cluster was made of between 850 and 1,500. Wards with less than 850 populations were grouped with others, or subdividing with more than 1,500 populations into segments as A, B, C, etc. For example: two wards with the population of 800 and 700 were combined into one cluster for the purpose of sampling and vice versa, a ward with the population more than 1550 was subdivided.
- From the 9 clusters 4 clusters were selected by using simple random sampling method ensuring that each ward has an equal chance of being selected.
- Eligible study subjects (respondents) were selected after the examination by ophthalmologist. A total of 170 respondents whose best corrected

visual acuity was <6/60 in either eye due to cataract were enrolled for barrier assessment and 70 cataract operated patients selected for the assessment of visual functioning.

3.6 METHODS AND PROCESS OF DATA COLLECTION

Data collection for the study was generated through qualitative and quantitative methods. Qualitative data were generated through a review of existing documents. Quantitative data were generated applying an extensive semi-structured interview.

Two teams were constituted for the data collection in the field. The teams were divided into enumeration team and eye examination team. Enumeration team consists of one supervisor (Mapper) and two enumerators and the eye examination team consists of one ophthalmologist, two Ophthalmic Assistants and two interviewers.

Enumeration team visited the selected village first (one or two days earlier of clinical examination) and the consent of community leaders such as VDC secretary, former VDC chairman and ward chief of the participant villages were obtained for conducting eye examination. A social mapping and central location for eye examination sites were confirmed before actual enumeration started. Number of households and estimated population of the VDC were acquired. Enumerators visited each household in the selected VDC and enumerated all people with the age of ≥ 50 years. Study subjects were provided with referral slips and requested to come for examination by the ophthalmologist at the centrally located clinical examination site and date fixed earlier.

In the examination day, all enumerated persons ≥50 years were tested for VA by the ophthalmic assistant and examined by ophthalmologist. EDTRS self-illuminating visual acuity chart were used to record the vision. Any person failed to read more than two letters in specified line considered as unable to read that line.

Visual acuity of the all persons were measured and refraction (Retinoscopy and Subjective) were performed in all person presenting VA<6/18. Basic eye examination were performed by ophthalmologist using torch, 2 X binocular loupe and slit lamp and direct Ophthalmoscope in each subject.

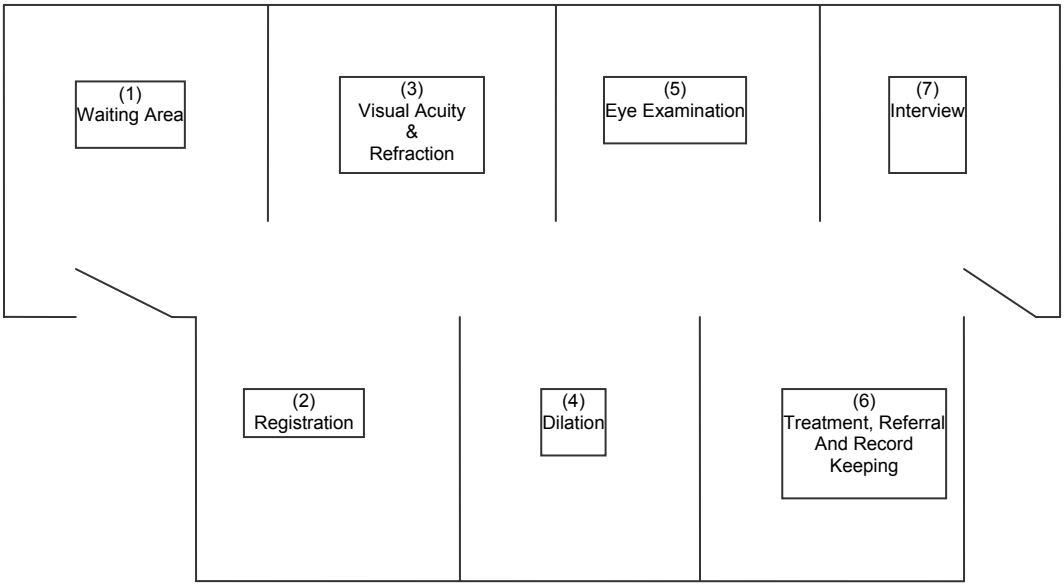

Figure 2: Diagram of Eye Examination and Interview Location

3.7 DATA COLLECTION TECHNIQUES AND TOOLS

3.7.1 Interview with Semi-Structured Questionnaire

Interview was used as the main data collection technique. A detailed form of semi-structured questionnaire (recommended by WHO) was used to cover the required information. Questionnaire was developed in English language and tested in pre-pilot and pilot tests before data collection. Local language speaking enumerators were hired to fill up the questionnaires. Prior to field visit, the enumerators were oriented on the study objectives and provided with training about filling-up the questionnaires.

3.7.2 Observation

Observation visit also conducted to validate the data as received from questionnaire schedule. The researcher was directly involved in the process. Interactions were made with the patients coming to the eye examination sites. Issues like people's opinion about cataract, its treatment, visual functioning of operated patients and barriers for cataract surgery were closely discussed. Checklist was prepared for discussion and collecting the information.

3.8 DATA PROCESSING AND ANALYSIS

The collected information was processed and analyzed using personal computer. Necessary computer application software were applied for maintaining database, processing and analysis.

3.8.1 Data Entry and Editing

The completed questionnaires in the field were taken to Kathmandu. Forms were checked, verified, cleaned and coded. Data entered into the computer and edited using software application program for the analysis.

3.8.2 Statistical Analysis

After editing the data it was analyzed using the Microsoft Excel and Statistical Package for Social Science (SPSS 12.0). Basic descriptive statistics (e.g., frequency distributions, percentage, cross tabs etc.) were generated and necessary output tables and charts were developed as per requirement. The percent is presented in round figure.

3.9 ETHICAL CONSIDERATION

Full consent was obtained from the respondents to participate in the study and they had right to accept or reject or give up in the middle while interviewed without

any obligation for this study. Consent to participate was voluntary for all respondents.

All the people arriving examination site were provided with basic eye examination. Necessary medicines and spectacles were provided free of cost at the spot. People requiring further investigation and cataract surgery were invited to Gaur Eye Hospital for free treatment.

CHAPTER IV

PROFILE OF RAUTAHAT DISTRICT

4.1 CHARACTERISTICS OF THE STUDY AREA

Rautahat, a Tarai district is situated in the eastern part of the Narayani zone in the Central region. It has a landmass of 1126 Sq. Kms. and lies between 26°44' to 27°14'N and 85°14 to 85°30'E.Topography elevation ranges from 122m to 244m asl. Political boundary of Rautahat district is surrounded by Sarlahi in the east, Sindhuli in the North-East, Bara in the west, Makwanpur in the north and Champaran district of Bihar state of India in the South.

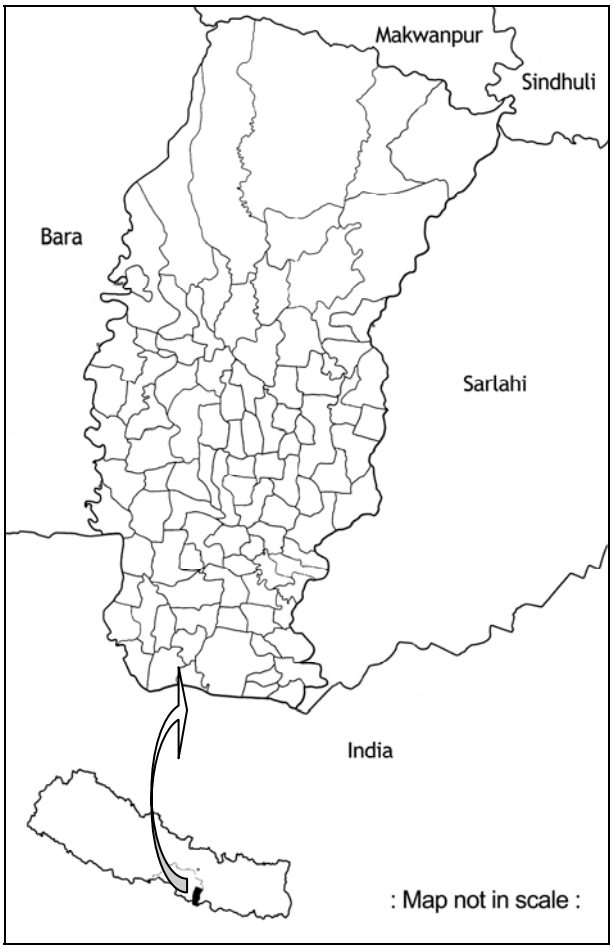

Figure 3: Map of the Study Area Rautahat

This district has 1 municipality and 96 Village Development Committees (VDCs). Only the municipality Gaur is the district headquarter of Rautahat which itself is a rapidly growing Terai market situated at the Indo-Nepal border line. Gaur has been developing as a major market center and a trading point within the district and India as well. People of the district obtain much of the goods and services from Gaur market. Its importance in terms of socio-economic linkages with the village communities has been growing over the years and any new facilities at Gaur add further attractions to these people.

