

**STATUS OF PEOPLE WITH CATARACT IN RURAL COMMUNITY
OF CENTRAL DEVELOPMENT REGION, NEPAL**

A Dissertation

**Submitted to the Faculty of Humanities and Social Sciences of
Tribhuvan University in Fulfillment of the Requirements for the**

Degree of

Doctor of Philosophy

in

RURAL DEVELOPMENT

By

NABARAJ GAUTAM

Ph.D. Reg. No. : 07/2069 Shrawan

Tribhuvan University

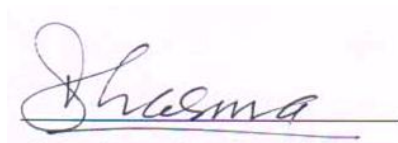
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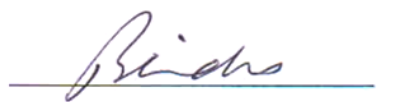
LETTER OF RECOMMENDATION

We certify that this dissertation entitled **Status of People with Cataract in Rural Community of Central Development Region, Nepal** was prepared by Mr. Nabaraj Gautam under our guidance. We hereby recommend this dissertation for the final examination by the Research Committee of the Faculty of Humanities and Social Sciences, Tribhuvan University, in fulfillment of the requirements for the Degree of **DOCTOR OF PHILOSOPHY in RURAL DEVELOPMENT**.

Dissertation Committee

A handwritten signature in blue ink, appearing to read 'Sharma', is written over a horizontal line.

Prof. Prem Sharma, Ph.D.
Supervisor

A handwritten signature in blue ink, appearing to read 'Bindu', is written over a horizontal line.

Prof. Bindu Pokharel, Ph.D.
Co-supervisor

Date: 10/05/2016



TRIBHUVAN UNIVERSITY
FACULTY OF HUMANITIES & SOCIAL SCIENCES

Office of the Dean

Kirtipur, Kathmandu

Dean's Office
Kirtipur

APPROVAL LETTER

This dissertation entitled **Status of People with Cataract in Rural Community of Central Development Region, Nepal** was submitted by Mr. Nabaraj Gautam for the final examination by the Research Committee of the Faculty of Humanities and Social Sciences, Tribhuvan University, in fulfillment of the requirements for the Degree of **DOCTOR OF PHILOSOPHY in RURAL DEVELOPMENT**. I hereby certify that the Research Committee of this Faculty has found this dissertation satisfactory in scope and quality and has therefore accepted it for the degree.

Date: 11/05/2016

Prof. Chintamani Pokharel, Ph.D.

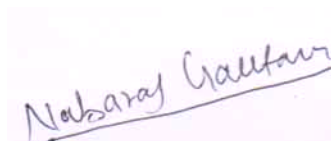
Dean and Chairman, Research Committee

Faculty of Humanities and Social Sciences

Tribhuvan University, Nepal

DECLARATION

I, hereby, declare that dissertation, **Status of People with Cataract in Rural Community of Central Development Region, Nepal** submitted to the office of the Dean, Faculty of Humanities and Social Sciences, Tribhuvan University, is an entirely original work prepared under the guidance of my supervisor and expert. I have made due acknowledgements to all ideas and information borrowed from different sources in the course of writing this dissertation. The result presented in this dissertation has not been presented or submitted anywhere else for the award of any degree or for any other purposes. No part of this document has ever been published in any form before. I shall be solely responsible if any evidence is found against my dissertation.



Nabaraj Gautam

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Nabaraj Gautam

ABSTRACT

This dissertation entitled **Status of People with Cataract in Rural Community of Central Development Region, Nepal** has set three objectives: i) to identify the socio-demographic characteristics of the households of people with cataract, ii) to analyze the status of people with cataract and the effects of cataract on their socio-economic development, and iii) to identify the knowledge, practices and barriers of people with cataract.

Three VDCs, namely Dhunche, Ramche and Basdilwa from the Central Development Region were purposively selected based on road access from Rasuwa (mountain), Sindhupalchowk (hill) and Parsa (terai) respectively. First of all, the total number of households of three select VDCs was obtained from VDC offices and then a sample size was determined using the standard formula. The sample size thus obtained was 251, which is 12.5% of the total number of households i.e., 2000. Therefore, 12.5 % of households from each VDC and ward were included in the study as part of proportional sampling. If there was no at least one cataract member in the selected households, another household closer to that household was selected for the household interview to meet the necessary requirement of being people with cataract. The number of people with cataract was ascertained by visual acuity testing; only those who had visual impairment with cataract were taken for the household survey. Of the total people with cataract (Dhunche, 71; Ramche, 103; and Basdilwa, 209), only 33% people with cataract of each VDC were interviewed to understand the status of people with cataract and the effects of cataract on their socio-economic development. Therefore, 24 people from Dhunche, 34 from Ramche, and 69 from Basdilwa were taken for the interview. The household survey and the population-based survey were conducted using the semi-structured questionnaire. In addition, to verify the data and information derived from the household survey, observation (eye care services in the study areas were observed), focus group discussions (two focus group discussions each with 5 to 8 participants from each VDC), key informant interviews (five people were taken for the interview from each VDC), and case studies (two people were taken from each VDC) were done as part of methodology of the research. Based on the analysis, the following findings have been drawn:

Firstly, the total population of sampled households of people with cataract ranged from 299 in Dhunche to 464 in Ramche and 820 in Basdilwa. The male population outnumbered the female population in all three VDCs. Cataract prevailed at a relatively young age in Basdilwa compared to other VDCs. Most families were of the joint type and had 5-10 members. Buddhists were in the majority in Dhunche, while Hindus were in the majority in the other two VDCs. The majority of people lived on annual incomes less than NRs. 50, 000. On using the Chi square (χ^2) test, no significant association (sig. 0.485 > 0.05) was observed between the level of income and knowledge about cataract surgery. The majority of respondents were married, and more females were illiterate. The majority of respondents in Dhunche and Ramche owned land with an area less than 5 Ropani. However, the majority of people in Basdilwa had ownership of land with an area of 5 to 10 Ropanis. The majority of people in Dhunche were found to have less than three months of food sufficiency, whereas those in Ramche had food sufficiency for up to 9 to 12 months. The majority of people in Basdilwa had surplus food production and had food sufficiency. The Chi square (χ^2) test shows a highly significant relationship (sig. 0.000 < 0.001) between the level of food sufficiency and the educational status, suggesting that literate people had more food sufficiency than illiterate people after cataract.

Secondly, the majority of people with cataract had visual acuity less than 6/60 in both eyes and had had visually impairment for the past 6-9 months. The reason of this duration of visual impairment as reported by the respondents was that they had been waiting for free surgical eye camps due to their poor socio-economic conditions. All the respondents reported poor distance vision, while the majority reported poor near vision. In addition, the majority reported moderate family behavior after cataract. Cataract adversely affected economic status by bringing about loss of employment, reduced productivity, less rewarding jobs, unemployment, and lower salaries.

Thirdly, the majority of respondents did not have knowledge about cataract and cataract surgery. Even with the knowledge about cataract surgery, the respondents kept waiting for free eye camps for surgery. The majority sought traditional healing from *Dhami/Jhankri* as the first point of contact of care. None used the device/glasses for near vision. While the majority of respondents in Dhunche waited for eye camps to have eye check-ups, those in Ramche did not bother to receive any form of

treatment even in eye camps. However, the majority of people in Basdilwa used to go to eye hospital for eye check-ups. The Chi square (χ^2) test indicates that there is a highly significant relationship ($0.000 < 0.01$) between the place of treatment and respondent's education. Clinical barriers, knowledge barriers, financial barriers, and geographical barriers prevented people from accessing and utilizing eye health services.

To conclude, the state of eye health in the study area is still alarming despite the various interventions to address the eye health conditions. People do not have good access to eye health services because of various barriers. Because of lack of knowledge of eye health and cataract, people in the terai region do not seek eye health services in spite of the better services in the region compared to other regions. Likewise, visually impaired people's conditions escalated into poor socioeconomic status because they had remained deprived of social and economic opportunities.

The dissertation recommends the authorities concerned to collect empirical data at village level, determine the socio-economic status of people with cataract and raise awareness about cataract surgery.

Keywords: cataract, ecological zones, Nepal, socio-economic status, visual impairment

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LISTS OF ABBREVIATIONS/ACRONYMS

ABEH	Apex Body for Eye Health
AD	Anno Domini (in the Christian era)
AIDS	Acquired Immunodeficiency Syndrome
AMD	Age-Related Macular Degeneration
ANM	Assistant Nursing Midwife
BC	Before Christ
BVI	Blind and Visually Impaired
CBS	Central Bureau of Statistics
CCU	Critical Care Unit
CECs	Community Eye Centers
CSR	Cataract Surgical Rate
DDA	Department of Drug Administration
DDC	District Development Committee
DDCP	District Development Committee Profile
DOTS	Directly Observed Treatment Strategy
EH	Eye Hospital
FGDs	Focus Group Discussions
GBP	Gender-Based Program
GDP	Gross Domestic Product
GoN	Government of Nepal
HIS	Health Information System
HIV	Human Immunodeficiency Virus
HP	Health Post
HRQoL	Health-Related Quality of Life
HSA	Health Systems Assessment
IAPB	International Agency for the Prevention of Blindness
ICD	International Classification of Diseases Code
ICU	Intensive Care Unit
IDB	International Database
INGO	International Non-Governmental Organization

KII	Key Informant Interview
LMICs	Low-and Middle-Income Countries
LOCSII	Lens Opacities Classification System II
LTHP	Long-Term Plan
MDG	Millennium Development Goals
MoH	Ministry of Health
MoHP	Ministry of Health and Population
MTR	Midterm Review
NBS	National Blindness Survey
NCP	National Commission on Population
NEP	Nepal Eye Program
NGO	Non-Governmental Organization
NHSP-IP	Nepal Health Sector Program Implementation Plan
NNJS	Nepal Netra Jyoti Sangh
NPA	National Plan of Action
NPC	National Planning Commission
OPD	Outpatient Department
PCB	Prevention and Control of Blindness
PDP	Parsa District Profile
PECC	Primary Eye Care Centre
Ph.D.	Doctor of Philosophy
PVA	Presenting Visual Acuity
QoL	Quality of Life
RAAB	Rapid Assessment of Avoidable Blindness
RDP	Rasuwa District Profile
SBA	Skilled Birth Attendants
SDIP	Safe Delivery Incentive Programme
SDP	Sindhupalchowk District Profile
SDT	Self-Determination Theory
SES	Socio-economic Status
SHP	Sub-Health Post
Sig.	Significance (probability, <i>p</i> , value)

SITA	Swedish Interactive Thresholding Algorithm
SLTHP	Second Long-Term Health Plan
SPSS	Statistical Package for Social Sciences
SWAHSP	Sector Wide Approach to Health Service Provision
TB	Tuberculosis
TBAs	Traditional Birth Attendants
TIO	Tilganga Institute of Ophthalmology
TU	Tribhuvan University
UN	United Nations
UNICEF	United Nations International Children's Emergency Fund
VA	Visual Acuity
VDC	Village Development Committee
VDCP	Village Development Committee Profile
VDCs	Village Development Committees
VI	Visual Impairment
VRQoL	Vision-Related Quality of life
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Visual impairment (low vision and blindness) is a major health concern all over the world. Of the total blindness, cataract alone occupies about 51 percent in the world (NNJS, 2013), whereas in Nepal it accounts for 62.2 percent of blindness (NNJS, 2012). Low educational attainment and low socioeconomic status have also been associated with blindness (Dandona & Dandona, 2001). Low utilisation of services by those with low educational attainment and low socioeconomic status is thought to be responsible for higher blindness rates in them. Increasing age is the most important predictor of blindness; however, female sex (independent of age) is also associated with blindness (Abou-Gareeb, Lewallen, Bassett, & Courtright, 2001). Usually, old-aged people have more visual problems than people of other age because the prevalence of handicaps and visual impairment is significantly associated with aging. Previous studies also demonstrated that subjects with a sensory impairment are more likely to undergo functional decline. Visual problems might greatly influence daily activities, health status, and well-being of the elderly. Visual impairment causes difficulties with basic activities of daily living and selfcare, and can hamper activities previously taken for granted, such as dressing, eating, writing, mobility, and simple communications or interactions with others (Stelmack, 2001 & Keeffe, Lam, Cheung, Dinh & Mccarty, 1998). In addition to daily activities and functional status, social relationship can particularly be affected by visual impairment (Carabellese *et al.*, 1993). Multi-dimensional influences on everyday living are affected by visual factors; quality of vision is an integral part of quality of life.

Visual impairment in poor countries can have enormous negative effects on quality of life and can reduce life expectancy. The vast majority of those affected in these countries are unable to work, leading to an association between blindness and poverty. Furthermore, research on disability suggests that blindness may lead to an individual's loss of social standing and isolation from the community, as is found in developing countries like Nepal.

In most poor countries, social services for those who suffer from blindness are limited or non-existent, so the burden of care falls solely on other family members. The individual responsible for helping a family member who suffers from blindness may be another adult, or possibly a child. As a result, this individual may be less able to work or attend school.

The relationship between poverty and eye health can be interpreted as being two-fold, in the sense that poverty may be a cause of poor eye health and poor eye health may lead to or deepen poverty (Gooding, 2006). Poverty confronting many developing countries has drastic implications for visual impairment and eye health services. People from impoverished backgrounds and environments are likely to experience conditions which contribute and lead to impaired vision (Khanna, Raman & Rao, 2007). For example, some eye diseases such as trachoma and cataract are perceived as diseases affecting the poor disproportionately, due to their association with poor infrastructure, such as dirty water supply, overcrowding and lack of hygiene in poor communities. On the other hand, when individuals go blind or are severely visually impaired and their accessibility to education and other opportunities are affected—mainly due to loss of income and lack of funds. Severely visually impaired and blind individuals are also refrained from accessing and utilizing available public services which are often limited in poorer countries (Khanna, Raman & Rao, 2007).

Three main reasons for the high prevalence of visual impairment are non-availability, non-accessibility and non-affordability of eye care services. However, there are several factors that may act as barriers to the use of available, accessible and affordable eye care services. These include the lack of knowledge of the services, impact of and care for eye diseases. Demographic, personal, social and cultural factors may influence or act as barriers to eye care utilization. These various factors are needed so as to understand the status of people with cataract and the effects of cataract on their socio-economic development.

Visual impairment can negatively affect every aspect of life of an individual. In view of this, the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB) with an international membership of Non-governmental Organizations (NGOs), Professional Associations, Eye Care Institutions and Corporations have developed a global initiative for the elimination of avoidable

blindness by the year 2020. The initiative called “Vision 2020: The Right to Sight” has three major components as target activities: specific disease control, human resource development, and infrastructure and appropriate technology development. After 1980s when the Government of Nepal and the WHO jointly agreed to establish Prevention and Control of Blindness (PCB) a WHO (2000) supported program has been taken into consideration by the national government with bilateral and multilateral assistants.

In line with the above mentioned issues, the present study focused on understanding the status of people with cataract in the rural community of the Central Development Region, Nepal. Furthermore, the study attempted to analyze the socio-demographic characteristics of sampled households of people with cataract and the effects of cataract on their socio-economic development.

1.2 Statement of the Problem

Although vision loss is widely acknowledged to have important demographic and socio-economic determinants, there is relatively limited quantitative and qualitative research exploring the nature of the association in different settings. Poverty and blindness are thought to be cyclically linked, with poverty increasing the risk of becoming blind and blindness exacerbating poverty through limiting opportunities to engage in income-generating activities (Dandona, *et al.*, 2001) At country level, the prevalence of blindness is higher in poor countries compared to that in wealthier countries; limited data suggest that the poor are more likely to be blind (Gilbert, *et al.*, 2008). Understanding this association and identifying risk groups can help make possible the equitable and efficient use of limited eye care resources.

In Nepal, since 1950s national health development programmes were initiated in a planned way and noticeable progress has been achieved. Though Nepal made remarkable improvements in the health sector by functioning and given the status of health posts, health centers, and hospitals at central, zonal, and district levels, little emphasis was laid on the eye health care services. No specific policies strategies and plans were developed toward blindness prevention and low vision treatment services up to 1980s. In 1980/81, a national survey to identify the causes and determinants of blindness was conducted. Subsequently, manpower was created to provide eye health care services at district level. The Ministry of Health (MoH) has been playing an

active role in policy making, program framing and service delivery through its extensive network. But the government has gradually withdrawn its responsibility from eye health care and subsequently non-governmental organizations (NGOs) have been entered into eye healthcare particularly since 1990s.

The history of eye health services in Nepal is one of failure in the midst of successes. Poor Nepalese people living beyond main cities and towns of the country are yet to benefit from the development of eye services in their own country. The government does not have clear-cut eye health policies. Eye health services are not integrated into general health services, and the delivery of eye health services is left entirely to Non-Governmental Organizations (NGOs) which have their own interests and are mainly occupied with being self-sufficient and making a name for themselves (Nepal, 2012).

Though non-government sectors have been playing a vital role in delivering eye health services in rural areas, the coverage of services to large sections of the population is still limited. Hence, the big issue is to understand the status of people with cataract residing in rural areas. It is argued that socio-demographic characteristics of the rural households determine the level of visual impairment by cataract.

The Government of Nepal has not paid adequate attention to providing eye care services particularly in rural areas yet. Though it has established some eye hospitals in the Kathmandu Valley, most of the rural areas are solely dependent on eye care services provided by I/NGOs. Tribhuvan University Hospital and Nepal Eye Hospital located in Kathmandu are the government hospitals of the country. 17 Eye Hospitals, 8 Eye Departments, 59 Community Eye Care centre and 10 Primary Eye Eare Centre are providing services to a population of 26,494,504 in the country (CBS, 2012), whereas 9 Eye Hospitals, 6 Eye Departments, 17 Community Eye Care Centres and 2 Primary Eye Care Centres are providing services to a population of 9,656,985 in the Central Development Region, Nepal (CBS, 2012; ABEH/MoHP/GoN, 2011). This information reveals the fact that the eye health care services in Nepal particularly outside the Kathmandu Valley are inadequate. There is an uneven distribution of eye specialists. While service providers are concentrated in major cities and towns, individuals who require cataract surgery predominantly live in villages. This has led to inadequate service provision for the rural people. Nepal has a long history of

providing cataract surgical services through outreach eye camps organized by non-governmental organizations (NGOs). However, such efforts appear to have limited success in reaching the population with cataract-induced visual impairment. Despite major efforts towards information, education and communication by the providers to increase the uptake of surgery by visually impaired people with cataract, several barriers at community level and among individuals continue to hamper the efforts to motivate them for cataract surgery.

Socio-economic conditions and blindness are interwoven, with poor socio-economic conditions increasing the risk of becoming blind and blindness which limits opportunities to engage in income-generating activities. Visual problems might greatly influence daily activities and well-being of the people with cataract. Visual impairment causes difficulties in inter-and intra-household activities (Stelmack, 2001 and Keefe, *et al.*, 1998). Although vision loss is widely acknowledged to have important demographic and socio-economic determinants, there is relatively limited research exploring the nature of the relationship in different settings. At country level, the prevalence of blindness is higher in poor people compared to that in wealthier people. Previous studies have shown that socioeconomic status is associated with access to health care. However, the role of these factors in vision loss is not known. Understanding this association and identifying at risk groups can help to form the equitable and efficient use of limited eye care resources (Braithwaite & Mont, 2008). In this context, the present study attempts to address the following research questions:

- What are the socio-demographic characteristics of the households of people with cataract by ecological zones?
- What are the status of people with cataract and the effects of cataract on their socio-economic development by ecological zones?
- What are the levels of knowledge, practices and barriers of people with cataract by ecological zones?

1.3 Objectives of the Study

The main objective of this study is to analyze the current status of people with cataract in three select ecological zones: Dhunche VDC from the mountain (Rasuwa district), Ramche VDC from the hill (Sindhupalchowk district) and Basdilwa VDC

from the terai (Parsa district) of the Central Development Region. In consonance with the main objective, the specific objectives of the study are as follows:

- To identify the socio-demographic characteristics of the households of people with cataract by ecological zones
- To analyze the status of people with cataract and the effects of cataract on their socio-economic development by ecological zones
- To identify the knowledge, practices and barriers of people with cataract by ecological zones

1.4 Significance of the Study

The study attempts to explore the status of people with cataract in the rural community of the Central Development region, Nepal. It also endeavors to understand the socio-demographic determinants of people with cataract and their effects on their socio-economic development. The available literature suggests that there have been no relevant studies conducted so far in the areas in question. Thus, the present study would form a unique literature in the context of ecological zones. This study helps explore and understand the existing scenario of people with cataract in different ecological zones.

The use of the socio-demographic variables in the context of people with cataract is a unique character of the present study. Although the study of characteristics of people with cataract and the effects of cataract on socio-economic activities requires a multi-disciplinary expertise, it has been simplified here in order to make it feasible for a single researcher to accomplish within a limited time and limited resources. Hence, it may prove useful for other studies of the similar kind. Furthermore, the selection and use of indicators of socio-demographic characteristics to understand the effects of cataract on people may be helpful in making such efforts in other parts.

This study has been carried out in areas of specific geographical and socio-economic settings; therefore, this may help predict the scenario in other similar regions of the country.

Lastly, the methodology used in the study to handle different types of data and information collected from various sources, using different methods as well as tools is

considered to be effective at exploring, establishing, understanding and explaining the real situation.

1.5 Hypothesis

1. Null Hypothesis (H_0): There is no relationship between food sufficiency and educational status. That is, food sufficiency and educational status are independent of each other.

Alternative Hypothesis (H_1): There is a significant relationship between food sufficiency and educational status. That is, food sufficiency and educational status are dependent on each other.

2. Null Hypothesis (H_0): There is no relationship between eye check-up habits and respondents' educational status.

Alternative Hypothesis (H_1): There is a significant relationship between eye check-up habits and respondents' educational status.

3. Null Hypothesis (H_0): There is no relationship between the level of income and knowledge about cataract surgery.

Alternative Hypothesis (H_1): There is a significant relationship between the level of income and knowledge about cataract surgery.

1.6 Limitations of the Study

The study has the following limitations:

- The study is limited to studying the socio-demographic characteristics of people with cataract and the effects of cataract on their socio-economic development. The study covers three ecological zones of the Central Development Region. Dhunche VDC from the mountain, Ramche VDC from the hill and Basdilwa VDC from the terai were selected for the study. Therefore, the findings derived from the study of other study areas may not have been similar with those from this study.
- The study has used only certain feasible indicators to examine the socio-demographic characteristics of people with cataract and the effects of cataract on their socio-economic development. Therefore, indicators used in the context of characteristics and effects adopted in the present study may not be equally applicable to other spatial and societal contexts. In the same way, the

results and generalizations made in this study may not equally be applicable to other geographical, social and economic settings.

- Socio-demographic status of people with cataract is measured using different indicators such as age, sex, marital status, land holding size, sources of income, occupation, etc. We may not have accurately captured levels of economic well-being in this population which would limit our ability to interpret the socio-economic findings in our study.

1.7 Organization of the Study

Chapter I covers the first part which includes problems and the background of the study and highlights the research issues and the problems formulated for the study. It also includes the objectives, significance, hypotheses and limitations of the study.

Chapter II covers the review of literature related to the four research issues. The first section deals with the theoretical bases of eye health care. The second section deals with the review of studies about blindness and cataract surgery in the world. The third section deals with the review of studies about blindness and cataract surgery in Nepal.

Chapter III discusses the conceptual framework and methodology used for the work. It also deals with the generation and analysis of data.

Chapter IV presents a brief account of the profile of the study areas.

Chapters V and VI analyze the objectives of the study. The central purpose of Chapter V attempts to identify the socio-demographic characteristics of the households of people with cataract by ecological zones and Chapter VI attempts to analyze the status of people with cataract and the effects of cataract on their socio-economic development and to identify the knowledge, practices and barriers of people with cataract.

Chapter VII covers the development of health and eye health care in Nepal.

The work is synthesized in Chapter VIII, which includes the summary and conclusions of the work along with certain workable recommendations for further research.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Review of Theories and Approaches Related to Health

2.1.1 Approaches to Understanding Our World

Scientists and philosophers have long struggled with the problem of how we understand and make sense of our world. There are descriptive and prescriptive approaches to understanding our world. On the descriptive side, theories of cognition, perception and thinking describe how we humans organize stimuli and make sense out of them. On the prescriptive side, there are two approaches to making sense of the world. The first is reductionism and the other is a system approach.

Reductionism asserts that the best way to have an understanding of new phenomena is to study the functioning or properties of its individual parts. For example, the best way to understand the working of a human body would be to break it into its components and to study the properties of each element.

System theory concentrates on the relations between the parts. Rather than reducing an entity such as the human body into its parts or elements (e.g. organs or cells), systems theory focuses on the arrangement of and relations between the parts how they work together as a whole. The way the parts are organized and how they interact with each other determine the properties of that system. The behavior of the system is independent of the properties of the elements. This is often referred to as a holistic approach to understanding phenomena.

Those who design interventions that aim to increase eye health are faced with a number of decisions when developing the intervention. For example, decisions need to be made concerning the primary goal of the intervention, the target population, and the selection of messages for the intervention. As we will try to demonstrate, two theoretical approaches provide powerful tools for identifying the specific beliefs that need to be addressed if one wishes to change or maintain a given behavior.

2.1.2 Health Belief Model

The health belief model (Janz & Becker, 1984; Rosenstock, 1974) proposes that in order for someone to carry out a recommended health behavior, the person must first have a conviction that he or she is at risk of acquiring a grave and severe negative health outcome. At the same time, the person must believe that the benefits of performing the recommended protective behavior outweigh the costs of performing that behavior. Note that the costs and benefits of performing one behavior may be very different from costs and benefits of another behavior.

The health belief model was developed by Irwin Rosenstock in 1966 and has been identified as one of the earliest and most influential models in health promotion. It was inspired by a study of reasons of people express for seeking. In 1970s and 1980s, Becker and colleagues modified the health believes model to include the people's responses to symptoms and illness, behaviours, preventive health and health screening. Demographic variables, socio-physiological variables, perceived self efficiency, health motivation, perceived control and perceived threat were added to the model (Becker & Maiman, 1975). In recent years the model has been used to predict general health behaviors and positive health behaviours, although when it was originally proposed, it was designed to predict action by actually ill clients. The health related action is seen as more likely when the action is viewed as being both cost-effective in terms of outcomes (Roden, 2004; Rosenstock, 1996).

2.1.3 Social Cognitive Theory

Social Cognitive Theory is also known as social learning theory developed by Bandura in 1989. According to social cognitive theory (Bandura, 1977), there are also two primary factors that determine the likelihood that someone will adopt a health-protective behavior. First, the person must believe that the positive outcomes (benefits) of performing the behavior outweigh the negative outcomes (costs). Second, the person must have a sense of personal agency or self-efficacy with respect to performing the behavior. That is, a person must believe that she or he can perform the recommended behavior, even in the face of various circumstances or barriers that make it difficult to perform that behavior.

2.1.4 An Integrated Theoretical Model

According to the model, any given behavior is most likely to occur if one has a strong intention to perform the behavior, if a person has necessary skills and abilities required to perform the behavior, and if there are no environmental constraints preventing behavioral performance (Fishbein, 2000; Fishbein, *et al.*, 2002). One immediate implication of this model is that very different sorts of interventions will be necessary for people who have formed an intention but are unable to act upon it, than for people who have little or no intention to perform the recommended behavior.

The health promotion programmes typically lack theoretical foundation or are based on conceptual model that does not conform to the current values and norms of health promotion practice (Bauer, Davies, Pelikan, Noack, Broesskamp & Hill, 2003; King, 1994; Stokels, 1996; Whitehead, 2004). Whitehead (2001) commented that the reliance on health education theories and frameworks may actually pose a barrier to progress in the area of health promotion.

2.1.5 Behavioral Change Theories

A number of behavior change theories exist to explain why people do and do not adopt certain health behaviors. Often those theories examine the predictors and precursors of health behavior. Many of these theories have common elements, such as self-efficacy and motivation. Self-efficacy is once believed in the ability to do something, such as the change of health-related behavior, and it is grounded on one's past success or failure in given activities. Once self-efficacy is seen as predicting the amount of effort one will expend in trying to change (Bandura, 1977).

Criticism of many of the behavioral change theories focuses on emphasis on individual behavior while excluding the influence of the environment, socio-cultural factors, economic issues, and policy level mandates. Constraints, such as chronic exposure of violence, political upheaval, and poor sensations are ignored in favor of paying greater attention to individual cognitive process (Stokols, 1996).

2.1.6 Theory of Reasoned Action (1975)

The theory of Reasoned Action was developed by Martin Fishbein and Icek Ajzen in 1975. An assumption underlying the Theory of Reasoned Action is that people routinely consider the consequences of their behaviours before engaging in these behaviors. There are three constructs: behavioral intention, attitude, and subjective norms. In this model, a behavioral intention is a function of the person's attitude about the behavior and subject norms. Voluntary behavior is predicted by one's attitude toward the behavior and what important people would think if the behavior was not preformed (Fishbein & Icek, 1975).

2.1.7 Self-Determination Theory

As a macro-theory of human motivation, self-determination theory (SDT) addresses basic issues, such as personality development, self-regulation, universal psychological needs, life goals and aspirations, energy and vitality, unconscious processes, the relations of culture to motivation, and the impact of social environments on motivation, behavior, and well-being. Further, the theory has been applied to issues within a wide range of life domains. Although the initial work leading to SDT dates back to the 1970s, and the first relatively comprehensive statement of SDT appeared in the mid-1980s (Deci & Ryan, 1985), it has been during the past decade that research on SDT has truly mushroomed. Basic research expanding and refining motivational principles has continued at a vigorous pace, but the huge increase in the volume of published SDT studies has been most apparent in the applied fields of health care (Deci & Ryan, 2008).

2.2 Studies on Blindness and Cataract in the World

In the year 2000 an estimated 38-42 million people were suffering from blindness (vision less than 3/60 in the better eye). A further 110 million people suffer from low vision and are at risk of becoming blind. The estimated worldwide prevalence of blindness is 0.7%, ranging from 0.3% in the western world to 1.4% in Sub-Saharan Africa (Thylefors, Negrel, Pararajase-garam & Dadzie, 1995). According to the WHO, there are approximately 16-18 million people blind from cataract in developing countries and this number tends to double every 20 to 25 years. Cataract is curable by a relatively simple but delicate surgical procedure. The yearly number of operated

patients, the surgical output, is however not keeping pace with the growing needs (Thylefors, 1995). For example, India has made impressive strides in building up staff and infrastructure for the control of cataract-related blindness, in the period between 1990 and 1996. These efforts have resulted in an increase in cataract surgery from 1.1 million operations to approximately 2.2 million cataract operations year since 1994 (sometimes two operations are performed on one patient and not every operation is successful in restoring sight). Unfortunately, in India at the moment yearly 2.5 to 5.8 million sight restoring operations are required, so subsequently blindness due to cataract in India has increased further during the last decade (Limburg, Kumar & Bachani, 1996).

Demographic changes like population growth and ageing are the main reasons for the increase in blindness due to cataract. It seems logistically rather impossible to restore vision in this huge number of individuals by modern standard eye surgical procedures (Yorston & Foster, 1995; WHO, 1990; Venkataswamy, 1993). As a result, approximately 85% of patients who become blind from cataract go untreated worldwide.

In the past decade, several large population-based studies have provided new information on the prevalence of visual impairment and major age-related eye diseases in Asia. These include epidemiological studies from India, Taiwan, Mongolia, Singapore, and Japan. In particular, the epidemiology of refractive errors and glaucoma has been well characterized, providing insights not only into the public health implications of these conditions, but also into anatomical changes of the eye with ageing. In contrast, there are few well conducted population-based studies on diabetic retinopathy and age-related macular degeneration in Asia, two conditions that are likely to be important causes of blindness in the future (Wong, Loon & Saw, 2006).

The outcome of cataract surgery in developing countries, by contrast, has been reported to be quite poor, with about a quarter or a lot more of the eyes blind after cataract surgery (presenting visual acuity less than 6/60) in population-based surveys from China, India, and Mali. Most blindness worldwide is in developing countries, and cataract continues to be the leading cause, with about half the blindness attributed to it. For example, on the basis of recent population-based data it is estimated that of

about 1 billion people in India, 18.7 million are blind, with presenting visual acuity less than 6/60 or a visual field less than 20 degrees in both eyes. This includes 8.2 million people blind owing to cataract and another 1.3 million blind after poor quality cataract surgery. The recent evidence of the widespread poor outcome of cataract surgery in developing countries suggests that much effort is now needed to improve the quality of cataract surgery in these countries so as to increase the number of surgical procedures, if blindness due to cataract in the developing world is to be reduced substantially. This issue assumes particular importance in the context of a recently launched global initiative, "Vision 2020: The Right to Sight," to eliminate avoidable blindness (Beare & Dandona, 2001).

Wong (2001) focused on the very elderly population which will provide more refined estimates of which groups of patients are most likely to derive benefit from cataract surgery. These studies should preferably be prospective, have objective and standardized documentation of visual and functional outcomes, and have well-defined subgroups of patients with various morbidities. Similar issues on benefit versus risk for cataract surgery in the elderly people with various severities of cataract and diabetic retinopathy and in those with systemic morbidities should be evaluated. Only then can we formulate better clinical guidelines in the management of cataract in very elderly patients, and perhaps reliably address whether age should be a factor in future healthcare policies on cataract surgery.

Frederick, Theodore & FACS (1965) noted the entire field of complications which may occur either during or after operation for removal of cataract. There are some suggestions that the complications described may be avoided or mitigated.

The significant improvement in quality of life measures in the elderly people after cataract surgery is undisputed worldwide. Cataract is a common cause of visual impairment, and cataract surgery is the most common elective surgical procedure carried out in the United Kingdom. Thirty percent of those aged 65 in the United Kingdom have visually impairing cataract.

The prevalence rate of blindness in a community may be taken as an index of the progress of such a community since it, as well as the individual person, bears responsibility for visual care. Education, habits, beliefs, and socio-economic standards

are all factors which determine the importance that a person attaches to his vision and, hence, the degree of care that he gives to his eyes'. The community also must provide healthy surroundings and attempt to induce good habits through health education and improved socioeconomic conditions. This goal would include, when necessary, providing free medical care for the poor and medically indigent. If a society is to take effective preventive measures to reduce the blindness prevalence rate, it must ascertain not only the populations at greatest risk but also the distribution of the various types and causes of blindness. In this way it may be possible to determine which groups need what type of preventive measures. The objective of this study was to investigate the prevalence rate and causes of binocular blindness in some urban and rural areas in Egypt and their relationship to age, sex, and environment.

Jonathan (1995) assessed that the relationship between demographic, environmental, and provider-related factors and the likelihood that cataract surgery. The association between likelihood of cataract surgery and patient's age, sex, race, income, and latitude of the residence was examined, as was the association with the supply of ophthalmologists and optometrists in each region, and the allowed charge for cataract surgery and cost of practice in a region. This cross-sectional, population-based study used administrative data. Both the regional model and the person-based model detected an association between a higher rate and personal likelihood of cataract surgery and female gender, more southerly latitude, higher concentration of optometrists per 1,000 medicare beneficiaries, and higher allowed charge for cataract surgery, after adjusting for variation in practice expenses. The person-based model additionally demonstrated that increased likelihood of undergoing cataract surgery was associated with increasing age from 65 to 94 years. Compared with the geographic variation in provision of other surgical procedures, the variation in cataract surgery across large geographic areas observed in this analysis was relatively low. A person-based analytic strategy offers considerable advantages over traditional small-area-variation approaches in measuring the association between personal characteristics and likelihood of receiving particular health services. Causal relationships between particular variables examined and the rate or likelihood of cataract surgery cannot be inferred from this analysis. The decreased likelihood of undergoing cataract surgery among black Medicare beneficiaries is alarming,

particularly in light of data showing a four-fold higher prevalence of cataract blindness among black Americans (Jonathan, 1995).

The South-East Region of the WHO comprises 11 countries. The region has provided significant evidence on the magnitude of blindness and visual impairment through large population-based surveys conducted periodically. The predominant sector providing eye care services is the government sector in five countries among the 11 countries which constitute this region. Cataract is the leading cause of blindness in the region, as evidenced by surveys. The region has witnessed improved cataract surgical rates and quality of cataract surgery over the past two decades. The gains in the region have a significant impact on the global magnitude of blindness and visual impairment. Eye care infrastructure and availability of appropriate human resources for eye care vary significantly across the region. Adequate focus on health systems strengthening, boosting primary eye care and generating evidence of progress made through monitoring and evaluation mechanisms can be important to realize goals of eliminating avoidable blindness from the region in coming years (Murty, Malhotra & Vashist, 2013).

According to the WHO in 2010, some of the countries have not yet developed a national plan for Vision 2020. There are an estimated 91 million visually impaired people in the entire South-East Asia Region, with almost one-third of the global share –12 million with blindness and 79 million with low vision. India alone is responsible for approximately one-fifth of the global burden and houses maximum visually impaired adults in the region (WHO, 2010).

Following the global movement and the launch of Vision 2020: The Right to Sight in 1999, the similar initiative was launched in South-East Asia after considering the rights-based approach to eliminating blindness from the region. It gave priority to avoidable causes of blindness as almost 85% of blindness was attributed to avoidable causes and considered health systems strengthening focus with emphasis on adequate advocacy, human resource development, infrastructure and technology development and partnerships for blindness prevention and control (WHO, 2010).

It was observed that the public sector was the predominant health care provider in Bhutan, the Democratic People's Republic of Korea, Indonesia, the Maldives and

Myanmar, while the private sector was the predominant provider in Sri Lanka and Thailand. In Bangladesh, India and Nepal there is a mixed system whereby both the public and the private sectors are important providers. Non-governmental organizations have made a big difference to eye care services in India and Nepal over the past three decades (Murty *et al.*, 2013).

In both India and Nepal, more than 60% of cataract surgery is performed by the NGO sector which only accounts for a third of all ophthalmologists, thereby reiterating the fact that efficiency increases output (Murthy, Gupta, Bachani, Tewari & John, 2004). The CSR (cataract surgical rate), which is defined as the number of cataract surgeries per million population, is a quantitative measure of delivery of cataract services in the country. India has a high CSR above 6000 per/ million population. Almost half of the countries in the region have achieved their target CSR levels. The Democratic People's Republic of Korea, Indonesia, the Maldives and Timor Leste have CSR levels below 1000 and need marked improvement in provision of cataract surgical services (Murthy, *et al.*, 2004).

Improvements in infrastructure are largely focused on secondary and tertiary care level, primary eye care by and large is a neglected area requiring concerted focus for future strategies. Though primary health care system in the countries has been improving regarding providing universal access to care, eye health has not been integrated well into this system. Largely programmes are cataract-centric and areas like low vision and rehabilitation, eye banking and posterior segment disease management require attention (Murthy, *et al.*, 2004).