4.2 CLIMATE

The area is characterized by tropical climate with very hot summer and heavy rainfall in monsoon. The temperature of the district is high during the summer. The average minimum and maximum temperature for the district is recorded at 19.6 degree Celsius and 31degree Celsius respectively. The temperature increases up to 40^{o}C or even more in hot summer and decreases to 5^{o}C in cold winter. Maximum rainfall (90 to>100mm) occurs during July-September.

4.3 POPULATION AND ETHNICITY

According to the census 2001, total number of population in Rautahat district is 545132 with an annual growth of 2.75 percent. Male and female populations account 282246 (51.8%) and 262886 (48.2%) respectively. Total household in the district is 88162 and average member per household is 6.18 which is higher than the national average of about 5.4.

The district is predominant of Tarai ethnic/caste groups like Yadav, Kurmi, Teli, Tharu, Kalwar, Dusadh. A fair number of Muslim people also live in this district. However, there is some diversity in the population, especially in Gaur Municipality and in the northern part of the district where the hill caste and ethnic groups like Brahmin, Chhetris, Newars, Magars and Tamangs also account for a sizable number.

4.4 SOCIO-CULTURE AND ECONOMIC CONDITION

People in Rautahat district have different tradition and belief systems. Terai caste and ethnic groups have different customs and traditions compared to hill caste and ethnic groups. These customs and traditions are associated their own worldview. Male members are generally the decision-makers in the families. They control the family resources except in the few cases. Female have little freedom to select health facilities and practitioner including eye treatment. They must seek permissions from their husbands, sons or father in-laws to travel out of the home and spending money.

Average income level of the family is low in the district and poor economic condition of the people has constantly given rise to the poverty level.

4.5 EDUCATION AND OCCUPATION

Overall literacy rate in the district is 32.74 percent, which is significantly lower than the national rate of 54.1 percent. Female literacy is lower (21.74%) comparing to male literacy (42.91%).

The major occupation is agriculture that plays important role for the livelihood of the people. According to CBS (2001) data 80.15 percent people in the district depend on agriculture. However, most of the agricultural households are marginal or small farms, agriculture is largely subsistence or below subsistence in nature. Many households in the district are either landless or own marginal land. Second major occupation is wage earnings which accounts about 15 percent. People unable to meet their needs from agriculture are involved in daily wage works either locally or outside.

4.6 HEALTH FACILITIES

Government institutions like Public Health Centers (PHCs), Health Posts (HPs) and Sub-Health Post (SHPs), established at VDC level are the lowest level health

facilities to offer basic health services at the grass root level. There is one district hospital located at district head quarter and there are 4 PHCs, 8 HPs and 85 SHPs in the district. However, the technicians in such institutions are not capable to handle the eye diseases except very ordinary cases.

4.7 GAUR EYE HOSPITAL

Gaur Eye Hospital was established in 1997 with the support of Narayani Eye Care Project (NECP) in Gaur. The hospital has been providing wide range of eye care services through hospital and outreach activities to local and Indian clients. Similarly GEH serves as the referral center in the area. Conceived from an eye center with six beds it has now expanded to a 100 bed full-fledged eye hospital with all modern technology facilities required for ophthalmic services.

Patients requiring specialized eye care services are referred to GEH from PHCs, HPs, SHPs and district hospitals of Rautahat. Other eye hospitals in Birgunj, Janakpur and Lahan are the nearest referral center for eye care services from the district.

CHAPTER V

RESULT OF THE STUDY

5.1 DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

This section presents various demographic measures such as age, sex, education and occupation of the respondents.

5.1.1 Age and Sex Composition

A total of 222 respondents included in the study. Among them 48 percent were male and 52 percent female.

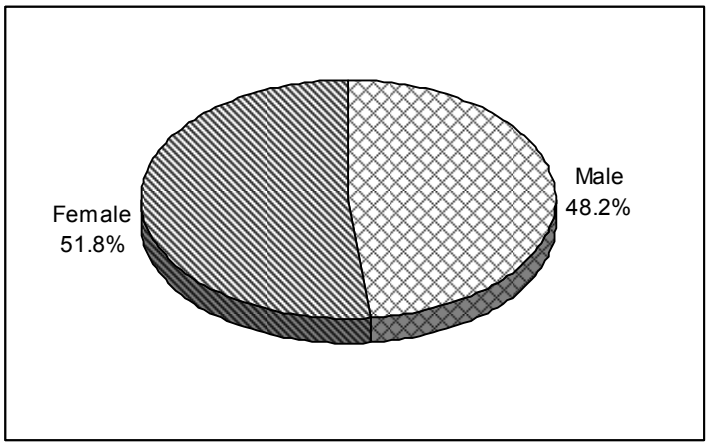

Figure 4: Sex Composition of the Respondents

Similarly table 2 highlights the age group of the respondents. Age group of the respondents was grouped into four categories as 50-60 years, 61-70 years, 71-80 and above 80 years. Among the respondents, majority (51%) of them are from 50-60 years age group followed by 34% from 61-70 age groups. Similarly, about 14 percent were from the age group 71-80, and about 1 percent from the age group of above 80.

Table 2: Age-group of the Respondents

Age Group of the Respondents	Frequency	Percent
50 - 60 years	114	51.4
61 - 70 years	76	34.2
71 - 80 years	30	13.5
Above 80 years	2	0.9
Total	**504**	**100**

Source: Field Survey 2006

5.1.2 Education Status of Respondents

Adult literacy rate is found very low in the study area. Almost whole of the respondents (96%) are found illiterate. Very negligible (about 4%) respondents are found to be literate.

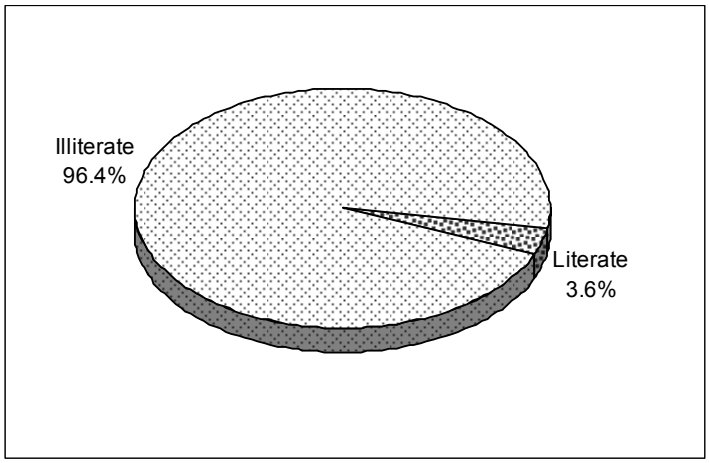

Figure 5: Education Status of Respondents

5.1.3 Occupation of the Respondents

Most of the respondents in the study area rely on household work. A total of 45 percent of the respondents worked as household worker. About 37 percent respondents were depending on agriculture in own land whereas 13 percent respondents were too old to work. Five percent respondent's occupation was agricultural labor in other people's land and very small size of the respondent (.5%) was engaged in manual labor (see figure 6).