The South-East Asia Region witnesses a high burden of blindness. Despite substantial gains in the past years tackling high disease load, much remains to be done for the elimination of avoidable blindness. Cataract and refractive errors remain the most common contributors to blindness and visual impairment. Newer disease challenges confront the region owing to an increase in the ageing population and risk factors for non-communicable diseases. The eye care infrastructure and human resource availability vary significantly across the countries of the region. In fact, the health care systems also vary dramatically across the whole region. Primary eye care will require a substantial investment in coming years. The focus on public health ophthalmological approach is imperative in order to reach the unreached and enhance

access to challenging geographical areas. How to increase the number of skilled personnel to uplift vision is the big challenge confronting many largely populated countries like Bangladesh and India. The development of strategies like vision entrepreneurs who market near glasses in Bangladesh and India at village level using basically trained women from the local communities is a novel idea to increase the reach of spectacle services. The adoption of this strategy by an established development non-governmental organization (NGO) like Bangladesh Rural & Advancement Committee in Bangladesh is an example that can be emulated by other countries. Innovation in technology and bridging the gap between the providers and the clients have led to improved access and cataract surgical rates and improved quality of surgery and therefore surgical outcomes. Efficiency of the operating rooms has improved by increasing number of tables and supportive staff and this has led to increased surgical coverage. In countries like India and Nepal, cross-subsidization schemes have made cataract surgery affordable to all sections of the society including the itinerant poor. Quality of surgeries and establishing monitoring mechanisms for post operative visual outcomes should receive due attention for further action (Murty *et al.*, 2013).

The WHO global action plan for eye health 2014-2019 focuses on universal access to eye care and gives prime importance to health systems, strengthening and integrating eye care into routine health system delivery. Countries in the region will have to work towards universalizing eye care to all people through adequate focus on health systems issues that include human resources, finances, infrastructure, medicines and supplies, management information systems, leadership and governance. Investments in quality-driven service delivery, with focus on local eye care needs will need to be coupled with monitoring and evaluation mechanisms to track the progress made in overall eye health of populations. Strengthening primary eye care through concerted action involving multiple stakeholders and fostering long-term partnerships with multiple players will be critical in realizing the goal of eliminating avoidable blindness in the South East Asia Region in coming years (Murty *et al.*, 2013).

The burden of blindness varies from country to country, and within country from one zone to another. The last nationwide assessment in India reported the prevalence of blindness as 8% amongst 50 years and older persons (presenting visual acuity <6/60

in the better eye). In Nepal, the prevalence of blindness ranged from 0.7% in Bhaktapur district (Thapa, *et al.*, 2011) to 17.4% in Rautahat district. A single study each reported from Myanmar and Timor Leste reported the high prevalence (above 7%). Cataract is the most common cause of blindness in the region and is responsible for 50-80% of all blindness.

The WHO and the IAPB along with local Governmental and Non-Governmental partners launched a global initiative for elimination of avoidable blindness in the late 1990s with an aim to eliminate avoidable blindness by the year 2020. World Sight Day is observed on the second Thursday of October to highlight the plight of people with visual impairment and blindness every year. The WHO estimates that 285 million people are visually impaired, 246 million have low vision and 39 million are blind: 80% percent of the blindness is preventable and 90% of them live in the developing countries (Pascolini & Mariotti, 2012).

Globally, uncorrected refractive errors are the main cause of visual impairment and cataract is the leading cause of blindness (Pascolini & Mariotti, 2012). A population-based study conducted for people over 30 years of age in central India found that the age-standardized prevalence of visual impairment and blindness was 17% and 0.5% based on the presenting visual acuity (Nangia, Jonas, Gupta, Khare & Sinha, 2012). This study also showed that refractive errors and cataract account for the majority of visual impairment.

Herxhimer & Stimson (1983) have argued that each cultural group has given the different meanings to medicines. They have their own system of defining ill health and health belief system. It is concluded that most treatments of every-day illness are not obtained from a doctor. There are traditional and indigenous healers able even to train professionally educated doctors, because they have the ability to understand the effective socio-cultural variables playing a major role in health conditions. Self-treatment is the norm.

Paneru (1980) reported that the villagers did not seek hospital care at the early stages of illness and they always preferred to consult traditional faith healers. But when the traditional faith healers fail to cure illness, the villagers seek the doctors' help or visit the hospitals as their last resort. One of the reasons for this, as she has reported, is that

the villagers cannot afford medicines since they are costly and moreover they are not available in the rural areas.

Iizugbara and Afangideh (2005) profile the varieties of therapeutic systems, which ethnic Igbo women of southeastern Nigeria utilized to manage their ill-health conditions. Evidence from this study suggests that Igbo women in urban Nigeria of different socio-economic and demographic characteristics utilize the services of different rural-based health care providers—indigenous healers, traditional birth attendants (TBAs), faith/spiritual, western-trained doctors and nurses as well as chemist shopkeepers—for conditions ranging from infertility, through child birthing and abortions, to swollen bodies, epilepsy, bone setting, and stubborn skin diseases. Major attractions to rural-based therapists were the failure of urban-based health services to provide cure, perceived mystical nature of conditions need to conceal information on therapeutic progress and/or the nature of specific disease conditions, belief in rural-based therapists' ability to cure conditions, and affordability of the services of rural-based health care providers. Findings underscore the critical implications of service characteristics, cultural beliefs, and the symbolic content of places for care seekers' patterns of resort.

Conrad (1985) has presented a paper with an alternative patient-centered approach to managing medications. In his study, he focused on the meaning of medication in people's everyday lives and also looks at why people take or do not take their medication.

Dubey (1971) claimed that although indigenous herbs and magico-religious practices are still continued in the cure for diseases, the efficacy of allopathic drugs and injections has greatly changed the attitudes of people towards modern medicine.

Yasudian (1979) in his study of Madras found that various health services were utilized more by the rich than the poor. The selection of a health center by the well-to-do people was on the basis of their personal knowledge of the doctor in the center and, at the same time, they utilized the private health services also. The poor, on the other hand, depended entirely on public health services for all their needs. Lack of resources and ignorance were the main causes for the poor being unable to properly utilize the health services.

Young (1989) applied four major criteria in choosing the option for any given disease episode. They were gravity of the particular illness, whether or not an appropriate home remedy was known for the illness, the faith one has in the effectiveness of folk healing, expense associated with some alternatives and availability of resources to meet them.

In a study, Astin (1998) attempted to determine why patients are using alternative therapies and found that the majority of users appear to be doing so because they find these therapies compatible with their own beliefs.

According to African belief systems, good health is holistic and extends to the person's social environment. An estimated 27 million South Africans use indigenous medicines (Eisenberg, Kessler, Foster, Norlock, Calkins, & Delbanco, 1993).

Marriot (1995) in his study of the western medicine in a village of north India has highlighted the importance of the cultural aspects of medical role like trust, responsibility, charity, power and respect which are important for interpersonal relations in the medical sphere. He opines that it is not so much his technical skill, which gives prestige to a healer, but his spiritual power gained through piety.

Carstairs (1965) study in rural Rajasthan outlined the importance of 'faith' and 'assurance' in the patient that the traditional method of health care establishes. Modern method, lacking this 'aura of conviction' needs to show results dramatically and without delay. His approach was socio-cultural as he related the patient's expectations to the general climate of the community.

Bell and Goebert, *et al.* (2002) conducted a longitudinal cross-sectional study on "Socio-cultural factors influencing adolescent preference and use of native Hawaiian healers" in five high schools in Hawaii, to examine the predictors of Native Hawaiian healer preference in the treatment of physical or emotional problems as well as the predictors of healer use and finds out that cultural identity plays a significant role in the preference and use of alternative practitioners, especially for minority adolescent populations. Grade level, gender, ethnicity and cultural identity were used to predict healer's preference. Ethnicity, gender, community access, healer's preference, health status, level of education, health insurance status, socio-economic status and health status were used to predict healer's use and participation in health care practices.

From their study it was found that gender, grade level, and socio-economic variables were not predictive of healer's preference or use.

Weller, Ruebush & Klein (1997) attempted to identify and describes factors associated with the choice of a health care source in rural Guatemala. Relative to the users, socioeconomic and demographic factors such as age, education and income have found to be influential in the choice of health care options. But the most important are socio-cultural and socio-psychological factors. There is also a connection between demographic, socioeconomic and psycho-cultural factors, in that people sharing certain socioeconomic-demographic characteristics tend to share attitudes and beliefs and to behave similarly (Selwyn, 1978).

Pelcastre-Villafuerte (1999) found out the social dimension of shamanic cure, the linguistic mode employed during the process, and the type of relationship established between the shaman, the patient and the people and also recount the way in which a shared symbolic reality is built, and how the shaman's worldview has important effects on people.

Opler (1963) in his study mentioned that the idea of harmony and balance finds a central position in a Hindu view of health and sickness. Omorodion (1993) in Nigeria tries to find out how a community perceives sickness and the mechanism of cure. He has given the emphasis to cultural beliefs associated with the cure of the sick and the type of health care practices used in treating the sick, which has a far-reaching impact on health.

Khare (1963) reported that the duration of illness is an important criterion for moving towards supernatural usage in Uttar Pradesh. Blum and Kreitman (1983) described the factors that affect the habits of health care users. They show how self-medication varies with the symptoms of the patients, their sex and also their lack of knowledge of the current use of health care.

Lyon (1998) studied the traditional beliefs of the Bajo community linked to health and illness, their causation and the diagnosis and curing techniques of the shamans, the contribution of cultural beliefs, social feelings and pragmatic considerations in the choice of health care practitioners and the role of traditional and modern health care practices in the Bajo society.

Subba (2004) reported that modern, self and alternative medications formed indispensable part of health seeking behavior of the Rajbanshi community in Katahari and Baijanathpur VDCs of Morang. Modern medication was equally popular in both poor and rich or educated and uneducated. But, the majority of people had reported modern medication as expensive medication. A significant number of Rajbanshis having less than 2 Bighas of land and who were uneducated were adopting self-medication in the community.

Herxhimer & Stimson (1983) have argued that each cultural group has given different meaning to medicines. They have their own system of defining ill health and health belief system.

Peneru (1980) reported that the village people did not opt for hospital care at the early stage of illness and they always preferred to consult the traditional faith healers. But when the traditional faith healers fail to cure illness, the village people go to the doctors to take help or visit hospital as their last resort. One of the reasons for this, as people have reported, is the village people's inability to afford the medicines.

Financial issue is the most frequently barrier to non-acceptance of cataract surgery in developing countries. This can be divided into direct and indirect costs. The direct costs refer to the cost on the medical intervention, i.e. the costs of eye examinations, surgery, post-operative medications and follow-up. Mansur reported that 61% of the interviewers had no ability to pay the treatment of cataract in a rural community of northern Nigeria (Rabiu, 2001). This factor was also identified by similar studies in India, Ethiopia, Ghana and Pakistan. While the indirect costs cover transport, food, accommodation and the accompanying person, "No escort" is a kind of representative of the indirect costs (Gyasi, Amoaku & Asamany, 2007). Because of visual disability, patients need to be accompanied and cared for during the treatment in the hospital. The costs of making escort were even beyond those of treatment with regarding to food from outside, rents for the hotel, "income loss from work" and transport (Fletcher, *et al.*, 1999).

Social and psychological burden is another common reason to bar patients with cataract from operations and also becomes the principal point in place of cost in some regions since the low-price or free cataract surgeries spread with subsidies from the

non-governmental organizations and local groups (Rabiu & Muhammed, 2008). The burden comprised of “fear”, “sex bias” (and “culture belief” reasons of “fear” was ranged from “damage of the eyes ball” “losing sight” to “fear of dying”). Those were results from lack of knowledge of cataract surgery and conservative nature. Furthermore, poor outcome of the surgeries decreased the uptake of cataract surgery not only in individuals but in the whole community. In terms of sex bias, it was reported females were more likely not to accept cataract surgery due to their lower social status in India (Finger, Ali, Earnest & Nirmalan, 2007). They should get the permission and support from their husbands and families. At last, culture belief plays a very important role in community life.

Low awareness constituted answers which included “believe untreatable” “could manage” and “no feeling”. Astrid E reported that a third of patients with cataract with low vision or worse said they could deal with their lives independently. Also, the study in South Africa identified this point that six interviewees (30%) felt that their life was not influenced by poor vision acuity. It might be due to a low expectation from their life or living in a familiar environment which may reduce the feeling of disability (Rotchford, Rotchford, Mthethwa & Johnson, 2002). That contributes to under-utilization of health care resources.

Besides the points mentioned above, lack of qualified cataract surgeons influences access to eye care services for patients with cataract. In addition, the unbalanced distribution of the medical resource accelerated this problem (Allen, 2006). Therefore, seeking an appropriate approach to extending cataract surgery coverage is a key strategy towards reducing the current burden of visual disability due to cataract.

Socio-demographic Determinants of Cataract

Globally, blindness is associated with old age and being female. Other socio-demographic and socioeconomic status characteristics associated with blindness have included educational attainment, and occupation. These factors reflect exposure to specific risk factors for blinding eye diseases and utilization of preventive and curative services by specific sectors of the population. A population-based survey of blindness and trachoma was conducted in Menofiya Governorate in Egypt. 3,322 adults 50 years of age and over were sampled from throughout the governorate

(population 2.7 million). Visual acuity and clinical conditions were recorded and interviews with respondents were conducted. Overall, blindness (presenting vision of 6/60 in the better eye) was recorded in 13% of the study population. Besides age and sex, other factors associated with blindness were marital status and poor sanitation in the household. Socio-economic status does not appear to be a significant factor associated with blindness in adults in this setting. Instead, socio-cultural factors, in particular, characteristics associated with gender sensitive decision making within households, are likely to be more important considerations in understanding blindness in these communities. Successfully combating blindness in the Nile Delta of Egypt will require gender sensitive efforts aimed at timely and effective utilization of eye care services (Fouad, Mousa & Courtright, 2004).

The available evidence quite clearly suggests an association between lower socioeconomic status and a higher rate of blindness. This applies to comparison between countries with different levels of average socioeconomic status, and to the different socioeconomic strata within particular countries (Dandona & Dandona, 2001). To estimate the prevalence and causes of blindness and visual impairment in Cape Town, South Africa and to explore socio-economic and demographic predictors of vision loss in this setting, a cross sectional population-based survey was conducted in Cape Town. Eighty-two clusters were selected using probability proportional to size sampling. Within each cluster 35 or 40 people aged 50 years and above were selected using compact segment sampling. Visual acuity of participants was assessed and eyes with visual acuity less than 6/18 were examined by an ophthalmologist to determine the cause of vision loss. Demographic data (age, gender and education) were collected and a socio-economic status (SES) index was created using principal components analysis. The prevalence of blindness among people aged 50 years in Cape Town was lower than expected and the contribution of posterior segment diseases higher than previously reported in South Africa and Sub-Saharan Africa. There were clear socio-economic disparities in the prevalence of vision loss and cataract surgical coverage in this setting which needs to be addressed in blindness prevention programs (Cockburn, *et al.*, 2012).

Poverty and eye health, including vision disability from visual impairment and blindness, are believed to be inter-related. The relationship between poverty and eye

health can be interpreted as being two-fold, in the sense that poverty may be a cause of poor eye health and poor eye health may lead to or deepen poverty. Evidence shows that the burden of visual impairment is high in poor people and vision impairment and poverty are linked to each other. However the empirical evidence to answer the questions—does poverty perpetuate poor eye health? How and why? Does poor eye health deepen poverty?—is sparse globally; especially, from low- and middle-income countries (LMICs). An article aimed to examine published information and other secondary data sources that provide an insight into the relationship between poverty and eye health, including eye disability caused from visual impairment and blindness. The same also provided a conceptual understanding of poverty-related attributes that contribute to eye disability from visual impairment and blindness, using evidence sourced from poverty and eye health research studies. The article also attempted to interrogate general theories and beliefs that have been conceptualized in relation to the impact that the vicious cycle of poverty has on eye health and the contribution of poor eye health to an individual's poverty status. The major outcomes of this article included identifying gaps in linking poverty and eye health; establishing key issues that will assist in the development of a theoretical framework; and preparing more appropriately for further investigation into the association between poverty and eye health (Jaggernath, Overland, Ramson, Kovai, Chan & Naidoo, 2014).

Effects of Cataract

Age-related cataract is the leading cause of blindness in the world, responsible for about 17 million (39%) of the 45 million cases of blindness (Resnikoff, Pascolini, Mariotti & Pokharel, 2004). Visual impairment from cataract is largely confined to people aged over 50 years and, as populations continue to grow and age, the magnitude of this condition is predicted to increase. Cataract-induced visual impairment is predominant more in low-income countries. Currently there is very little information on the impact of this visual impairment on the individuals most affected, nor on how this may be alleviated after sight-restoring cataract surgery. Impact can be measured in terms of poverty, daily activities and quality of life. Poverty blindness from cataract and poverty may be linked in a cycle. Poorer people may be less able to access surgical services and therefore remain blind from cataract. Visual impairment may also exacerbate poverty, through reduced productivity of the

visually impaired person as well as lost opportunity costs to household members who look after them. After cataract surgery people may be more likely to engage in productive activities and this may improve their economic circumstances (Shamanna, Dandona & Rao, 1998; Frick & Foster, 2003; Smith & Smith, 1996). Although these links may seem self-evident, there is little evidence supporting or refuting these links.

Alleviation of poverty through provision of cataract surgery could contribute towards the achievement of the first Millennium Development Goal to 'Eradicate extreme poverty and hunger', since the vast majority of cataract blindness is in low-income settings, and among the poorest people in those communities. However, there is an absence of empirical data either supporting or disputing the impact of cataract surgery on poverty alleviation in low-income settings. Daily activities and time-use participation in different daily activities have important implications for well-being. There is substantial evidence of a positive relationship between involvement in activities and well-being, cognitive function and life satisfaction among older adults (Gilbert, *et al.*, 2008). Although studies have shown that people report less difficulty undertaking daily activities after cataract surgery, information is lacking on whether actual participation in and time spent on different daily activities changes (Menec, 2003; Hawkins, 2005). This link is likely to be complex as cataract predominantly affects older people who may experience other co-morbidities influencing their engagement in activities. Concerning quality of life, the assumption behind cataract surgery is that it brings improvements to the health-related quality of life (HRQoL) of the patient. However, the degree to which this occurs is not captured by clinical measures such as visual acuity (VA) and so the patients' views must be assessed directly to measure HRQoL. Measures to assess HRQoL include condition specific instruments (e.g. relating to visual impairment) and generic HRQoL instruments which are applicable to all health conditions. The impact of cataract surgery on HRQoL has been explored in high-income countries with inconsistent results. A positive impact of cataract surgery on vision-related QoL (VRQoL) has been consistently shown, while findings on generic HRQoL are mixed with some studies showing an improvement, 9-10 and others finding no change (Desai, Reidy, Minassian, Vafidis & Bolger, 1996; Jayamanne, Allen, Wood & Currie, 1999; Owsley, McGwin, Scilley, Meek, Seker & Dyer, 2007; Rasanen, *et al.*, 2006). Few of these studies have been undertaken in low-income settings, 14-15 particularly for

generic HRQoL. A cataract impact study was undertaken to fill these gaps in knowledge (Gupta, *et al.*, 2005; Fletcher, *et al.*, 1999). This study aimed to explore the impact of cataract surgery on poverty, time-use and quality of life among adults aged ≥ 50 years in low-income countries.

2.3 Studies of Blindness in Nepal

In 1981, the National Blindness Survey (NBS), the first landmark study on eye health in Nepal was conducted. The survey stated that the prevalence of bilateral blindness (visual acuity $< 3/60$ with best correction in the better eye) was 0.84% with a higher prevalence in females. The blindness was 3.77% in the population aged 45 years and older. It was found that cataract and its sequelae were found as the major causes of blindness in 72.1% of people across the country, whereas cataract covered 84% of all avoidable blindness. The prevalence of blindness was higher in females (63.8%) than males (36.4%). Most of the blind people (92%) resided in the rural areas of Nepal. About 2.7% of the population had visual impairment (visual acuity $< 6/18$, best corrected, in the better eye). The major causes of blindness were cataract, trachoma, xerophthalmia, glaucoma and other ocular infections (Brilliant, Pokhrel & Grasset, 1981). Currently, eye health service in Nepal compared to that in developed countries and South Asia is standard, operating from tertiary level to grassroots level through non-government organizations.

Several epidemiological surveys were carried out in late nineties in different zones of Nepal and the prevalence of blindness ranged from 2.6 to 5.3% (Bheri and Lumbini, and Gandaki surveys) in the age group 45 and above, whereas the prevalence ranged from 4.6 to 17.4% in the age group 50 and above (NNJS, 2007). It was estimated by the WHO that in the South-East Asia Region, where Nepal is located, the prevalence is 3.4% among patients ≥ 50 years.

Nepal Gender and Eye Health Group conducted study with the objectives to review the gender equity in eye care in Nepal, to examine the causes of gender inequity, to identify the immediate-, medium- and long-term remedies, to delineate research areas and to recommend the needed policy reform. Data were collected from 16 eye hospitals which covered 12 of the 14 zones. Data from hospitals were collected using questionnaires designed especially for this study, supplemented with visits of select

sites. Population-based data were collected using published data of the Rapid Assessment of Avoidable Blindness Survey. This study also used the data of Blind and Visually Impaired (BVI) children studying in schools and those out of school; the research was conducted by BP foundation (Nepal Gender and Eye Health Group, 2010).

Key findings of the study had been that there was a gap in the utilization of services IN eye care institutes where the prevalence of blindness was twice in females than males. The gap in the outpatient department was 49.7% and in cataract surgery was 56.2% as per the established fact in the world. This evidence clearly indicates that for every man accessing service one women accesses eye care and one woman is left out. To improve the situation would require reforms in the eye care system, which enables reaching out to more women and girls by increasing awareness, improving access and ensuring protection from vulnerability (Nepal Gender and Eye Health Group, 2010).

Nepal conducted the population-based blindness survey in 1980/1981. The prevalence of blindness in that survey was 0.84%. The causes of blindness were cataract (66.8%) followed by corneal scars (8.4%), glaucoma (3.2%), trachoma (2.4%) and posterior segment diseases (13.9%) (Brilliant, *et al.*, 1981). However, the prevalence of blindness in 2010 is 0.35% (NNJS, 2013).

Prevalence of refractive errors could not be estimated in that study as visual acuity was recorded with the pin hole only. Prevention of blindness program was launched in Nepal following the survey, leading to establishment of eye hospitals and training of ophthalmologists and ophthalmic assistants. However, most of the hospitals are located in Kathmandu and accessible areas in plains bordering India. As a result, most of the people receiving eye service are either people from around cities and towns in Nepal or are non-Nepalese. Unfortunately, this did not help reduce visual impairment and blindness to a desirable level in Nepal even though lots of national and international resources were invested towards that end. Studies of ocular morbidity in school children in Kathmandu showed that the prevalence of refractive error was found from 8.1 to 11.9 percent (Nepal, Koirala, Adhikari & Sharma, 2003).

Nepal launched the Vision 2020 Program in the year 1999 with the Apex Body for Eye Health under the Ministry of Health and Population. A mid-term review of Vision

2020 Nepal was done in 2010 which found that basic eye care facilities were hardly available beyond district headquarters and there were very limited facilities to address uncorrected refractive errors. The review recommended that the Government of Nepal should take ownership of eye care and integrate eye care into general health services (ABEH/MoHP/GoN, 2011).

Rapid assessment of avoidable blindness (RAAB) in Nepal was done for people over 50, from 2008 to 2010; age- and sex-specific population data from International Database (IDB) were used for the year 2011. The study showed that the prevalence of blindness due to cataract was reduced only by 21%; and that due to corneal scar doubled, glaucoma increased by one third and posterior segment increased by 22% over the last 30 years in spite of enormous expansion of infrastructure, equipment and human resources for eye care during that period (Sapkota, 2012).

Shrestha & Gurung (2012) attempted to assess the differences in access to eye care between females and males, in the urban hospital settings and in rural outreach clinics. A retrospective study was designed to review the patients who sought eye care at a tertiary level eye care institute and its rural outreach clinics from 2006 to 2009 in Nepal. Data were retrieved from clinical records. In the hospital, females accounted for 50.8% of patients receiving outpatient care and 48.3% of patients receiving surgical care. In rural outreach clinics, females accounted for 56.1% of clinic patients and 51.5% of patients undergoing surgery. Fewer girls than boys aged 0-14 years (44.3%) sought clinical care at the hospital. The study derived the conclusion that females account for approximately half of the hospital eye care services in Nepal. More females seek care at rural outreach clinics than at the urban hospital. However, given the female burden of disease in Nepal, there is still much improvement to be made in this area of care.

To determine the prevalence of blindness, visual impairment and the cataract surgical coverage for people aged 50 years and older in the Lumbini Zone and the Chitwan District (Narayani Zone) of Nepal.

A population-based cross-sectional study in 2006 selected subjects aged 50 years and older through a random multistage cluster sampling and door-to-door enumeration. Ophthalmic examination included visual acuity assessment and refraction, and

anterior and posterior segment examination of the eyes carried out by a trained ophthalmologist and two ophthalmic assistants at centralized locations.

Although the prevalence of blindness and visual impairment is lower than that 10 years ago, particularly among women, correctable blindness due to cataract and refractive error (79.5% of blind people) remains a significant population health problem in Lumbini zone and Chitwan district.

Sherchan (2010) identified cataract and glaucoma as the major causes of blindness in Nepal. Bhaktapur is one of the three districts of the Kathmandu Valley which represents a metropolitan city with a predominantly agrarian rural periphery. This study was undertaken to determine the prevalence of visual impairment, cataract surgery, and awareness of cataract and glaucoma, among subjects, residing in this district of Nepal.

Subjects aged 40 years and above were selected using a cluster sampling methodology and a door-to-door enumeration was conducted for a population-based cross sectional study. During the community field work, 11,499 subjects underwent a structured interview regarding awareness (heard of) and knowledge (understanding of the disease) of cataract and glaucoma. At the base hospital 4,003 out of 4,800 (83.39%) subjects underwent a detailed ocular examination, including logMAR visual acuity, refraction, applanation tonometry, cataract grading (LOCSII), retinal examination and SITA standard perimetry when indicated.

The low prevalence of visual impairment and the high cataract surgical coverage suggest that cataract intervention programs have been successful in Bhaktapur. Awareness and knowledge of cataract and glaucoma was very poor among this population. Eye care programs need to be directed towards preventing visual impairment from refractive errors, screening for incurable chronic eye diseases and promoting health education in order to raise awareness on cataract and glaucoma among this population (Thapa, *et al.*, 2011).

Justice (1992) discussed the relationship between Nepalese culture and politics and its impact on health before and after the democratic movement in Nepal. Wake (1976) described the certain aspects of illness and health facilities on a comparative basis

between geographical regions in Nepal. The impact of health services was discussed from the point of view of service seekers, and health-related manpower.

Regarding Nepalese health care practices and concept of illness, Pigg (1986) in his paper "The Anthropology of Illness and Healing in Nepal" has focused on cultural beliefs that order the experience of illness and explained the causes of illness.

Presern and Hilligan (1987) has noted in their studies most of the Sherpas who live in the high Himalayas in east Nepal believe that illnesses are mainly caused by offering or neglecting any of the various spirits. The Sherpas think that they have to please the ghost or spirits with appropriate ordering of sacrifices if a patient has to be cured.

Shrestha (1979) after carrying out a study has concluded that villagers normally see the traditional faith healers first as they prescribe "culturally appropriate" and easily accessible ways of health care. Villagers have trust or belief in traditional faith healers as their techniques are rooted in the spiritual rather than a bacterial concept of diseases.

Stone (1976) reported that although villagers show high respect to the western medicine they are somewhat unwilling to accept western medicine. She reported that the district hospital and health post are used as the last option, not because it is a system of threatening ideas of illness, but because it lacks integration with village life. Villagers heard complaining about differences in the quality of services, offered in western health care providers, which depends upon one's wealth and status. Instead, the *dhamis*, and *jhankris* treat people equally, irrespective of caste, age, sex and wealth etc. Though she has identified certain limitations in the government-supported western health care service systems, she does not identify the limitations of the traditional health care systems encompassing failures of shamanism. She does not explain how many people go to hospital as the last resort.

Miller (1979) by conducting an in-depth study on the faith healers of Nepal's Himalayan region has noted that ordinary Nepalese consider the *jhankri* as their doctor and turn to him whenever any family member or child is ill because he is easily consulted without great expenses and without disruption of one's daily pursuits. So, he has concluded by saying sociology of medical health care demands a larger and integrated focus like economics and politics of health services, information-seeking

behaviour of the families where illnesses occur, or decision-making processes in rural households.

Shrestha (1979) maintained that the village people usually see the traditional faith healers first as they prescribe "culturally appropriate" and easily accessible ways of health care. Village people always trust the traditional and faith healers because their techniques are rooted in the spiritual rather than a bacterial concept of the disease.

2.3.1 Barriers to Cataract Surgery in Nepal

Barriers to cataract surgery are being unaware of treatment, destiny/God's will, waiting for maturity of cataract, unavailability of services and unaffordability (NNJS, 2012).

The Nepal Blindness Survey conducted more than 30 years ago, in 1981, showed that 0.84% of the Nepalese population were bilaterally blind and 1.66% were unilaterally blind (Brilliant, *et al*, 1985). No national blindness survey has been conducted since 1981 but a few region-based surveys are present. The major causes of blindness in Nepal include cataract, trachoma, corneal trauma, corneal ulceration, glaucoma, and vitamin A deficiency (Upadhyaya, *et al*, 1991; Khatry, Lewis & Schein, 2004). After the launch of the global campaign "Vision 2020: The Right to Sight" by the WHO and the IAPB, the Government of Nepal also addresses blindness as one of the major health agendas. Vision loss due to cataract is decreasing due to affordable services in most parts of the world. In most of the cases, the visual outcome from cataract surgery is expected to improve. Therefore, in urban areas with adequate eye care services, blindness and low vision due to posterior segment disease are increasing. Because of the improved health access and better health facilities, life expectancy of the Nepalese population is increasing. So, blindness due to age-related problems is also expected to increase. The 1981 Nepal Blindness Survey showed that 0.84% of the Nepalese population was bilaterally blind and 7.7% monocular blind (Brilliant, *et al.*, 1981).

In studies by Upadhaya, Karmacharya & Koirala (1991) the major causes of blindness in Nepal included cataract, trachoma, corneal trauma, ulceration, glaucoma, and vitamin A deficiency. Similarly, in the zonal surveys carried out by Sapkota, Pokharel, Nirmalan, Dulal, Maharjan & Prakash, (2006) in Gandaki Zone, cataract was found to be the principal cause of blindness (60.5%).

2.3.2 Health-related Policies, Strategies and Plans in Nepal

Discussed below are a number of varied policies, strategies and plans adopted by the government:

Periodic Plans

In 1956, the government introduced the first periodic plan. After this, the government attempted to uplift the health status of people, placing an emphasis on various plans. The following summarizes the main health-related policies.

The First Five-Year Plan (1956-1961), the national development plan, was launched in 1956 and came to an end in 1961. The plan had objectives of increasing gross domestic products, providing employment and improving living standards of the people. The plan had primary focus on the institutionalization of curative services through existing 34 hospitals, 24 dispensaries and 63 Ayurvedic dispensaries. It was during this period when the Maternity Hospital (1956) and others were established. Before this plan, Civil Medical School existed to train compounders and dressers for the management of injuries and common illnesses (NPC, 1956).

During the **Second Plan** (1962-65) as part of the overall health program, preventive and curative medicine was prioritized for the first time. In 1962, a survey for small pox was initiated. Besides, pilot projects for leprosy (1963) and TB (1965) control were commenced. The Royal Drug Research Laboratory was started in 1964. The Assistant Nursing Midwife (ANM) training program also began in 1962 (NPC, 1963).

For the **Third Five-Year Plan** (1965-70), a great deal of extensive efforts were exercised with an aim to help plan health strategies for the future. Although many of the health-related services still concentrated on the rendering of curative activities, the concept of preventive medicine had become fairly well-established in the process of planning and budgeting. This plan initiated a Chapter of "Population and Manpower". In order to cope up with a number of health issues, the following specific programs were started, with the additional international support to achieve optimum health standards. Also, the idea of rural health posts was introduced, and nine of these posts had been built by 1970. Other achievements during this period comprised the development of these vertical projects, namely the Smallpox Eradication Project (1967), and Family

Planning and Maternal Child Health Project (1968). Furthermore, in 1967 the Central Health Laboratory was established (NPC, 1966).

As part of the **Fourth Five-Year Plan** (1970-75), Nepal changed its policy of emphasizing curative services to focusing more on preventive services. To make this preventive strategy a success, the GoN founded the Institute of Medicine, which aimed at producing new paramedical workers and training existing medical personnel further. In 1970, the Community Health and Integration division was established to help deal with overlaps in services and to make the health programs more cost-effective. To help make this possible, the division experimented with the process of integrating the vertical projects under one administrative body (NPC, 1971).

During the **Fifth Five-Year Plan** (1975-80) period, this process of integrating the vertical programs into the overall health infrastructure was further developed. Before the fifth plan, health services were made available for use, through different channels. Hospitals, health centers and health posts provided basic curative health services, which were static in nature, with no outreach. Though the facilities were located throughout the country, the delivery of these facilities in some of the remote areas was hampered by geographical conditions. On account of this uneven delivery of facilities, a section of the population was unable to receive adequate medical care (NPC, 1976).

During this **Sixth Five-Year Plan** (1980-85), the focus was on decentralization under the sectoral policy in development administration. This plan gave priority to the establishment of four regional health development centres. Authority delegated the regional centre to formulate, implement, monitor and evaluate plans and programmes of corresponding regions (NPC, 1981).

The **Seventh Five-Year Plan** (1985-90) had its concentration on people's minimum basic health needs. The document had a mention of primary health care and sanitation. Basic health care services expanded in rural areas, and were integrated. Preventive measures were also strengthened so as to control and prevent malaria, tuberculosis, leprosy, and other contagious and epidemic diseases. The family planning program was consolidated to control the population growth rate. Maternity and child welfare services programs were adopted so that nutrition status would be improved. Ayurvedic, Homeopathy and Unani health care were developed as integral parts of

basic health services. This plan placed an emphasis on private sector's participation. However, lack of adequate human resources, weak co-ordination mechanism, and political turmoil in the country were deemed major constraints on the achievements of the objectives of the plan (NPC, 1986).

The **Eighth Five-Year Plan** (1992-97) strove to attain the highest level of health for all Nepalese people and spelled out the need to improve the health of the people in order to provide healthy people for the country's development; to extend basic and primary health services to rural areas to improve the health of rural people; to extend family planning and maternal and child health services to the local level; and to develop specialised health services accessible throughout the country (NPC, 1993).

The **Ninth Five-Year Plan** (1997-2002) plan placed an emphasis on improving the health status of the people and supporting poverty eradication in this way. Also, this plan prioritized mobilising the private and non-government sectors for quality health services and human resource development. The plan aimed at improving the cost-effectiveness of health service provision, developing policies to fix problems related to the environment of professional health care, promoting people's participation, inter-regional coordination and decentralisation; and exploring alternative ways of health care financing (NPC, 1998).

The **Tenth Five-Year Plan** (2002-07) also known as Nepal's Poverty Reduction Strategy Paper, focused on poverty alleviation and called for making essential health care services available to all; establishing a decentralised health system; establishing public-private-NGO partnerships to deliver health care services; and improving the quality of health care through total quality management of human, financial and physical resources (NPC, 2003).

The **Three-Year Interim Plan** (2007/8-2009/10) established the right of citizens to make available free of cost basic health care. The plan mentioned that preventive, promotive and curative health services should be implemented according to primary health services. The plan focused on laying a foundation for economic and social transformation; adopting an inclusive development process and carrying out targeted programs while concentrating on excluded groups and establishing the right of all citizens to free basic health care services without any discrimination by region, class,

gender, ethnicity, religion, political belief or social and economic status, keeping in view the broader context of social inclusion (NPC, 2007).

The **Twelve Three-Year Plan** (2010/11-12/13) called for quality health care services for all by encouraging partnerships between public and private organisations, NGOs and communities; Also, other strategies included developing appropriate referral systems and controlling and treating non-communicable diseases like cancer, heart diseases, mental health problems, diabetes and hypertension (NPC, 2010).

The **Thirteenth Three-Year Plan** (2013/14-15/16) adopted the main objective to enhance equitable access of all citizens to basic and quality health service by improving access to and quality of free and basic health services and also by conducting preventive, curative, promotional and rehabilitative health services as primary health services. The plan also aimed to manage human resources, physical infrastructure, and institutional capacity development, and the effective supply of medicines and equipment. In addition, the plan strove to fulfill its objective by expanding the treatment services of communicable or non-communicable diseases and by enhancing collaborative efforts among the government, private, co-operative, community and development partner agencies in enhancing health services. Last but not least, the plan aimed at improving the nutritional status of vulnerable citizens by implementing multi-sectoral nutrition programs (NPC, 2013).

The Interim Constitution, 2007

The interim constitution, 2007, guaranteed access to basic health care as a fundamental right. The constitution also guaranteed the provision of basic health services free of cost (Article 16.2), reproductive health and other reproductive matters (Article 20.2) and basic health, social security and the right to get nurtured (Article 22.2) (Nepal Law Commission, 2007).

Constitution of Nepal, 2015

The Constitution of Nepal, 2015 guarantees that the state shall not discriminate among citizens on grounds of health access to basic health care as a fundamental right. Pursuant to Article 35, the constitution guarantees the provision of basic health care services from the state and that no citizen shall be deprived of emergency health care. Also, the constitution guarantees the right to be informed about citizens' health condition with regard to health care services. Besides, each person shall have equal access to health care, clean water and hygiene (Nepal law Society, 2015).

Millennium Development Goals

The United Nations (UN) endorsed the Millennium Development Goals (MDG) incorporating eight goals to achieve the overall improvement of health and the development status of world's population by 2015. Nepal is one of the signatory countries, setting the goals with its own capacity. Although Nepal is working towards meeting some targets and trying to meet the remaining targets of MDGs, visual impairment may be a barrier to achieving all goals.

To achieve the MDGs, the achievement of Vision 2020 is crucial. Basically, it is impossible to eradicate poverty and hunger without managing the all types of visual impairment. In addition, visual impairment-based disability affects the education and health services of children due to socio-economic and physical barriers of low-income countries. Many of the conditions associated with childhood blindness are also causes of childhood mortality.

As Nepal is one of the member states of the WHO, it has strove to achieve targets of MDGs. It is difficult to achieve MDGs without first addressing the problems of visual impairment (Poverty, 2015).

2.3.3 Health Policies

Following health policies are reviewed for this study purpose:

National Blood Policy, 1993

The objective of this policy was to ensure adequate, safe and timely supply of blood and blood products to meet the transfusion requirements in an equitable and affordable manner. Following the introduction of this policy the Government mandated the Nepal Red Cross Society as the sole agency responsible for blood collection, storage and supply related services in Nepal. A National Strategic Plan on blood transfusion and related services was drafted for 2009-2013.

National Drug Policy, 1995

This policy was formulated to increase the domestic production of drugs, and called for the rational use of drugs; increasing the domestic production of drugs; the production of pharmacy-related human resources for health; and restructuring the Department of Drug Administration (DDA).

National AIDS Policy, 1995

This policy called for high priority to be given to the prevention and treatment of HIV/AIDS and sexually transmitted diseases, conducting multi-sectoral decentralized programmes to combat HIV/AIDS and the integration of HIV prevention in other programmes by government and non-government agencies.

National Mental Health Policy, 1995

This policy aimed to ensure availability and accessibility of mental health services for all people in Nepal by producing human resources for mental health; promoting respect for the human rights of mental patients; formulating legislation to ensure the fundamental human rights of the mentally ill and improving awareness about mental health; and mental disorders and promoting mental health friendly lifestyles.

National Ayurveda Health Policy, 1996

The policy called for promoting, preserving, and developing Ayurvedic treatment and promoting research on Ayurveda by generating quality Ayurveda health personnel by founding a National Institute of Ayurveda; expanding the provision of Ayurvedic medicine in VDCs, district and regions; rendering specialized Ayurveda services in

central hospitals; orienting health workers on the use of local herbs; and making Ayurvedic health care economical and available to communities in remote areas.

National Safe Motherhood Policy, 1998

The Safe Motherhood policy called for reducing mortality and morbidity of women during pregnancy, childbirth and in the post-natal period by enhancing maternity care services, including family planning at all levels of health care delivery and in communities; and uplifting the general status of women by bringing attitudinal, behavioral and societal change.

National Health Research Policy, 2003

The policy called for health research focusing on equity and social justice and on facilitating health improvements by establishing links between health research and the national health policy; promoting health research on all aspects of health; ensuring the availability of human and financial resources for carrying out health research; and facilitating collaboration and networking between health researches stakeholders to better inter-sectoral participation and international linkages.

National Oral Health Policy and Strategies, 2004

This policy called for the provision of high quality, effective, basic oral health care to all people at all levels including promotive, preventive, curative and rehabilitative care.

National Nutritional Policy and Strategies, 2004

The goal of this policy was to ensure the nutritional well-being of all people in Nepal by running nutrition programmes, through collaboration of the health sector with other relevant sectors to run.

National Safe Abortion Policy, 2006

The policy called for expanding access to safe abortion services by legalising abortion services, defining standards for safe abortions, increasing awareness about safe abortion with involvement of government, INGOs, private sectors and other stakeholders; and protecting the rights of women to continue or discontinue unwanted

pregnancies within the legal framework with involvement of the government, INGOs, private sectors and other stakeholders.

National Skilled Birth Attendants (SBA) Policy, 2006

The goal of this policy was to ensure a sufficient number of skilled-birth attendants were trained and deployed at primary health centre level and provided with necessary support. It called for defining the role and skills of skilled-birth attendants, which led to the introduction of relevant training on this subject for all eligible health personnel; and also it called for strengthening safe motherhood and new-born programmes at district hospitals; strengthening pre-service and in-service training to skilled-birth attendants, developing, introducing and strengthening regulating, accrediting and licensing systems for skilled-birth attendants; and strengthening referral systems for safe motherhood and newborn care (district hospitals).

Health Care Technology Policy, 2006

This policy aimed to promote quality health service provision by ensuring health facilities through the appropriate use of technology by establishing a supportive system for promoting appropriate technology in the health system; improving the planning and purchasing system of health service technology, equipment and services; creating an appropriate environment for producing human resources for health technology; and promoting the effective use of equipment, and the cost-effective use of technology and good clinical practices.

Policy on Quality Health Services, 2007

This policy called for systems to ensure quality health services at all health facilities by developing quality assurance in essential health care service delivery; developing standards for quality services; developing partnerships with non government and private organizations and communities to ensure quality health services; developing and implementing community monitoring and evaluation of health service provision.

Free Essential Health Care Policy, 2008

The interim constitution of Nepal, 2007 guaranteed every citizen the right to basic health services free of cost as provided by law. The Free Essential Health Care Policy, 2008 called for the provision of free basic health services at all public health facilities. The policy aimed to increase access to and use of health services especially by poor and marginalized people, women and children. In 2008, the first budget after Nepal had been declared a republic and removed user charges for basic health care.

Free Delivery Policy, 2009

To accelerate the use of skilled-birth attendants, the Safe Delivery Incentive Programme (SDIP) was adopted by the government in 2005. The Free Delivery Policy, 2009, subsequently called for providing women with cash incentives and transport subsidies to attend public health facilities to give birth; free delivery services at health facilities; and incentives to health workers for attending home deliveries.

2.3.4 Health Strategies

The government made an introduction of four health strategies between the period of 1998-2004.

National Reproductive Health Strategy, 1998

Nepal, as a signatory to the Cairo Plan of Action in 1994, was committed to providing reproductive health services throughout Nepal. The National Reproductive Health Strategy, 1998 defined reproductive health services as a new approach to strengthening existing safe motherhood, family planning, HIV/AIDS, child survival and nutrition interventions with a holistic life-cycle approach. The policy called for providing reproductive health services throughout Nepal; strengthening existing safe motherhood, family planning, HIV/AIDS, child survival and nutrition programmes, including safe motherhood, family planning, HIV/AIDS, child survival and nutrition programmes within reproductive health services; and providing reproductive health service packages at different levels.

National Adolescent Health and Development Strategy, 2000

The National Adolescent Health and Development Strategy, 2000 called for improving the health and socio-economic status of adolescents by increasing access to and availability of adolescent health and development services; and creating a safe and supportive environment for adolescents to improve their legal, social and economic status.

Health Sector Strategy: An Agenda for Reform, 2003

The goal of this strategy was the achievement of the Millennium Development Goals for health. The government adopted this strategy to call for an equitable high quality health care system for people living in remote and rural places and especially for women and children and poor, vulnerable and excluded people by adopting a sector wide approach (SWAHSP) to health service provision; providing an equitable high quality health care system for people in remote and rural places especially targeted at women and children and poor, vulnerable and excluded people; and rendering quality health services.

National Neonatal Health Strategy, 2004

The National Neonatal Health Strategy, 2004 called for improving the health and survival of new-born babies in Nepal by achieving sustainable increases in the adoption of healthy new-born care practices and reducing prevailing harmful practices.

2.3.5 Health Plans and Programmes

The government introduced four long-term plans for the health sector:

Long-term Health Plan (1976-1992)

With a view to promoting physical, mental and social well-being of the people; producing health sector manpower to make basic health services available to all the people; reducing the mortality rate; and uplifting the average life expectancy, a 15-year long-term health plan (1976-1992) came into effect in 1976. Long-Term Health Plan (LTHP, 1975) as part of the process, in 1975, an elaborate strategy was

formulated with participation from not only the Crown but also from the National Commission on Population (NCP), National Planning Commission (NPC), and the Ministry of Finance and Education. The plan called for the expansion of the basic health care services, to rural areas on a gradual basis. The policies of the LTHP included providing basic health services at village level for the majority of the population and checking population growth to promote national development. In addition, the priorities included developing these basic health services, popularizing family planning and maternal and child welfare services and producing health manpower (MoH, 1976).

Second Long Term Health Plan, 1997-2017

The Second Long Term Health Plan is a 20-year perspective plan. It has strategies aimed at improving the efficiency and effectiveness of the public health care system. It offers guidance and support to private and NGO sectors and assists external development partners to direct financial and technical resources to improve the health situation in the country. It calls for improving the health status particularly of those whose health needs are often not met — vulnerable people, women and children, rural people and poor, under-privileged and marginalised people; extending essential health care services at all public health facilities; developing an appropriate number and type of technically competent and socially responsible health personnel particularly in rural areas; enhancing the management and organization of the public health sector; developing appropriate roles for NGOs and for public and private sector participation in health; and improving inter-and intra-sectoral coordination and supporting the effective decentralization of health care services with full community participation (MoH, 1997).

Nepal Health Sector Programme — Implementation Plan, 2004-10 (NHSP-IP)

NHSP-IP was developed to implement the Health Sector Strategy: An Agenda for Reform (2003). It provided operational guidelines for implementing this strategy. It called for increasing the coverage and quality of essential health care services; and developing an efficient health sector management system with adequate financial resources.

Second Nepal Health Sector Programme — Implementation Plan, 2010-15

The Second Nepal Health Sector Programme was launched with an aim to improve the health and nutritional status of the Nepalese population, especially poor and excluded people. This was to happen on the part of the government by providing equal opportunities to receive high quality affordable health care services free of cost. This plan provided strategic direction to the Ministry of Health and Population to achieve its objectives and called for access to and the use of quality essential health care services; reducing cultural and economic barriers to access to health care services and harmful cultural practices in partnership with non-state actors; and achieving the universal coverage of essential health services.

Vision 2020: The Right to Sight

Launched in 1999, the global initiative referred to as ‘Vision 2020: “The Right to Sight”’ is an established partnership between the WHO and the IAPB. It was established with the twin aims of eliminating avoidable blindness by the year 2020 and preventing the projected doubling of avoidable visual impairment between 1990 and 2020. The ultimate goal of the initiative is to integrate a sustainable, comprehensive, high-quality, equitable eye care system into strengthened national health-care systems (ABEH/MoHP/GoN, 2011).

As outlined in the document, the three approaches of Vision 2020 to the prevention of blindness and visual impairment remain control of disease, development of human resources and infrastructure and technology. Their interdependence of these three approach areas is obvious.

National Health Policy, 1991

The primary objectives of this health policy were to uplift the health standards of the majority of the rural population by extending basic primary health services up to village level and to provide opportunities to rural people so as to enable them to obtain benefits of modern medical facilities by making such facilities accessible to them. Major areas focused in this policy document are dealt with below (MoH, 1991).

Preventive Health Services

Services provided for the prevention of diseases are preventive health services. Under these, priority would be given to programmes that directly help reduce infant and child mortality rates. These services would be provided in an integrated way through sub-health care centres at rural level (MoH, 1991).

Promotive Health Services

Programmes that enable persons and communities to live healthy lives are promotive health services.

a) **Health Education and Information** — One of the main reasons for the low health standards of the people is dearth of public awareness of health matters. Therefore, health education would be provided in an effective manner from central to rural levels. For this, political workers, teachers, students, social organisations, women and volunteers would be mobilised extensively to the ward level (MoH, 1991).

b) **Nutrition** — Priority programmes would be given in order to promote breast-feeding, growth monitoring, prevention of iodine deficiency disorders, iron and vitamin A deficiency, and health education to enable mothers to meet the daily requirements of children through locally available resources (MoH, 1991).

c) **Environmental Health** — Programmes to apprise the people of personal hygiene through various media; to collect and manages solid wastes; to inspect hotel foods, drinking water and other edible products and the construction of general latrines and urinals would be initiated in a coordinated manner (MoH, 1991).

Curative Health Services

The following curative health services would be made available at central, district and village levels: preventive, promotive and curative health services would be made available in an integrated way in rural areas through sub-health posts, health posts and primary health care centres; there would be at least one hospital in each district of Nepal where out-patient services, in-patient services, family planning and maternity and child health services, immunisation services and emergency services would be provided; one zonal hospital would be established gradually in each of the zones of

the country; specialised services relating to paediatrics, gynaecology, general surgery, general medicine and eye care would be available there; one regional hospital would be established gradually in each of the five regions of the country. In these hospitals, specialised services e.g. dermatology, orthopaedics and psychiatry would be available in addition to those available in zonal hospitals; central hospitals would be equipped with sophisticated diagnostic and other facilities and would provide specialty and super-specialty services; specialist services would be provided to remote mountain regions, as and when required, through mobile teams; a referral system would be generated through which the rural population would be supplied with the opportunities to obtain services from modern well-equipped hospitals, as and when required (MoH, 1991).

Basic Primary Health Services

Sub-Health Posts would be established in a phased manner in all village development committee areas of the country. Each sub-health post would employ one village health worker, one maternal and child health worker and one auxiliary health worker. These sub-health posts would provide general curative, promotive and preventive health services. Immunisation, family planning, maternity and child health, health education, nutrition, environmental education, sanitation, and treatment of malaria, leprosy and tuberculosis would also be provided by these sub-health posts, up to ward level.

One health post in the 205 electoral constituencies of the country would be upgraded in a gradual manner and converted to a primary health care centre. In addition to the services provided by sub-health posts, arrangements would be made for two emergency beds and one maternity bed in these centres.

The health posts operating at present would provide all health services in village development committees where they are located as done by sub-health posts and would also provide training for and supervise and monitoring of the activities of sub-health posts (MoH, 1991).

Community Participation in Health Services

Community involvement would be sought at each level of health care. The participation of women volunteers, traditional birth attendants (*sudenis*) and local

leaders of various social organisations would be mobilized for health programmes at the ward level (MoH, 1991).

Organisational and Management Reform

- a) Improvements would be made in the organisation and management of health facilities at the central, regional and district levels. Hospitals and public health offices at district levels would be operated in an integrated way under one organisation.
- b) The technical and administrative supervision and follow-up system for health organisations at various levels would be made more effective.
- c) Hospitals and health facilities at different levels would be classified. A detailed description of the services available at the health facilities at different levels cost of the services and list of free services would be prepared and made public.
- d) The collection, compilation, recording and reporting systems for health information at each level would be made more effective.
- e) Improvements would be made in the transportation and support systems for drugs and equipment at various health facilities (MoH, 1991).

Private, Non-Government and Inter Sectoral Coordination

- a) If anyone in the private sector wanted to extend health services by establishing hospitals, health units, nursing homes, without any financial liability to the then His Majesty's Government, such institutions might be operated after having obtained necessary permission from the then His Majesty's Government and subject to prescribed minimum standards.
- b) Non-government organisations and associations would be encouraged to provide health services under the prescribed policies of the then His Majesty's Government.
- c) Necessary coordination would be maintained at each level with health-related sectors including agriculture, education, drinking water and local development (MoH, 1991).

Ayurved and Other Traditional Health Systems

- a) The Ayurvedic system would be developed in a gradual manner. Organisational structures for different levels will be prepared separately. This type of medicine would be developed and expanded on the basis of evaluation of services through research.
- b) Encouragement would be provided, as possible, to other traditional health system like unani, homeopathy and naturopathy (MoH, 1991).

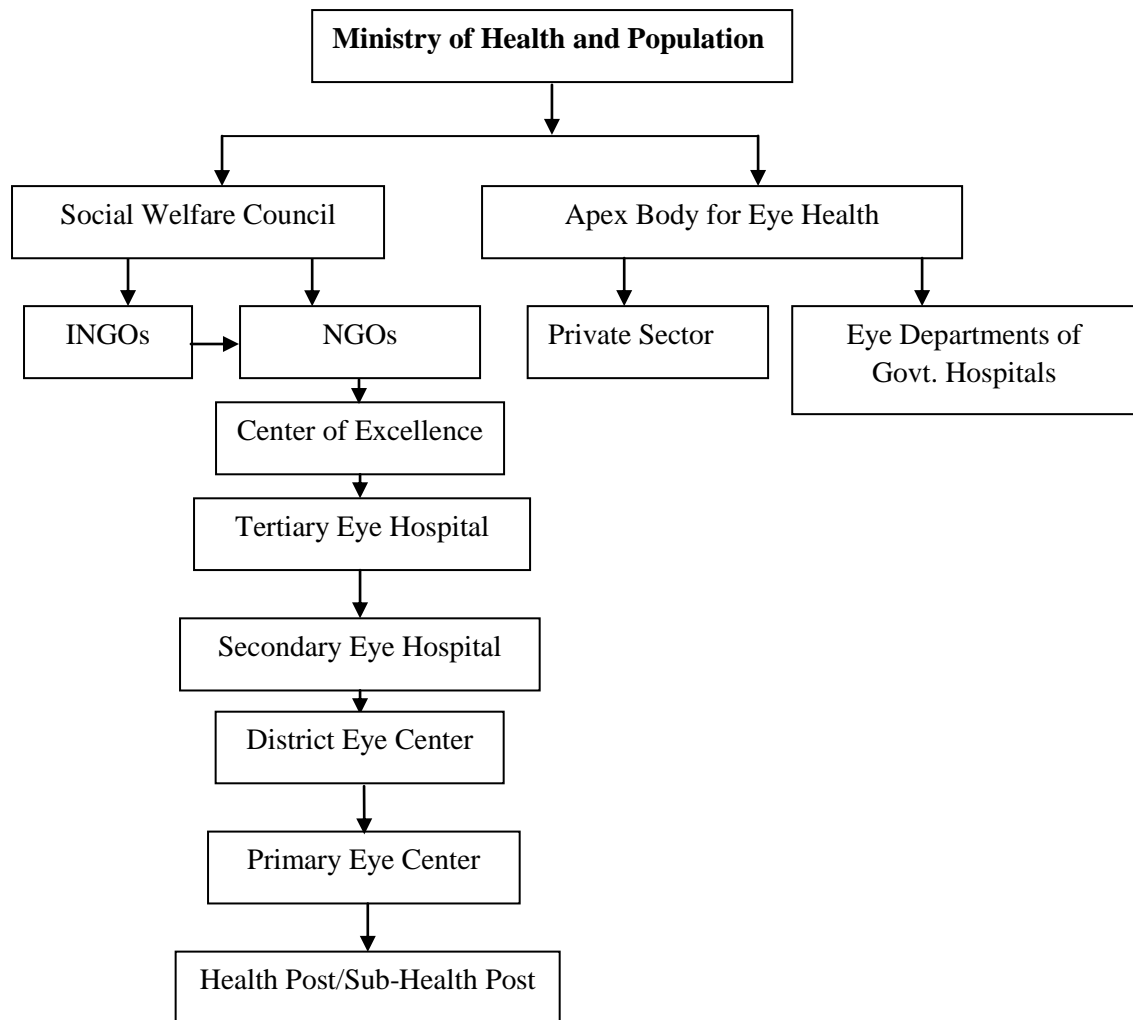
Resource Mobilisation in Health Services

- a) National and international resources would be mobilised for health services. National and foreign donor agencies would be requested to provide necessary cooperation for providing resources to implement the programmes under this Health Policy of the then His Majesty's Government.
- b) Various alternative measures for resource mobilisation for health services would be the subject of experiment including health insurance, user's charges, revolving drug schemes and so forth.

2.3.6 Organizational Structure of Eye Health Services in Nepal

The organizational structure of eye health services in Nepal is given in following Figure 2.1.

Figure 2.1: Organizational Structure of Eye Health Services in Nepal



Source: NNJS (2013), *Strategic plan for the Eye Care services, Nepal*, p. 6.

The Government of Nepal does not have a clear-cut eye health policy. Eye health services are not integrated with general health services and the delivery of eye health services is left entirely to Non Governmental Organizations (NGOs) which have their own interests and are mainly occupied with being self sufficient and making a name for themselves (Nepal, 2012).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Conceptual Framework of the Study

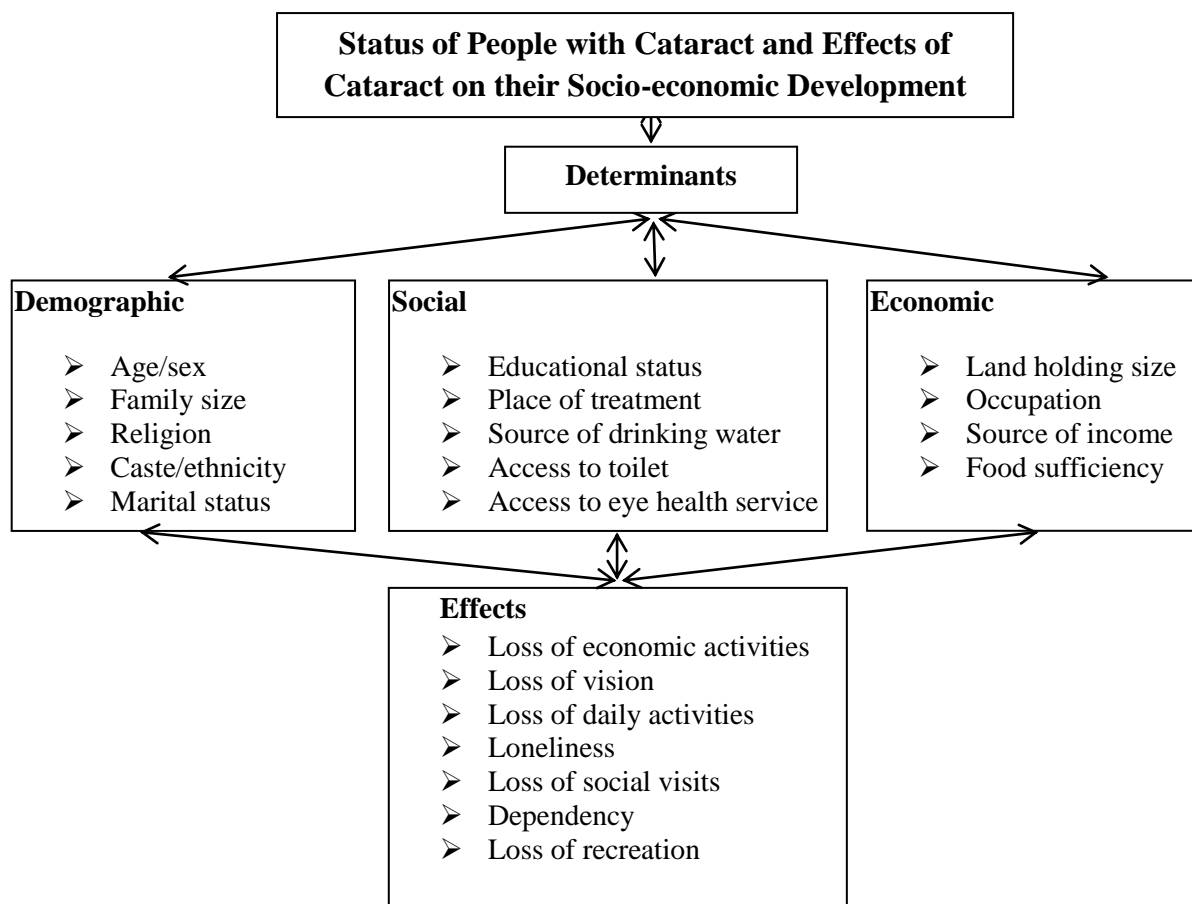
An individual has always been concerned about his/her health and has complex conceptions of life, sickness and measures to improve the health status. People develop a cognitive frame of the world and its agents guided by their socio-cultural world. In many ways, some of the components of such cognitive frame are culture-specific that not only help understand the natural, socio-cultural and metaphysical phenomenon but also equip the individual to enable him to react in predetermined ways.

An increasing body of research shows diversity in the use of eye health services among various ethnic and socio-economic groups of Nepal. Such diversity demands some specific theoretical explanations for a better understanding of people and their cataract care.

There are several reasons why culture and ethnicity are critical to consider from a theoretical lens. One of the reasons is that the morbidity and mortality rates tend to vary in different cultural and geographical group. So it is essential to understand the characteristics of target populations (e.g. ethnicity, socio-economic status, gender, age, and geographical location) in order to understand their conception of health, illness and related behavior.

Among the various models used in the understanding of people and their health behaviors, models proposed by Rosenstock (1966) are used here for the conceptual framework. Therefore, in the present study generalization is made from different theoretical models considering the research issues.

Figure 3.1: Conceptual Framework on Status of People with Cataract in Rural Community of Central Development Region, Nepal



The conceptual framework presented above deals with a general understanding of status of people with cataract in a rural community of the Central Development region of Nepal. The framework is based on socio-demographic characteristics of households of people with cataract and the effects of cataract on activities of them.

Demographic Characteristics included in the study are the socio-demographic factors such as age/sex, family size, religion, caste, ethnicity, marital status etc., which motivate or provide a reason for subsequent behavior when one becomes visually impaired, and are thought to influence a person's propensity to use services before the need for those services is present.

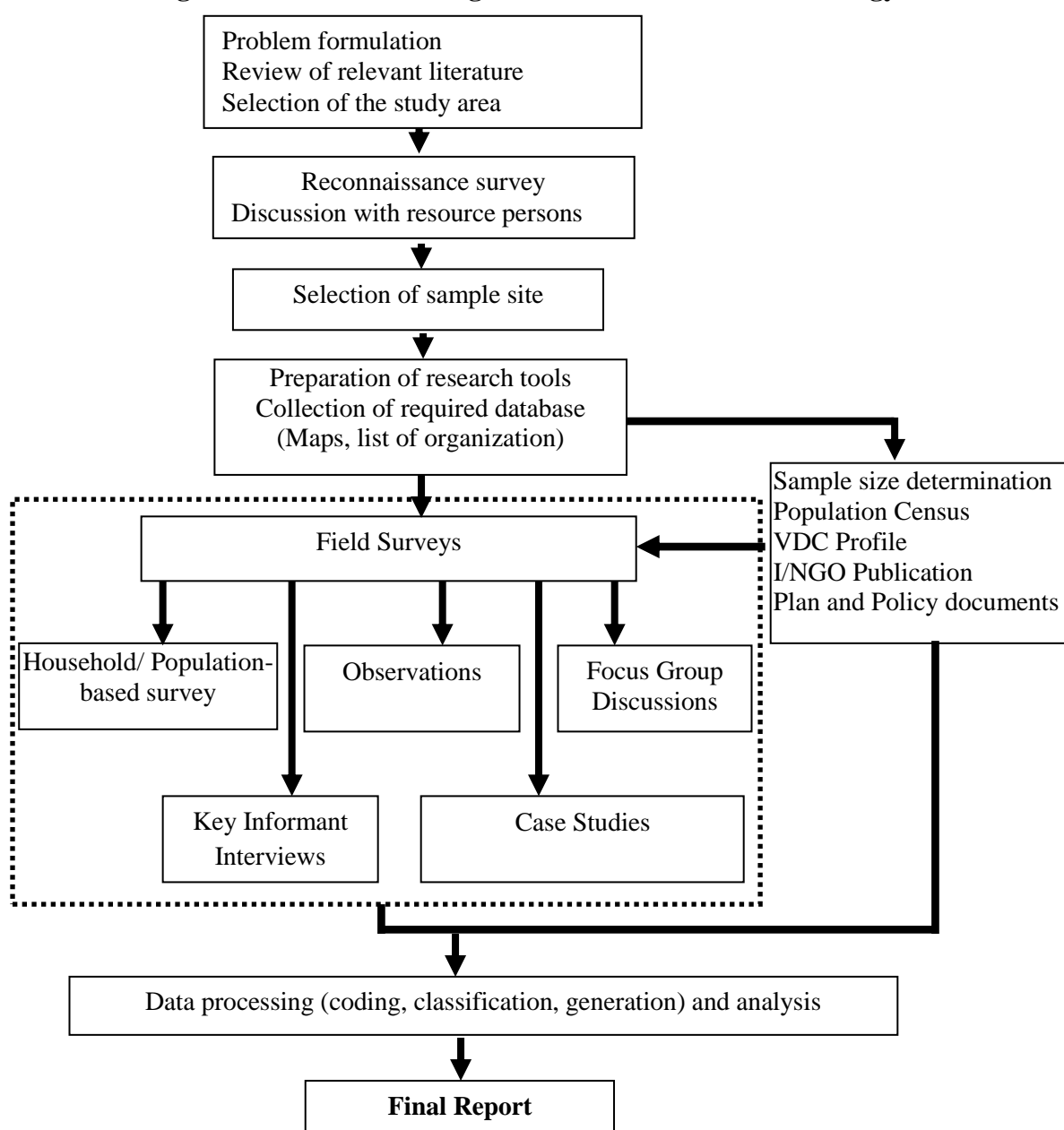
Social Characteristics are family or community level characteristics that facilitate or inhibit the ease with which help is obtained. The **Social Characteristics** included here are the educational status, the first place of treatment, sources of drinking water,

access to toilet facilities and access to eye health services which may influence conception of visual impairment and choice of eye health-care facilities.

The Economic Characteristics included are economic capability i.e. the land holding size, sources of income, food sufficiency, and occupation.

The factors mentioned above can have effects on people with cataract, which greatly influence daily activities, the health status, and well-being. Visual impairment causes difficulties with basic activities of daily living and selfcare, and can hamper activities previously taken, such as dressing, eating, writing, recreation, mobility, and simple communications or social interactions with others.

Figure 3.2: Schematic Diagram of the Research Methodology



3.2 Sources of Data

This study has been based basically on primary data collected from different sources. However, secondary data have also been used in the research. The detail procedures are presented in the subsequent sections.

3.2.1 Secondary Source

Related publications and reports were collected and consulted for acquiring supporting information. Important sources of secondary data are publications such as Epidemiology of Blindness in Nepal: 2012 published by Nepal Netra Jyoti Sangh, Mid –Term review of Vision 2020: The Right to Sight, Nepal, 2011 published by the Ministry of Health and Population. In addition, Population Census Report, 2011 published by the Central Bureau of Statistics (CBS) was used to obtain information on population characteristics of the study area. VDC profiles of the study regions were also used to obtain information regarding socio-demographic characteristics of the study areas. Different plan documents and other policies and programmes related to health particularly about eye health and cataract surgery published by the government have been used as invaluable sources for this study. These data have been used to explain the relationship among key variables/factors obtained from primary sources.

3.2.2 Primary Source

This study is primarily based on the extensive field survey. The primary sources of data are the main bases of this study. Due to a paucity of exhaustive data on people with cataract, the bulk of data necessary for this study were obtained from the extensive field survey. The field survey methods used observations, household surveys, focus group discussions (FGDs) and key informant interviews (KIIs) and case studies.

3.3 Methods and Tools of Primary Data Collection

Ethical clearance approval was obtained from the Ethical Review Board of Nepal Health Research Council, Government of Nepal, before the undertaking of this study. Five methods of primary data collection, namely, observations, household surveys, focus group discussions (FGDs), key informant interviews (KIIs) and case studies

were used. Prior to using these five survey methods, a reconnaissance survey was accomplished to make the researcher familiar with the field situation.

3.3.1 Sample Design

With the aim to enhance the understanding about patients with cataract, three districts, namely Rasuwa, Sindhupalchowk and Parsa, were selected from the mountain, hill and terai respectively (Figure 3.3). Three VDCs from three ecological regions – Dhunche from Rasuwa, Ramche from Sindhupalchowk¹ and Basdilwa from Parsa – were selected purposively based on road access. First of all, the total number of households of selected three VDCs was obtained from VDC Offices and then a sample size was determined using the standard formula given below. The sample size thus obtained was 251, which out of the total number of households i.e., 2000, makes 12.5%. Therefore, 12.5 % of households from each VDC and ward were included in the study as part of proportional sampling. The summary of distribution of sample size by VDCs and wards is given in Table 3.1. If there was no at least one cataract member in the selected households, another household closer to that household was selected for the household-level interview to meet the necessary requirement of being people with cataract. The number of people with cataract in sampled households was identified through eye examination of family members by the visual acuity tester (for visual acuity) during the household survey. Of the total people with cataract (Dhunche, 71; Ramche, 103; and Basdilwa, 209), only 33% people with cataract of each VDC were interviewed to understand the effects of cataract on their socio-economic development. Therefore, 24 people from Dhunche VDC, 34 from Ramche VDC and 69 from Basdilwa VDC were taken for the interview.

Formula:
$$n = \frac{N * Z^2 * \sigma^2}{(N-1) * e^2 + Z^2 * \sigma^2}$$

Where,

n= Sample Size

Z = The value of the given confidence

σ = Population Standard Deviation (variance)

¹ Though the Government of Nepal has labelled Sindhupalchowk district as a Mountain Region, the bio-physical and socio-demographics characteristics of Ramche VDC are similar to those in the hill region. Therefore, in our study, Ramche VDC is included under the hill region.

N= Total household

e= Acceptable error

Therefore,

N = 2000

z = 1.96 (95% confidence level)

$\sigma = 77.749$

$\sigma^2 = 6045$

e = 9 (acceptable error)

$$n = \frac{2000 * 1.96 * 1.96 * 6045}{(2000 - 1) * 9 * 9 + 1.96 * 1.96 * 6045}$$

$$n = \frac{46444944}{162000 + 23222.47}$$

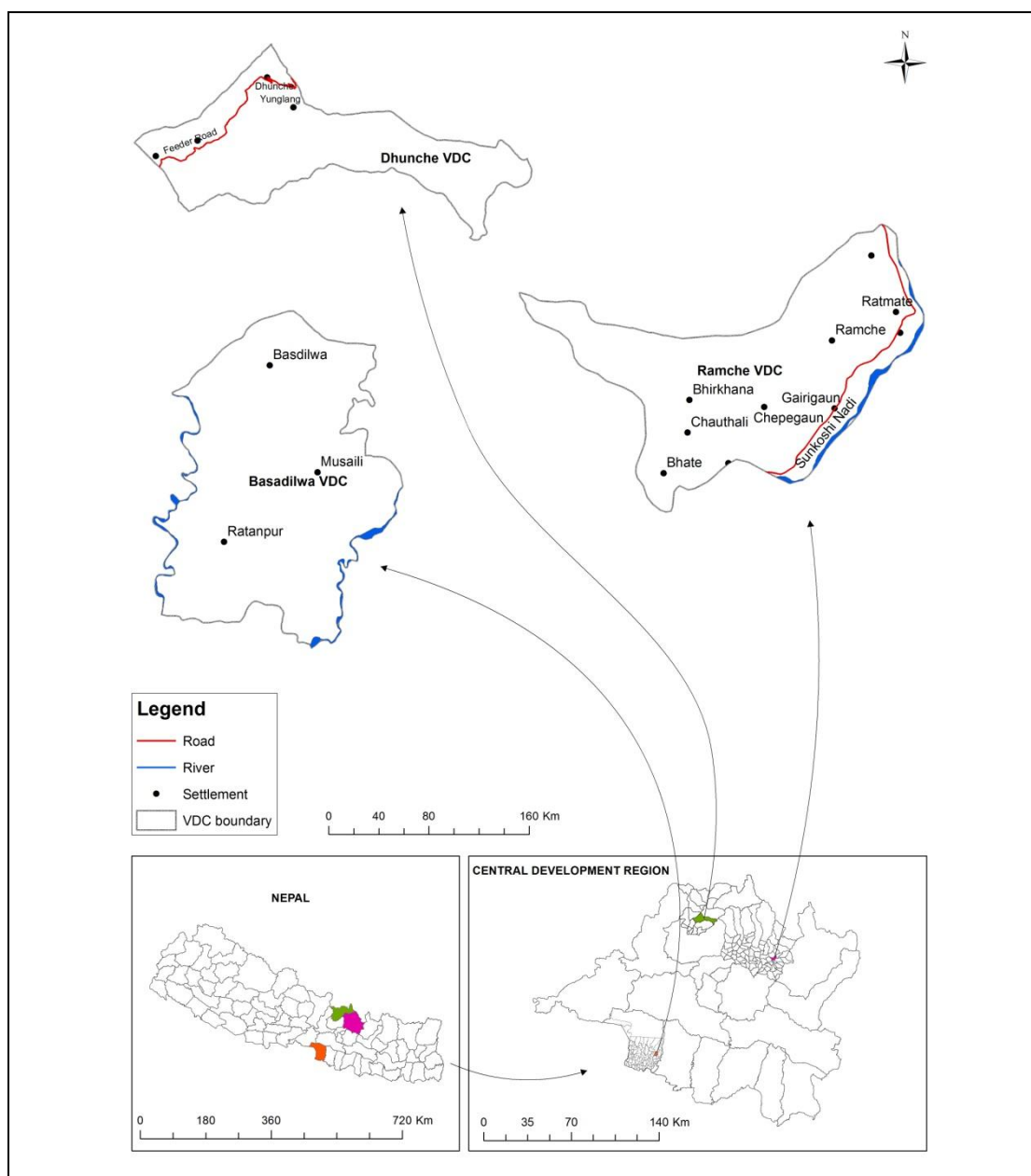
$$n = \frac{46444944}{185222.5} = 250.7522 = 251$$

Percentage in total households= 251/2000*100=12.5%

Table 3.1: Distribution of Sample Size by VDCs and Wards

Ward No.	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)		Total	
	Number Household	Sampled	Number Household	Sampled	Number Household	Sampled	Number Household	Sampled
1	51	7	100	12	83	11	234	30
2	18	2	105	13	59	7	182	22
3	26	3	46	6	81	10	153	19
4	34	4	32	4	56	7	122	15
5	180	23	93	12	111	14	384	49
6	29	4	56	7	184	23	269	34
7	27	3	103	13	133	17	263	33
8	82	10	64	8	65	8	211	26
9	29	4	65	8	88	11	182	23
Total	476	60	664	83	860	108	2000	251

Figure 3.3 Location Map of the Study Areas



The inclusion and exclusion criteria for this study are given below:

Inclusion criteria

- The Respondent should be the resident of Dhunche VDC of Rasuwa District, Ramche VDC of Sindupalchowk District and Basdilwa VDC of Pasrpa District.
- The Respondent should be willing to give consent and participate in the interview.
- The Respondent should have at least one family member with cataract.

Exclusion criteria

- The Respondent refuses give consent.
- The Respondent is without cataract.
- The Respondent becomes unable to provide complete data.

3.3.2 Observation

During the field survey, observation was conducted by the researcher to obtain information regarding eye health care related infrastructure, equipment and services available in the study area. An observation checklist was developed to note major information (Appendix I).

3.3.3 Household Survey

The household survey was conducted to gather information on socio-demographic characteristics of households of people with cataract. Through the household survey, the information regarding family size, religion, cast/ethnicity, marital status, land holding size, economic status, occupation etc. was obtained. Altogether, 251 households were surveyed using the semi-structured questionnaire (Appendix II). During the survey, attempts were made to ask the household's seniormost person the questions.

3.3.4 Population-Based Survey

The population-based survey was carried out using the same semi-structured questionnaire (Appendix II). The number of people with cataract in sampled households was identified through eye examination of family members by the visual

acuity tester (for visual acuity) during the household survey. Presenting visual acuity was measured by using the Snellen's E-chart and visual acuity was categorized into four groups: less than 3/60, less than 6/60, less than 6/18 and greater than 6/18. A separate cataract population-based survey was conducted to obtain information regarding the period of visual impairment with cataract, condition of near vision after cataract, family behavior after cataract, conditions of drudgery after cataract, functionality and quality of life, knowledge and practice, and barriers preventing the people from accessing and utilizing eye health services (Appendix II).

3.3.5 Focus Group Discussions

The focus group discussions were carried out to verify the information collected from the household survey. Altogether, six focus group discussions (FGDs) were conducted including two from each VDC. Each group was formed consisting of five to eight individuals engaged in health delivery services and social work. A FGD guideline was prepared to conduct discussions in a consistent way (Appendix III). At the time of group formation, attempts were made to ensure the representation from ophthalmologists, optometrists, government officers, ophthalmic assistants, social workers and teachers. The list of participants in the FGDs is given in Appendix IV.

Focus group discussions (FGDs) were conducted to gather information on the views and perception of the people associated with cataract and its effects. The researcher remained as a facilitator; therefore, the researcher was neither active nor passive while conducting the focus group discussions. During the whole discussions, the researcher remained neutral so that the participants could express their views in a free manner. The researcher, however, encouraged the poor participants to raise their voices in the discussion. Also, efforts were made for the people of the lower social strata in order to raise their voices effectively by giving examples of the sector in which they were not satisfied with the programs and policies as well as activities of the local organizations.