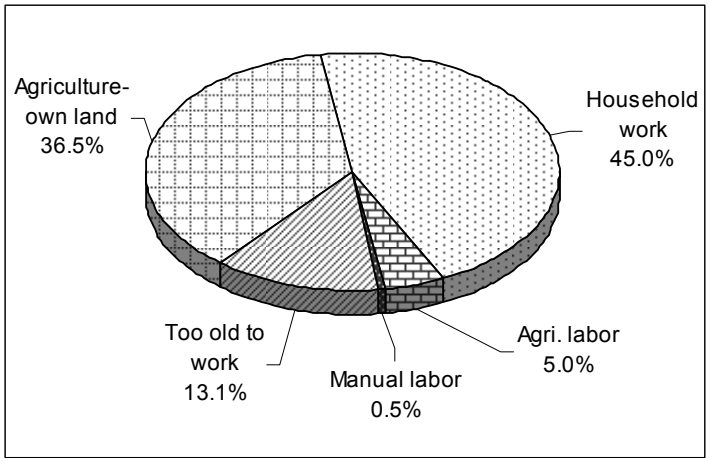

Figure 6: Occupation of Respondents

5.2 CURRENT MAGNITUDE OF BLINDNESS IN STUDY AREA

5.2.1 Overall Blindness

A total of 655 people were examined in 2 eye examination sites consisting of 287 (44%) males and 368 (56%) females. Out of the total people 60 percent were found to have some degree of visual impairment i.e. VA<6/18 to 6/60.

Among the total patients, 57 percent had cataract in right eye (RE) and 59 percent in left eye (LE). About 39 percent had vision impairment due to refractive errors in right eye and 36 percent in left eye. Likewise, rest of the respondents, 4 percent in right eye and 5 percent in left eye had visual disorders due to other types of diseases. Hence, cataract is found to be the chief cause of vision impairment in the area followed by refractive errors.

Table 3: Causes of Low Vision

Causes	Right Eye (RE)		Left Eye (LE)	
	Frequency	Percent	Frequency	Percent
Refractive error	151	38.7	142	35.7
Cataract	223	57.2	236	59.3
Others	16	4.1	20	5.0
Total	**390**	**100.0**	**398**	**100.0**

Source: Field Survey 2006

5.2.2 Cataract Blindness

Among the total people examined, 273 (about 42%) had cataract. Of them 87(32%) were unilateral and 186(68%) bilateral cataracts (see table 4).

Table 4: Distribution of Cataract by Sex

	sex		Total
	Male	Female	
Unilateral	42 (48.3%)	45 (51.7%)	87
Bilateral	74 (39.8%)	112(60.2%)	186
Total	116 (42.5%)	157 (57.5%)	273

Source: Field Survey 2006

Like elsewhere in the world and even in Nepal, female are found to have higher cataract prevalence. The study result shows that in both groups, unilateral (female: 52%, male: 48%) and bilateral (female: 60%, male: 40%) cataracts, female number is higher than that of their counterparts. Thus, in totality, among the total cataract patients, about 58 percent are women and about 43 percent are men. Among the total examined male population, about 40 percent are suffered from cataract whereas in the case of female, about 43 percent of them were with cataract. Hence, the cataract prevalence rate is higher among females by 3 percent than that of males.

5.3 VISUAL FUNCTIONING (VF) AND QUALITY OF LIFE (QOL) OF CATARACT OPERATED PATIENTS

One of the objectives of the study was to examine the quality of surgery by assessing operated people's eye sight and their feelings.

The study was conducted among 70 respondents who had received surgery in either eye or in both eyes. All eligible people i.e. cataract operated people were included in the interview. Among the respondents 44 percent were male and 56 percent were female. Similarly, 47(67%) respondents had received surgery in single eye (right or left) and rest 23 (33%) received in both eye.

5.3.1 Vision Quality of Operated Eyes

Quality of vision is an important concern not only to the patients but for the service providers since it measures the quality of service being provided. The quality of vision in this study was assessed according to the WHO standard. According to the World Health Organization (WHO) people with VA 6/6 to 6/18 are categorized as 'good vision'. Similarly, VA<6/18 to 6/60 are 'vision impaired', VA <6/60 to 3/60 'economic or moderate blind' and VA<3/60 are defined as 'severe or social blind'. Respondents' visual acuity was measured by Ophthalmic Assistants (OAs).

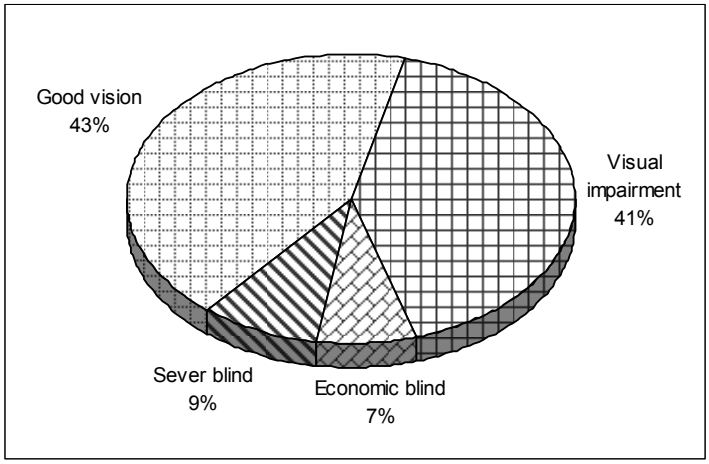

Figure 7: Visual Outcome of the Cataract Surgery

Of the total respondents, 43 percent of them had good vision, 41 percent respondents were visually impaired followed by 7 percent economic or moderate blind. The findings shows that 9 percent operated respondents were blind.

5.3.1.1 Self Assessment of Eye Sight

Attempt was made to appraise the outcome of the surgery through the perception and feelings of the respondents. Respondents were asked to rate their eye sight quality by their own to assess respondent's overall eyesight. Most of the respondents cited positive and pleasant feelings about their eyesight. A higher number of respondents (66%) ranked their vision as very good. Another fair number of respondents (26%) found their vision good. Rest of the respondents

(4%) ranked as moderate. Although 4 percent of them are not satisfied with their vision as they ranked it as 'very bad'.

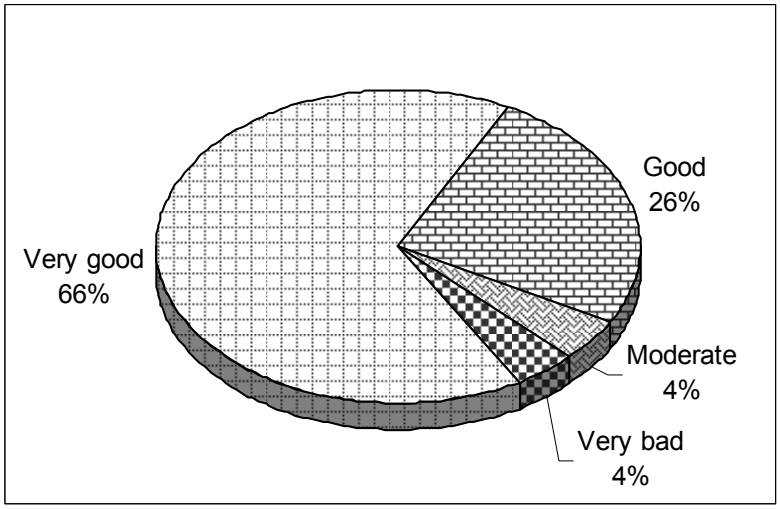

Figure 8: Respondent's Feelings about Their Eye Sight

5.3.1.2 Pain or Discomfort Feelings

Majority of the respondents (66%) have no complaints at all of pain or discomfort on their operated eyes. Of them 23 percent, however, mentioned that they have mild pain and discomfort. Similarly, 9 percent cited of moderate problem whereas 4 percent respondents had severe pain or discomfort.