3.3.6 Key Informant Interview

The key informant interview was conducted to obtain information regarding knowledge, problems and prospects of people with cataract. Fifteen key informants were interviewed consisting of five participants from each VDC using the checklist (Appendix V). The key informants selected for this survey included social workers,

representative of NGOs working on eye health, personnel working in the government hospitals, health post and sub-health post to understand existing existing facilities on eye health care and future needs (Appendix VI).

3.3.7 Case Study

For this study, case studies were carried out to investigate the history of, effects on, and barriers to the treatment of people with cataract. For this, two people with cataract from each VDC were selected for the case studies. The cases were selected on the basis of different sex, ethnic and religious groups. At the time of the case studies, attempts were made to understand the causes of cataract, feelings after cataract, family and social behavior after cataract. To conduct case studies smoothly, guidelines were developed (Appendix VII).

3.4 Data Processing

The processing of the collected data has been performed by using the computer and the manual method. In the first step, the data and information obtained from the field survey were carefully edited for any missing, unclear, and incomplete responses. The population-based survey data collected through the questionnaires were coded and entered into the computer by using SPSS version 21 and Microsoft Excel. Upon completion of data processing, different tables were created and used in the textual context as required. The data and information obtained from the secondary sources were also used in the text wherever relevant.

3.5 Methods of Analysis

The unit of analysis is “cataract patient”; therefore, all analysis of the survey data is entirely based on the sampled population. The population-based data obtained from field survey have been analyzed in terms of socio-economic characteristics, differences in cataract utilization by gender and caste and ethnicity and the effects of cataract on daily life. Analysis of problems and prospects of cataract have also been based on the data obtained from the field survey. The Chi Square Test which has the following formula has been used:

Formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

$$E = \frac{RT \times CT}{N}$$

OR

$$\chi^2 = \frac{N(ad - bc)^2}{(a + b)(c + d)(a + c)(b + d)}$$

Σ = Summation Sign, O = Observe frequency, a, b ,c, d cell frequencies

N = Total frequencies (a +b+ c+ d, Total Sample Units)

RT = Row Total, CT = Column Total, χ^2 = Chi Square, E = Expected Value

Various tables and graphs have been used to extract meaningful information for interpretation. Their use and explanations are made in the text where they appear. The methods employed for the analysis of the collected data and information is mixed methods i.e. qualitative and quantitative. This study involves a descriptive research design.

CHAPTER FOUR

PROFILE OF THE STUDY AREA

This chapter attempts to describe physical settings- location, climate, drainage system, social settings-population, educational status, religion, health care services and economic settings- land holding size, sources of family annual income, food sufficiency level.

4.1 Introduction of the Study Districts

Geographically, Rasuwa district is located in Bagmati zone of the Central Development Region. It is located 118 km far from the capital of Nepal. There are eighteen VDCs in this district and each VDC has nine wards. The total area of this district is 1,544 km². Dhunche is the district headquarters of Rasuwa district. The total population of this district is 43,300 and the density of population is 28/km² (CBS, 2011).

Sindupalchowk district is located in Bagmati zone of the Central Development Region. It is located 60 km far from the capital city of Nepal. There are 79 VDCs in this district and each VDC has nine wards. This district covers an area of 2,542 km². Chautara is the district-headquarters of this district. The total population of this district is 287,798 and the density of population is 110/km² (CBS, 2011).

Parsa district falls under Narayani zone in the Central Development Region. There are 79 VDCs in this district and each VDC has nine wards. The total area of this district is 1,353km² and the headquarters of this district is Birgunj. The total population of this district is 601,017 and the density of population is 440/km² (CBS 2011).

4.2 Physical and Socio-Economic Settings of the Study Area

4.2.1 Physical Settings

The physical settings of the study area include location and boundaries, climate, drainage system, etc., which are discussed separately in the following sections:

4.2.2 Location

Dhunche VDC is situated 118 Km north-west of Kathmandu. This VDC is surrounded by Syarphu in the east, Yarsha in the south, Ramche in the west, Ghyagnphedi in the north. This VDC covers an area of 77.83 sq. Km, which is 5.14% of the total area of the district (DDC Profile, 2063).

Ramche VDC is situated 85 Km north-east of Kathmandu. This VDC is surrounded by Bhotekoshi and Sunkoshi rivers and Dhuskun VDC in the east, Mankha VDC in the south, Phulpingcoat and Jalbire VDCs in the west, Adhirikhola and Maneswara VDC in the north. The total area of this VDC is 2,243 hectares (VDC Profile, 2067).

Basdilwa VDC is situated 118 Km north-west of Kathmandu. This VDC is surrounded by Belawa Bhatta VDC in the east, Biruwaguthi in the west, Biruwaguthi in the north, Bagahi VDC in the south. The total area of this VDC is 552 hectares (VDC Profile, 2067).

4.2.3 Climate

According to the physical features, the climate of Dhunche is very cold because of its location in Lantang Mountain. Most of the time in winter, ward no 8 of Dhunche VDC witnesses snowfall so massively that on some days of the year, snow fall occurs in the market area of the district headquarters. Dhunche is located in the lap of Gosaikunda, a famous religious temple of the Hindus. In winter, people are unable to go to Gosaikunda because of snow in the temple area. The height of Dhunche VDC from sea level is 1,200 to 5,000 meters. Geographically, most of the area of this VDC is attached to the mountain area, especially Langtang Mountain (VDC profile 2068).

According to the physical features, the climate of Ramche is very cold as it is in the hill area; the city area enjoys climate in moderation. Ramche is located on the way to Tatopani, a famous religious place of the Hindus. The height of Dhunche VDC from sea level is 800 to 2,500 meters (VDC profile, 2067).

According to the physical features, the climate of Basdilwa VDC is very hot because of its location in the terai area. Most of the time in winter, Basdilwa VDC is very hot.

Basdilwa is located very close to the border between Nepal and India (VDC Profile, 2067).

4.2.4 Drainage System

Dhunche VDC is very rich in water resources. Most of the area of this VDC is covered by mountains of Lantang National Park, so a lot of snow rivers are available in the area. Cold natural water is always available in this VDC. A very big mineral water factory is located in this VDC. The common characteristic of the rivers is that during monsoon, rivers get inundated. In particular, the rivers in the slope area have markedly influenced their upper physiography almost eliminating the original quaternary basin deposits underneath. In the dry season, the water level is unusually low. As most snow rivers flow throughout the year, they could prove useful to small-scale irrigation. This particular aspect is very significant to explain the location of Dhunche villages near to the source of water in the mountain ridges (VDC profile 2068).

Bhotekoshi is the main water resource of Ramche VDC which separates Ramche VDC from Barabise VDC. Natural water is always available in this VDC. The common characteristic of the rivers is that during the monsoon rainfall they often get flooded over their banks. Particularly, the rivers in the slope area have markedly influenced its upper physiography almost eliminating the original quaternary basin deposits underneath. In the dry season, their water level is usually low (VDC profile 2067). Underground water is the main source of water in Basdilwa VDC. However, there are some small streams which flow from this VDC (VDC profile 2067).

4.3 Socio-Economic Settings

Under this section, population distribution, literacy status, caste/ethnic composition, religion and food sufficiency levels are discussed.

4.3.1 Population Distribution by Age and Sex

Population distribution and density are affected by both the geographical factors as well as socio-economic factors. The population of the study VDCs is uneven by wards. Some wards are densely populated, some wards are moderately populated and

some wards are sparsely populated because of different physical and socio-economic conditions.

Table 4.1: Population Distribution by Age and Sex

Age Group	Sex	Dhunche(mountain)		Ramche(hill)		Basdilwa(terai)	
		No.	Percent	No.	Percent	No.	Percent
< 15 year	Male	414	18.82	760	18.67	1491	23.52
	Female	353	16.05	659	16.19	1488	23.48
15-59 year	Male	680	30.92	1245	30.59	1614	25.47
	Female	632	28.75	1184	29.1	1561	24.63
60 + year	Male	66	3.01	118	2.89	71	1.13
	Female	54	2.45	104	2.56	112	1.77
Total Population		2199	100	4070	100	6337	100

Source: VDC Profiles of Dhunche, (2068), Ramche, (2067), and Basdilwa, (2067).

Figure 4.1: Population Distribution by Age and Sex

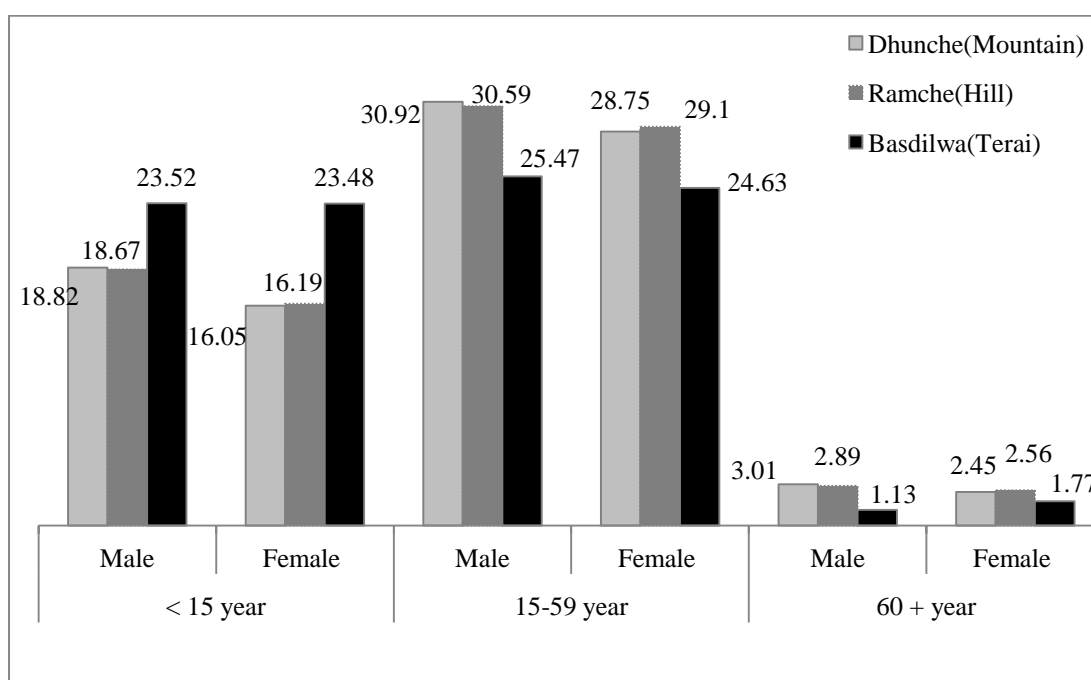


Table 4.1 and Figure 4.1 show the population distribution by age and sex of study. According to this table, in Dhunche (mountain) VDC, there are 414 (18.82%) male and 353 (16.06%) female population under 15 years of age, 680 (30.92%) male and 632 (28.75%) female population aged 15-59 years and 66 (3.01%) male and 54

(2.45%) female population aged 60 years and above. The total population in Dhunche (mountain) VDC is 2,199. Ramche (hill) VDC comprises 760 (18.67%) male and 659 (16.19%) female population under 15 years, 1,245 (30.59%) male and 1,148 (29.1%) female population aged 15-59 years, and 118 (2.89%) male and 104 (2.56%) female population aged 60 years and above. The total population of this VDC is 4,070. Likewise, in Basdilwa (terai) VDC, there are 14.91 (23.52%) male and 1488 (23.48%) female population under 15 years, 1,614 (25.47%) male and 1,561 (24.63%) female population aged 15-59 years and 71 (1.23%) male and 112 (1.77%) female populations aged 60 years and above. The total population of Basdilwa (terai) VDC is 6,337 (Figure 4.1).

4.3.2 Literacy Status

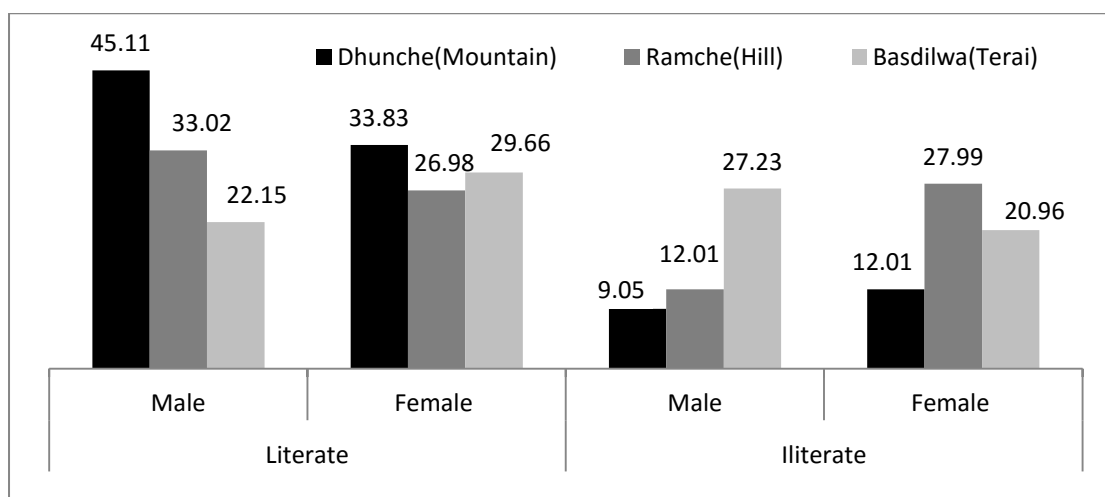
In every community, education is one of the fundamental forces of the social restructuring. The degree of education in a community indicates the standard of living. It is also an instrument of change. For the present study, literacy is defined as a person who can read and write his/her own name. Literacy status of the study VDCs is given in Table 4.2 and Figure 4.2.

Table 4.2: Literacy Status by Sex

Literacy	Sex	Dhunche(mountain)		Ramche(hill)		Basdilwa(terai)	
		No.	Percent	No.	Percent	No.	Percent
Literate	Male	992	45.11	1344	33.02	1404	22.15
	Female	744	33.83	1098	26.98	1879	29.66
Illiterate	Male	199	9.05	489	12.01	1726	27.23
	Female	264	12.01	1139	27.99	1328	20.96
Total		2199	100	4070	100	6337	100

Source: VDC Profiles Dhunche, (2068), Ramche, (2067), and Basdilwa (2067).

Figure 4.2: Literacy Status by Sex (in percent)



Of the total population, 992 (45.11%) male and 744 (33.83%) female are literate, whereas 199 (9.05%) male and 264 (12.01%) female population are illiterate in Dhunche (mountain) VDC. In Ramche (hill) VDC, 1,344 (33.02%) male and 1,098 (26.98%) female are literate, whereas 489 (12.01%) male and 1,139 (27.99%) female are illiterate. Likewise, of the total population (63,379), 1,404 (22.15%) male and 1,879 (29.66%) female are literate, whereas 1,726 (27.23%) male and 1,328 (20.96%) female are illiterate. The table above depicts the fact that male and female literacy is higher in Dhunche VDC, whereas male literacy is lowest in Basdilwa VDC and female literacy is lowest in Ramche VDC. Likewise, male illiteracy is higher in Basdilwa VDC, whereas female illiteracy is higher in Ramche VDC (Figure 4.2 and Table 4.2).

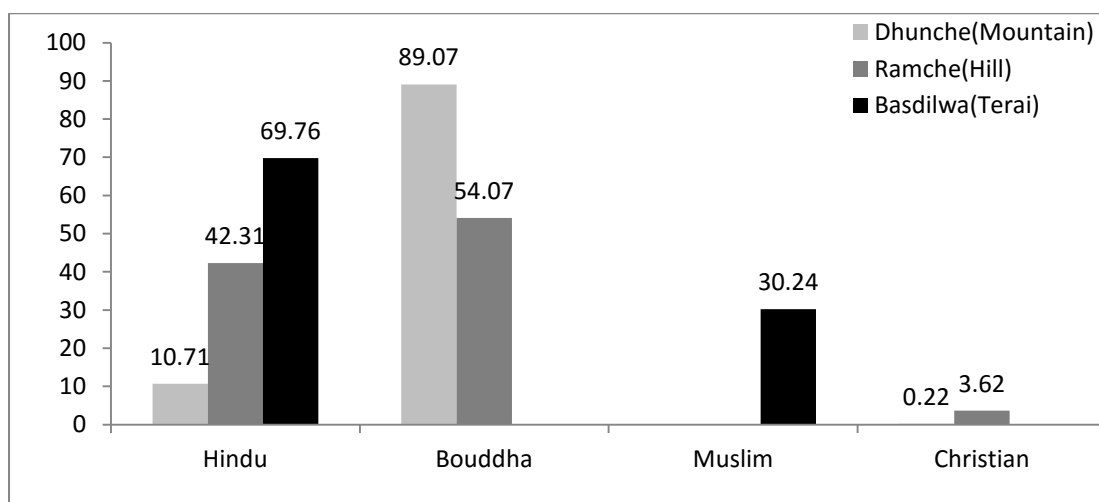
4.3.3 Religious Composition by Population

Table 4.3: Religious Composition by Households

Religion	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
	Number	Percent	Number	Percent	Number	Percent
Hindu	51	10.71	281	42.31	600	69.76
Bouddha	424	89.07	359	54.07	-	-
Muslim	-	-	-	-	260	30.24
Christian	1	0.22	24	3.62	-	-
Total	476	100	664	100	860	100

Source: VDC Profiles Dhunche, (2068), Ramche, (2067), and Basdilwa (2067).

Figure 4.3: Religious Composition by Households



The people residing in the study VDCs follow different religions such as Hinduism, Buddhism, Muslim and Christianity. Of the total (476) households in Dhunche VDC, 51 (10.71%) households are Hindu, 424 (89.07%) households are Buddhist and one (0.22%) household is Christian. There are altogether 664 households in Ramche VDC. Of these, about 281 (42.31%) households follow Hinduism, 359 (54.07%) households are Buddhist and 24 (3.62%) households follow Christianity. Likewise, there are altogether 860 households in Basdilwa VDC of which 600 (69.76%) households are Hindu and 260 (30.24%) households are Muslim (Table 4.3).

4.3.4 Caste / Ethnicity by Population

Caste and ethnic composition is a parameter which helps determine the social cohesion and the organizational basis in a society. A major caste and ethnic group plays a dominant role in organizing and decision making in the community. This is a general statement, although it may not always be true.

Table 4.4: Caste /Ethnicity by Ecological Zones

Caste	Sex	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
		No.	Percent	No.	Percent	No.	Percent
Brahman	Male	-	-	509	12.50	41	0.65
	Female	-	-	513	12.61	42	0.67
Chhetri	Male	-	-	593	14.57	-	-
	Female	-	-	608	14.93	-	-
Dalit	Male	30	1.36	62	1.52	297	4.69
	Female	37	1.68	68	1.67	275	4.34
Ethnic Group	Male	1,113	50.61	829	20.37	1,134	17.9
	Female	830	37.75	839	20.62	1,197	18.88
Muslim	Male	-	-	-	-	1,180	18.63
	Female	-	-	-	-	1,144	18.05
Others	Male	105	4.77	23	0.57	524	8.26
	Female	84	3.83	26	0.64	503	7.93
Total Population		2,199	100	4,070	100	6,337	100

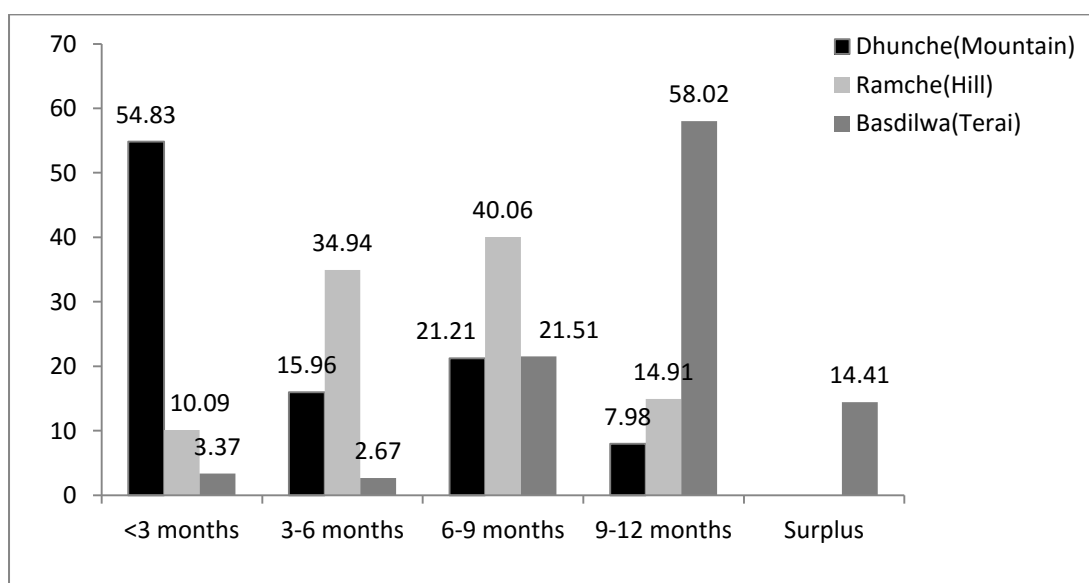
Source: VDC Profiles Dhunche, (2068), Ramche, (2067), and Basdilwa (2067).

Of the total population, more than four-fifths (88.4 percent) are from the ethnic group in Dhunche (mountain) VDC. There is no population from the caste group. In Ramche (hill) VDC, about 54.5 percent of the total inhabitants are from the caste group followed by the ethnic group (41 percent). Likewise, in Basdilwa (terai) VDC, about 37.0 percent of the total are from the ethnic group, whereas the Muslim community occupies about 36.0 percent (Table 4.4 and Figure 4.3).

Table 4.5: Food Sufficiency Level of Households by Ecological Zones

VDC	Dhunche(mountain)		Ramche(hill)		Basdilwa(terai)	
	No.of household	Percent	No.of household	Percent	No.of household	Percent
<3 months	261	54.83	67	10.09	29	3.37
3-6 months	76	15.96	232	34.94	23	2.67
6-9 months	101	21.21	266	40.06	185	21.51
9-12 months	38	7.98	99	14.91	499	58.02
Surplus	-	-	-	-	124	14.41
Total	476	100.0	664	100.0	860	100.0

Source: VDC Profiles Dhunche, (2068), Ramche, (2067), and Basdilwa (2067).

Figure 4.4: Food Sufficiency Households by Ecological Zones

Dhunche (mountain) and Ramche (hill) VDCs have no surplus food production. Only 14.41 percent families have surplus food production in Basdilwa (terai) VDC. This shows the fact that the study areas are food-deficit regions. About 261 (54.83%) households barely enough food for 3 months in Dhunche VDC, followed by 67 (10.09%) households in Ramche VDC and 29 (3.37%) households in Basdilwa VDC. Families having their own food sufficiency for 3-6 months, 6-9 months, and 9-12 months in Dhunche VDC account for 76 (15.96%), 101 (21.21%) and 38 (7.98%)

respectively. About 232 (34.94%), 266 (40.06%) and 99 (14.91%) families have their own food sufficiency for 3-6 months, 6-9 months, and 9-12 months in Ramche (hill) VDC. Likewise, families having their own food for 3-6 months, 6-9 months, and 9-12 months in Basdilwa VDC account about 23 (2.67%), 185 (21.51%) and 499 (58.01%) respectively (Table 4.5 and Figure 4.4).

Table 4.6: Annual Income of Households by Ecological Zones

VDC	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
Annual income (In Rs)	No.of household	Percent	No.of household	Percent	No.of household	Percent
<50000	79	16.59	166	25.00	172	20.00
50,000-100000	74	15.55	132	19.88	60	6.98
100000-150000	109	22.89	199	29.97	86	10.00
150000-200000	156	32.78	68	10.24	352	40.93
>200000	58	12.19	99	14.91	190	22.09
Total	476	100%	664	100%	860	100%

Source: VDC Profiles Dhunche, (2068), Ramche, (2067), and Basdilwa (2067).

Figure 4.5: Annual income of Households by Ecological Zones

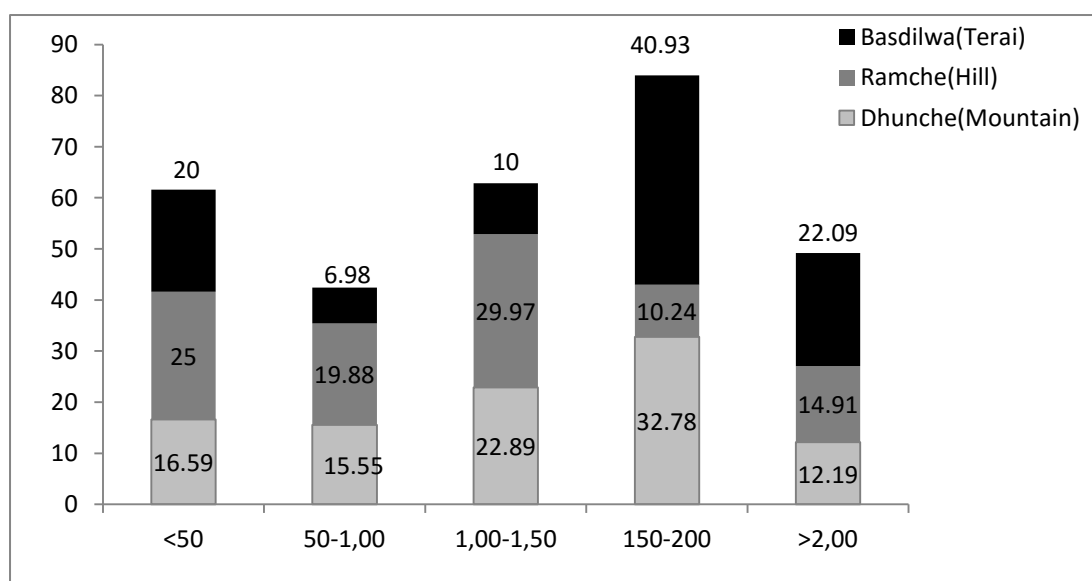


Table 4.6 and Figure 4.5 depict the fact that there is a variation in the annual income of the households among the studied VDCs. Of the total households, about one-third (33.0 percent) have an annual income of Rs.1,50,000-2,00,000 in Dhunche

(mountain). In Ramche (hill) VDC, about 30.0 percent households have an annual income of Rs.1,00,000-1,50,000. The annual income of more than forty percent households in Basdilwa (terai) VDC is Rs.1,50,000-2,00,000 (Table 4.6 and Figure 4.5).

Table 4.7: Landholding size of Households by Ecological Zones

VDC	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
Landholding size (in ropani)	No.of household	Percent	No.of household	Percent	No.of household	Percent
Landless	22	4.62	62	9.33	107	12.44
Less than 5 ropani	53	11.12	28	4.21	80	9.3
5 to 10 ropani	90	18.90	303	45.63	152	17.67
11-15 ropani	92	19.32	77	11.61	250	29.07
More than 15 ropani	219	46.04	194	29.22	271	31.52
Total	476	100.0	664	100.0	860	100.0

Source: VDC Profiles Dhunche, (2068), Ramche, (2067), and Basdilwa (2067).

Figure 4.6: Landholding Size of Households by Ecological Zones (in percent)

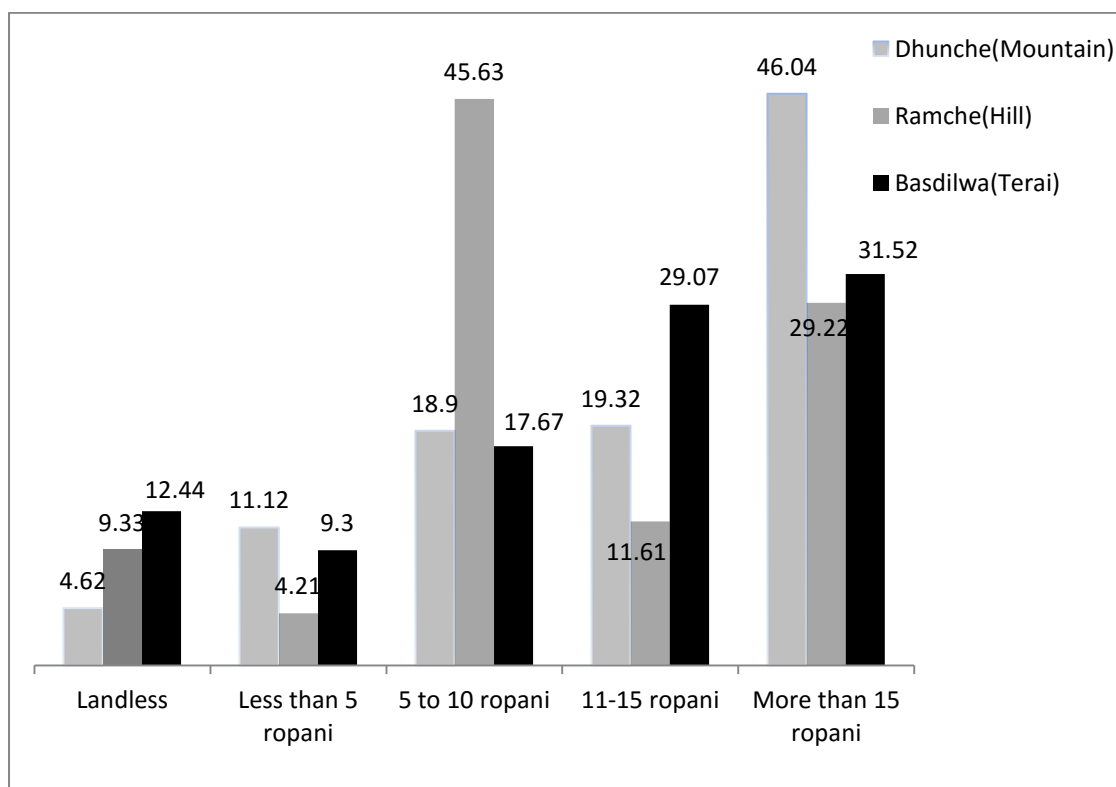


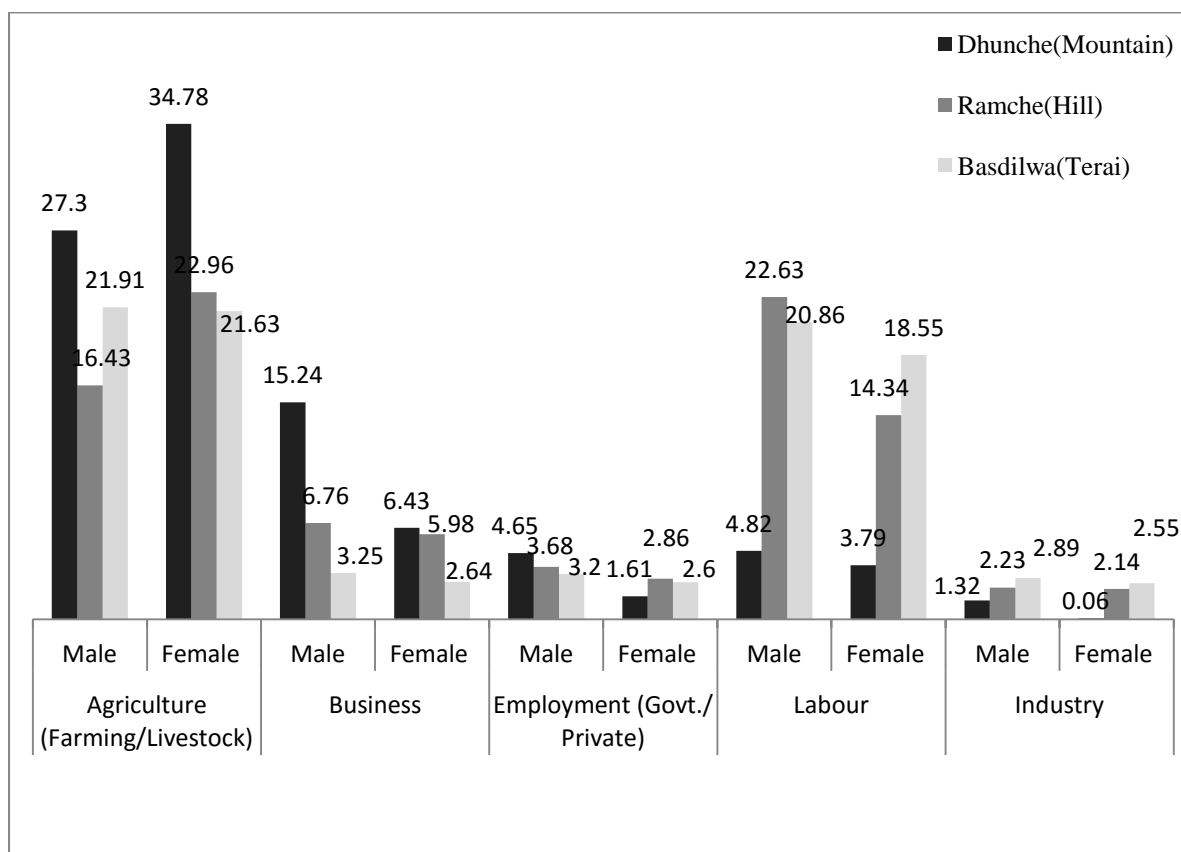
Table 4.7 and Figure 4.6 depict the fact that there is a variation in land holding size of the households between the studied VDCs. Of the total households, about 46.0 percent households have more than 15 ropani land in Dhunche (mountain) VDC followed by 11-15 ropani (19.3 percent). In Ramche (hill) VDC, more than 45.0 percent households have land between 5 and 10 ropani followed by more than 15 ropani which comprises about 29 percent households. The land holding size of more than 31.0 percent households in Basdilwa (terai) VDC is more than 15 ropani followed by 11-15 ropani which comprises about 29.0 percent (Table 4.7 and Figure 4.6).

Table 4.8: Occupation of Population by Ecological Zones (Age Group 15-59 Years)

Age Group	Sex	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
		No.	Percent	No.	Percent	No.	Percent
Agriculture (Farming/Livestock)	Male	475	27.30	401	16.43	874	21.91
	Female	605	34.78	560	22.96	863	21.63
Business	Male	265	15.24	165	6.76	130	3.25
	Female	112	6.43	146	5.98	105	2.64
Employment (Govt./ Private)	Male	81	4.65	90	3.68	128	3.20
	Female	28	1.61	70	2.86	104	2.60
Labour	Male	84	4.82	552	22.63	832	20.86
	Female	66	3.79	350	14.34	736	18.55
Industry	Male	23	1.32	54	2.23	115	2.89
	Female	1	0.06	52	2.14	102	2.55
Total	Male	928	53.34	1,262	51.73	2,079	52.11
	Female	812	46.66	1,178	48.27	1,910	47.89
Grand Total		1,740	100%	2,440	100%	3,989	100%

Source: VDC Profiles Dhunche, (2068), Ramche, (2067), and Basdilwa (2067).

Figure 4.7: Occupation of Population by Ecological Zones (Age Group 15-59 Years)



Agriculture is the dominant occupation of the studied VDCs. Engagement of female in agriculture in Dhuncha and Ramche is found greater than the male engagement, whereas in Basdilwa VDC male engagement in agriculture is slightly higher than female engagement (male 21.9 and female 21.6). After agriculture, business is the second occupation for the household members of Dhuncha and Ramche VDCs, whereas labour is the second occupation after agriculture in Basdilwa VDC (Table 4.8 and Figure 4.7).

CHAPTER FIVE

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF SAMPLED HOUSEHOLDS OF PEOPLE WITH CATARACT

The utilization of health services is likely to depend on demand factors such as income, cost of service and access to care, education, social norms and traditions, and quality and appropriateness of the service provided. Different health status, use of health care services and health care quality have been documented across a wide range of demographic and socio economic sub-groups (Nickens, 1995; Pappas, Queen, Hadden & Fisher, 1993; Otten, Teustch, Wiulliamson & Marks, 1990; Institute of Medicine, 2002; Schondroef, Hogue, Leinman & Rowley, 1992).

Many social, cultural and economic factors affect eye health. This chapter concentrates on those determinants that have been shown in a variety of settings to have the greatest influence -income, employment and occupation, education, housing, social cohesion and culture and ethnicity. A recent survey in Porirua confirmed that the wider community considers these factors, among others, to be important determinants of health including eye health (Porirua Health Partnership, 1998).

5.1 Demographic Characteristics

Characteristics of a population at risk for inadequate or inappropriate health care include age, gender, family size, education, occupation, and culture (Fiedler, 1981). Personal, cultural, and belief systems are crucial characteristics in an increasingly diverse rural population. Person or population characteristics can represent important barriers to access, especially if provider characteristics differ from patient characteristics, such as cultural or ethnic variances. Yet, the characteristics of rural people and the communities in which they live may not necessarily be a barrier to access. For example, community social capital enables better access to care (Hendryx, 2002).

Demographic changes affect health of the population of the country. From a population health perspective, health is defined quite broadly. The WHO has, rather ambitiously, defined good health as not merely the absence of disease, but a state of complete physical, mental and social well-being (WHO, 1981). Good eye health

enables people to participate fully in society and provides the means by which people can pursue their goals in life.

The causes of poor eye health are complex. A society understands that the determinants of eye health have an important influence on the strategies the society uses to maintain and improve the eye health care of its population (Mustard, 1996). The characteristics of certain populations make them more vulnerable to ill health than other populations (Woodward, 1996).

Research has documented a relationship between health inequalities and socio-economic inequalities in income, education, occupational status and employment status (Arber, 1997; Blaxter, 1990; Denton & Walters, 1999; Marmot, 1997; Townsend & Davidson, 1982). Studies also found that health status is a function of other social structural factors such as social support (Blaxter, 1990; House, Landis & Umberson, 1994; Kessler & McLeod, 1985), marital status (Walters, McDonough & Stroschein, 2002), age and gender (Arber & Cooper, 1999; Walters, Lenton & McKeary, 1995).

5.1.1 Age Composition

The prevalence of cataract also increases with age, although it often occurs earlier in life, and there is more of it. “Age” in this context almost certainly represents the cumulative effect of the complex interaction of exposure to many factors over time that contribute to the development of cataract. Some of these factors are known, others are not yet identified or confirmed (Chatterjee, Milton & Thyle, 1982). There is a significant association between age and noticeable decrease in vision by cataract (Kovai, Krishnaiah, Shamanna, Thomas & Roa, 2007). Robin, *et al.*, (2004) found that the use of eye care increased significantly with age, and this was attributed to the fact that most eye diseases manifest themselves during old age. The likelihood of using eye care services increased with advancing age due to the higher prevalence of disease such as diabetes, hypertension, cataract, and age-related maculopathy (Schaumberg, Christen, Glynn & Buring, 2000).

Table 5.1: Age Composition of Family Members of Sampled Households

Age Group	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
	Number	%	Number	%	Number	%
< 15 year	95	31.77	150	32.33	361	44.02
15-59 year	124	41.47	194	41.81	279	34.03
60 +	80	26.76	120	25.86	180	21.95
Total	299	100.00	464	100.00	820	100.00

Source: Field Survey, 2015.

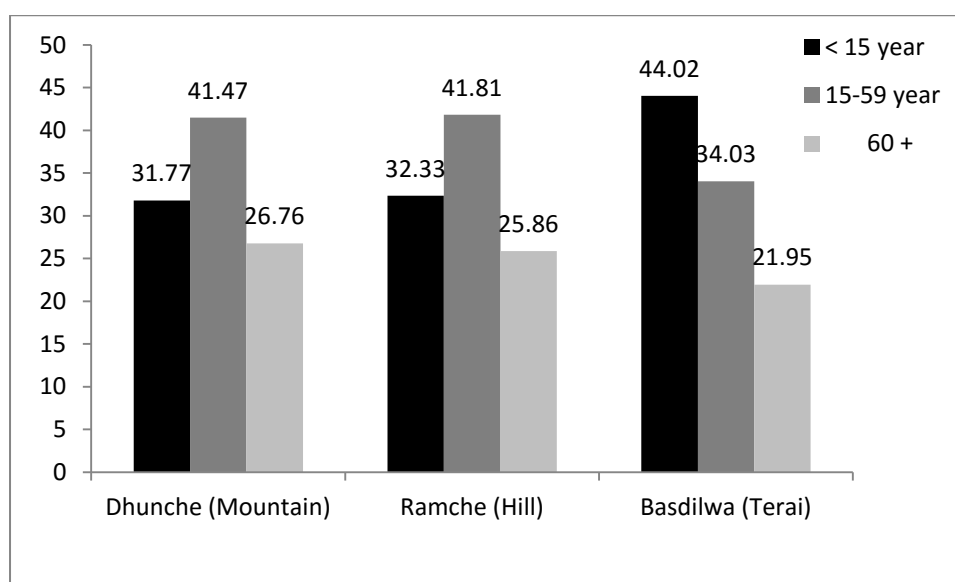
Figure 5.1: Age Composition of Family Members of Sampled Households

Table 5.1 and Figure 5.1 show the population distribution by age groups. According to this table, in Dhunche (mountain) VDC, there are 95 (31.77%) people under 15 years of age, 124 (41.47%) people aged 15-59 years age and 80 (26.76%) people aged 60 and above. The total population of sampled households of people with cataract in Dhunche (mountain) VDC is about 299. Ramche (hill) VDC comprises 150 (32.33%) people having less than 15 years age group, 194 (41.81%) people aged 15-59 years and 120 (25.86%) people aged 60 and above. The total population of sampled households of people with cataract in this VDC is 464. Likewise, in Basdilwa (terai) VDC, there are 361 (44.02%) people under 15 years, 279 (18.54%) people aged 15-59 years and 180 (21.95%) people aged 60 and above. The total population of sampled households of people with cataract in this VDC is about 820. Among these VDCs, the dependency load is (under 15 years, and 60 years and above) highest in Basdilwa (65.97%) followed by Dhunche (58.53%) and Ramche (58.19%).

5.1.2 Sex Composition

Since gender is a measure of both biological/genetic and social differences, it is likely that the health inequalities between men and women reflect both sex-related biological and social factors, and the interplay between them (Bird & Rieker, 1999; Verbrugge, 1989). In terms of social factors, researchers pose two general hypotheses to account for gender-based inequalities in health. The differential exposure hypothesis suggests that women report higher levels of health problems because of their reduced access to the material and social conditions of life that foster health (Arber, 1999; Ross & Bird, 1994) and also because of the greater stress associated with their gender and marital roles.

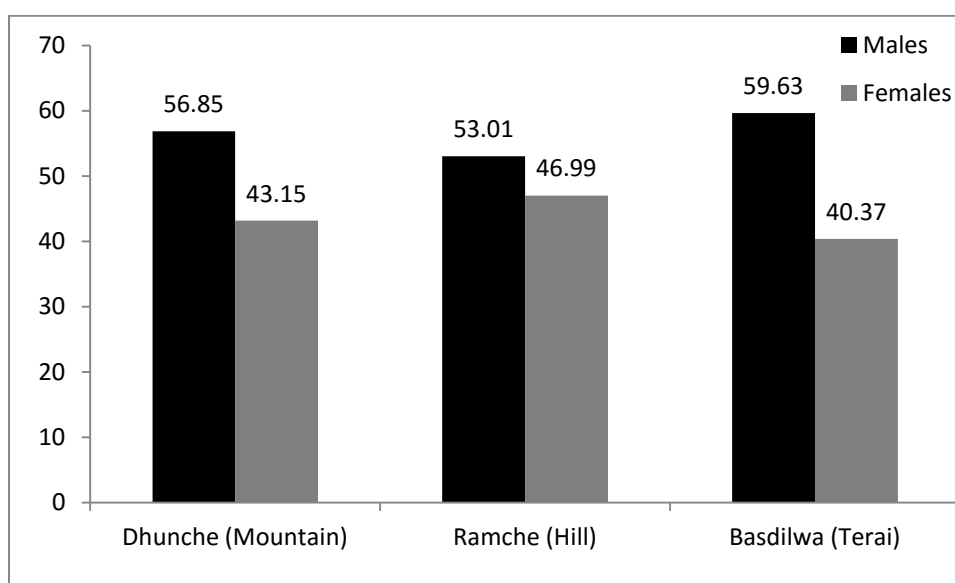
While women generally experience poorer health than men, the pattern of gender differences in health is varied (Arber & Cooper, 1999; Macintyre, Hunt & Sweeting, 1996; also see the special issue of *Social Science and Medicine* edited by Hunt & Annandale, 1999). Women have lower rates of mortality but, paradoxically, report higher levels of depression, psychiatric disorders, distress, and a variety of chronic illnesses than men (Baum & Grunberg, 1991; McDonough & Walters, 2001; Verbrugge, 1985). However, the direction and magnitude of gender differences in eye health vary according to the symptom/condition and phase of the life cycle (Macintyre, Hunt & Sweeting, 1996; Matthews, Manor & Power, 1999). A consideration of sex in the analysis of inequalities in health is important, as females commonly suffer social and economic vulnerability in many societies worldwide, which contributes to inequalities in health and access to health care (Oxaal and Cook, 1998). This may be due to longer life expectancy among women as many eye diseases are age-related, increased susceptibility to certain ophthalmic conditions or gender disparities in access to and utilisation of health services (Table 5.1.3).

Table 5.1.3: Sex Composition of Family Members of Sampled Households by Ecological Zones

Number	Sex	Dhuncha (mountain)		Ramche (hill)		Basdilwa (terai)	
		No.	Percent	No.	Percent	No.	Percent
	Males	170	56.85	246	53.01	489	59.63
	Females	129	43.15	218	46.99	331	40.37
Total		299	100%	464	100%	820	100%

Source: Field Survey, 2015.

Figure 5.2: Sex Composition of Sampled Families of People with Cataract by Ecological Zones



The population of cataract respondent households has been divided by sex for ecological zones. Of the total sampled households, there are 170 (56.8%) males and 129 (43.2%) females in Dhunche (mountain), 246 (53.0 %) males and 218 (47.0%) females in Ramche (hill) and 489 (59.6%) males and 331 (40.4 %) females in Basdilwa (terai). The male population has outnumbered the female population in all three VDCs (Table 5.1.3 and Figure 5.2).

5.1.3 Family Size and Types

The evidence from the medical literature on family size and eye health is largely based on observations of a relationship between family size and different health outcomes (Karmaus & Botezan, 2002).

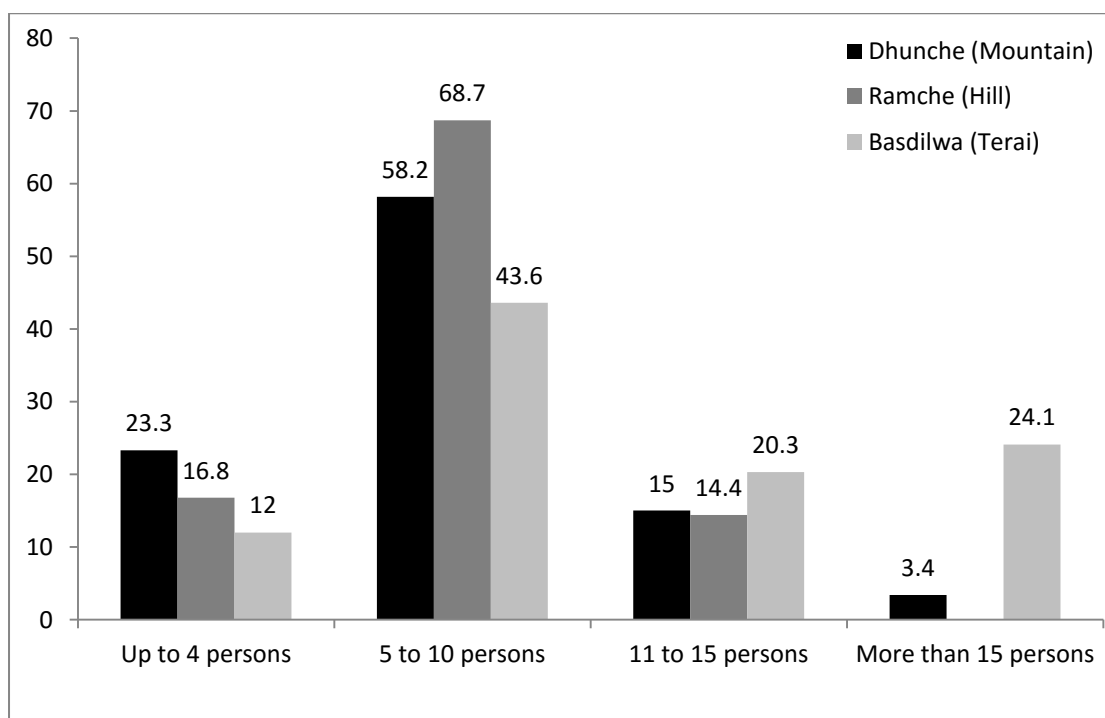
The family size is an important indicator for eye health. An increase in family size would be associated with cataract particularly for old age people due to their less affordability for eye health care. Old age people in larger families are likely to be exposed to cataract (Strachan, 1989).

Table 5.3: Family Size of Sampled Households by Ecological Zones

VDC	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
Family size	Household	Percent	Household	Percent	Household	Percent
Up to 4 persons	14	23.3	14	16.8	13	12.0
5 to 10 persons	35	58.2	57	68.7	47	43.6
11 to 15 persons	9	15.0	12	14.4	22	20.3
More than 15 persons	2	3.4	-	-	26	24.1
Total	60	100.0	83	99.9	108	100.0

Source: Field Survey, 2015.

Figure 5.3: Family Size of Sampled Households by Ecological Zones



In the sampled households of people with cataract, family size having 5-10 persons is in the greatest majority in all ecological zones having 68.7 percent in Ramche (hill) followed by Dhunche-mountain (68.2 percent) and Basdilwa-terai (43.6 percent) respectively. The share of family members having up to 4 members is higher in Dhunche-mountain (23.3 percent) and lower in Basdilwa-terai (12.0 percent). The share of family members having 11-15 members and more than 15 members is found higher in Basdilwa (terai) than other ecological zones comprising 20.3 percent and 24.1 percent respectively (Table 5.3 and Figure 5.3).

Table 5.4: Types of Families of Sampled Households by Ecological Zones

VDC	Single	Percent	Joint	Percent	Extended	Percent	Total
Dhunche(mountain)	13	21.7	45	75.0	2	3.3	60
Ramche (hill)	7	8.4	75	90.4	1	1.2	83
Basdilwa (terai)	4	3.7	93	86.1	11	10.2	108

Source: Field Survey, 2015.

Figure 5.4: Types of Families of People with cataract by Ecological Zones

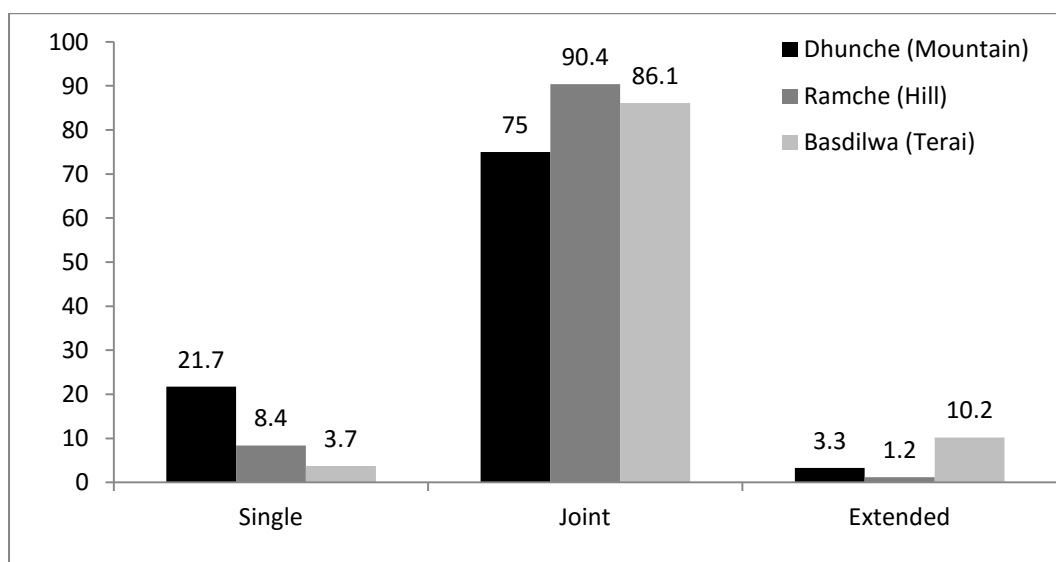


Table 5.4 and Figure 5.4 vividly depict the fact that in the study households joint family formed the greatest proportion in all ecological zones with 90.4 percent in Ramche (hill) followed by Basdilwa-terai (86.1 percent) and Dhunche-mountain (75 percent) respectively. The share of the single family is higher in Dhunche-Mountain (21.7 percent) and lower in Basdilwa –Terai (3.7 percent), whereas the share of extended families is higher (10.2 percent) in Basdilwa (terai) than other ecological zones.

5.1.4 Religion

Certain aspects of religion affect measures of illness, disease and death (Levin, 1994). There are a number of possible causal pathways, including through behaviour, psychosocial effects, the psychodynamics of belief systems, religious rites and faith, as well as transcendent explanations including ‘miracles’. Culture and health care preliminary focus on the dialectical relationship between cultural systems and the organization, institutional practices, power and thoughts of health care knowledge (Levin, 1994).

Table 5.5: Religion of Sampled Households by Ecological Zones

Households									
Religion	Hindu	Percent	Bauddha	Percent	Muslim	Percent	Christian	Percent	Total
Dhunche (mountain)	1	1.7	59	98.3	-	-	-	-	60
Ramche (hill)	73	88	8	9.6	-	-	2	2.4	83
Basdilwa (terai)	66	61.1	-	-	42	38.9	-	-	108

Source: Field Survey, 2015.

From the field survey, it becomes obvious that the people residing in different ecological zones follow different religions. In Ramche (hill) and Basdilwa (terai) the majority of the households follow Hinduism comprising 88.0 percent and 61.1 percent respectively. Contrary to it, in Dhunche (mountain), the overwhelming majority (98.3 percent) of the people follow Buddhism. Of the total sampled households (251), only two households of Ramche (hill) follow Christianity (Table 5.5).

5.1.5 Caste and Ethnicity

Difference in the causes of blindness by ethnicity could be related to inherent predisposition to the disease itself or because of difference in access to eye care services, which in turn could be due to lower socioeconomic status (Dandona & Dandona, 2001). An ethnic group is characterized by a distinctive social and cultural tradition maintained within the group between generations, a common history and origin, a sense of identification with the group and often a common genetic heritage (Last, 1995).

Ethnicity is strongly associated with almost every measure of health and disease. As it is one of the strongest cultural influences, ethnicity is often used as a proxy for 'culture' but this can lead to incorrect conclusions about the effect of cultural influences on health. Most important is the influence that a person's ethnic origin has on their subsequent social position and individual values and behaviour. For cultural identity, including elements such as language and land may protect individuals against poor health (Durie, 1995). In addition, certain protocols and beliefs that are part of an

ethnic group's cultural practices may protect health, while others can be harmful. The ways in which different ethnic groups value older members of the groups will affect the health and well-being of their older people (Durie, 1995).

Table 5.6: Households of Caste ethnicity of Sampled Households by Ecological Zones

Caste	Dhunche(mountain)		Ramche(hill)		Basdilwa(terai)	
	Household No.	Percent	Household No.	Percent	Household No.	Percent
Brahman	-	-	14	16.86	1	0.92
Chhetri	-	-	51	61.45	-	-
Dalit	-	-	6	7.23	27	25.0
Ethnic Group	59	98.33	10	12.05	1	0.92
Muslim	-	-	-	-	43	39.82
Others (Others: Thakur, Thami, Tharu, Mahato and Yadav)	1	1.67	2	2.41	36	33.34
Total Households	60		83	100.00	108	100

Source: Field Survey, 2015.

In the study regions, a single caste/ethnic group is found dominant in each ecological zone. Of the total sampled households of people with cataract (60) in Dhunche (mountain), 59 households (98.33 percent) comprise the ethnic group whereas in Ramche (hill) the dominant caste group is Brahman/Chhetri which comprises more than three-fourths (78.31 percent) of the total sampled households. Basdilwa (terai) VDC is found highly occupied by the Muslim community which shares about two-fifths (39.82 percent) of the total sampled households of people with cataract (Table 5.6).

5.1.6 Marital Status

The association between marital status and health has been quite an interesting area of research for more than a century and many scholars from different disciplines have

tried to establish the mechanism through which marriage and health are associated to each other. Over the last few decades, numerous studies have shown healthful advantages of being married (Rahman 1993; Zick & Smith 1991; Hu & Goldman, 1990). Many studies document that married adults are healthier than single adults (Pandey, 2010).

Table 5.7: Marital Status of Members of Sampled Households by Ecological Zones

VDC	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
Marital status	Number	Percent	Number	Percent	Number	Percent
Unmarried/Children	103	34.44	120	25.87	258	31.46
Married	190	63.54	322	69.39	556	67.80
Widow/widower	6	2.02	21	4.53	5	0.62
Divorce	-	-	1	0.21	-	-
Separate	-	-	-	-	1	0.12
Total	299	100.0	464	100.0	820	100.0

Source: Field Survey, 2015.

Of the total population of sampled households (299), more than three-fifths (63.5%) are married, whereas more than one-third (34.4) are unmarried/children in Dhunche (mountain) VDC. Of total, about 2.0 percent are in the widow/widower group in the same VDC. 69.4 percent of the total are married in Ramche (hill), whereas 25.9 percent are unmarried. There are about 4.5 percent of the widowed people and one person has been divorced. Likewise, more than two-thirds (67.8 percent) are married in Basdilwa (terai) whereas slightly less than one-third (31.46 percent) people are unmarried. In this VDC, 5 persons belong to the widow/widower group and one person has been divorced (Table 5.7).

5.2 Social Characteristics

The first step in assessing social determinants of health is to conduct a community assessment. Community assessments are important for several reasons. First, an assessment can provide an insight into the community context and ensure that interventions will be designed, planned, and carried out in a way that maximizes

benefits to the community. A community assessment also helps to ensure that all members of a partnership understand of the relationship between the social determinants and the health behaviors or outcomes of interest. Information from a community assessment can encourage others in the community to provide support or resources for the intervention efforts. A community assessment is considered more comprehensive than the more traditional “needs assessment” because it assesses not only the challenges and needs of the community but also the resources and strengths of the community health.

The relationship between socioeconomic conditions and health operates primarily in the other direction; that is, deprivation leads to poor health. People with strong family and community ties have better health than people who are socially isolated (Greenwood, Muir, Packham & Madeley, 1996; Rosenfield, 1997).

Social connectedness cannot be measured in itself, but insights are provided by examining factors that will influence it including employment, housing conditions, mobility, household structure, and communication networks and transports (Goodlad and Gibb, 1994).

5.2.1 Educational Status

The likelihood of seeking eye care is associated with higher levels of education. Education provides greater knowledge, hence more reasonable behaviour. It is also presumed to be due to the fact that educated people are members of the higher socio-economic class and therefore may have greater access to the eye care services and find them more affordable (Fotouhi, Hashemi, Mohammed & Barraza, 2006). There is a positive association between education and eye care use; the higher the level of education, the more likely and timely eye examination are performed, and the less likely that blindness will occur (Barraza, 1998). There is a significant association between the educational level and having an eye examination within two years among American women. Those with bachelor’s degrees or master’s degrees were generally more likely to have had an examination than those with primary or high school level of training (Schaumberg, Christen, Glynn & Buring, 2000).

A significant literature also explores the relationship between health status and educational outcomes. Most of these studies focus on how education affects health. However, several studies also analyze that the impact of health on education estimates

a simultaneous model and finds that both physical illness and psychological disorders have a causal impact that reduces years of schooling (Wolfe, 1985).

There are two broad explanations why education and health might be correlated: The first is that the observed positive correlation is specious and, in fact, caused by underlying third variables like parental or family background, parental investments into their children or differences in non-cognitive traits or time preferences.

Education and health are the two most important characteristics of human capital. Their economic value lies in the effects they have on productivity: both education and health make individuals more productive. Education and health have a considerable impact on an individual's well-being, as well. The wealth of nations is to a large extent determined by the educational attainment and the health status of its population. According to the 2003 Human Development Report, "Education, health, nutrition and water and sanitation complement each other, with investments in any one contributing to better outcomes in the others" (UN, 2003). Levels of education appear to be associated with underreporting of illness by patients (Mackenbach, Looman & van der Meer, 1996).

Education, in terms of years of schooling, has also been assessed as an independent predictor for the risk of blindness, often as a surrogate measure for economic status. Around three times higher risk of blindness has been reported in those with no schooling compared with those with schooling in studies from Nepal (Pokharel, Regmi, Shrestha, Negrel & Ellwein 1998).

Educational attainment is strongly related to subsequent occupation and income level, and poor social circumstances in early life are associated with significant chances of low educational achievement (Wadsworth, 1997). Educational achievement is not just a function of an individual's abilities and aspirations, but is influenced strongly by socioeconomic circumstances (Benzeval, Judge & Whitehead, 1995). An important feature of education level is that it is more easily improved by society than income, occupation and other indices of socioeconomic status. In addition, unlike other socioeconomic determinants, educational achievement cannot be lost once attained.

Table 5.8: Literacy Level of Sampled Households by Ecological Zones

Literacy	Sex	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
		No.	Percent	No.	Percent	No.	Percent
Illiterate	Male	44	14.72	59	12.71	54	6.58
	Female	51	17.05	88	18.97	95	11.59
Primary	Male	72	24.09	79	17.03	201	24.51
	Female	46	15.39	61	13.14	99	12.08
Lower secondary	Male	38	12.70	91	19.61	108	13.17
	Female	23	7.69	62	13.36	73	8.9
Secondary	Male	11	3.67	13	2.80	79	9.63
	Female	7	2.34	6	1.29	35	4.27
Higher education	Male	5	1.68	4	0.87	47	5.73
	Female	2	0.67	1	0.22	29	3.54
Total		299	100	464	100	820	100

Source: Field Survey, 2015.

Female illiteracy is higher than male illiteracy in each ecological zone- mountain, hill and terai comprising around 17.0 percent, 19.0 percent and 12.0 percent respectively. The male and female illiteracy comprise around one-third in Dhunche-Mountain (31.77 percent) and Ramche-Hill (31.68 percent). The number of people acquiring higher education is greater in Basdilwa (terai) than in mountain and hill regions (Table 5.8).

5.2.2 Treatment Seeking Behaviour

Villagers normally see the traditional faith healers first as they prescribe “culturally appropriate” and easily accessible ways of health care. Villagers have trust or belief in traditional faith healers as their techniques are rooted in the spiritual rather than a bacterial concept of diseases (Shrestha, 1979). According to Stone (1976), the *dhamis*, and *jhankris* treat people equally, irrespective of caste, age, sex and wealth, etc. Though she has identified certain limitations in the government supported western health care service systems, she does not identify the limitations of the traditional health care systems encompassing failures of shamanism. She does not explain how many people go to hospital as a last resort. Miller (1979) has noted that ordinary Nepalese consider the *jhankri* as their doctor and turn to him whenever any family member or child is ill because he is easily consulted without great expenses and without disruption of one’s daily pursuits. So, he has concluded by saying sociology of medical health care demands a larger and integrated focus like economics and

politics of health services, information seeking behaviour of the families where illness occurs, or a decision making process in rural households.

Treatment seeking behaviour of local people is influenced by illness perceptions, cultural practices and availability of health services. There are three treatment alternatives such as traditional healers, private practitioners/drug retailers and government health facilities (SHPs/HPs and Hospitals) around the Kushbadiya settlements across the five districts. Local people can seek help from only one source or multiple sources according to the nature of illness.

Local people respond to illness on the basis of description and severity of illness, past experience and causation of the condition. If illness is suspected to be affected by natural causes like weather, food, water and hot and cold imbalance, then illness is tried to be managed within households with their resources. Neem leaves and other herbs are used in fever and wounds. Asthma and other chronic illness are attempted to be treated with Jackal bile and blood. In case of joint pain and backache, jackal meat and local wine made using jackal bone stuff are given to the patient. Now-a-days, Jackal meat and wine are not easily available. Therefore, they begin to use pain killers bought from drug shops for headache, fever and backache. Many illnesses are attempted to be managed at home by using local resources and traditional belief systems.

Table 5.9: First Place of Treatment of Sampled Households by Ecological Zones

VDC	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
First Place of Treatment	No.of household	Percent	No.of household	Percent	No.of household	Percent
Dhami/Jhankri	54	90.0	16	19.3	2	1.9
Private Clinic	1	1.7	2	2.4	4	3.7
Health Post/Sub-Health post	1	1.7	61	73.5	53	49.1
Private Hospital	4	6.7	3	3.6	44	40.7
Home-made Herbs/Medicine	-	-	1	1.2	5	4.6
	60	100.0	83	100.0	108	100.0

Source: Field Survey, 2015

A greater proportion (90 percent) of the total sampled households in Dhunche (mountain) reported that they prefer to go first to the traditional healer (*dhami/jhankri*) for any kind of illness. The conditions for using traditional healers as

they reported are evil spirit-induced illness, sudden severe illness, illness not cured by medicine or hospital treatment, and almost all other types of illness. Likewise, the reasons for seeking help from traditional healers are traditional beliefs and practices, their easy availability around the settlement and affordability. The people's behavior of going for traditional healing for treatment was found decreased in Ramche (hill) and Basdilwa (terai). People of this region mostly preferred to go to the health posts and sub-health posts (Table 5.9).

5.2.3 Sources of Drinking Water

Water is the most vital liquid for maintaining life on the earth. Safe drinking water is a basic need for good health and also a basic right of human beings. Fresh water is already a limiting resource in many parts of the world. In the next century, it will become even more limiting due to increased population, urbanization and climate change (Jackson, *et al.*, 2001). Unfortunately, in developing countries like Nepal, the drinking quality of water is continuously being contaminated and hazardous for use by human beings.

Rural population still lack good access to safe drinking water. Access to safe water has implications for health and productivity. Therefore, sources of drinking water play an important role in reducing the incidence of water-borne diseases. In mountain and hill regions, private taps and public piped water (taps) are the main sources of drinking water respectively, whereas in the terai region, ground water such as the tube well/deep well is the main source of drinking water.

Table 5.10: Sources of Drinking Water of Sampled Households by Ecological Zones

VDC	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
	No. of household	Percent	No. of household	Percent	No. of household	Percent
Private tap	41	68.3	9	10.8	18	16.7
Public Tap	18	30.0	70	84.3	39	36.1
Well/Pond	1	1.7	3	3.6	-	-
Stone Tap	-	-	1	1.2	-	-
Tube well/deep well	-	-	-	-	51	47.2
Total	60	100.0	83	100	108	100.0

Source: Field Survey, 2015.

Of the total sampled households of people with cataract in Dhunche (mountain), more than two-thirds (68.3 percent) use private taps (piped water) as a major source for drinking and sanitation, whereas about 30.0 percent use public taps for the same purpose. In Ramche (hill), more than four-fifths (84.3 percent) households use public taps for drinking and sanitation purposes. On the contrary, about 47.0 percent households of Basdilwa (terai) use tube wells/deep wells for drinking and sanitation (Table 5.10).

5.2.4 Access of Toilet

Access to sanitation is a basic human right, yet almost a third of the world's population suffer on a daily basis from lack of access to a clean and functioning toilet. Without toilets, untreated human waste can impact the whole community, affecting many aspects of daily life and ultimately posing a serious risk to health. The issue runs deeper into societal impacts (Roma, 2010).

Table 5.11: Toilet Availability of Sampled Households by Ecological Zones

VDC	Dhunche (mountain)	Percent	Ramche (hill)	Percent	Basdilwa (terai)	Percent
Availability	Respondent household		Respondent household		Respondent household	
Yes	60	100	83	100	9	8.3
No	-	-	-	-	99	91.7
Total	60	100	83	100	108	100

Source: Field Survey, 2015.

In the study regions, all the sampled households of Dhunche (mountain) and Ramche (hill) have access to toilet facilities, whereas in Basdilwa (terai) only a negligible number of households (8.3%) have access to toilet facilities. Because of lack of access to toilet facilities, they defecate on open places around the settlement such as along the side of the road, paddy fields, canals and river banks. When asked why respondents do not use toilets, they replied that they had no land space to build the latrine and that they did not have the idea and capacity to construct such facilities in their own efforts.

Toilet availability of respondent households is an important indicator to determine health status including eye health status. Table 5.11 reveals that all of the sampled

households have toilet facilities in Dhunche (mountain) and Ramche (hill). But only 9 (8.3%) households have toilets in Basdilwa (terai) (Table 5.11).

5.2.5 Access to Eye Health Services

The issue of access to eye health care services is particularly acute. By definition, rural places have lower population densities, resulting in rural residents having to travel greater distances to access health care, and in health care providers being less proximate to the people they serve.

Accessibility of health care is influenced by physical and social resources. Moreover, beyond physical limitations, social resources are also integral to utilization. Social resources include economic level, social support, and group knowledge of illnesses and illness treatment resources (LaVela, Smith, Weaver & Miskevics, 2004). Access to eye health care services means timely use of personal health services to achieve the best health outcomes. Barriers to access result in unmet eye health care needs, delays in receiving appropriate care, and inability to get preventive services. Accessibility of eye health service is a major step towards prevention of blindness. The habit of eye care practice is the main indicator to find out accessibility of eye care service.

Table 5.12: Eye Check-up Habits of Sampled Households by Echological Zones

VDC	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
Place of treatment	No. of respondent	Percent	No. of respondent	Percent	No. of respondent	Percent
Eye Hospital	7	11.7	3	3.6	36	33.3
Eye camp	21	35.0	17	20.5	25	23.1
Eye clinic	11	18.3	15	18.1	3	2.8
None of them	21	35.0	48	57.8	44	40.7
Total	60	100.0	83	100.0	108	100.0

Source: Field Survey, 2015.

Figure 5.5: Eye Check-up Habits of Sampled Households by Echological Zones

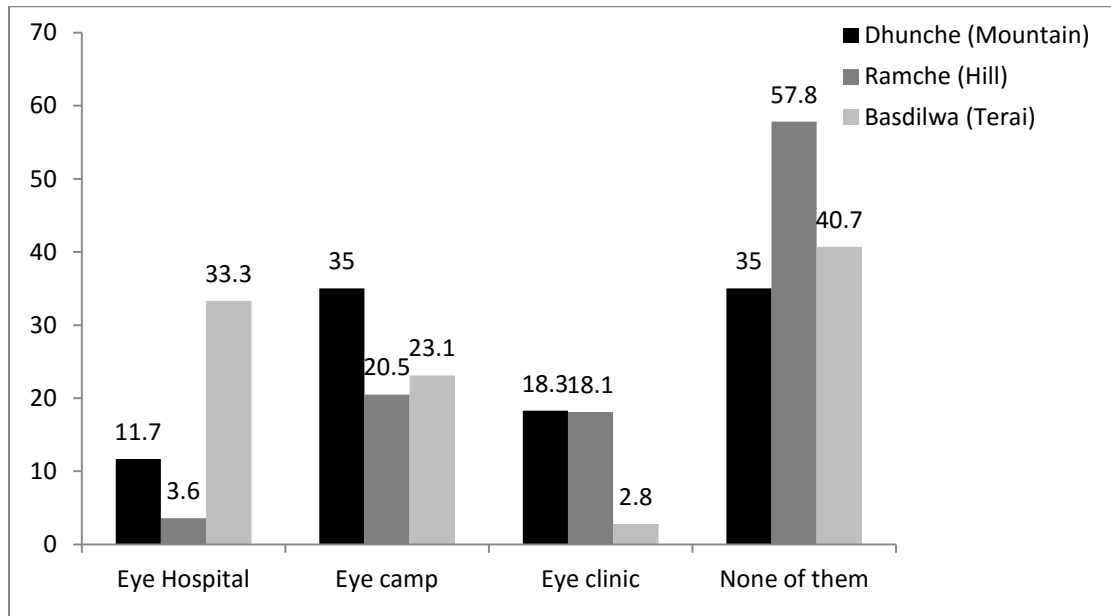


Table 5.12 and Figure 5.5 depict the fact that out of the total sampled households, about 35.0% in Dhunche (mountain), 57.8% in Ramche (hill) and 40.7% in Basdilwa (terai) reported that they did not go to any eye hospital and clinic for an eye check-up. The Chi square (χ^2) test indicates that there is a highly significant relationship (significance of $0.000 < 0.01$) between the place of treatment and respondent's education (Appendix XI).

5.3 Economic Characteristics

Economic status has been found to influence the use of eye care services. Affordability of eye care services is influenced by income levels and cost of the services in both the developing and developed nations, finances can definitely influence the utilization of ophthalmic health care. The use of eye care increased significantly with an increase in income (Robin, *et al.*, 2004). The people having higher household incomes are likely to have more frequent eye examinations.

In many rural areas of the world, poverty is a major issue; therefore, residents are not able to afford the cost of eye care services and as a result conditions which could have been treated at an early stage are not attended to and may result in low vision and blindness (Oduntan, 2005).

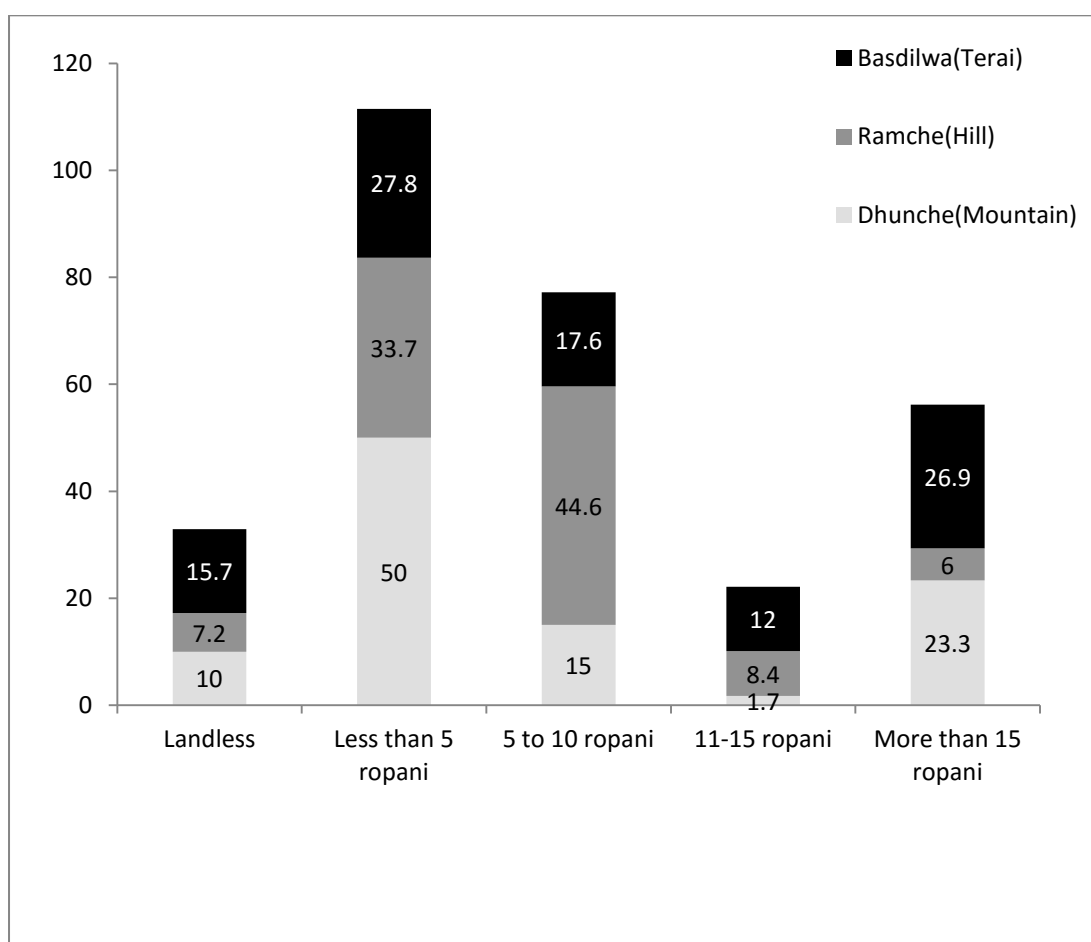
5.3.1 Landholding Size

Table 5.13: Landholding Size of Sampled Households by Ecological Zones

VDC	Dhunche(mountain)		Ramche(hill)		Basdilwa(terai)	
Landholding size (in ropani)	No.of respondent	Percent	No.of respondent	Percent	No.of respondent	Percent
Landless	6	10.0	6	7.2	17	15.7
Less than 5 ropani	30	50.0	28	33.7	30	27.8
5 to 10 ropani	9	15.0	37	44.6	19	17.6
11-15 ropani	1	1.7	7	8.4	13	12.0
More than 15 ropani	14	23.3	5	6.0	29	26.9
Total	60	100.0	83	100.0	108	100.0

Source: Field Survey, 2015.

Figure 5.6: Landholding Size of Sampled Households by Ecological Zones



Of the total sampled households, 10.0 percent in Dhunche (mountain), 7.2 percent in Ramche (hill) and 15.7 percent in Basdilwa (terai) are landless. In Dhunche (mountain), about 50.0 percent households have 5-10 ropani land, whereas in Ramche (hill) about 45.0 percent households have 5-10 ropani land. Similarly, in Basdilwa (terai), the households having less than 5 ropani land are 27.8 percent, whereas 26.9 percent households have more than 15 ropani land (Table 5.1.3 and Figure 5.6).