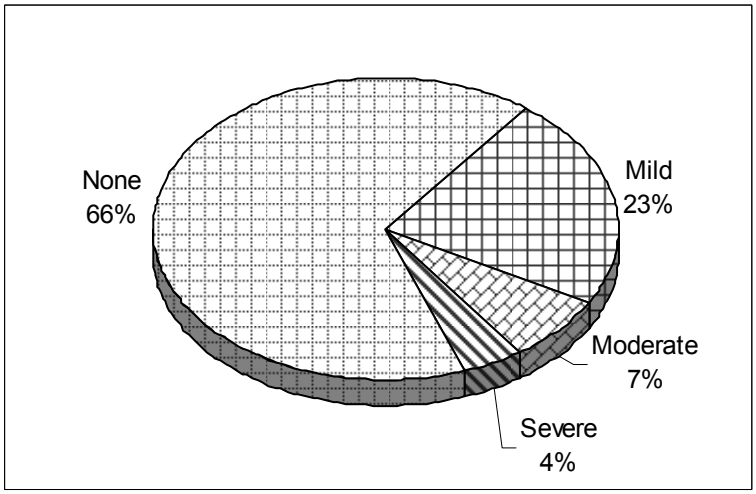

Figure 9: Pain or Discomfort on Operated Eyes

5.3.2 Quality of Life (QOL) of the Respondents

Visual disorder significantly deteriorates the quality of life (QOL) of the people. Attempt was made to measure the QOL by assessing how much difficulties are faced by the respondents. Respondents those who have rated their vision 'very good' and 'none' for pain or discomfort were excluded. Of the total 70 respondents, 43 (about 66%) were completely satisfied with their vision and they have not felt any pain or discomfort. Thus, rest of 27 respondents who complained about their eyesight were included to examine their visual functioning and quality of life. Various activities which are carried out by the people in their day to day life were used and asked respondents how difficulties or uncomfortable they have faced conducting such activities under two main categories- general functioning and psycho-social functions.

5.3.2.1 General Functioning Difficulties

Under the general functioning respondent's visual sight were assessed through visual function questionnaire (WHO standard) with other subscales: visual perception (mobility limitation, near vision, distance vision), peripheral vision, sensory adaptation (light/dark adaptation, visual search, color discrimination, glare disability) and depth perception were administered.

5.3.2.1.1 Distance Vision and Mobility Difficulties

The most common and the foremost problem faced by a vision impaired person is mobility. To measure the difficulties in mobility 3 questions were asked- firstly, how much difficulty in going down steps or stairs, secondly, how much difficulty in doing activities outside of the house (e.g. sporting events, walking to shops or neighbors, religious events and doing household chores) and lastly, how much difficulty in seeing irregularities in the path (while walking).

Majority of the respondents (66%) mentioned that they have not at all felt difficulty in going down steps while 23 percent felt mild and 7 percent faced moderate

difficulties in going down steps. Among them, 4 percent faced severe problem in walking in steps.

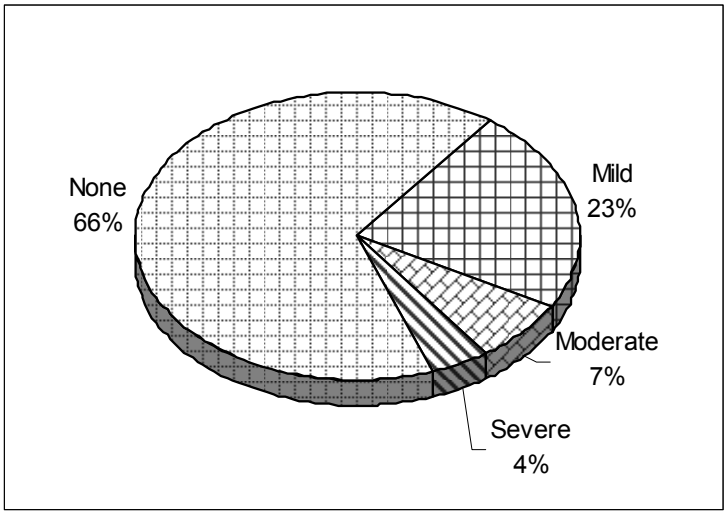

Figure 10: Difficulties in Going Down Steps

Attempt was made to assess the difficulty level of respondents in noticing obstacles e.g. animals, vehicles and etc. while walking outside. A highest number (44%) of respondents opined of having mild problem and 11 percent of having moderate level difficulties. About 19 percent respondents have been suffered from severe difficulties and, on the other hand, about 26 percent did not experience the difficulties.

Table 5: Difficulty in Noticing Obstacles While Walking

Difficulty Level	Frequency	Percent	Cumulative Percent
None	7	25.9	25.9
Mild	12	44.4	70.4
Moderate	3	11.1	81.5
Severe	5	18.5	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

Similarly, as shown by the figure 11 below, 11 percent had not any problem in seeing irregularities in the paths. A high number (40%) of respondents had moderate problem. Another 30 percent had mild problem while 15 and 11 percent had severe and extreme problems respectively.

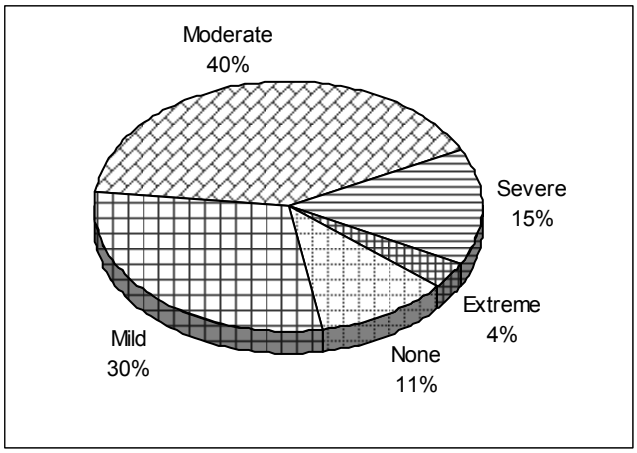

Figure 11: Difficulties in Seeing Irregularities in Paths

Because of their eyesight disorder, people face difficulties in going to activities outside of the house e.g. sporting events, shopping, and religious events. Maximum number of respondents expressed of having either mild or moderate problems by 33 and 30 percent respectively. Eleven percent respondents have been experiencing severe difficulties while about 4 percents were affected excessively. Result of this study also shows that 22 percent respondents were free of such difficulties.

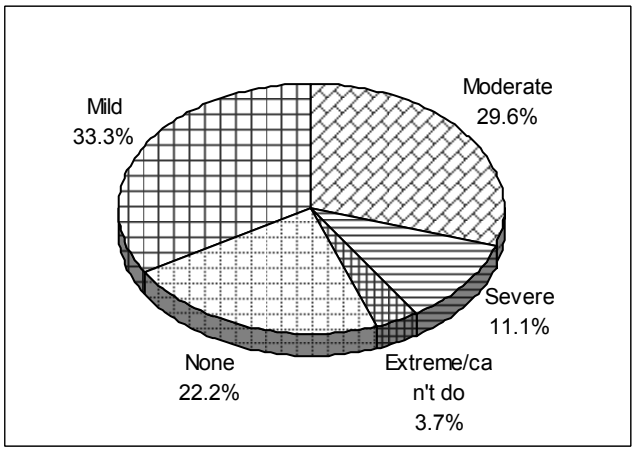

Figure 12: Difficulties in Going for Activities

Table 6 below witnesses that 30 percent respondents have been facing sever problem of distance vision. More importantly, about 19 percent people have been facing more severe difficulties as they expressed of having 'extreme' difficulties,

completely unable to see. Almost 26 and 19 percent of respondents have difficulty level of 'moderate' and 'mild' respectively. Only very negligible number of respondents, 2(7%) are free of such difficulties.

Table 6: Difficulty in Recognizing People from 20 Meter Distance

Difficulty Level	Frequency	Percent	Cumulative Percent
None	2	7.4	7.4
Mild	5	18.5	25.9
Moderate	7	25.9	51.9
Severe	8	29.6	81.5
Extreme/can't do	5	18.5	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

5.3.2.1.2 Near Vision Difficulties

An attempt was made to appraise the near vision difficulties faced by the respondents. To evaluate the near vision quality of the respondents, different 5 questions related to daily usual activities were administered.

Firstly, respondents were asked how much difficulties they have in seeing close objects e.g. making out differences in coins or notes, reading newsprints. As shown by the table 7, 59 (25.9% + 33.3%) percent suffered from mild or moderate difficulties. Another 22 percent had severe and 7 percent had extreme difficulties who are completely unable to seeing close objects. Of them, 11 percent, however, did not have such difficulties.

Table 7: Difficulty in Seeing Close Objects

Difficulty Level	Frequency	Percent	Cumulative Percent
None	3	11.1	11.1
Mild	7	25.9	37.0
Moderate	9	33.3	70.4
Severe	6	22.2	92.6
Extreme/can't do	2	7.4	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

Second question was asked how much difficulty do you have in doing activities that require you to see well-close up e.g. sewing, finding lice, putting string into needle holes, using hand tools etc. The result shows that about half (48%) of the respondents articulated of having severe and extreme difficulties. Almost 30 percent have had moderate and about 15 percent mild difficulties in performing well-close seeing actions. About seven percent have never had such difficulty.

Table 8: Difficulty in Doing Activities Seeing Well-close

Difficulty Level	Frequency	Percent	Cumulative Percent
None	2	7.4	7.4
Mild	4	14.8	22.2
Moderate	8	29.6	51.9
Severe	6	22.2	74.1
Extreme/can't do	7	25.9	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

Next question was put as because of their eyesight, how much difficulties respondents have been facing in recognizing the face of a person nearby them. Forty four of respondents are not having this type of difficulties whereas another same number of respondents are facing mild level difficulties. Remaining respondents, of three groups, had same number of respondents (3.7) rated their problems moderate, severe and extreme.

Table 9: Difficulty in Recognizing Person's Face

Difficulty Level	Frequency	Percent	Cumulative Percent
None	12	44.4	44.4
Mild	12	44.4	88.9
Moderate	1	3.7	92.6
Severe	1	3.7	96.3
Extreme/can't do	1	3.7	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

Table 10 demonstrates that majority of the respondents (74% in aggregate) have mild and moderate level difficulties in searching for something on a crowded shelf.

About 11 percent respondents have expressed of severe (7%) and extreme (4%) difficulties. Rest of the respondents (15%) has not experienced such difficulties.

Table 10: Difficulty in Searching Objects

Difficulty Level	Frequency	Percent	Cumulative Percent
None	4	14.8	14.8
Mild	11	40.7	55.6
Moderate	9	33.3	88.9
Severe	2	7.4	96.3
Extreme/can't do	1	3.7	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

The last question to assess the near vision of the respondents was how much difficulty they have in seeing the level in a container when pouring. Twenty two percent reported that they do not have any problems of seeing level in a container when pouring liquid. About 41 percent respondents reported of having mild difficulties while another 22 percent have been facing moderate difficulties. Likewise 11 percent have severe and about 4 percent have extreme difficulties.

Table 11: Difficulty in Seeing Level in a Container

Difficulty Level	Frequency	Percent	Cumulative Percent
None	6	22.2	22.2
Mild	11	40.7	63.0
Moderate	6	22.2	85.2
Severe	3	11.1	96.3
Extreme/can't do	1	3.7	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

5.3.2.1.3 Light/Dark Adaptation and Color Vision Difficulties

Respondents were asked how much difficulties they have been facing in seeing when coming inside after being in bright sunlight to assess their light and dark adaptation functioning. The result shows that 37 percent respondents have been facing moderate problem whereas about 26 percent of them complained of having

mild problem. Thirty percent have severe problem of light/dark adaptation while about 7 percent have no such difficulties.

Table 12: Difficulty in Seeing in Dark after Bright Sunlight

Difficulty Level	Frequency	Percent	Cumulative Percent
None	2	7.4	7.4
Mild	7	25.9	33.3
Moderate	10	37.0	70.4
Severe	8	29.6	100.0
Total	27	100.0	

Source: Field Survey 2006

Study result demonstrates that in aggregate 41 (severe 33.3% + extreme 7.4%) percents are facing severe/extreme problems in their vision seeing in light glare while 11 percent of them have no such problems at all. Likewise, about 41 percent rated their problem as moderate and about 7 percent as mild.

Table 13: Difficulty in Seeing Light Glare

Difficulty Level	Frequency	Percent	Cumulative Percent
None	3	11.1	11.1
Mild	2	7.4	18.5
Moderate	11	40.7	59.3
Severe	9	33.3	92.6
Extreme/can't do	2	7.4	100.0
Total	27	100.0	

Source: Field Survey 2006

Vision disorders make people suffer of difficulties in recognizing colors. It was assessed in the study how much difficulty respondents have problems of seeing differences in colors. Table 14 shows that a maximum number of people (about 41%) have been facing mild and about 19 percent moderate difficulties. Eleven percent has severely suffered from the problem while about 30 percent were free of such problems.

Table 14: Difficulty in Seeing Color Differences

Difficulty Level	Frequency	Percent	Cumulative Percent
None	8	29.6	29.6
Mild	11	40.7	70.4
Moderate	5	18.5	88.9
Severe	3	11.1	100.0
Total	27	100.0	

Source: Field Survey 2006

5.3.2.1.4 Problems Conducting Usual Works

Visual disorder limits people performing their usual works. Question was put to the respondents how much difficulty they have in carrying out their usual works. Moderate difficulties faced by 33 percent respondents and about 26 percent faced mild difficulties. Almost 19 percent of them have no such problems at all while same percent of the respondents have severe difficulties. Rest 4 percent respondents were completely limited to perform their usual works as they have been facing extreme difficulties.

Table 15: Difficulty in Carrying Out Usual Work

Difficulty Level	Frequency	Percent	Cumulative Percent
None	5	18.5	18.5
Mild	7	25.9	44.4
Moderate	9	33.3	77.8
Severe	5	18.5	96.3
Extreme/can't do	1	3.7	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

5.3.2.2 Psycho-Social Functioning

The questionnaire for this functioning consists four subscales: social interaction (hesitation attending social functions, meeting friends), and mental wellbeing (burden on others, dejection, loss of confidence etc.).

5.3.2.2.1 Social Function Limitations and Dependency

Question was asked to assess the fact how often respondents have been hesitant to participate in social functions like wedding functions, fates, feasts and other social gatherings. Among the respondents, 33 percent have never faced such hesitation. However, about 30 percent experienced such hesitation 'sometimes' and 22 percent of them spoken they have 'rarely' hesitated to attend social functions. Likewise, 11 percent have been facing such difficulties 'very often' and about 4 percent frequently as they rated their hesitation as 'often'.

Table 16: Hesitation in Attending Social Activities

Frequency of Hesitation	Number	Percent	Cumulative Percent
Never	9	33.3	33.3
Rarely	6	22.2	55.6
Sometimes	8	29.6	85.2
Often	1	3.7	88.9
Very often	3	11.1	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

Similarly, after having visual disorders people feel of being dependant or burden to family and others. Because of their eye problems, most of the people have felt that they became of burden on others.

Table 17: Feelings of Burden on Others

Frequency of Feelings	Number	Percent	Cumulative Percent
Never	9	33.3	33.3
Rarely	1	3.7	37.0
Sometimes	2	7.4	44.4
Often	7	25.9	70.4
Very often	8	29.6	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

As the table 17 above shows, among the respondents, about 30 and about 26 percent respondents articulated of having feelings of being burden or dependant

on others 'very often' and 'often' respectively. Another significant number (33%) of respondents never had feelings of being burden to others. Likewise, 7 percent respondents felt being burden sometimes and 33 percent never had feelings of being burden to others.