5.3.2 Occupation

Employment is one of the most important determinants of health. Having a job or an occupation is an important determinant of self-esteem. It provides a vital link between the individual and society and enables people to contribute to society and achieve personal fulfillment (Marmot, Wilkinson & Editors, 2003). The World Health Organisation identifies a number of ways in which employment benefits eye health (Mathers & Schofield, 1998). These include the provision of structured time, social contact and satisfaction arising from involvement in a collective effort. Therefore, the loss of a job or the threat of losing a job is detrimental to health. The type of job a person has and the working conditions he or she is exposed to will also affect health. It is also important to consider the impact that employment has on other aspects of people's lives that are important for eye health for example, family life, social life and caring responsibilities for family members (Bartley, 1994).

Employment exerts impact on health, which in turn affects the achievement of good employment. A healthy workforce is a prerequisite for economic success and improvements in eye health will help to increase efficiency and productivity. The main factor determining adequate income is participation in paid employment (Department of Statistics, 1991). There is also good evidence that unemployment is detrimental to both physical and eye health (Bartley, 1994; Barnett, Howden-Chapman & Smith, 1995; Mathers & Schofield, 1998; Morrell, Taylor & Kerr, 1998).

Table 5.14: Occupation of Sampled Households by Ecological Zones

Age Group	Sex	Dhunche(mountain)		Ramche(hill)		Basdilwa(terai)	
		No.	Percent	No.	Percent	No.	Percent
Agriculture (Farming/Livestock)	Male	33	15.13	56	16.51	152	32.20
	Female	32	14.68	57	16.81	43	9.11
Business	Male	5	2.29	16	4.72	11	2.33
	Female	6	2.75	16	4.72	10	2.11
Employment (Govt./ Private)	Male	20	9.18	23	6.79	34	7.21
	Female	16	7.34	12	3.54	9	1.91
Labour	Male	60	27.53	102	30.10	160	33.89
	Female	41	18.81	55	16.22	27	5.73
Industry/ Remittance	Male	4	1.84	2	0.59	26	5.51
	Female	1	0.45	-	-	-	-
Total	Male	122	55.96	199	58.70	383	81.14
	Female	96	44.04	140	41.30	89	18.86
Grand Total 1029		218	100%	339	100%	472	100%

Source: Field Survey, 2015.

Labour is the main occupation of the population in Dhunche (mountain). Of the total population (1,029) between the age group of 15-59, about 46.3 percent are engaged in labour. They primarily work as labourers in trekking, road construction, fire wood collection, and as porters. After labour, agriculture is another important occupation of the people of this VDC, which occupies about 29.7 percent in total. In Ramche (hill) VDC also, labour is the dominant occupation which shares about 46.3 percent where agriculture comprises about one-third (33.3 percent) in total. Likewise, in Basdilwa (terai) VDC, about 39.5 percent of the total sampled population are engaged in labour, whereas in agriculture about 32.2 percent population is engaged. This indicates the fact that in all the studied VDCs, labour is the main occupation followed by agriculture (Table 5.14).

5.3.3 Sources of Income

Apart from the association of socioeconomic status with causes of blindness itself, some studies have found an association of socioeconomic status with the prevalence of eye diseases that can potentially lead to blindness (Dandona & Dandona, 2001). Income is the single most important determinant of health. There is a persistent correlation worldwide between low income and poor health. Poverty has long been recognized as an important determinant of ill health. Poverty excludes people socially and materially from full participation in the life of their community. The way to alleviate the effects of poverty on health is to alleviate poverty itself (Black, 1993). Sources of income of the people determine the capacity of affordability of health services and particularly in the treatment of established disease. Adequate income is a prerequisite for many other determinants of health, for example, adequate housing, a nutritious diet and educational opportunities. Low family income affects health directly by precluding the purchase of adequate basic necessities such as adequate shelter, food and warmth, and limiting people's ability to participate in society. Currie and Madrian (1999) has highlighted that there is a significant relationship between health and labour income.

Table 5.15: Major Source of Income of Sampled Households by Ecological Zones

VDC	Dhunche(mountain)		Ramche(hill)		Basdilwa(terai)	
Major source of income	No.of household	Percent	No.of household	Percent	No.of household	Percent
Government service	5	8.3	7	8.4	1	0.9
Agriculture	18	30.0	26	31.4	55	50.9
Business/Trade	13	21.7	5	6.0	2	1.9
Labour	19	31.7	35	42.2	35	32.4
Private service	2	3.3	2	2.4	8	7.4
Remittance	2	3.3	4	4.8	4	3.7
Others	1	1.7	4	4.8	3	2.8
Total	60	100.0	83	100.0	108	100.0

Source: Field Survey, 2015.

Of the total sampled households (60), the major source of income in Dhunche (mountain) VDC is labour (31.7 percent) followed by agriculture (30.0) and business/trade (21.7). According to the sampled respondents, major sources of income in Ramche (hill) are labour which occupies about 42.2 percent followed by agriculture (31.4 percent). Simultaneously, the major source of income of the sampled households in Basdilwa (terai) VDC is agriculture where more than half (50.9 percent) of the total households are engaged. After agriculture, labour is another important major occupation of the sample households, which shares about slightly less than one-third (32.4 percent) as shown in Table 5.15.

Table 5.16: Annual Income of Sampled Households by Ecological Zones

VDC	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
Annual income (In Rs)	No.of household	Percent	No.of household	Percent	No.of household	Percent
<50,000	24	40.0	47	56.6	47	43.5
50,000-1,00,000	6	10.0	13	15.7	16	14.8
1,00,000-1,50,000	2	3.3	1	1.2	10	9.3
1,50,000-2,00,000	24	40.0	17	20.5	8	7.4
>2,00,000	4	6.7	5	6.0	27	25.0
Total	60	100.0	83	100.0	108	100.0

Source: Field Survey, 2015.

Of the total sampled households (60), about 40.0 percent households have the annual income of less than Rs.50,000 in Dhunche (mountain). Another 50.0 percent households also have annual income of Rs.1,50,000-2,00,000 in this VDC. In Ramche (hill) VDC, the majority of the households (56.6 percent) have annual income of less than Rs.50,000 followed by 20.0 percent households having annual income of Rs.1,50,000-2,00,000. In Basdilwa (terai) VDC also, the share of annual income of less than Rs.50,000 is high (43.5 percent) followed by the income level greater than Rs.2,00,000 (25.0 percent) which is shown in Table 5.17. In this study, attempts were made to test the association between the level of income and knowledge about cataract surgery. Since the χ^2 value of significance is 0.485 which is greater than 0.05, so there is no significant association between the level of income and knowledge about cataract surgery (Table 5.16; Appendix XI).

5.3.4 Food Sufficiency

Food is the main basic need of human population. Adequate diet and good nutrition are important to the conservation of sight (Black, Browne, Van Der Meulen, Jamieson, Copley, & Lewsey, 2009). A vision of healthy people always includes a multitude of ways to access healthy food, but there are many other benefits that arise from food sufficiency. Food deficiency produces various negative consequences which can quickly affect the health of families and communities.

Table 5.17: Food Sufficiency of Sampled Households by Ecological Zones

VDC	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
Food sufficiency	No.of household	Percent	No.of household	Percent	No.of household	Percent
<3 months	31	51.7	22	26.5	33	30.6
3-6 months	9	15.0	19	22.9	9	8.3
6-9 months	1	1.7	12	14.5	3	2.8
9-12 months	14	23.3	26	31.3	24	22.2
Surplus	5	8.3	4	4.8	39	36.1
Total	60	100.0	83	100.0	108	100.0

Source: Field Survey, 2015.

Of the total sampled households (60), about 36.0 percent have surplus food production in Basdilwa (terai) VDC, whereas the proportion is very low in Dhunche (mountain) and Ramche (hill) VDC where only 8.3 percent and 4.8 percent households have food sufficiency respectively. About 51.7 percent of households have barely enough food for 3 months in Dhunche, 26.5 percent in Ramche and 30.6 percent in Basdilwa VDC. The households having food sufficiency for less than six months account about 66.7 percent in Dhunche, 49.4 percent in Ramche and 38.9 percent in Basdilwa. In this study, an attempt was made to test the association between educational status and food sufficiency. The χ^2 value of significance level is very small (significance of 0.000), so there is a highly significant relationship between the level of food sufficiency and the educational status. That means literate people have more food sufficiency than the illiterate people after cataract (Table 5.17; Appendix XI).

5.3.5 Availability of Eye Care Service of Sampled Households by Ecological Zones

Availability of eye care services varies from country to country in many regions of the world, and the number of eye care providers per million population in the richest countries may be nine times higher than in the poorest countries (Silva, Bateman & Contreras, 2002). Even within a country, availability of services may vary from province to province, from district to district, even from one community to another. Poor practitioner-to-patient ratios, absence of eye-care personnel, inadequate facilities, poor state funding and lack of educational programs have been considered as the hallmarks of eye care, with preventable and treatable conditions being the leading cause of blindness (Naidoo, Savage & Westerfall, 2006). Also, the disproportionate distribution of optometry and ophthalmological services between rural and urban areas in many developing countries may increase the rate of visual impairment in the rural areas.

Table 5.18: Availability of Eye Care Service for Sampled Households by Ecological Zones

VDC	Dhunche(mountain)		Ramche(hill)		Basdilwa(terai)	
Eye care service	No.of household	Percent	No.of household	Percent	No.of household	Percent
Good	-	-	-	-	3	2.8
Moderate	32	53.3	-	-	6	5.6
Poor	28	46.7	83	100.0	99	91.7
Total	60	100.0	83	100.0	108	100.0

Source: Field Survey, 2015.

Attempts were made to understand the perception of respondents regarding the availability of eye care services in their locality. Of the total sampled households (60) in Dhunche (mountain), no one judged availability of health care services as good, while 53.3% judged it as moderate and 46.7% judged it as poor. Of the total sampled households (83) in Ramche (hill) no one judged it as good and moderate, all the respondents perceived available facilities as poor. Likewise, of the total sampled households (108) in Basdilwa (terai), only 2.8% rated it as good, 5.6 percent rated it as moderate and the overwhelming majority (91.7%) rated it as poor (Table 5.18).

CHAPTER SIX

STATUS OF PEOPLE WITH CATARACT AND EFFECTS OF CATARACT ON THEIR SOCIO-ECONOMIC DEVELOPMENT

Socio-economic status and eye health, including vision disability resulting from visual impairment and blindness are thought to be directly and often indirectly linked. The majority of preventable eye health problems, such as cataract, trachoma, conjunctivitis and others, which cause visual impairment and may lead to blindness in developing countries, are closely related to socio-economic status mainly through a lack of sanitation, poor or inadequate water supply, malnutrition and the lack of education—all of which persist in both rural areas (UN Habitat, 2007).

The relationship between poverty and eye health can be interpreted as being two-fold, in the sense that poverty may be a cause of poor eye health and poor eye health may lead to or deepen poverty. The dire poverty confronting many developing countries has drastic implications for blindness, visual impairment and eye health services. People from impoverished backgrounds and environments are more likely to experience conditions which contribute and lead to impaired vision (Khanna, Raman and Rao, 2007). For example, some eye diseases such as trachoma and cataract are perceived as diseases affecting the poor disproportionately, due to their association with poor infrastructure, such as dirty water supply, overcrowding and lack of hygiene in poor communities. On the other hand, when individuals go blind or are severely visually impaired their accessibility to education and other opportunities are affected—mainly due to a loss of income and lack of funds (Khanna, Raman and Rao, 2007). Severely visually impaired and blind individuals are also refrained from accessing and utilising available public services which are often limited in poorer countries (Khanna, Raman & Rao, 2007). Therefore, visual impairment is both the cause and consequence of poverty.

The limitations for carrying out daily activities are reduced by cataract. Cataract surgery can prevent reduced autonomy, and delay dependency situations. Cataract surgery has been proven to be effective in improving quality of life, especially in physical aspects, according to the improvement in role limitation due to physical problems. Visual acuity improves after surgery. Disease specific instruments should

be used as the outcome measure in clinical practice after cataract surgery (Cabezas, León, *et al.*, 2008).

6.1 Status of People with Cataract

The present status of people with cataract in the studied region is discussed below:

At the time of data collection, attempts were made to collect the visual acuity of the sampled people with cataract. Visual acuity was measured by using the Snellen's vision chart.

Table 6.1: Vision of Cataractous Eyes of the Respondents by Ecological Zones

VDC	Dhunche(mountain)				Ramche(hill)				Basdilwa(terai)			
Vision	Right eye	Percent	Left eye	Percent	Right eye	Percent	Left eye	Percent	Right eye	Percent	Left eye	Percent
less than 3/60	29	40.85	33	46.48	36	34.95	41	39.81	85	40.67	95	45.45
less than 6/60	33	46.48	34	47.89	58	56.31	54	52.43	124	59.33	111	53.12
less than 6/18	8	11.27	4	5.63	8	7.77	7	6.79	0	0.0	3	1.43
more than 6/18	1	1.40	0	0.0	1	0.97	1	0.97	0	0	0	0
Total	71	100.0	71	100.0	103	100.0	103	100.0	209	100.0	209	100.0

Source: Field Survey, 2015.

The majority of people with cataract had visual acuity less than 6/60 in both eyes. None of the people with cataract in Basdilwa had visual acuity greater than 6/18. Only a small proportion of people in Basdilwa had visual acuity greater than 6/18. Only one person with cataract each in Dhunche and Ramche had visual acuity greater than 6/18 (Table 6.1).

Table 6.2: Period of Visual Impairment with Cataract by Ecological Zones

VDC	Dhunche(mountain)		Ramche(hill)		Basdilwa(terai)	
Period	No.of Respondent	Perce nt	No.of respondent	Perce nt	No.of respondent	Perce nt
<3month	1	4.2	1	2.9	3	4.3
3-6 month	-	-	1	2.9	21	30.4
6-9 month	9	37.5	21	61.8	32	46.4
9-12 months	7	29.2	5	14.7	8	11.6
More than one year	7	29.2	6	17.6	5	7.2
Total	24	100.0	34	100.0	69	100.0

Source: Field Survey, 2015.

From the population-based survey of the sampled people with cataract in all the ecological zones, it was observed that a larger proportion of people with cataract had had visual impairment for the past 6-9 months, which occupied about 37.5% in Dhunche, 61.8% in Ramche and 46.4% in Basdilwa. During the focus group discussions, the participants reported that the main reason behind this was that the people had been waiting for free surgical eye camps due to their poor socio-economic conditions. The proportion of visually impairing cataract with a history of less than 3 months was lower than other categories in all three ecological zones (Table 6.2).

Table 6.3: Near Vision of Sampled People with Cataract by Ecological Zones

VDC	Dhunche(mountain)		Ramche(hill)		Basdilwa(terai)	
Near vision	Number	Percent	Number	Percent	Number	Percent
Good	1	4.2	-	-	-	-
Poor	22	91.7	34	100.0	69	100.0
Moderate	1	4.2	-	-	-	0.0
Total	24	100.0	34	100.0	69	100.0

Source: Field Survey, 2015.

All the sampled respondents from Ramche and Basdilwa reported that they had poor near vision after cataract while in Dhunche 91.7% reported the same. In Dhunche one respondent reported that he had good near vision after cataract, whereas 3 respondents reported moderate near vision. All of the respondents had reported that they had poor distance vision after cataract in both eyes (Table 6.3).

6.2 Effects of cataract on Socioeconomic Development

6.2.1 Effect on Family Behavior

The behavior of the family members towards people with cataract becomes changed at a time when the patient loses vision and cannot perform household activities. In addition, individuals who have impaired vision following eye diseases such as cataracts often need assistance from their family members and other people to conduct daily tasks as it becomes increasingly difficult for them to move around (Lee, Smith and Kington, 1999). Without the ability to move around, including the ability to see where you are going, affected individuals are forced to stay at home; furthermore, they require the help of an extra able-bodied person to assist them. Thus, Lee, *et al.*, argues that there is a significant association between visual impairment and a person's functionality (Lee, Smith & Kington, 1999).

Table 6.4: Family Behavior after Cataract by Ecological Zones

VDC	Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
Family behavior	No.of household	Percent	No.of household	Percent	No.of household	Percent
Good	1	4.16	1	2.94	1	1.45
Poor	4	16.67	-	-	1	1.45
Moderate	19	79.17	33	97.06	67	97.10
Total	24	100.0	34	100.0	69	100.0

Source: Field Survey, 2015.

In all the three ecological zones, the respondents reported that they have found moderate family behavior after cataract. No respondent has reported poor behavior from family members in Ramche; however, 4 respondents and 1 respondent each from Dhunche and Basdilwa reported that they have found poor behaviour from the family after cataract. Very few respondents found good behavior after cataract from their family members (Table 6.4)

6.2.2 Effects on Employment and Material Wealth

The factors that are affected by visual impairment include physical mobility, functionality, education or academic status and social interaction and overall functionality. These disabling factors of blindness prevent affected individuals from finding employment and securing a good life for themselves, and thus they become more vulnerable. At the time of the field survey, the sampled respondents reported that due to cataract, they are unable to take employment and enjoy material wealth as shown in the following reasons:

- Disability results in: loss of employment, reduced productivity, less rewarding jobs, unemployment especially for women, lower salaries
- In addition disability limits employment for other household members as more time is spent on care-giving
- Restoring sight results in work resumption and enabling caregivers to find employment
- Households affected by disability, including visual impairment have: lower average incomes, more severe income loss, lower savings, higher debt and low asset and land ownership, and lower housing and amenity standards
- Households also suffer from hunger and food insecurity

6.2.3 Effects on Education and Health

The respondents perceived that they are deprived from taking informal education due to cataract. The people with cataract have poor hygiene and sanitation and have deteriorated health status. They have experienced difficulties in cleaning water pots before pouring and washing hands with soaps. The disabled have: numerous barriers to healthcare, limited access to rehabilitation services, greater risk of accidents and limited outreach and treatment services. The frequency of taking bath by people with cataract reduced after cataract from once a week to twice a week in many households. They have perceived difficulties in washing hands before taking food, after toilet, after caring for livestock, after working in the farm and after washing dishes.

6.2.4 Increased Drudgery

The survey instrument was designed to know the perception of the respondent about the effects of cataract on the increment of drudgery (painful efforts). The result has supported the negative impact of the cataract. For instance, all the respondents in study regions believe that after cataract, it has increased drudgery associated with water fetching, and collection of fuel-woods. They also feel relatively uncomfortable in performing household duties like sending children to school on time as they are receiving no help from other family members. In addition, during the field survey, respondents have reported their increased drudgery particularly in the following areas:

- Access to credit after cataract
- Intra household equality after cataract
- Equality in society after cataract
- Social activities
- Self-esteem and stigma
- Empowerment after cataract
- Decision-making power in and outside household
- Recreation facilities after cataract

6.2.5 Decreased Functionality and Quality of Life (QoL)

Vision loss severely affects multiple dimensions of people's lives. Healthy eyes and good vision play a critical role in the development of an individual and how the person interacts with others in society, therefore, vision impacts negatively on an individual's quality of life and their functionality, and has major impacts on the global economy. This is confirmed by numerous studies that show that visual impairment has a major impact on the quality of life of individuals (Payot and Barrington 2011). For most patients, going blind or losing their vision means adaptation to new conditions and way of life. The respondents expressed their views that vision impairment has threatened to deter the individual from being able to conduct daily tasks and maintaining the dignity and respect which is earned by the ability of being independent. Those who are already affected by the cataract suffer from other health problems in old age. Other factors that are affected by visual impairment include physical mobility, functionality, education or academic status and social interaction

and overall functionality. These disabling factors of blindness prevent affected individuals from finding employment and securing a good life for themselves, and thus they become more vulnerable.

If the person required to care for the blind person is a family member, the affected household is forced to live without the income of the two individuals who have been pre-occupied by the needs of blindness.

6.3 Knowledge and Practice of People with Cataract

The generally lower levels of cataract-related knowledge and awareness among people may result in low demands for eye health care services. To realize the benefits of seeking care one must know where and when to seek appropriate eye health care. Because of prevailing illiteracy, the low level of education and poor economic condition one could not get knowledge and information about eye health problems and essential care and treatment. Many households were found to be unaware of what types of eye services are available in their surroundings. Because of this one did not have knowledge that he was suffering from cataract for last four months. Now-a-days, he is seeking traditional faith healing and traditional medicine (home made herbs) for cataract (Case study 1).

Table 6.5: Knowledge and Practice of People with cataract by Ecological Zones

Indicator		Dhunche (mountain)		Ramche (hill)		Basdilwa (terai)	
		Number	Percent	Number	Percent	Number	Percent
Knowledge about cataract	Yes	7	29.17	8	23.53	35	50.72
	No	17	70.83	26	76.47	34	49.28
	Total	24	100	34	100	69	100
Knowledge about cataract surgery	Yes	5	20.83	4	11.76	28	40.58
	No	19	79.17	30	88.24	41	59.42
	Total	24	100	34	100	69	100
Annual eye check-up	Yes	1	4.17	-	-	-	-
	No	23	95.83	34	100	69	100
	Total	24	100	34	100	69	100
Jharphuk for cataract treatment	Yes	23	95.83	27	79.41	15	21.74
	No	1	4.17	7	20.59	54	78.26
	Total	24	100	34	100	69	100
Device/Glass for near vision	Yes	-	-	-	-	-	-
	No	24	100	34	100	69	100
	Total	24	100	34	100	69	100

Source: Field Survey, 2015

About three-fourths (70.83%) respondents in Dhunche do have not knowledge about cataract, whereas 76.47 percent respondents in Ramche and 49.28 percent respondents in Basdilwa do have not knowledge about cataract and being blindness. Only about 20.83 percent respondents in Dhunche, 11.76 % in Ramche and 40.58% in Basdilwa have knowledge about cataract surgery. Though they have knowledge about cataract, still they are waiting for free eye camps for surgery. The tendency of an annual eye check-up is very poor in the study area. Except Basdilwa (terai), the majority of the people with cataract still go to jharphuk/traditional healers. No sampled patient with cataract has used near devices/glasses for near vision (Table 6.5).

6.4 Barriers Preventing the People from Accessing and Utilising Eye Health Services

The eye health state in Nepal is considerably alarming. The majority of the people in Nepal are still burdened by treatable and preventable eye diseases, amongst other factors. Usually, poor people are unable to access the health services that they require. During focus group discussions and key informant surveys, the following barriers were identified:

6.4.1 Clinical Barriers

Clinical barriers was perceived as major barriers that prevent the poor from accessing and utilising eye health services include lack of skilled public sector health practitioners, inadequate equipment and the lack of appropriate facilities to provide quality services. According to the participants, these barriers result in people, often the poor, not receiving quality care that is adequate and appropriate.

6.4.2 Knowledge Barriers

Apart from the clinical barriers to accessing eye health services, the lack of eye health knowledge is another barrier. The majority of people in studied VDCs, especially those from poor households are illiterate and uneducated when it comes to eye health. The respondents opined that good quality information and advice concerning eye health have not been widely available to the public. There are individuals who believe blindness is a natural part of ageing and therefore nothing should be done about it. The lack of knowledge not only prevents people from accessing services, but it also perpetuates the conditions which are detrimental to their well-being. Participants pointed out that people who have been educated on eye health and the services available are more likely to undertake surgery or any type of vision correction as compared to those who do not receive education and remain illiterate. People were not aware that they lost vision owing to cataract. They do not know of cataract surgery which can help them see by restoring their eyesight either (Case study 1).

6.4.3 Financial Barriers

Besides inadequate or a lack of eye health knowledge, one of the most common barriers to accessing eye health services for the poor is finance. The majority of individuals who are visually impaired in developing countries fail to meet direct and indirect costs of financing their health care needs. Lack of funds play a huge role in the uptake of health services. Patients experience difficulties paying for treatments, transportation, and often they are unable to take time off from work to visit the health facilities—because they fear losing daily wages. People with poor economic status people cannot arrange money for surgery so, the respondents have been waiting for free eye camps for surgery and facing difficulties with far and near vision (Case Study 2).

6.4.4 Geographical Barriers

The participants of the discussion express their views that health care access is not only influenced by socio-economic factors; however the patient's geographical disposition is another determining factor. People in urban areas have multiple health care service providers to choose from in comparison to the rural communities, who often depend on inadequately equipped health facilities. People in rural communities travel long distances to the health facilities. People residing in the remotest of areas have to be content with travelling a full day to the nearest health facility. Participants told that when implementing eye health programmes, it is important to target groups in a population who are most in need. Easy access to eye care should not be determined by socio-economic and geographical factors and even the poorest individuals from the most disadvantaged backgrounds need easy access to health care services

CHAPTER SEVEN

DEVELOPMENT OF HEALTH AND EYE HEALTH CARE SERVICES IN NEPAL

7.1 History of Health Development in Nepal

Ayurveda originated in the Vedic times around 5000 BC. Based on the 'tridosha' theory of disease, it developed gradually from the medical knowledge in Atharvaveda, one of the four Vedas. The three doshas or humors are vata (wind), pitta (gall) and kapha (mucus). It is reported that disease ensues following a disturbance in the equilibrium of these humors (Park, 2002).

In the Ramayana, after Lord Rama fainted during a fierce battle, Hanuman, the King of the monkeys, was summoned to bring the 'Sanjibani buti' from the Himalayas to treat him. Hanuman, being unable to find the specific herb, carried the whole mountain peak to Lanka (Shrestha, 2006). Faith healers and medical care providers constitute the traditional health care providers in Nepal. The medical care providers can be divided into a) Baidhya-Kabiraj and b) Jadi-butiwala. Baidhya and Kabiraj are regarded as ayurvedic physicians who make use of elixirs, metal preparations and herbs, whereas the jadi-buti walas employ only herbs to treat illness. After much of population pressure and unplanned development, the people have been forced to denude the hills and mountains of shrubs and plants with healing properties. Also, the practitioners are getting senile and becoming less and less functional. This particular scenario is putting the future of Ayurvedic practice in jeopardy (Dixit, 1995).

The history of health development and Nepalese history may be divided into the ancient (first century to 879 AD), medieval (879 AD to the control of the Kathmandu Valley by King Prithvi Narayan Shah in 1768 AD) and the modern period from 1769 AD onwards (Marasini, 2003). The Lichhavi kings had founded ayurvedic hospitals or aarogyashalas in the fourth to seventh century. The Malla kings of the Kathmandu Valley during the medieval period also supported the development of Ayurveda. King Pratap Malla (1641-74 AD) established a dispensary practicing Ayurvedic medicine at the Royal palace in Kathmandu (Marasini, 2003). The current Singha Durbar baidyakhana or traditional medicine manufacturing plant remains to be the continuation of the dispensary. In 1952, King Tribhuvan issued a royal order to

provide medicines to the common public at production costs. The *baidyakhana* has been functioning under the Ministry of Health (MoH) since then. Around two dozen private companies are also successfully manufacturing herbal drugs (Koirala & Khaniya, 2006).

The Ayurveda College was the first educational institution in the health sector and this college was functioning under the management on the part of Tribhuvan University (TU). Several other institutions are operating under the Mahendra Sanskrit University, producing Ayurvedic health assistants (Koirala & Khaniya, 2006).

7.1.1 Traditional Health Care Systems

Traditional healthcare has been in vogue since ancient times, based on herbalism and belief systems. Traditional healers, including, but not limited to, *Dhami*, *Jhankri*, Gubhaju, Guruva, Tantrik, Lama, Purohit and Baidya, provide health care services in formal sectors without formal systems. In this system, illnesses are purportedly caused by mainly supernatural factors such as evil spirits, sorcery, wrath of God and Goddess, witchcraft and evil eyes, breach of taboos, planetary effects and cold-hot imbalance. Much of a healer's work is centred on driving out evil spirits by exorcising, blowing mantras, beating drums and by appeasing God by offering sacrifices and prayers. These are all directed towards curing/healing illness and providing faith-based health care services with no scientific and specific systems followed. Traditional healers often specialize in particular techniques (Stone, 1977). Therefore, techniques of curing illness differ from one healer to another. Twenty years ago, it was estimated that 400,000 to 800,000 various categories of healers were offering health services to Nepalese people in all villages of Nepal (UNICEF, 1992). Traditional healing systems are very prevalent in communities of the indigenous people. In most cases, local healers are first of all invited and consulted to cure illness at home as part of cultural practices.

The Ayurvedic system of health care is also labelled as the traditional health care system having some specific system. It is one of the oldest formulated systems of medicine based on doctrines, which takes into account the physical, chemical, biological and spiritual dimensions of life. The literal meaning of Ayurveda is

knowledge of life. It bases itself on one of the four Vedas, Athurvaveda. As the oldest system of health services, it is linked with formal health care sectors of Nepal.

7.1.2 Modern Health Care Systems

In earlier days, the Christian Mission offices working in many countries had multiple roles and one of them was health coupled with medicine. Medical doctors sent through the Christian Missions introduced modern medicine hospitals to many parts of the world. In Nepal also, the modern or allopathic medicine was introduced by Christian Missionaries in the sixteenth century, which could not continue for a long time because of religious, and, to some extent, because of political factors (Marasini, 2003).

7.1.3 Traditional Health Care Practices in Nepal

Folk medicine and healing practices are very much practised in the non-western world (Foster and Anderson, 1978). The literature on traditional health care practices is abundant and written from varied perspectives. Some have taken a regional viewpoint (Bonnerman, 1983, Saldon, 1981; Foets, *et al.*, 1985; Trotter, 1981); some have focused on a single healer with focus on functional aspects of healing (Hand, 1980; Rogers, 1982; Dietrich, 1998, Shrestha & Lediard, 1980; Cameron, 1985; Claudia, *et al.*, 2002). Some have struggled with the problems of definition and differentiation from each other and the psychological bases of their experience (Harwood, 1970, Leslie, 1976). Some have exclusively examined the shamanic healing (Peters, 1979; Winkelman, 2000), while others have explored both natural and supernatural aspects of healing (Harwood, 1971). Some have even maintained that fewer researches are carried out in alternative practices compared to shamanic healing (Acharya, 1994); others have examined traditional healers who make use of indigenous plants and herbs (Teshome-Bahiru, 1999).

Several empirical studies have been conducted of alternative health care found in different parts of Nepal. The accumulated findings depict a rich system of health care practices which range from shamanic healing to the use of herbal remedies. The conclusion is that Nepal entertains a medical pluralistic setting, and traditional health care practices have been the major source of health care despite the fact that modern health care practices have been introduced to every nook and corner of the country

(New Era, 1986).

Traditional health care practices include both government-recognized as well as folk-healing practices prevalent in the rural areas. Ayurveda is a widely accepted traditional method of health care practised in India and Nepal. Some *baidhyas*, whether trained in the Ayurveda course or not, practise herbal medicine both in rural and urban areas of Nepal. Some have found that there exist some specific folk healers trained in specific types of health problems. Durkin (1984) have noted that patients with jaundice visit Ayurvedic experts, and the mentally disturbed visit *dhami-jhakri* and *jharphuke, vaidhyas*. In another study, Ayurvedic methods of health care, not the shamanic, were predominant among the Hindu communities (Cameron, 1985). Cameron noted that treatment of children especially involved *baidhya*, with an element of hot-cold theory of disease. Use of herbal remedies in communities is also reported by Kafle, *et al.*, (1986), it is required that these traditional healers be integrated into mainstream health care by training these healers in allopathic technique. Lechner-Knecht (1978) has also noted the practice of Ayurveda and opined that it demands a larger handling process and helps develop a more intense relationship between healers and sick people. Such a relationship may increase compliance in the sick person as well as a good relationship between healers and seekers. The authors, however, emphasized the people's perception of origin of illness and the role of folk healers.

The most prominent traditional healers are *dhamis* and *jhakris*. *Dhamis* are mediators between the sick person and the supernatural being, and *jhakris* are considered similar to shamans (Maskarinec, 1992; Peters, 1998). *Dhamis* and *jhakris* are undoubtedly regarded as the most popular magico-religious healers.

Despite the wide acceptance of the dominant role of *dhamis* and *jhakris* in Nepalese health care services, researches conducted in different parts of Nepal have identified different types of traditional healers, though most of them remain guided by similar religio-philosophical views held by *jhakris* and *dhamis*. Sometimes their modus operandi also appears very similar. Stone (1977) reported three categories of healers popularly called *janne manchhe* in her research area. These include 1) those who blow mantras and practise *jharphuk*, 2) those who make *buti* and *jantars*, and 3) those who are able to blows mantras, practise *jharphuk*, make *buti* and *jantars* and summon

spirits. She further mentioned that villagers think that it is highly specialized to have a knowledge of astrology, mantras, witchcraft and other matters relating to illness and curing. The villagers are clearly relating to the systems of curing on an emotional rather than intellectual level.

Subba (2003) with an indigenous approach to his investigation on traditional health practices has noted important traditional healers of Jajarkot district as *dhāmi* (mediator), *jhāngrī* (shaman), *jaisi* (astrologer), *vaidya* (priest), *mantarne* (user of sacred formula), *jaro jhādne* (one who uses *kā_d_ī* treatment), *khātepāte* (treatment with herbs), as well as health providers who specialised in Ayurvedic medicine.

With his extensive anthropological examination on *jhakris* of the western part of Nepal and especially in Jajarkot district, Maskarinec (1992) reported that shamanic etiology of affliction identifies precise sources and effects that cover a spectrum ranging from purely physical to purely metaphysical, intersecting the natural and supernatural worlds. In the urban areas, the belief in metaphysical intersection is yet strongly held. Newar pantheons observe that children afflictions such as diarrhea, "crying sickness" and fever are particularly brought about by *Chhwasa Ajima* (Nepali, 1965). Most of the problems of the children are also attributed to 'cross-road' spirits. Newars despite living in the urban Kathmandu held beliefs in ghosts, spirits and black magic and considered the same as predominant factors that control their life.

The belief system or specially perception of illness/disease has a key role in subsequent behavior. The perception itself is guided by the larger cultural system whether biomedical or traditional. *Jhakris* and doctors differ in their interpretation of the origin of physical disorders, and hence methods of health care differ correspondingly (Miller, 1979).

7.2 Historical Era of Health and Hospital Development in Nepal

Historians have divided the Nepalese history into ancient (first century to 879 AD), medieval (879 AD to till the control of Kathmandu by King Prithvi Narayan Shah–1768 AD) and modern Nepal from 1769 AD onwards. The health development history also can be divided in the same way but the modern era for health should rather be considered from 1889 AD as a landmark of establishing the hospitals by the

Government of Nepal to provide health services to common people as an initiative on the part of the state (Regmi, 1996).

7.2.1 Health and Hospital Development in Nepal during Ancient Era

The history of health and hospital development dates back to the ancient Nepal or the Lichchhavi period. During the reign of the Amshu Verma (605-620 AD), one of the historical documents found in 604 AD has mentioned facts regarding the Aarogyashala or hospitals (probably Ayurvedic), but no elaborate explanations have been found. Descriptions of Aarogyashala can be found in the reign of the Lichchhavi King Narendra Dev (643-679 AD) and Man Dev (464-505 AD), too (Marasini, 2003).

Lichchhavi Kings also issued rules and directives to be followed by the general population on the safe motherhood practices. These directives were the separation of mother and baby before last rites are performed in case of death of the pregnant women with the baby *in utero*, and identifying the husband responsible for care for the pregnant and the post-natal wife and warning punishment in case of negligent behavior or death (Narendra Dev). Also, the directive was to cut the umbilical cord immediately after the baby is born and not to wait till the placenta is expelled (Amshu Verma) (KC, 1998).

7.2.2 Health and Hospital Development during Nepalese Medieval Era

In the medieval era, no continuity can be found of Aarogyashalas or hospitals established during the Lichchhavi period. It can be presumed that the medicine became a family business rather than a state business after the Lichchhavi period. In the Malla period the King of the Kantipur, Pratap Malla (1641-1674 AD) established a traditional medicine (Ayurvedic) dispensary for common people at the Royal Palace Complex in Hanumandhoka, Kathmandu. King Pratap Malla and Malla Kings of Bhaktapur and Patan encouraged the Ayurvedic system of medicine by asking to prepare books in Ayurveda and by creating opportunities for professional training. It is widely held in belief that the current Singh Darbar Baidyakhana or Traditional Medicine Manufacturing Plant is the continuity of the dispensary established earlier by the King Pratap Malla. Before being located to the current place, it was shifted to the Thapathali Darbar complex, residential palace of the then Prime Minister Jung Bahadur Rana (Gautam, 2001).

7.2.3 Allopathic Medicine by Christian Missionaries in Malla Period

Practice of modern medicine or allopathic system of medicine in Nepal was done by the Christian Missionaries working in Peking, China and Lhasa, Tibet. In those days, one of the Trans-Himalayan trade routes was the one via Kathmandu and the Christian Missionaries used the road and felt health needs of the then Nepal. In 1624 AD Father D'Andrada travelled to Tibet via the Himalayan route; however, it remains unclear whether he went through Kathmandu or used other routes. Even so, meeting with the Nepalese and familiarity of Nepali people with the Christian religion is mentioned. He has not mentioned about the medical service (Marasini, 2003).

In 1661 AD, Jesuit Father Grueber and Dorville and associates entered Nepal via Lhasa from the Christian Mission office in Peking. At that time, Pratap Malla was the King in Kantipur, Siddinarsingh Malla in Patan and Jagajyoti Malla in Bhaktapur and it has been mentioned in the history that Father Grueber and his associates met the King Pratap Malla initially and presented a pair of binoculars and other mathematical instruments (Marasini, 2003).

With these presents, Pratap Malla became very happy, allowed missionaries to work in Kantipur. Other cause of permission could be a periodical epidemic of plague and cholera in Kathmandu, which were serious health problems, and the king might have heard about the prevention and treatment from the missionaries. After receiving permission from the king, the missionary team started health service, school education and Christian religious activities such as education and preaching. They were appreciated by the people of the Kathmandu Valley, for they helped prevent children against plague. But King Siddi Narsingh Malla (1621-1661) of Patan was unhappy with the act of the Jesuit Father Dorville and his associates as they begun to distribute the food among people, and involved the people in preaching. Because of their acts, they got expelled from the country (Sharma, 1999; Paudel, 1994 & Landan, 2001).

The missionary Fathers used Kathmandu as a temporary station for travel to China or Tibet offices. Father Tavernier replaced the Jesuit father Grueber, and probably he went to Lhasa via Kathmandu. Jesuit Father Desideri entered Nepal from Lhasa at the time of King Bhupatindra Malla of Bhaktapur (1696-1722). Father Grueber and his associates were placed again in Tibet and there was some conflict between the Jesuit

mission and the regular missionaries in the Lhasa office and the then pope of the Vatican replaced the Jesuit mission with the capuchin monks. Capuchin monks established a small mission office in Kathmandu in 1715 AD, but the hostility shown by the Brahmins of the Kathmandu drove them to take shelter in Bhaktapur. After this incident Capuchin Father Horrace Della Penna went back to Rome, from Kathmandu opposing the expulsion, and returned to Bhaktapur in 1741 AD. Another group headed by Father De Recanti continued to work in Bhaktapur and it is widely believed that he also established a missionary office in Bettiah, too, a small state in Indo-Nepal border. He initially entered Bhaktapur at the time of the King Ranjit Malla (1722-1769 AD). Later in 1745 AD the capuchin monks working in the Lhasa office were driven out by the Tibet administration and all of them gathered in the Kathmandu Valley. It has been mentioned in the history that in 1750s all three kingdoms of Kathmandu had Christian mission offices and medical clinics (Landan, 2001).

Movement of unification of small kingdoms under a greater Nepal was started by the King of Gorkha, Prithvi Narayan Shah (1733-1772 AD) and several kingdoms west of the Kathmandu valley then unified with the Gorkha kingdom. Unification campaign started within the Kathmandu Valley, too. With the Kantipur kingdom being very powerful out of the three kingdoms of valley, the war broke out with Kantipur. Second war broke in 1763 AD between Kantipur and Gorkha in Kirtipur. Prince Soon Pratap Shah of Gorkha got an injury to his eye. The capuchin monk Michael Angelo was called and treated the wounded prince.

7.2.4 Discontinuity of Modern Medical Services in Nepal

In 1768 AD, unification of the kingdom of the Kantipur and Patan came to completion. The last kingdom remaining ununified at that time in the valley was Bhaktapur, which eventually got unified in 1769 AD. After the control over the valley, the new administration reviewed the role of Christian Mission offices and adopted the policies of ‘with the bible bayonet comes and with the missionary musket comes’. The new administration in Kathmandu considered them as representatives of the overall European policy rather than the Christian religion. The Gorkhalis were also suspicious with monks’ role in dispatching the army by the East India Company to help the last King of Kantipur, Jaya Prakash Malla. With all these issues, the then administration decided to close mission offices, including medical clinics, and

expelled all the capuchin monks and their Nepali followers from Nepal, and they left for the mission office in Bettiah (Landan, 2001).

The driving out of the capuchin monks from the Kathmandu Valley represents the end of the initial part of the history of modern medicine in Nepal. Though the capuchin monks got expelled from the country, but it has been mentioned in the history that they came to Kathmandu on request to treat King Singh Pratap Shah, who was suffering from smallpox. Despite treatment, the king died in 1777 AD (Yadav, 1996). There is no mention of the use of modern medicine or establishment of hospitals till another 120 years. Ayurvedic medicine continued to be the main health system of the country (Marasini, 2003).

7.2.5 Health and Hospital Development in Modern Era in Nepal

The modern era can also be divided into three phases – first phase, medical service from British resident doctors; second phase, the Rana period; and the third phase, the post-democracy period. Re-introduction of modern medicine and expansion of medical services and the institutionalization of the Ayurvedic system of medicine were done in this period (Marasini, 2003).

7.2.6 Medical Services and British Residency in Nepal

At the end of the seventeenth century, war was waged with India and an agreement was signed between Nepal and British India governments in 1801 AD. Subsequently, British residency got established in Kathmandu in 1802 AD. Prior to this, there was no diplomatic mission in Nepal. Captain Knox as the resident and Dr. FB Hamilton as the resident surgeon were appointed for the residency office in Nepal. After arriving in Kathmandu, Dr. Hamilton was busy with collection of the herbs, plants and seeds.

The agreement between British India and Nepal governments was cancelled in 1804 AD and residency staff returned to India. War broke out again. The Sugauli agreement was signed between Nepal and India in 1815 AD, and British residency was re-established in 1816 AD. The appointment of doctors in the re-established residency has not, however, been mentioned. It can be conjectured that the British residents appointed at that time had some experience in medicine. This is supported by the paper published by resident Brian Hodson (1829-31 and 1833-1843 AD) in

cholera and malaria in Nepal. It appears to be possible that a medical assistant might have been posted at that time. Dr. H.A. Oldfield was appointed as resident doctor in 1850 to 1863 AD. Dr. Oldfield has pointed major health problems of Nepal such as smallpox, malaria, cholera, tuberculosis and problems related to childbirth. As there were no modern medicine facilities at that time, he treated the ruling class on the recommendations of the then Prime Minister Rana Jung Bahadur. Oldfield also introduced vaccination in 1850 AD in Nepal for the first time, with vaccination of the children of the family of the Prime Minister Jung Bahadur (Landan, 2001).

Dr. Wright replaced Dr. Oldfield in the British residency. In 1883 AD, there was a mention of another medical doctor, Dr. Adar Nath who treated the then Commander-in-Chief General Dhir Shamsher. Likewise, Adar Nath treated General Bhim Shamsher, too, for abdominal colic in 1884 AD. It is not clear whether Adar Nath was a resident doctor or government doctor (Dixit, 2002 & Dixit, 1995).

7.2.7 State Initiative to Establish Medical Services in Rana Period

The Rana Period which lasted for 104 years marks an important era of health and hospital development in Nepal. In this period, the country witnessed several hospitals and dispensaries flourishing both in the modern medicine and traditional medicine. As there were no qualified health personnel in Nepal, all doctors and nurses were brought from India. Khokna Leprosy Asylum was the first health institution established by the state in 1857 AD to isolate the leprosy patients (Mali, 1966). As there was no treatment discovered for leprosy patients at that time, people with leprosy were just detained by the home department. At that time, Surendra Bir Bikram Shah was the King and Jang Bahadur was the Prime Minister (Marasini, 2003).

7.2.8 Introduction of Hospital Services by Prime Minister Bir Shamsher (1885-1901 AD)

The tenure of Prime Minister Bir Shamsher is remembered as the landmark for the health and hospital development in Nepal. During his premiership, the first hospital of the country in modern medicine was established in Kathmandu in the year 1947 BS or 1889 AD. The hospital named collectively after the then King Prithvi Bir Bikram Shah (1880-1913 AD) and Prime Minister Rana Bir Shamsher as Prithvi- Bir Hospital. In the same year Cholera Hospital was established in Teku, Kathmandu near

the rope way station. In addition, hospitals by the Prithvi-Bir group were established in the same year in Birgunj, Jaleshwar, Hanuman Nagar, Taulihawa and Nepalgunj. Leprosy Hospital was also established in Tripureshwar (Dixit, 2002).

7.2.9 National Network of Hospitals and Dispensaries (Prime Minister Chandra Shamsher, 1902-1929 AD)

Rana Chandra Shamsher succeeded Bir Shamsher as the Prime Minister. Rana Chandra Shamsher further established new hospitals and consolidated the previously established hospitals. Chandra Lok Hospital was established in Bhaktapur in 1903 AD. The second-generation hospitals were established in the name of the then King Prithvi Bir Bikram and Prime Minister Chandra Shamsher as Prithvi- Chandra group of hospitals. Prithvi-Chandra Hospitals were established in Palpa, Palhi, Doti, and Ilam. After the death of the King Prithvi Bir Bikram Shah, Crown Prince Tribhuvan Bir Bikram Shah (1913–1954 AD) took over as the King. A new group of hospitals as Tribhuvan-Chandra Hospitals were established in Dhankuta, Bhadrapur, Sarlahi, and Rangeli. In 1925 AD, 64-bedded Tri-Chandra Military Hospital was established in Kathmandu in commemoration of the war heroes of the First World War. Prithvi-Bir Hospital in Kathmandu was further strengthened with establishment of the separate Women's Hospital, radiology and laboratory units and Chandra Sales Dispensary. Nardevi Ayurvedic Hospital was established in 1918 and parallel Ayurvedic dispensaries were established in districts along with the modern medicine hospitals. He also established Lalitpur Hospital in Patan in 1924 AD. The expansion work of Khokna Leprosy Asylum to the sanatorium and construction of Tokha Tuberculosis Sanatorium were also started during the premiership of the Rana Chandra Shamsher. A total of eighteen hospitals and fourteen dispensaries were founded during his premiership (Sharma, 1990; Dixit & Dixit, 1966).

Kharga Hospital was established in Bajhang by Jaya Prithvi Bahadur Singh from the non-governmental sector during the tenure of Chandra Shamsher.

7.2.10 National Network of Hospitals and Dispensaries (Prime Minister Bhim Shamsher, 1929-1932 AD)

Rana Bhim Shamsher succeeded Chandra Shamsher Rana as the Prime Minister. He founded Tri-Bhim Hospitals in Bahadurgunj, Bhairahawa and Butwal. The Ramghat

dispensary at Pashupati was inaugurated in 1929 AD. Further dispensaries were established in Sindhulimadi, Ramechhap, Okhaldhunga, and Pashupatinagar (Sharma, 1990; Dixit & Dixit, 1966).

7.2.11 Prime Minister Juddha Shamsheer (1932-1945 AD)

Juddha Shamsheer became the Prime Minister after the death of Bhim Shamsheer. He established the Tri-Juddha group of hospitals in 1931 AD in Dharan and in Bhimphedi, Bardiya, and Kailali in 1940. Tokha Tuberculosis Sanatorium (40 beds) started operating in 1935 AD. Leprosy Asylum in Khokana, Kathmandu was upgraded to the sanatorium, and a new leprosy sanatorium constructed in Malunga, Syangja also came in operation in the same year. The Leprosy Department and Treatment Center was established at Pachali (shifted from Tripureshwar) in 1937 AD (Mali, 1966).

7.2.12 Prime Minister - Padam Shamsheer (1945-1948 AD) and Mohan Shamsheer (1948 –1951 AD)

This tenure witnessed strengthening of health services already established. One health center was established in Sankhu in 1949. A homeopathic dispensary was opened, and a chest clinic (1951) was started in Bir Hospital. School health programs were started during this period (Sharma, 1990; Dixit & Dixit, 1966 & Das, 1966).

7.2.13 Post –Democracy Period

This period marks an important period in the history of Nepal. The period also saw initiation of several new health programs alongside the establishment of secondary and tertiary care health institutions. This period also opened opportunities to non-governmental organizations and private sectors to provide health care. This period can also be divided into several phases (Marasini, 2003).

7.2.14 New Health Policies and Programs and Involvement of NGOs Health Care (1951-1963 AD)

In this period, the planned development process was started in Nepal and more health institutions were established to increase the access of people to basic health care. The then dispensaries were transformed to health centers or upgraded to hospitals. Health

training institutions were established to train the health care technicians and nurses within the country (Marasini, 2003).

Health centers were established in Banepa (1954), Dailekh (1955), Ramnagar Bhutaha (1956), and Chainpur, Sankhuwasabha (1957). Biratnagar Hospital, Dang Hospital and Baglung Hospital commenced their services in 1956, 1957 and 1958 respectively. In 1962, Kanti Hospital was established in Kathmandu. Health programs aimed at controlling malaria (1958), smallpox (1962), leprosy (1963) and those for family planning and maternal and child health (1962), were started. In 1958, the Ministry of Health implemented a new health policy of establishing one health center in each of 105 electoral constituencies. With this policy, one health center was opened in 1958, two in 1959, 40 in 1960, 14 in 1961, 10 each in 1962 and 1963 respectively. There were 32 hospitals and 104 health centers in the public sector in 1963 (Dixit & Dixit, 1966).

NGO hospitals funded by missions were established in Lalitpur (Shanta Bhawan Hospital – 1954, now functioning as the Patan Academy of Health Sciences under the MoH), Bhaktapur (Suryabinayak Hospital –1954), Banepa (Scheer Memorial Hospital–1957), Kaski (Pokhara Shining Hospital–1957), Gorkha (Amp Pipal Hospital –1957), Okhaldhunga (Okhaldhunga Hospital–1963), Nawalparasi (Bulingtar Hospital–1962) and Palpa (United Mission Hospital–1954). Leprosy Hospitals were established by the leprosy mission in Lalitpur (Anandban Leprosy Hospital -1963), Kaski (Green Pasteur Hospital–1957) and Dadeldhura (Dadeldhura Leprosy Hospital) in this period. In Thapathali, Kathmandu Indra Rajya Laxmi Maternity Hospital (1958) was established by a national NGO (Marasini, 2003).

7.2.15 Regionalization of Health Services in Nepal (1964-1974 AD)

After the country was divided into 75 districts and 14 zones in 1964, regionalization of health services got started and new zonal hospitals providing comprehensive health care were established in Nepalgunj, Janakpur, Pokhara, Birgunj, Biratnagar, Rajbiraj and Butwal. Kanti Hospital was converted into Kanti Children's Hospital with the merger of the pediatric department of Bir Hospital. ICU/CCU services were commenced for the first time in the country in Bir Hospital. Nepal Tuberculosis Association opened Tuberculosis Hospital (1970) in Kalimati, Kathmandu. Some

health centers were converted into health posts or upgraded to district hospitals during this period (Marasini, 2003).

7.2.16 Emergence of Single Specialty Hospitals and Implementation of Primary Health Care Systems in Nepal (1975-1992) AD

Single specialty hospitals were founded during this period in specialties of psychiatry and eye. The long-term health plan was prepared and primary health care system was implemented. In the public sector 775 Health posts at community level and district hospitals or bigger hospitals were established in all districts except Okhaldhunga, Mugu, Dolpa, Kavre, Syangja, Rolpa, Ramechhap, Humla, and Kalikot. Bhadrapur hospital, Kailali hospital and Kanchanpur hospital were upgraded to zonal hospitals. Gandaki Zonal Hospital was upgraded to the Western Regional Hospital. National Tuberculosis Center was established in Sanathimi, Bhaktapur. Bir Hospital saw several changes – the eye department merged with Nepal eye hospital, and the gynaecology and obstetrics department merged with Maternity Hospital. The Psychiatry department also merged with the new Mental Hospital in Lagankhel, Lalitpur. Teku Hospital was freed from the control of Bir Hospital, received an independent infectious disease hospital status and got upgraded to the status of the national hospital. Homeopathic Hospital was upgraded and shifted to a new building in Pulchowk, Lalitpur. Besides, traditional medicine dispensaries were established at community level. High-level health manpower production was started and lower level health manpower production intensified. The goal of smallpox eradication was achieved. Expanded immunization got started afterwards (Marasini, 2003).

Tribhuvan University Teaching Hospital, Institute of Medicine (1986) and Birendra Police Hospital (1984) were established in Kathmandu in the public sector. NGO sectors also actively contributed to health by establishing Nepal Eye Hospital (1980) in Kathmandu. Several eye hospitals were established outside Kathmandu, in Biratnagar, Lahan, Pokhara, Bharatpur, Dang, Birgunj, Janakpur, Bhairahawa, Nepalganj, and Dhangadhi.

The Orthopedic hospital was also established in Jorpati, Kathmandu while Khunde and Phaplu hospitals were established in the Khumbu region. Additional eye hospitals started their services in Kathmandu, namely Tilganga Eye Hospital and Lion's Eye

Care Center with support from NGOs. Some small hospitals were established in the private sector (Marasini, 2003).

7.2.17 Emergence of Tertiary Care Centers and Expansion of Primary Health Care and Growth of Private Health Institutions in Nepal (1993- 2015 AD)

Tertiary care services emerged in neurosurgery, cardiac surgery and cancer on the part of the public sector. One hundred and eighty health centers at electoral constituency level and 3,107 sub-health posts at village development committee level were founded alongside many traditional medicine treatment centers. Health programs were started to eradicate polio, and the DOTS strategy was initiated to control tuberculosis (Marasini, 2003). Leprosy Elimination Program was also started. District hospitals were established in Syangja, Humla and Ramechhap. BP Koirala Memorial Cancer Hospital (1995) in Chitwan and Shahid Gangalal National Heart Center (1997) in Kathmandu were established. Manipal Medical College Teaching Hospital (1997), Bharatpur Medical College Teaching Hospital (1998), Bhairahawa Medical College Teaching Hospital (1999), Nepal Medical College Teaching Hospital (1997), Kathmandu Medical College Teaching Hospital (2000), and Nepalgunj Medical College Teaching Hospital (2002), were established from the private sector, providing secondary and tertiary medical care services and education. One medical college hospital from the public sector, BP Koirala Institute of Health Science Teaching Hospital (1993) was established. Besides, privatization was launched in the nursing and allied health worker training programs. Private hospitals as big as the ones with 200 beds were established (Om Hospital, National Medical College Teaching Hospital, and B & B Hospital) to provide secondary and tertiary medical care. The first dental hospital, National Dental Hospital, and People's Dental College were established in Kathmandu by private sectors (Marasini, 2003). In the same vein, recently the private sector has emerged as a burgeoning eye care service provider, as many such providers, including, but not limited to, Mechi Drishti Eye Hospital and Research Center Private Limited, Birgunj Drishti Eye Care Center and Jamal Drishti Eye Care Center have been rendering their outstanding services.

The non-governmental organization also contributed to health care by establishing hospitals in Damak, Dhulikhel, Doti and Chaurjahari. Maternal and Child Health Hospitals were founded in Butwal and Bhaktapur. Epilepsy Hospital was established

in Dolakha. The orthopedic hospital for rehabilitation of children was opened in Banepa. Sushma Koirala Memorial Plastic and Reconstructive Surgery Hospital was started in Sankhu in 1999. Cancer Hospital was established in Bhaktapur Leprosy Hospital was opened in Lalgadh, Sarlahi. Treatment centers with indoor facilities were opened for high altitude sickness, tuberculosis and snake bite in many parts of the country. Birthing centers were established in several parts of the country. Dadeldhura Leprosy Hospital was changed to General Hospital. Lamjung District Hospital was handed to NGOs by the government. New health care concept such as Hospice Nepal (2001) was started for terminally ill patients from incurable diseases in Kathmandu (Marasini, 2003).

7.3 Eye Care Service in Nepal

Nepal is one of the first countries in the world where a country-wide population-based survey on blindness and visual impairment was conducted (1980-81). At that time, eye care facilities were minimal and the needs huge. There was a great need to know the magnitude of blindness and visual impairment, their main causes and to understand the epidemiology in order to develop adequate plans to prevent and control blindness. The study had a tremendous impact so much so that within 20 years the eye care infrastructure in Nepal developed from a very basic level to one of the most advanced and efficient systems in the world (NNJS, 2012).

Formal eye health care service was initiated with an eye camp held in Butwal in 1947 with support from two eye surgeons from Sitapur Eye Hospital, India. About one month later, another free eye camp was held at the Shree Juddha Ghat in Tripureshwor, Kathmandu. The first eye surgeon in Nepal, Dr. Yagya Raj Baidya, with his fellow, Dr. Nem Bahadur Shrestha, started the concept of eye care services in Nepal. They opened an eye department in Bir Hospital; this specialization extended to major urban centres of Nepal (Malla, 1999; Nepal Ophthalmic Society, 2003).

There were seven ophthalmologists with 16 beds within the capital city and 12 beds outside the Kathmandu Valley till 1971. The first eye hospital in Nepal, Nepal Eye Hospital, was established in 1974 with the support from the Government of Nepal. The first national non-government organization (NGO), Nepal Netra Jyoti Sangh (NNJS) started functioning in 1978 with the leadership of General Rabi Shamsher

Rana. Altogether, they had nine members with one eye doctor, Dr. Ram Prasad Pokhrel, as a general secretary on the founding committee (NNJS, 2011). The first Nepal Blindness Survey was conducted in 1981, which is the landmark event in the history of Nepal to develop the evidence-based practices in eye health care in Nepal.

Nepal, a member state of the WHO, has been playing vital roles in implementing strategies, interventions and carrying out programs to improve health including eye health status of the country and other members. In 1978, the WHO initiated a program aimed at preventing blindness to address the problems of blindness around the world. The Government of Nepal and the WHO jointly established the project for the prevention of blindness in 1980.

Tilganga Institute of Ophthalmology (TIO), an implementing body for the Nepal Eye Program (NEP), is providing eye care services through its own tertiary eye care centre at Gaushala in Kathmandu, and one community eye hospital in Hetauda, Makawanpur. In eleven mountain and hilly districts of Nepal, eleven community eye centers (CECs) are providing eye care. Nepal is being assisted by over one dozen international partners providing financial and technical support to strengthen eye care services. Eye care service in Nepal is relatively good in the South Asian Regions and other developing countries of the world (Tilganga Institute of Ophthalmology, 2009).

The human resources play a major role in running the eye health institution and providing quality services. In order to develop ophthalmic human resources, about ten institutions are producing skilled human resources for eye health within Nepal. The mid-level ophthalmic assistant training program was started from 1981. The master's degree residency program in Ophthalmology was initiated in 1987 at the Institute of Medicine, Tribhuvan University. By 2010, ophthalmologists numbered 147, optometrists 56, ophthalmic assistants 275, Eye workers 205 and orthoptists 8 in Nepal (NNJS, 2012).

The numbers of human resources are still meager due to an increase in the disease burden, population growth and ageing population.

7.3.1 History of Eye Health Care Service Development in Nepal

As eye care services are not integrated into general health care services, the former have limited coverage in remote rural areas. Financing remains to be the backbone of the eye health system; it is a key to ensuring that eye care delivery is done in an equitable, efficient, and sustainable manner. Health financing serves as the scaffolding for implementing and sustaining eye care programmes, and fostering service delivery. The WHO defines health financing as the function of a health system concerned with the mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively, in the health system (WHO, 2000).

An understanding of how eye care services fits into the broader health system will assist eye care programmes in three chief ways (Blanchet & Lindfield, 2010), by allowing programme managers as policy makers have a greater impact on the health of the population: develop services that support and enhance clinical practice in eye care, create awareness of the wider support services that is necessary to provide a high quality clinical intervention which aids the identification of the available resources and strengths of the existing system, complement them with innovations, and develop constructive collaborations with other health care providers, including mutual learning and sharing of resources, information and experiences for the benefit of both parties.

The planned process for development was initiated in 1950 in Nepal. As of now, Nepal has completed its tenth five-year plan and two three-year interim plans. A separate health plan was introduced towards the end of the fourth five-year development plan. Initially, the first long-term health plan was planned for 25 years. This initial effort was changed and made the 15-year (1975-1990) long-term health plan, and was implemented coordinating with the five-year development plan. There was a gap between first and second long-term health plans (Dixit, 2005). Since 1997, Nepal has been executing the second long-term health plan (1997-2017). Twenty essential health care packages have been incorporated by this plan. Among them, eye health care (prevention of blindness) has been regarded as one of the top ten priorities within packages (MoH, 1997).

Nepal adopted the Vision 2020 initiative the same year in September 1999 with ratification by the then Health Minister Dr. Ram Baran Yadav (now former Rt. Honorable President of Nepal). Prior to 1980, the eye care service in the country was in a very rudimentary stage. Only a limited number of ophthalmologists are available outside the Kathmandu Valley (NNJS, 2013).

The delivery of eye care service sky rocketed in the country after the Nepal Blindness Survey showed that the magnitude of the problem of blindness prevails as a public health problem. The eye care infrastructure and human resources on the part of the Government of Nepal were not capable of coping with a huge magnitude of blindness revealed. Thus, support from various national and international organizations was solicited in order to combat blindness in the country. A geographical sector wide approach was adopted and different INGOs were delegated the responsibility to develop eye care service in the specified areas under the umbrella of the local NGO as a partnership programme. Specific-program objectives, based on the survey results, were established and Nepal began building the physical and human infrastructure necessary to address the problem. Primary, secondary and tertiary eye care facilities dedicated to the prevention of and treatment for eye diseases were established in the areas of the country with the greatest need. The program simultaneously implemented a strategy of training eye care professionals at all levels to staff of the hospitals and clinics as they became operative (NNJS, 2013).

The presence of the government in eye care is minimal. Despite the fact that NGOs played a role in eye care delivery for the last three decades, it has been realized that primary eye care service could not be effectively integrated into primary health care effort of NGOs. So, the government should play an important lead role in the integration of primary eye care service into Primary Health Care service (NNJS, 2013).

One of the impediments to reducing blindness in any community remains to be the limited access to appropriate eye care services within the community. People tend to seek other alternatives when they live in communities with inadequate or inaccessible healthcare facilities. In developing countries like Nepal, with limited regular healthcare facilities, it is probable that substantial eye care information and services are sought outside this regular eye care system (NNJS, 2012).

7.3.2 Health Care Systems and Access to Eye Health Care in Nepal

Eye care has conventionally been established as an entity separate from the rest of health care, although the Vision 2020 strategy has tremendously prompted the integration of eye care services. This is on account of the fact that the majority of eye care services do not have the need for the input of any other health services. This, in particular, has prompted the existence of eye hospitals and eye clinics, which stand alone from the rest of the health care structure. This history has meant that eye care has been dilatory in realizing the importance of health systems as an enabling factor.

Access to Eye Health services among the people hinges on various factors, such as prevailing health care systems, distribution of health facilities across the country, socio-economic conditions and cultural practices associated with illness and treatment.

7.3.3 Nepal Netra Jyoti Sangh (NNJS)

Nepal Netra Jyoti Sangh (NNJS) was established in 1978 as a National Society for Comprehensive Eye Care under the Health Co-ordination Committee of the Social Services National Co-ordination Council. Later, it was developed and made stronger in 1980 as a full-fledged non-governmental social welfare organization dedicated to facilitating the provision of all the possible facilities with regard to the treatment of eye patients in Nepal. The NNJS extends its co-operations towards the application and fulfilment of the National Program and Policies of the Government of Nepal, aimed at the well-being of the eye patients. The NNJS is a not-for-profit, non-governmental, welfare-oriented social organization to represent the Government of Nepal and the Social Welfare Council of Nepal, concerning the sphere of eye care activities.

The NNJS is a central co-ordinating body for technical manpower, and maintains links with eye hospitals and eye care centres, the Government of Nepal, and both national and international non-governmental organizations with regard to almost all of the eye-related programs and quality control of eye care in Nepal. It plays a key role in the evaluation and monitoring of the existing programs, mobilizes internal and external resources, involves active community participation and promotes self-reliance (NNJS, 2013).

7.3.4 Tilganga Institute of Ophthalmology

Tilganga Institute of Ophthalmology (TIO), the implementing body of the Nepal Eye Program, is a not-for-profit, community-based, non-governmental organization that is committed to rendering quality ophthalmic care to the people of Nepal and developing nations. The TIO incorporates three principal divisions: the Comprehensive Quality Eye Services (Surgicentres, Eye Bank and Outreach programs), the Ophthalmic Products (Fred Hollows Intraocular Lens Manufacturing) and the production of Human Resources for Eye Health (Education/Training and Research). Established in June 1994, the TIO was first known as Tilganga Eye Centre until April 2009. By 2011, the TIO examined a total of 2.7 million patients and performed an outstanding 0.2 million surgeries on its premises and at the Hetauda Community Eye Hospital, Community Eye Centres and Outreach Clinics. This institute has produced more than 500 skilled human resources at different levels through academic and training programs. Fred Hollows Intra-ocular Lens Laboratory, as the first and only intra-ocular lens manufacturing unit in Nepal, has made cataract surgery affordable in markets both locally and globally. The Nepal Eye Bank has been working towards reducing the prevalence of corneal blindness. The TIO is helping globally with innovation and formulation of new clinical practices that are published in papers, indexed-journals, which all aid more dissemination at different levels. The TIO is one of the growing organizations in Nepal. As a member of the Apex Body for Eye Health in Nepal, the TIO is engaged in varied activities with a view to achieving the goals of Vision 2020 in Nepal and extending its services on domestic and international scales through collaboration with organizations, both national and international (Tilganga Institute of Ophthalmology, 2009).

7.3.5 Mechi Eye Care Center

With the assistace lent by Eye Care Himalaya of the Netherlands in November 1996, the Mechi Eye Care Center was founded in a rented building in November 1996. An ever increasing number of patients seek services at the center, further extending the frontiers of its service areas. Provision of efficient and good quality treatment, close monitoring on attainment of good surgical quality and visual outcome are the main aims of this eye centre. Community involvement (such as active participation in screening camps and land donation for a new proposed eye hospital) has been

exemplary. Trained ophthalmic assistants are fully utilized, thus enabling ophthalmologists to devote their time to surgery and examination of referred patients. Preventive maintenance of instruments & equipment is a routine practice in this eye center. It is running short of space and human resources (chiefly ophthalmologists). The hospital has become a gift to the blind people of this region because it is working to prevent and cure blindness and at the same time, it is also striving to eliminate avoidable blindness in this part of the world and contribute to the goals of Vision 2020 (Singh & Pokharel, 2002).

Many health institutions were closed due to restructuring of health services and other administrative reasons. The Tokha Tuberculosis Sanatorium and Malunga Leprosy Sanatorium have been closed. Some private hospitals and nursing homes were also closed. Mission hospitals in Nawalparasi, Suryabinayak and Pokhra were closed permanently and Amp Pipal Mission Hospital, Gorkha is preparing to operate differently after the management of mission left. Dharan Hospital and the British-Gurkha Army Hospital in Dharan merged initially to form Eastern Regional Hospital and now were transferred to BP Koirala Institute of Health Sciences. Lalitpur Hospital and Shantabhawan Hospital merged as Patan Hospital as a model of government and non-government partnership in health care and is put under the unified governing board. Bir Hospital had the major changes in organization and service repeatedly (Marasini, 2003).

A Health Information System (HIS) is defined as a set of components and procedures organized with the objective of generating information which will improve health care management decisions at all levels of the health system (Lippeveld, *et al.*, 2000).

The goal of a Health Information System is to allow decisions to be taken in a way that is both evidence-based and transparent and, to produce relevant and quality information to support decision-making (Health Metrics Network, 2006).

General health check-ups involve multiple tests in a person who does not feel ill with the purpose of finding disease early, preventing disease from developing, or providing reassurance. Health check-ups form a common element of health care in some countries. To many people, check-ups intuitively make sense, but experience from screening programmes for individual diseases has shown that the benefits may be

smaller than expected and the harm greater. One of the possible harms from health check-ups is the diagnosis and treatment of conditions that are asymptomatic or not fatal. Their diagnosis will, therefore, be superfluous and carry the risk of unnecessary treatment (Krogsboll, 2012).

CHAPTER: EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

8.1 Summary

The study entitled 'Status of People with cataract in Rural Community of Central Development Region, Nepal' has set three objectives: i) to identify the socio-demographic characteristics of the households of people with cataract, ii) to analyze the status of people with cataract and the effects of cataract on their socio-economic development, and iii) to identify the knowledge, practices and barriers of people with cataract.

Three VDCs, namely Dhunche, Ramche and Basdilwa were purposively selected based on road access respectively from Rasuwa (mountain), Sindhupalchowk (hill) and Parsa (terai) districts. First of all, the total number of households of selected three VDCs was obtained from VDC Offices and then a sample size was determined using the standard formula. The sample size thus obtained was 251, which is 12.5% of the total number of households i.e., 2000. Therefore, 12.5 % of households from each VDC and ward were included in the study as part of proportional sampling. If there was no at least one cataract member in the selected households, another household closer to that household was selected for the household-level interview to meet the necessary requirement of being people with cataract. The number of people with cataract in sampled households was identified through eye examination of family members by the visual acuity tester (for visual acuity) during the household survey. Of the total people with cataract (Dhunche, 71; Ramche, 103; and Basdilwa, 209), only 33% people with cataract of each VDC were interviewed to understand the effects of cataract on their socio-economic development. Therefore, 24 people from Dhunche VDC, 34 from Ramche VDC and 69 from Basdilwa VDC were taken for the interview. The household survey and the population-based survey were conducted using the semi-structured questionnaire. In addition, to verify the data and information derived from the household survey, observation (eye care services in the study areas were observed), focus group discussions (two focus group discussions each with 5 to 8 participants from each VDC), key informant interviews (five people have been

taken for the interview), and case studies (two people were taken from each VDC) were done as part of methodology of the research.

From the analysis of the findings, the following summary has been derived:

- The total population of sampled households of people with cataract ranged from 299 in Dhunche (mountain) VDC to 464 in Ramche (hill) and 820 in Basdilwa (terai). Of the total sampled households' population, there were 95 (31.77%) people under 15 years age in Dhunche, 150 (32.33%) people in Ramche and 361 (44.02%) people in Basdilwa VDC. The population having the 15-59 age group ranged from 121 (41.47%) in Dhunche to 194 (41.8%) in Ramche and 279 (34.03%) in Basdilwa VDCs. The population aged 60 years and above ranged from 80 (26.76%) in Dhunche to 120 (25.86%) in Ramche and 180 (21.95%) in Basdilwa VDC. Among these VDCs, the dependency load was (under 15 years age and +60 and above population) highest in Basdilwa (65.97%) followed by Dhunche (58.53%) and Ramche (58.19%). The male population has outnumbered the female population in three VDCs.
- The people having cataract was predominantly high in the age group 61-70 years in mountain (43.67%) and hill (55.34%), whereas in terai the people with cataract were found predominantly high in the age group 51-60 (44.49%). It also indicates the fact that cataract prevails from a lower age of population in the terai than in the mountain and the hill.
- In the sampled households, joint families formed an overwhelmingly high proportion in all ecological zones with 90.4% in Ramche (hill) followed by 86.1% in Basdilwa (terai) and 75% in Dhunche (mountain) respectively. The share of single families in Dhunche is about 21.7 % followed by 8.4% and 3.7% in Ramche and Basdilwa respectively. The share of extended families is higher (10.2%) in Basdilwa than Dhunche (3.3%) and Ramche (1.2%).
- Of the total sampled households, the family size having 5-10 persons was in the greatest majority in all VDCs having 68.7 % in Ramche (hill) followed by Dhunche (68.2%) and Basdilwa (43.6%) respectively. The households having family members 11-15 persons and more than 15 persons were found higher in

Basdilwa (terai) which made about 44.4% than Dhunche (mountain) 18.4% and Ramche (hill) 14.4% respectively.

- The people residing in different ecological zones followed different religions. In Ramche (hill) and Basdilwa (terai), the majority of the households followed Hinduism comprising 88.0 % and 61.1% respectively. Contrary to it, in Dhunche (mountain), the overwhelming majority (98.3%) of the people followed Buddhism.
- Of the total sampled households (60) in Dhunche (mountain) 59 households (98.33%) were comprised by the ethnic group whereas in Ramche (hill) the dominant caste group was Brahman/Chhetri which comprised more than three-fourths (78.3%) of the total sampled households. The Basdilwa (terai) VDC was found highly occupied by the Muslim community which shared about two-fifths (39.82 percent) of the total sampled households.
- Of the total population of sampled households (299), more than three-fifths (63.5%) were married, whereas more than one-third (34.4) were unmarried/children in Dhunche (mountain) VDC. Of total, about 2.0 percent were in the widow/widower group in the same VDC. 69.4 percent were married in Ramche (hill), whereas 25.9 percent were unmarried. There are about 4.5 percent of the widowed people and one person was divorced. Likewise, more than two-thirds (67.8 percent) were married in Basdilwa (terai) whereas slightly less than one-third (31.46 percent) people were unmarried. In this VDC, 5 persons belonged to the widow/widower group and one person was divorced.
- Of the total population (1583), more females were illiterate compared to males in each ecological zone– mountain, hill and terai comprising around 17.0 percent, 19.0 percent and 12.0 percent respectively. The number of people acquiring higher education was greater in Basdilwa (9.27%) than in Dhunche (2.35%) and Ramche (1.09%).
- About 90.0% of total sampled households in Dhunche (mountain) reported that they preferred to go first to the traditional healers (*dhami/jhankri*) for any kind of illness. The conditions for using traditional healers as they reported were illnesses caused by evil spirits, sudden severe illnesses, illnesses not cured by medicine or hospital treatment. Likewise, the reasons for seeking

help from traditional healers were traditional beliefs and practices, easy availability of the healers and affordability. The people's behaviours of going to traditional healers for treatment were found less practised in Ramche (hill) and Basdilwa (terai). People of this region mostly preferred to go to health posts and sub-health posts.

- Of the total sampled households in Dhunche (mountain), more than two-thirds (68.3%) used private taps (piped water) as a major source for drinking and sanitation, whereas about 30.0% used public taps for the same purpose. In Ramche (hill), more than four-fifths (84.3%) household used public taps for drinking and sanitation purposes. Contrary to it, about 47.0 percent households of Basdilwa (terai) used tube well/deep wells for drinking and sanitation.
- In the study regions, all the sampled households of Dhunche (mountain) and Ramche (hill) had access to toilet facilities, whereas in Basdilwa (terai) only the negligible number of households (8.3%) had access to toilet facilities. Because of lack of access to toilet facilities, they defecated on open places around the settlement such as along the side of the road, on paddy fields, canals and river banks. When asked why respondents did not use toilets, they said that they had no land space to build the latrine and did not have the idea and capacity to construct such facilities in their own efforts.
- The habit for going for an eye check-up in the hospital and clinic was very poor in the total sampled households, about 35.0% in Dhunche (mountain), 57.8% in Ramche (hill) and 40.7% in Basdilwa (terai) reported that they did not go to any eye hospital and clinic for eye check-up. The Chi square (χ^2) test indicates that there is a highly significant relationship (significance of $0.000 < 0.01$) between the place of treatment and respondent's education.
- Of the total sampled households, about 10.0 percent in Dhunche (mountain), 7.2 percent in Ramche (hill) and 15.7 percent in Basdilwa (terai) were landless. Similarly, in Basdilwa (terai), the households having less than 5 Ropani land was 27.8%, whereas 26.9% households had more than 15 Ropani land.
- Labour was the main occupation of the active population in the study area. Compared to other occupations, labour alone comprised about 46.3 % in Dhunche, 46.3% in Ramche and 39.5% in Basdilwa. They primarily worked

as labourers in trekking, road construction, firing wood collection, and porters. After labour, agriculture was the second important occupation of the people residing in these VDCs.

- The major source of income of the sampled households in Dhunche (mountain) VDC was labour (31.7%) followed by agriculture (30.0%), whereas the major source of income in Ramche (hill) was labour which occupied about 42.2% followed by agriculture (31.4 %). Simultaneously, the major source of income of the sampled households in Basdilwa (terai) VDC was agriculture (50.9%) followed by labour (32.4%).
- In the study areas, the annual income of sampled households ranged from less than Rs.50,000 to more than Rs.2,00,000. The households having less than Rs.50,000 annual income was high compared to other income group in the study area which comprised about 40.0%, 56.65% and 43.55% in Dhunche, Ramche and Basdilwa VDCs respectively. The households having Rs.1,50,000-2,00,000 annual income occupied the same (40%) as less than Rs.50,000 annual income in Dhunche. The households having Rs.1,50,000-2,00,000 annual income occupied the second position in Ramche (20.5%) and those more than Rs.2,00,000 annual income in Basdilwa stood at 25%. Since the χ^2 value of significance is 0.485 which is greater than 0.05, so there is no significant association between the level of income and knowledge about cataract surgery.
- About 36.0% households had surplus food production in Basdilwa VDC, whereas the proportion was very low in Dhunche (8.3%) and Ramche (4.8%) VDC. The proportion of households having barely enough food for 3 months was about 51.7% in Dhunche, 26.5 % in Ramche and 30.6% in Basdilwa VDC. The χ^2 value of significance is very low at 0.000, so there is a highly significant relationship between the level of food sufficiency and the educational status. That means literate people had more food sufficiency than the illiterate people after having cataract.
- Of the total sampled households (60) in Dhunche (mountain), no one judged availability of health care services as good, while 53.3% judged it as moderate and 46.7% judged it as poor. Of the total sampled households (83) in Ramche (hill) no one judged it as good and moderate, all the respondents perceived

available facilities as poor. Likewise, of the total sampled households (108) in Basdilwa (terai), only 2.8% rated it as good, 5.6 percent rated it as moderate and the overwhelming majority (91.7%) rated it as poor.