5.3.2.2.2 Mental Well-being

Two major questions were asked to the respondents to measure their mental well-being status. The first question was how often the respondents feel ashamed or embarrassed in their daily life. The highest numbers (33%) of them have sometimes felt ashamed or embarrassed while other 30 percent have had such experience rarely. Similarly, 11 and 7 percent mentioned of having such experience 'very often' and 'often' respectively.

Table 18: Feelings of Ashamed or Embarrassed

	Frequency	Percent	Cumulative Percent
Never	5	18.5	18.5
Rarely	8	29.6	48.1
Sometimes	9	33.3	81.5
Often	2	7.4	88.9
Very often	3	11.1	100.0
Total	**27**	**100.0**	

Source: Field Survey 2006

The second question was how often the respondents fear or worry of loosing their eye sight. The result suggests that majority of the people were worried about loosing their vision.

Table 19: Worrying of Loosing Remaining Eyesight

Frequency of Worrying	Frequency	Percent	Cumulative Percent
Never	1	3.7	3.7
Rarely	7	25.9	29.6
Sometimes	2	7.4	37.0
Often	2	7.4	44.4
Very often	15	55.6	100.0
Total	27	100	

Source: Field Survey 2006

In aggregate, 63 percent (very often 55.6% + often 7.4%) respondents expressed that they worry about loosing their remaining sight. On the other hand about 26 percent respondents rarely think of loosing their remaining eye sight due to their problem. Likewise, 7 percent people worry of loosing their sight sometimes while other 4 percent people never worried about it (see table 19).

5.4 BARRIERS TO EYE CARE SERVICE ACCESS

A total of 190 persons with presenting vision less than 6/60 in either eye due to cataract were enrolled in the study.

5.4.1 Difficulties in Performing Daily Household Chores

Respondents were asked about extent of problems they are facing in carrying out household chores due to their vision impairment. Among them 45 percent are facing problem quite a bit and about 33 percent are facing a little problems. About 22 percent respondents expressed that their vision has affected a lot in their daily work and complained about significant problem due to low vision. Only one respondent (.5%) did not have problem at all (see table 20).

Table 20: Difficulties in Performing Daily Household Chores

Difficulty Level	Frequency	Percent	Cumulative Percent
Not at all	1	.5	.5
A little	62	32.6	33.2
Quite a bit	86	45.3	78.4
A lot	41	21.6	100.0
Total	**190**	**100.0**	

Source: Field Survey 2006

5.4.2 Duration of Vision Loss

The study also tried to find out the duration of eye problem to assess how promptly respondents go for treatment of their problems. For this, respondents were asked since how long they were aware of having vision problems. Majority (63%) of them

noticed their visual loss symptom for more than 1 year. About 13 percent respondents reported the duration of their visual symptoms since 7-12 months and 12 percent since more than 1 month but less than 6 months. Only 2 persons (1%) had the problem since less than a month. Another 11 percent respondents could not say more about the duration of their visual loss symptoms.

Table 21: Duration of Becoming Aware of Vision Problem

Duration	Frequency	Percent	Cumulative Percent
< 1 month	2	1.1	1.1
1-6 months	23	12.1	13.2
7-12 months	24	12.6	25.8
> 1 year	120	63.2	88.9
Can't remember	21	11.1	100.0
Total	190	100.0	

Source: Field Survey 2006

5.4.3 Causes of Vision Loss

When asked about knowledge to access respondent's understanding on cause of their vision loss, about 28 percent knew that the cataract was the cause of their vision loss, 40.5 percent think their loss of vision is not due to cataract rather due to some other reasons and about 32 percent respondents did not know about cataract and cause of their vision loss.

Table 22: Cause of Vision Impairment

Causes	Frequency	Percent	Cumulative Percent
Cataract	53	27.9	27.9
Others	77	40.5	68.4
Don't know	60	31.6	100.0
Total	**190**	**100.0**	

Source: Field Survey 2006

5.4.4 Knowledge about Cataract Treatment

The respondents were asked whether they knew their vision could be improved by treatment. About 95 percent respondents were aware that their vision problem is

curable. Very few, 5 percent respondents were not aware that their vision can be improved.

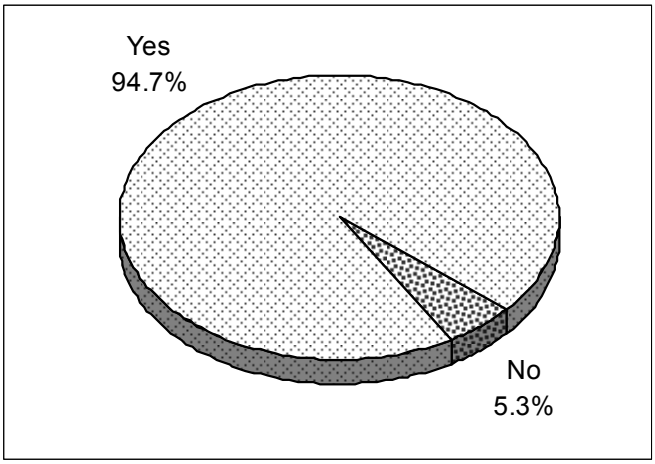

Figure 13: Can Your Vision Problem be Cured?

Among the respondents who knew that their vision can be improved were asked when they had known about it. A total of 180 respondents were eligible to answer this question. As shown in table 23 below, 119 (66%) said they received the information since more than 1 year ago. Five percent knew about the treatment of their problem more than 7 months but less than a year whereas 1 percent knew about it less than six months. Two percent came to know about it just now. A fair number, 46 persons (about 26%) knew cataract is curable but cannot remember when they received the information.

Table 23: Duration of Knowing about Treatment

Duration	Frequency	Percent	Cumulative Percent
Now	4	2.2	2.2
1-6 months	2	1.1	3.3
7-12 months	9	5.0	8.3
> 1 year	119	66.1	74.4
Can't remember	46	25.6	100.0
Total	180	100.0	

Source: Field Survey 2006

5.4.5 Source of Knowledge about Cataract Treatment

The study revealed that eye hospitals and public health centers (PHC) are the most prominent media spreading the source of information regarding the curability of cataract as about 43 percent respondents came to know through it. Likewise, previously operated cataract patients (about 41%) are also seen as the effective means to spread the message about treatment of cataract. About 9 percent respondents had received the information from private practitioners followed by from eye camps (4%). Other sources contributed about 3 percent to disseminating the information.

Table 24: Sources of Knowledge of Cataract Treatment

Sources	Frequency	Percent	Cumulative Percent
Eye camp	8	4.4	4.4
Hospital/PHC	77	42.8	47.2
Pvt. practitioner	17	9.4	56.7
Operated patients	73	40.6	97.2
Others	5	2.8	100.0
Total	**180**	**100.0**	

Source: Field Survey 2006

5.4.6 General Barriers

Table 25 evidenced that the main barrier for not seeking cataract surgical service is economic reason like no money for surgery or other logistic support, loss of wages that is contributed by 35 percent. A significant number (25%) of respondents mentioned that they could not go for treatment due to no one to accompany them. Clinical reason (cataract yet to mature, inability to walk or due to other physical problems) contributed for the barriers to service access by 23 whereas 10 percent respondents expressed that service location (geographical distance) is too far for them. About 6 percent respondents did not seek treatment due to fear of surgery.

Table 25: Reason for not seeking Treatment

Reason for not seeking Treatment	Responses	Percent
Fear	13	5.6
No one to accompany (attendant)	59	25.4
Too far	24	10.3
Clinical reason (cataract yet to mature etc.)	54	23.3
Economic (no money, loss of wages etc.)	82	35.3
Total	**232**	**100.0**

Source: Field Survey 2006

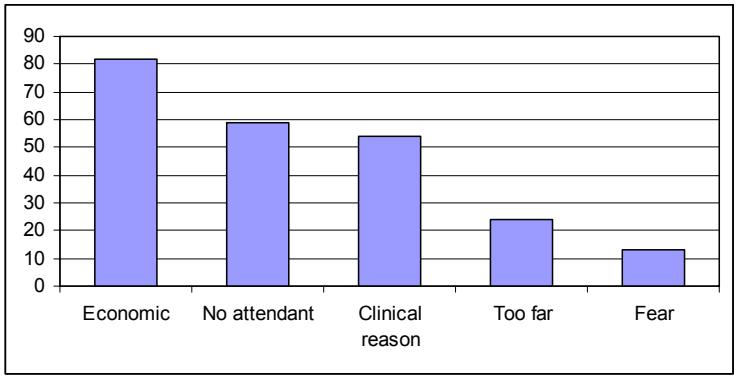

Figure 14: General Barriers

5.4.7 Behavioral Barriers

A total of 71 people complained about behavioral reason for not seeking eye care service of which 65% had no support from family and 35% feel that they do not need better vision because of old age.

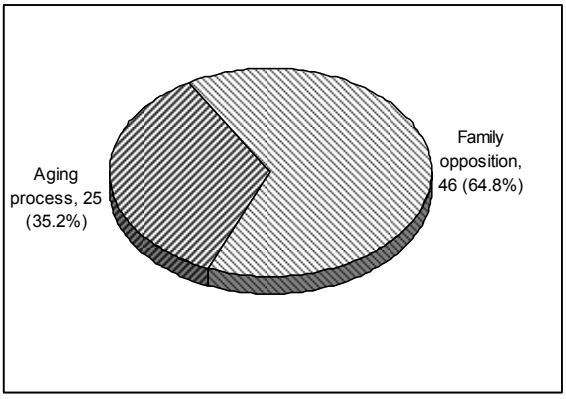

Figure 15: Behavioral Barriers

5.4.8 Knowledge Barriers

Among the respondents those who mentioned about knowledge barrier, a total of 54 percent people had gone for surgery because they did not know treatment can improve their problem. And 46 percent respondents are unknown about where the treatment is available.

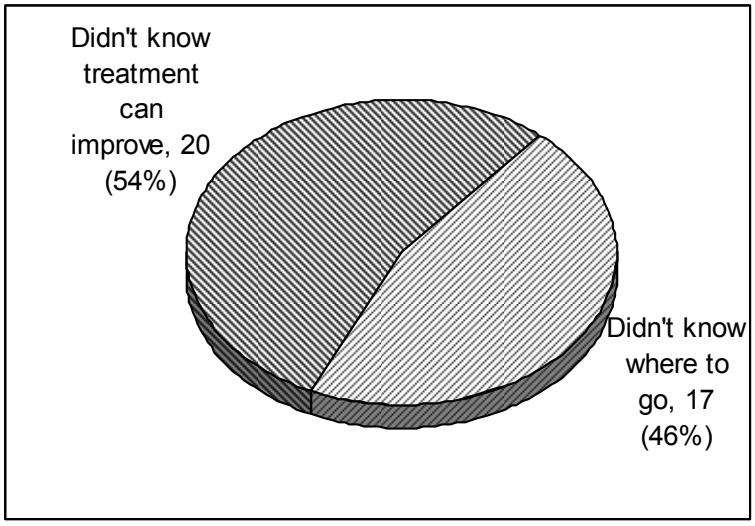

Figure 16: Knowledge Barriers

5.4.9 Attitudinal Barriers

A total of 254 responses were received for attitudinal barriers. A highest number (about 41%) of respondents have not felt vision inferiority as they said able to see adequately. Another higher number of respondents of about 24 percent mentioned they had no time to avail services. Fifteen percent had already up took surgery, can see well and thus do not think necessary to treat the fellow eye (do not need to have binocular vision). About 9 percent did not think that their vision could improve and about 5 percent felt that it is not necessary to have treatment. Similarly, about 4 percent have do not have faith towards the treatment while about 2 percent were not willing to have surgery because other people known to them had bad outcome of surgery.

Table 26: Causes for not Seeking Treatment

Causes	Responses	Percent
No time	60	23.6
No faith in treatment	10	3.9
Do not think necessary	12	4.7
Do not think will improve vision	24	9.4
Able to see adequately	103	40.6
One eye operated felt not necessary	39	15.4
Known bad outcome	4	1.6
Others	2	0.8
Total	**254**	**100.0**

Source: Field Survey 2006

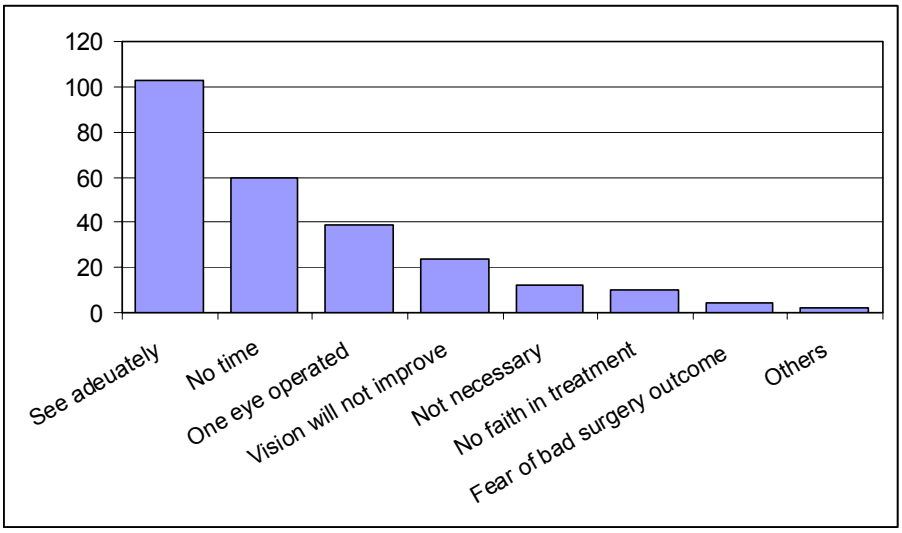

Figure 17: Attitudinal Barriers

CHAPTER VI

MAJOR FINDINGS AND DISCUSSION

6.1 BLINDNESS AND SERVICE COVERAGE

Study revealed that visual disorder is the significant problem in the study area. Out of the total people gone through eye examination, 60 percent were found to have some degree of visual impairment i.e. VA<6/18 to 6/60. It is also found that cataract is found to be the chief cause of vision impairment in the area followed by refractive errors. Among the total people examined, 273 (about 42%) had cataract and of them, majority were (68%) bilateral cataracts requiring immediate surgery at least in one eye.

Service coverage is found to be quite low since only 70 (about 26%) of the people had surgery out of 273 cataract patients. Like elsewhere in the world and even in Nepal, female are found to have higher cataract prevalence, bilateral (female: 60%, male: 40%) cataracts, female number is higher than that of their counterparts. Available studies consistently indicate that in every region of the world, and at all ages, females have a significantly higher risk of being visually impaired than males (WHO Fact Sheet No. 282, 2004). Result of this study also revealed that the cataract prevalence rate is higher among females by 3 percent than that of males.

The study divulged that among the 70 cataract operated people only 43 percent of them had good vision and which indicates that the outcome of the surgery is not so good. Forty one percent respondents were visually impaired followed by 7 percent economic or moderate blind. Even after having surgery 9 percent people are totally blind.

6.2 VISUAL FUNCTIONING AND QUALITY OF LIFE OF THE CATARACT OPERATED PEOPLE

Visual disorder significantly deteriorates the quality of life (QOL) of the people. Attempt was made to measure the QOL through two major functioning- general functioning and psycho-social functioning. General functioning measured how much difficulties are faced by the respondents whereas psycho-social function tried to measure how often people feel uncomfortable due to their vision. Respondents those who have rated their vision 'very good' and 'none' for pain or discomfort were excluded. Of the total 70 respondents, 27 respondents who complained about their eyesight were included to examine their QOL.

In the general functioning category, various activities which are carried out by the people in their day to day life were used and asked them about extent of difficulties they have faced. Among them 37 percent people have severe/extreme difficulties in distance vision and mobility. Twenty two percent people have been facing severe difficulties in near vision, specially performing well-close works and recognizing people's face. Similarly, 27 percent people were suffered severely in relation to light/dark adaptation and differentiating colors. Likewise, about 22 percent people have been heavily limited to carry out their usual activities because of their visual disorder.

Psycho-social functioning activities were included to assess how often the respondents feel uncomfortable mentally or psychologically due to their low vision. The result suggests that 21 percent people hesitated to attend social functions or felt burden on others very often. Likewise, 34 percent people, because of their eyesight, felt ashamed or embarrassed and worried of loosing remaining eye sight very often.

6.3 BARRIERS TO UPTAKE CATARACT SURGERY

Result of the study revealed that because of their visual disorders and ageing most of the people are compelled to stay at home and carry out household works. This cause resulted that a significant number (45%) of the respondents' major occupation was household work. However, majority of people (67%), are facing significant difficulties performing their household chores due to their vision problems. They complained that their vision has affected a lot in their daily work. Again, they are not going for the surgery due to various barriers.

People are found to be reluctant to go for the treatment of their problems even though they are well-aware of their eye problem. Majority of people, 63%, noticed their visual loss symptom for more than 1 year and they were well aware that their vision could be improved by treatment. About 95 percent respondents were aware that their vision problem is curable. Nevertheless, they did not turn for the treatment. The wait and see attitude was a common practice among the patients.

It was attempted to assess the barriers to uptake cataract surgery under 4 categories- general barrier, behavior barriers, knowledge and attitudinal barriers. Multiple answer questions were provided for this purpose. A total of 594 responses were received from 190 respondents. Result of the study revealed that attitudinal barrier is the principle barrier (43%) followed by the general barrier (39%). Likewise, behavioral barriers and knowledge related barriers stands as another barriers as they contributed by 12 and 6 percent respectively (see figure 18).

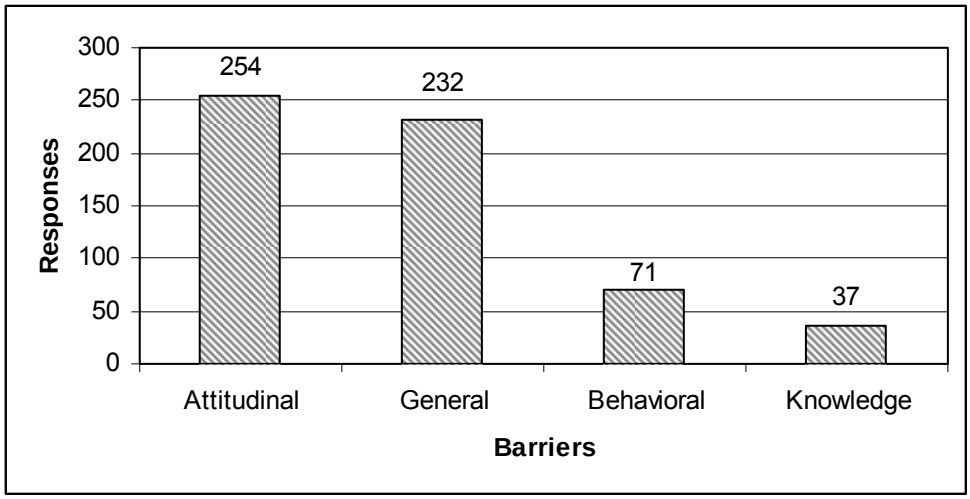

Figure 18: Barriers to Cataract Surgery

Study shows that people are barred from up taking surgery mainly due to their attitudes. Under the attitudinal barriers, about 41 percent of respondents, among the visual impaired, have not felt vision inferiority as they said they can see adequately. Another higher number of respondents of about 24 percent mentioned they had no time to avail services. Thus, many people do not even realize that they had eye problem and even they know about it, they do not want to spare the time for treatment.

Under the general barriers, economic reason is found principle barrier for cataract surgery. People are unable to arrange money for surgery and other logistic supports like traveling cost, lodging and fooding expenses in one hand and on the other hand they loose their wages. Thus, people are not using the services due to the poverty. Clinical reasons and escorting are also found as the major barriers. As suggested by Kathmandu study the willingness to pay is directly related to poverty and 60% of population in the country lived under poverty line, average per capita of the country (USD320) per year is not enough to spend on this painless problem of cataract blindness (Shrestha et al., 2004). Similarly, a noticeable number, 25 percent people did not go for surgery mainly due to no one to escort them up to the hospital and 23 percent did not go for surgery due to clinical reasons like cataract is yet to mature, inability to walk due to other physical problems and so on.

Behavior of the people also prevents them to accept the surgery. Among the respondents, majority (65%) of them could not go for treatment of their problem as their family did not support them. Rest of the respondents think that their problem is due to aging problem thus do not need better vision as they are too old.

Level of knowledge regarding the cataract and its treatment is found to be quite high among the people. Only few, 6 percent of 594 responses mentioned about barriers relating to the knowledge. Among the respondents those who mentioned about knowledge barrier, a total of 54 percent people had gone for surgery because they did not know treatment can improve their problem. And 46 percent respondents are unknown about where the treatment is available.

CHAPTER VII

CONCLUSION AND RECOMMENDATIONS

7.1 CONCLUSIONS

- Cataract is found to be the major cause of blindness in the study area. Of the total blindness about 42 percent of people are being blind due to cataract. Aged people and women are highly suffered by cataracts. Cataract prevalence rate is higher among females by 3 percent than that of their counterparts.
- Despite the fact that comprehensive cataract surgery services have been established for sight restoration, its coverage is found to be low. Only 26 percent of the people had gone through surgery out of 273 cataract patients. Among the total cataract people, 68 percent are bilateral cataracts requiring immediate surgery at least in one eye.
- Quality of the service being provided in the study area is also needed to be improved. The study result revealed that among the cataract operated people only 43 percent of them had good vision which indicates that the outcome of the surgery is not so satisfactory. Among the operated people, 48 percent people are facing vision disparity and 9 percents are totally blind although even after they got operated. Thus, it can be concluded that service coverage should be widened mainly focusing to women and aged people and quality of cataract surgery should be improved.
- Among the service providers, a general assumption exists that people do not seek services due to awareness or knowledge about their problem and its curability or because of not having money for treatment. However, this study revealed that knowledge and awareness level among the people is quite high and basically it is not barrier any more. Similarly, though economic reason is found to be one of the major barriers, it is not the main one. Rather, attitudinal barrier is found as the principle barrier because 43 percent people did not go for surgery due to this barrier.

Economic barrier is found as second principle restriction for up taking surgery.

- Despite the increased availability of sight restoring surgery, large number of curable blinds and eye patients residing in remote and rural areas are beyond the reach of eye care services due to various reasons. Surgery up taking rate among the people is found low. Hence, only establishment of service is not enough but making service accessible to the rural people is most important.
- Visual disorder significantly deteriorates the quality of life (QOL) of the people. About 27 percent people are suffered from extreme difficulties and their quality of life is significantly deteriorated. Likewise, they are compelled to live with painful and humiliated conditions as they suffer from mental and psycho-social problems.

7.2 RECOMMENDATIONS

- Although people are well aware of eye problems and service availability they are not using the services mainly due to attitudinal and economic reasons. Hence, service providers especially eye hospital should conduct massive outreach (community based) programs that can provide treatment at their door steps mainly focusing on poor, aged and women.
- For the time being, operation of free camps or provision of services in subsidized rate for poor in the hospital with transportation facilities is required for clearing backblock. However, It would be impossible to offer free services to everyone every time. Therefore, income generating programs and awareness raising focusing to change attitudes of people are needed to make them prepared themselves financially and mentally so that they can avail eye health facilities to their maximum benefit.
- Besides curative services, wider level educational and awareness raising programs in grass root level should be conducted. For this, any single efforts of any single institution is not sufficient rather it requires strong and collaborative action. Enhancing local people's participation and

establishing partnership with other local level organizations (development organizations like Plan Nepal, UNICEF, Red Cross, NGOs, District health Office, District Education Office) would be effective in this process.

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