- The majority of people with cataract had visual acuity less than 6/60 in both eyes. None of the people with cataract in Basdilwa had visual acuity greater than 6/18. Only a small proportion of people in Basdilwa had visual acuity greater than 6/18. Only one person with cataract each in Dhunche and Ramche had visual acuity greater than 6/18.
- In all the ecological zones, a larger proportion of people with cataract had had visual impairment for the past 6-9 months, which occupied about 37.5% in Dhunche, 61.8% in Ramche and 46.4% in Basdilwa. During the focus group discussions, the participants reported that the main reason behind this was that the people had been waiting for free surgical eye camps due to their poor socio-economic conditions. The proportion of visually impairing cataract with a history of less than 3 months was lower than other categories in all three ecological zones.
- All the sampled respondents from Ramche and Basdilwa reported that they had poor near vision after cataract while in Dhunche 91.7% reported the same. In Dhunche one respondent reported that he had good near vision after cataract, whereas 3 respondents reported moderate near vision. All of the respondents had reported that they had poor distance vision after cataract in both eyes.
- In all the three ecological zones, the majority of the respondents reported that they found moderate family behavior after cataract. No respondent reported poor behavior from family members in Ramche. However, of the total sample of people with cataract in Dhunche (24) and Basdilwa (69) VDC, 4 respondents and 1 respondent respectively reported that they have found poor behaviour from family after cataract. The number of respondents who got good behavior after cataract from their family members was one in each VDC.
- Disability through cataract was found to have resulted in loss of employment, reduced productivity, less rewarding jobs, unemployment especially for women and lower salaries. In addition, disability limited employment for other

household members as time was spent on care-giving. Restoring sight resulted in work resumption and enabling caregivers to find employment.

- Households affected by disability, including visual impairment have: lower average incomes, more severe income loss, lower savings, higher debt and low assets and land ownership, and lower housing and amenity standards.
- People with cataract reported that after cataract the drudgery has been increased particularly in the following areas:
 - Access to credit
 - Intra household equality
 - Equality in society
 - Social activities
 - Self-esteem and stigma
 - Empowerment
 - Decision-making power in and outside the household
 - Recreation facilities
 - Household work
- About three-fourths (70.83%) respondents in Dhunche did have not knowledge about cataract, whereas 76.47 percent respondents in Ramche and 49.3 percent respondents in Basdilwa did have not knowledge about cataract and being blind. Only about 21.12 percent respondents in Dhunche, 11.7 % in Ramche and 40.7 % in Basdilwa had knowledge about cataract surgery. Though they had knowledge about cataract surgery, they were still waiting for free eye camps for surgery. The tendency of annual eye check-ups was very poor in the study areas. Only one person in Dhunche opted for an annual eye check-up. Except Basdilwa (terai), the majority of the people with cataract still went to jharphuk/traditional healers. None of the sampled people with cataract used the near device/glasses for near vision.
- From the FGDs and KIIs, following barriers preventing the people from accessing and utilizing eye health services were identified:
 - Clinical Barriers
 - Knowledge Barriers
 - Financial Barriers
 - Geographical Barriers

8.2 Conclusions

Based on the findings of the study, following conclusions have been derived:

- The state of eye health in the study area is still alarming despite the various interventions to address the eye health conditions.
- People do not have good access to eye health services because of their limited eye health knowledge, low income, poor clinical services and geographical barriers.
- People with visual impairment, especially those with blindness, have become deprived of social and economic opportunities, which have escalated their conditions into poor economic status.
- Poor people are subject to limited access to employment opportunities and basic services such as education, water and sanitation, and health—all of which affect eye health and vision restoration or treatment.
- Even though better eye health services are located in the terai region than in the mountainous and hilly regions, people in the terai region do not seek services adequately because of a lack of knowledge of eye health and cataract.

8.3 Recommendations

Based on the findings of the study, following recommendations have been made:

- The causal links between cataract and socio-demographic conditions also require further investigation. In addition, more empirical data are required to prove that measures to reduce blindness also enhance socio-economic condition of the people. Hence, while further research studies are essential to determine factors leading to cataract, an equally important strategy to investigate their links to socio-economic status is essential.
- Analysis of eye health status is seriously hampered by the lack of organized village level data. Further efforts are required first to establish the village level data to formulate realistic planning.
- Lack of awareness of cataract surgery among people is the root cause of visual impairment (low vision and blindness) due to cataract. Therefore, awareness about cataract surgery should be created by the authorities concerned.

APPENDIX - I

OBSERVATION GUIDELINES

Observation Methods

The researcher has observed an eye department in a medical college, health posts/sub-health posts, eye treatment infrastructure, equipment and services in the research areas.

Observation Guidelines for Health Centres

Preliminary Information

Location: District: VDC: Ward:
Date of Observation:

Basic Information

1: General characteristics

- Focus on existing capacity of health centers including the number of out-patient and in-patient beds available
- Availability of specific resources such as electricity, water, telephones and radios

2. Services provided at the health centre

Services	Availability (Yes, No)
OPD	
In-Patient	
Diagnostic	
Pharmaceutical	
General Eye Check Up	
Surgical	
Others (Specify)	

3. Status of Equipment

Please indicate whether or not the following pieces of equipment are available and functional in this facility (indicate clearly the status such as available, not available, functional and not functional):

Facilities	Available	Not Available	Not functional
Slit Lamp			
Oxygen (No of filled.....) cylinders			
Autoclave for sterilization			
Infusion kits for intravenous solution			
Operating theatre			
Anesthetic machine			
Sutures and needles (blood counts)			
Others (Specify)			
Facilities	Available	Not Available	Not functional
Slit Lamp			
Oxygen (No of filled.....) cylinders			
Autoclave for sterilization			
Infusion kits for intravenous solution			
Operating theatre			
Sutures and needles (blood counts)			
Others (Specify)			

Injection and sterilization equipment

Yes

No

Human resources

Category of staff	M	F	Total no. at health facility	Number currently at post
Doctors				
General Nurses				
Midwives				
Community Health Nurses				
Medical Assistants				
Public Health Nurses				
Pharmacists				
Community health Officers				
Lab Technicians				
Occupational Health Officers				
Administrators				
Accounts officers				
Others (Specify)				
Ophthalmic Assistants				
Optometrists				

4. Facilities in the health centre

- | | |
|-----------------|---------------------|
| a. Water Supply | b. Electricity |
| c. Toilet | d. Others (Specify) |

Pharmacy service

- | | |
|--------|-------|
| a. Yes | b. No |
|--------|-------|

Eye operation facilities.

- | | |
|--------|-------|
| a. Yes | b. No |
|--------|-------|

Lab tests

- | | |
|--------|-------|
| a. Yes | b. No |
|--------|-------|

Existing capacity of eye health

- | | | |
|---------------|-----------------|------------------|
| a. Sufficient | b. Insufficient | c. Not available |
|---------------|-----------------|------------------|

APPENDIX - II

HOUSEHOLD SURVEY QUESTIONNAIRE

Research on "Status of People with Cataract in Rural Community of Central Development Region, Nepal"

Preliminary Information

1. ID
2. Name
3. Age
4. Sex
5. V.D.C.
6. Ward No.

Questionnaire related to Social Status

7. Types of family
 1. Single
 2. Joint
 3. Extended
8. Household Populations
 1. Male
 2. Female
 3. Total member
 4. Age Group
 1. < 15 year
 2. 15-59 year
 3. 60+ year
9. Religion
 1. Hindu
 2. Buddhist
 3. Christian
 4. Muslim
 5. Others
10. Caste ethnicity
 1. Brahman
 2. Chhetri
 3. Thakur
 4. Newar
 5. Tharu
 6. Tamang
 7. Sherpa
 8. Gurung
 9. Thami
 10. Dalit
 11. Mahato
 12. Muslim
 13. Yadav
11. Place of treatment
 1. Dharmi/Jhakri
 2. Home made herbs
 3. Private clinic
 4. Health post/Sub health post
 5. Private Hospital
 6. Public Hospital
12. Source of drinking water
 1. Private tap
 2. Public tap
 3. Stone tap
 4. River/stream
 5. Hand Pipe
 6. Well/pond
 7. Others

13. Marital status
 1. Unmarried 2. Married 3. Widow/widower 4. Divorced 5. Seperated
14. Eye check up
 1. Eye Hospital 2. Eye clinic 3. Eye camp 4. None of them
15. Respondent Educational Status
 1. Illiterate 2. Primary 3. Secondary 4. Higher education
16. Male Educational Status
 1. Illiterate 2. Primary 3. Secondary 4. Higher education
17. Female Educational Status
 1. Illiterate 2. Primary 3. Secondary 4. Higher education
18. Toilet
 1. Yes 2. No

Questionnaire related to Economic Status

19. Land holding size
 1. No land 2. Less than 5 ropani 3. 5-10 ropani 4. 10-15 ropani 5. More than 15 ropani
20. Annual income
 1. Less than 50,000 2. 50,000-1,00,000 3. 1,00,000-1,50,000
 4. 1,50,000-2,00,000 5. More than 2,00,000
21. Occupation
 1. Labour 2. Agriculture 3. Private service 4. Government service
 5. Business 6. Unemployment 7. Others
22. Major source of income
 1. Agriculture 2. Business/Trade 3. Labour 4. Transport
 5. Pension 6. Unemployment 7. Others
23. Food sufficiency
 1. Less than 3 months 2. 3-6 months 3. 6-9 months
 4. 9-12 months 5. Surplus

CATARACT POPULATION SURVEY QUESTIONNAIRE

1. Know about cataract surgery
 1. Yes
 2. No
2. Annual eye check-up
 1. Yes
 2. No
3. Trauma in your eyes
 1. Yes
 2. No
4. Eye care service
 1. Good
 2. Moderate
 3. Not available
5. Know about cataract
 1. Yes
 2. No
6. Family behave after cataract
 1. Good
 2. Moderate
 3. Poor
7. Visual impairment with cataract
 1. Less than 3 months
 2. Three months
 3. Six months
 4. One year
 5. More than one year
8. Jharphuk for cataract
 1. Yes
 2. No
9. Traditional treatment for cataract
 1. Yes
 2. No
10. Near vision after cataract
 1. Good
 2. Poor
 3. Moderate
11. Device for near vision
 1. Yes
 2. No
12. Distance vision after cataract
 1. Good
 2. Poor
 3. Moderate
13. Difficulties in un-familiar surrounding after cataract
 1. Yes
 2. No
14. Vision after cataract
 1. Good for near
 2. Good for distance
 3. No vision

15. Effect on occupation by cataract
 1. Yes
 2. No
16. Effect on income by cataract
 1. Yes
 2. No
17. Cataract effect on daily life activity
 1. Yes
 2. No
18. Cataract and feeling of loneliness
 1. Yes
 2. No
19. Cataract and social visit
 1. Lost
 2. Not lost
20. Cataract and dependency
 1. Yes
 2. No
21. Cataract eye
 1. Right eye
 2. Left eye
 3. Both eyes
22. Vision of cataract RE
 1. Less than 3/60
 2. Less than 6/60
 3. Less than 6/18
 4. More than 6/18
23. Vision of cataract LE
 1. Less than 3/60
 2. Less than 6/60
 3. Less than 6/18
 4. More than 6/18
24. Health impact after cataract
 1. Deteriorated
 2. Same as before
 3. Somewhat improved
 4. Very much improved
25. Drudgery reduction after cataract
 1. Deteriorated
 2. Same as before
 3. Somewhat improved
 4. Very much improved
26. Access to credit after cataract
 1. Deteriorated
 2. Same as before
 3. Somewhat improved
 4. Very much improved
27. Intra household equality after cataract
 1. Deteriorated
 2. Same as before
 3. Somewhat improved
 4. Very much improved

28. Empowerment after cataract

- | | |
|----------------------|-----------------------|
| 1. Deteriorated | 2. Same as before |
| 3. Somewhat improved | 4. Very much improved |

29. Recreation facilities after cataract

- | | |
|----------------------|-----------------------|
| 1. Deteriorated | 2. Same as before |
| 3. Somewhat improved | 4. Very much improved |

APPENDIX - III

FOCUS GROUP DISCUSSION GUIDELINE

a. Focus Group Discussion Method

- Five to eight focused community people, from among the ones mentioned below, have participated in discussions in related research areas. Two focus group discussions have been conducted within one research area.

b. Focus group discussions have been participated in by

- Ophthalmologists
- Optometrists
- Government officers
- Ophthalmic assistants
- Government/NGO official leaders
- Other related people of eye health

c. Focus group discussions-guidelines:

- a. General perception of eye health of local people.
- b. Perception of eye health availability of local people.
- c. Perception of eye health accessibility of local people.
- d. Perception of eye health sustainability of local people.
- e. Barriers of cataract treatment/Surgery.
- f. Suggestions of local people to improve eye health.

APPENDIX - IV

NAME LIST OF PARTICIPANTS IN FOCUS GROUP DISCUSSION

Dhunchhe (mountain) Group One

S.No.	Name	Age	Sex	Occupation/Designation	Remarks
1	Sanjeev Mahat	51	M	Ophthalmic Assistant	
2	Ram Bdr. Sherpa	49	M	Teacher	
3	Shyam Khatri	43	F	Teacher	
4	Ranjana Gurung	40	F	Health Worker	
5	Sagar shree Sharma	35	M	Teacher	

Dhunchhe (mountain) Group Two

S.No.	Name	Age	Sex	Occupation/Designation	Remarks
1	Sunder Rasaili	35	M	NGO Worker	
2	Khem Ghale	48	M	Teacher	
3	Mengmer Ghale	55	F	Teacher	
4	Bamgen Tamang	45	F	Health Worker	
5	Kilpa Dolma	51	M	Teacher	
6	Chiring Findo	44	M	Scoial Worker	

Ramche (hill) Group One

S.No.	Name	Age	Sex	Occupation/Designation	Remarks
1	Bhupendra Thapa	55	M	Social worker	
2	Bishu Maya Paudel	42	F	Public health officer	
3	Sanchya Maya Shrestha	53	F	Teacher	
4	Dhanmaya Tamang	50	F	Health Worker	
5	Giti Rya	32	M	Teacher	

Ramche (hill) Group Two

S.No.	Name	Age	Sex	Occupation/Designation	Remarks
1	Sabitri Paudel	48	F	Social worker	
2	Bishu Maya Paudel	42	F	Public health officer	
3	Padam Bhandari	45	M	Health Worker	
4	Pabitri Karki	51	F	Teacher	
5	Ramba Devi Timilsina	32	F	Teacher	
6	Chitra Kumar Paudel	36	M	Teacher	
7	Jit Kumar Thami	38	M	Social Worker	

Basdilwa (terai) Group One

S.No.	Name	Age	Sex	Occupation/Designation	Remarks
1	Sachita Nanda singh	50	M	Act. Public Health Officer	
2	Amaleswor Mishra	48	M	Public Health Officer	
3	Prof.Dr.Binay Kumar Verma	60	M	Prof. & HOD of National Medical College	
4	Dr. Hari Sharma	38	M	Medical Director, Drishti Eye Hospital	
5	Dr. Amar Keyal	32	M	Ophthalmologist, Kedia Eye Hospital	
6	Sangita Devi	52	F	Health Worker	
7	Basanta Paudel	30	M	Optometrist	
8	Nima Kathaun	38	F	Teacher	

Basdilwa (terai) Group Two

1	Sanjay Chaudhari	32	M	Health Worker	
2	Gajawoli Khatun	44	F	Teacher	
3	Sabira Khatun	39	F	Social Worker	
4	Shahid Miya	50	M	Teacher	
5	Suresh Ram	49	M	Health Worker	
6	Parmananda Yadav	42	M	Teacher	
7	Lalita Kumari Mandal	41	F	Social Worker	

APPENDIX - V

KEY INFORMANT INTERVIEW CHECK LIST

(Interviews with five people have been conducted from each VDC to obtain key information)

The following have been respondents, whomever available, during key informant interviews:

- a. Eye hospital manager/Doctor and related people of the related research areas.
- b. Medical college Eye department manager/Doctor and related people of the related research areas.
- c. Health post and/or sub-health post incharges/VDC secretaries and teachers and related people of the related research areas.

Key informant interview-guidelines:

- a. General perception of eye health of local people.
- b. Perception of eye health availability of local people.
- c. Perception of eye health accessibility of local people.
- d. Perception of eye health sustainability of local people.
- e. Barriers of cataract treatment/Surgery.
- f. Suggestions of local people to improve eye health.

APPENDIX-VI

PARTICIPANTS OF KEY INFORMANT INTERVIEW, DHUNCHE (MOUNTAIN)

S.No.	Name	Age	Sex	Occupation/Designation	Remarks
1	Sanjeev Mahat	40	M	Ophthalmic Assistant	
2	Krishna Bahadur Mijar	50	M	Senior public health officer	
3	Wilium Karki	40	F	ANM	
4	Devaki Raila	50	F	Sub health post incharge	
5	Sagar shree Neupane	35	M	Teacher	

Ramche (hill)

S.No.	Name	Age	Sex	Occupation/Designation	Remarks
1	Bhupendra Thapa	55	M	Social worker	
2	Ramesh Shrestha	42	M	Public health officer	
3	Hari Bhandari	52	M	Teacher	
4	Amrita Shrestha	50	F	Staff nurse	
5	Krishna Neupane	32	M	Teacher	

Basdilwa (terai)

S.No.	Name	Age	Sex	Occupation/Designation	Remarks
1	Sachita Nanda singh	50	M	Act. Public Health Officer	
2	Amaleswor Mishra	48	M	Public Health Officer	
3	Prof.Dr.Binay Kumar Verma	60	M	Prof. & HOD of National Medical College	
4	Dr. Hari Sharma	38	M	Medical Director, Drishti Eye Hospital	
5	Dr. Amar Keyal	32	M	Ophthalmologist, Kedia Eye Hospital	

APPENDIX - VII

CONSENT FORM

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**Informed consent from for Ph.D. Research on Status of People with
cataract in Rural Community of Central
Development Region, Nepal**

Namaskar,

I am Nabaraj Gautam, a Ph.D. Scholar at the Department of Rural Development, Faculty of Humanities and Social Sciences, Tribhuvan University. I am here as a researcher to carry out research for requirements of my Ph.D. in Rural Development. The title of my research is **Status of People with Cataract in Rural Community of Central Development Region, Nepal**. I need to take an interview with you as an important respondent of my research. If you take part in my research, it will be easier for me to complete my research. I will carry out this research work ensuring confidentiality, and anonymity of yours. If you are interested to participate, I will proceed. Otherwise, I will leave and will not be disappointed if you are not interested. Your contribution can make a difference to depicting a clear picture of the problem.

The information given by you will be used only for the fulfillment of the research objectives.

May I proceed?

Yes No

If no, stop the interview

Signature of the respondent Signature of the researcher.....

Name of the respondent

Interviewer's name.....

Signature

Date.....

APPENDIX - VIII

GUIDELINES FOR CASE STUDY

Case Studies have been taken with focus on the following points. Two related people have been taken from each VDC for the research.

Checklist for Case Study

1. Name, Age, Sex, Caste, Address
2. Educational and professional background
3. Economical background
4. Family background
5. Causes of cataract
6. Feeling after visual impairment
7. Family's, friend's and community's behaviour after cataract
8. Physical and mental condition after cataract
9. Relation with family after cataract
10. Participation in community, society or others programmes after cataract
11. Living arrangements after cataract
12. Mental and psychological effect after cataract
13. Future plan
14. Suggestions

APPENDIX - IX

CASE STUDIES

Case Study 1

- Mailo Chamar, (a pseudonym to ensure anonymity), a married male aged 86 years, lives in Basdilwa VDC, Parsa. He is living with his family. He has five daughters, seven sons, and is widowed. His family comprises thirteen members. He is illiterate. He does not know that he has been suffering from cataract for the last four months. Now-a-days, he is taking treatment offered by *Dhami/Jhakri*, and traditional medicine (home-made herbs) for cataract. None of his family members knows about cataract in him. His health has deteriorated day by day. He has maintained that he is not loved and cared for because he has lost his wife. He is Hindu and dalit (untouchable).
- He does not know that he lost his vision because of cataract; however, he knows of cataract surgery which can restore his eyesight. His economic condition is very poor, because of which he is waiting for free eye camps in his village to get his eyes checked-up. His visual acuity is counting fingers close to face. He also believes in God and supernatural power. He thinks that the illness is the result of the wrong activities of past life and God had given him punishment. He thought that those old have such kinds of problems and do not restore vision.
- He is a farmer. He had vision before he acquired cataract. Following cataract, he has become unable to work on land, as a result of which his family's financial condition changed for worse. Now-a-days, his children are not staying with him; he is alone with few daily activities to do. Because of poor financial condition and visual impairment, he cannot purchase food and cook. He is waiting for his death.
- He urges the government to arrange for free food, shelter, general health as well as eye healthcare service for each rural person. He knows about his sickness. Since his family is weak financially, he cannot spend on medicine and surgery. He opines that it is better to die than to be blind.

Case Study 2

- Parbati Thami (a pseudonym), a married female aged 70 years, was born in a remote village in Sindupalchowk. She is living with her family. Her families are Christian; she has one daughter, one son, and her husband. She has a family of four members.
- She works as a volunteer in Church. Her family members work as labourers in tourist areas of Tatopani, a famous Hindu religious place near the border between Nepal and China. She is able to read letters (primary education). Her family is dependent on farming in the village. Her economic status is poor. There is no alternative occupation in her family. One year earlier she experienced difficulties with distance and near vision. Her vision is 3/60 in each eye. She has age-related cataract in both of her eyes. As a result of cataract, she has become unable to work. She is aware that cataract surgery helps restore her eyesight; therefore, she is waiting for eye camps so that she could undergo cataract surgery for free. Her vision has deteriorated day by day.
- She is unable to work like she used to in the past because she has cataract. Her family treats her now in the same way as it did in the past. Now-a-days, she cannot visit places in her community to know about activities there. She remains sleepless all night because she is so worried about her vision loss and her health which has worsened. She is living with her family. The bond between her and other family members has remained the same. She is hopeful about her vision, which she thinks will improve following cataract surgery. She is praying to Lord Jesus for an eye camp. She wishes to see the world clear before dying.

Case Study 3

- Maya (a pseudonym), a married female aged 70 years, was born in a poor family in Basdilwa VDC of Parsa district. A Hindu by religion, she has two sons and three daughters. A total of eight members live in her family. The family has a small house to live in, but does not have land for farming. She never got a chance to study because of which she is illiterate. Her family used to work on a landlord's farm to the extent she recalls.
- She heard about cataract but was not aware of when her eyes got cataract. Her both eyes have had blurry vision for the last several years. She went to *Dhami* and *Jhakri* for traditional treatment, which did not improve her condition. Her vision deteriorated day by day, and she fears that she will become blind soon.
- She does not have money to go to hospital, so she is waiting for free camps to come to the village. Her vision is 3/60 in both of her eyes. She has age-related cataract in both of her eyes. She is having difficulty with her work due to cataract; she, however, knows what can help her recover her poor eyesight i.e., she is cognizant of cataract and cataract surgery. Her vision is worsening day by day.
- Cataract has barred her from working. Her family members are behaving towards her in a good way. Now-a-days she is unable to see the activities of the people in her community, as result of which she remains unaware of the activities in her community. She is sleepless at night because she is very worried about her vision loss and her worsening health. Her relationship with the family is good. She expects good vision as soon as possible. She is praying to God for the arrangements of free camps for free surgery. She desperately hopes to see the world clear before she dies, and this is possible after cataract surgery has been done on her eyes.

Case Study 4

- Kami Sherpa (a pseudonym), a married male aged 70 years, lives in Dhunche VDC, Rasuwa. He is living with his family. He has two daughters, a son, a wife and his mother. He has a family with members of six in total. He has not attended school. He knows that he has been suffering from cataract for the last six months. Now-a-days, he is taking treatment offered by *Dhami* and *Jhankri*. All of his family members know about his cataract and his health status. His family loves and cares for him so much. He says, "When my small daughter and son encourage me to live a long life and they take care and give me love more than I expect, then at that time I really feel helpless and have a remorse for poor vision."
- He knows that vision lost due to cataract can be recovered after surgery. His economic condition is very poor so, he is waiting for free eye camps in the village. His visual acuity is counting fingers close to face in both eyes. He has a strong belief in God and supernatural power. He has a conviction that the illness is the result of the wrong activities of the past life and that God had given him punishment.
- He is a farmer but has been prevented from working because of visual impairment due to cataract. As he developed cataract, his family's financial status escalated as the family financially depends on him, as a result of which he is unable to afford treatment in Kathmandu. Therefore, he is compelled to wait for a free eye camp for his visual recovery. He wants to urge the government to arrange for free eye care service for each rural person. He knows about his sickness. At last, he wants other people to not remain visually impaired due to cataract and to enjoy seeing the world as life is a valuable gift.

Case Study 5

- Saili Ghale (a pseudonym), a married female of 63 years, lives in Dhunche VDC of Rasuwa district. She is living with her family. Her families are Buddhist; she has four daughters, two sons, and a husband. In this way, she has a family of eight members in total.
- Her profession is farming. But, sometimes her family members work as labourers in tourist areas of Langtang Mountain. Her educational status is illiterate and her family is dependent on the farming occupation. Her economic status is very poor. There is no alternative occupation in her family members. She has been experiencing difficulty with far and near vision. Her vision is hand movement. She has age-related cataract in her both of her eyes. She is having difficulty with her work due to cataract; however, she does not know how she can get her vision back. She is unaware of cataract and cataract surgery. She is seeking traditional treatment by going to *Dhami* and *Jhankri* for vision recovery. In spite of this, her vision has deteriorated day by day.
- She is unable to work like she used to in the past before cataract. Her family has started treating her differently after her acquisition of cataract. Now-a-days she cannot see the activities of people in her community so, she does not know about community activities. She remains sleepless at night because she is very worried about her vision loss and worsening physical health. She expects good vision as soon as possible. She is very optimistic about seeing the world clear before she dies and she does not have other further plans. She prays to God for the restoration of her visual acuity.

Case Study 6

- Badri Paudel (a pseudonym), a married male aged 70 years, lives in Ramche VDC in Sindupalchowk district. He is living with his family, which follows Hinduism. He has four daughters, two sons, and a wife. In this way, he has a family of six members in total. He has not attended school. He is cognizant of the fact that he has been suffering from cataract for the past one year. Now-a-days, he is taking treatment offered by *Dhami* and *Jhankri*. None of his family members know about his cataract. His family loves and cares for him very much. Day by day his vision has been worsening so much so that his presenting visual acuity is 1/60 in both eyes.
- He knows that vision lost due to cataract can be recovered after surgery. But, he has not opted for surgery and has been waiting for a free eye-surgical camp as his economic condition is so poor that he remains unable to afford cataract surgery. He holds a strong belief in God and in supernatural power. He thinks that the cause of blindness is the result of wrong activities done in the past life and that God had given him punishment.
- Before he acquired cataract, he had been labourious. As he developed cataract, his family's financial status escalated as the family financially depends on him, as a result of which he is unable to afford treatment in Kathmandu. Therefore, he is compelled to wait for a free eye camp for his visual recovery. He wants to urge the government to arrange for free eye care service for each rural person. He knows about his sickness. At last, he wants other people to not remain visually impaired due to cataract and to enjoy seeing the world as life is a valuable gift.

APPENDIX – X

SPSS STATISTIC OUTPUT WORKSHEET

Table X.1. Descriptive statistics of eye check-up habits in three VDCs

VDC	Eye check-up	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Dhunche VDC	Eye Hospital	7	100.0%	0	0.0%	7	100.0%
	Eye Camp	21	100.0%	0	0.0%	21	100.0%
	Eye clinic	11	100.0%	0	0.0%	11	100.0%
	none of them	21	100.0%	0	0.0%	21	100.0%
Ramche VDC	Eye Hospital	3	100.0%	0	0.0%	3	100.0%
	Eye Camp	17	100.0%	0	0.0%	17	100.0%
	Eye clinic	15	100.0%	0	0.0%	15	100.0%
	none of them	48	100.0%	0	0.0%	48	100.0%
Basdilwa VDC	Eye Hospital	36	100.0%	0	0.0%	36	100.0%
	Eye Camp	25	100.0%	0	0.0%	25	100.0%
	Eye clinic	3	100.0%	0	0.0%	3	100.0%
	none of them	44	100.0%	0	0.0%	44	100.0%

Table X.1.1. Cross tabulation of Educational Status and Eye Check-up Habits of the Respondents of the Sampled Households

			Eye check-up habits				Total
			Eye Hospital	Eye Camp	Eye clinic	none of them	
Respondents' Educational Status	Illiterate	Count	18	54	21	105	198
		Expected	36.3	49.7	22.9	89.1	198.0
	Primary	Count	23	6	6	7	42
		Expected	7.7	10.5	4.9	18.9	42.0
	Secondary	Count	3	2	2	1	8
		Expected	1.5	2.0	.9	3.6	8.0
	Higher education	Count	2	1	0	0	3
		Expected	.5	.8	.3	1.4	3.0
	Total	Count	46	63	29	113	251
		Expected	46.0	63.0	29.0	113.0	251.0
		Count					
		Expected					

Table X.1. 2. Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	63.055 ^a	9	.000
Likelihood Ratio	57.286	9	.000
Linear-by-Linear Association	33.596	1	.000
N of Valid Cases	251		

Table X.2. Descriptive Statistics of Different Categories of Annual Income in Three VDCs

VDC	Annual income	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Dhunchhe VDC	<50000	24	100.0%	0	0.0%	24	100.0%
	50,000-100000	6	100.0%	0	0.0%	6	100.0%
	100000-150000	2	100.0%	0	0.0%	2	100.0%
	150000-200000	24	100.0%	0	0.0%	24	100.0%
	>200000	4	100.0%	0	0.0%	4	100.0%
Ramche VDC	<50000	47	100.0%	0	0.0%	47	100.0%
	50,000-100000	13	100.0%	0	0.0%	13	100.0%
	100000-150000	1	100.0%	0	0.0%	1	100.0%
	150000-200000	17	100.0%	0	0.0%	17	100.0%
	>200000	5	100.0%	0	0.0%	5	100.0%
Basdilwa VDC	<50000	47	100.0%	0	0.0%	47	100.0%
	50,000-100000	16	100.0%	0	0.0%	16	100.0%
	100000-150000	10	100.0%	0	0.0%	10	100.0%
	150000-200000	8	100.0%	0	0.0%	8	100.0%
	>200000	27	100.0%	0	0.0%	27	100.0%

Table X.2.1. Cross tabulation of Different Categories of Annual Income of Sampled Households and Knowledge about Cataract Surgery

			Knowledge about cataract surgery		Total
			Yes	No	
Annual income	<50000	Count	37	81	118
		Expected Count	41.8	76.2	118.0
	50,000-100000	Count	12	23	35
		Expected Count	12.4	22.6	35.0
	100000-150000	Count	7	6	13
		Expected Count	4.6	8.4	13.0
	150000-200000	Count	18	31	49
		Expected Count	17.4	31.6	49.0
	>200000	Count	15	21	36
		Expected Count	12.8	23.2	36.0
Total		Count	89	162	251
		Expected Count	89.0	162.0	251.0

Table X.2.2. Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.451 ^a	4	.485
Likelihood Ratio	3.358	4	.500
Linear-by-Linear Association	1.645	1	.200
N of Valid Cases	251		

Table X.3. Descriptive Statistics of Different Levels of Food Sufficiency in Three VDCs

VDC	Food sufficiency	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Dhunche VDC	<3 months	31	100.0%	0	0.0%	31	100.0%
	3-6 months	9	100.0%	0	0.0%	9	100.0%
	6-9 months	1	100.0%	0	0.0%	1	100.0%
	9-12 months	14	100.0%	0	0.0%	14	100.0%
	Surplus	5	100.0%	0	0.0%	5	100.0%
Ramche VDC	<3 months	22	100.0%	0	0.0%	22	100.0%
	3-6 months	19	100.0%	0	0.0%	19	100.0%
	6-9 months	12	100.0%	0	0.0%	12	100.0%
	9-12 months	26	100.0%	0	0.0%	26	100.0%
	Surplus	4	100.0%	0	0.0%	4	100.0%
Basdilwa VDC	<3 months	33	100.0%	0	0.0%	33	100.0%
	3-6 months	9	100.0%	0	0.0%	9	100.0%
	6-9 months	3	100.0%	0	0.0%	3	100.0%
	9-12 months	24	100.0%	0	0.0%	24	100.0%
	Surplus	39	100.0%	0	0.0%	39	100.0%

Table X.3.1. Cross Tabulation of Educational Status and Food Sufficiency of Sampled Households

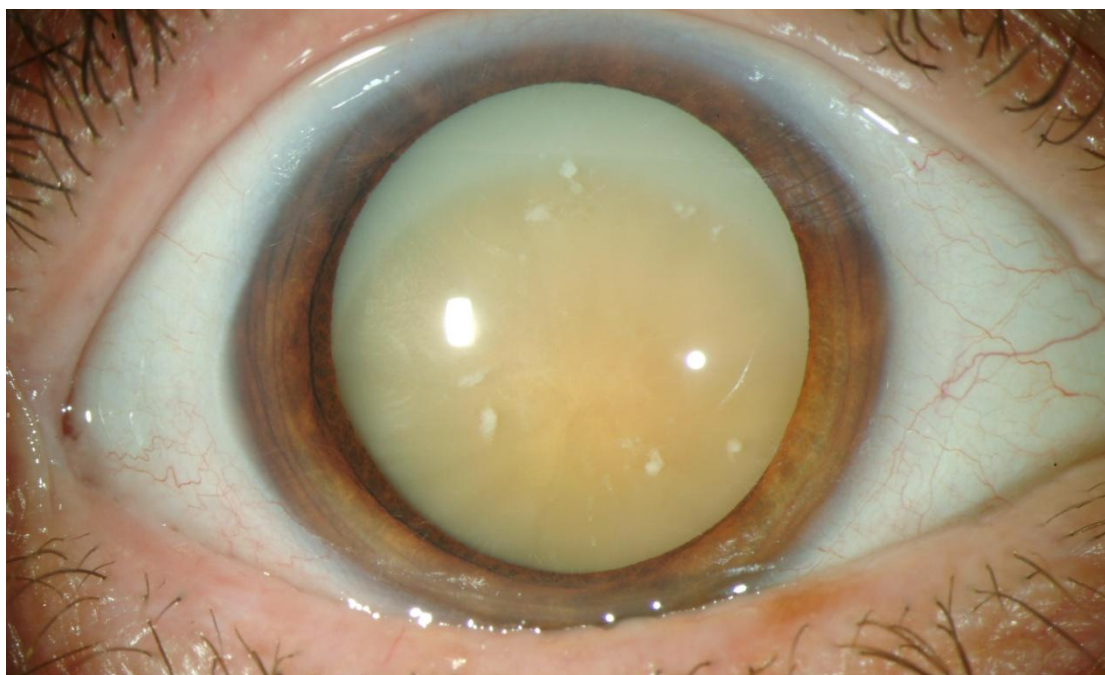
			Food sufficiency					Total
			<3 months	3-6 months	6-9 months	9-12 months	surplus	
Respondents' Educational Status	Illiterate	Count	81	24	13	51	29	198
		Expected Count	67.8	29.2	12.6	50.5	37.9	198.0
	Primary	Count	4	9	3	11	15	42
		Expected Count	14.4	6.2	2.7	10.7	8.0	42.0
	Secondary	Count	1	4	0	2	1	8
		Expected Count	2.7	1.2	.5	2.0	1.5	8.0
	Higher education	Count	0	0	0	0	3	3
		Expected Count	1.0	.4	.2	.8	.6	3.0
	Total	Count	86	37	16	64	48	251
		Expected Count	86.0	37.0	16.0	64.0	48.0	251.0

Table X.3.2. Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.669 ^a	12	.000
Likelihood Ratio	38.913	12	.000
Linear-by-Linear Association	12.508	1	.000
N of Valid Cases	251		

APPENDIX – XI
LIST OF PHOTOGRAPHS

Photo No. 1: Eye showing cataractous lens



Source: Photograph taken by Nabaraj Mainali, 2015

Photo No. 2: Eye examination of a man in Basdilwa VDC, Parsa



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 3: Eye examination of a woman in Basdilwa VDC, Parsa



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 4: Focus Group Discussion in Basdilwa VDC, Parsa



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 5: Focus Group Discussion in Basdilwa VDC, Parsa



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 6: Eye examination of a man in Basdilwa VDC, Parsa



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 7: Interview with a woman in Basdilwa VDC, Parsa



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 8: Eye examination of a man in Ramche VDC, Sindhupalchowk



Source: Photograph taken by Nabaraj Mainali, 2015

Photo No. 9: Interview with a woman in Ramche VDC, Sindhupalchok



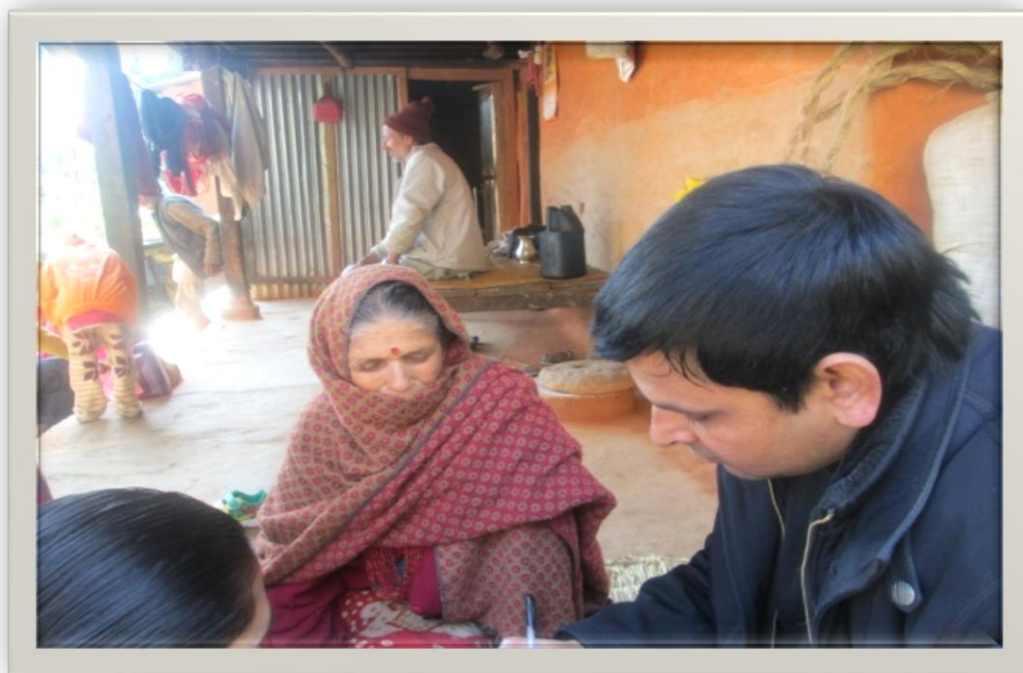
Source: Photograph taken by Nabaraj Mainali, 2015

Photo No. 10: Eye examination of a man in Ramche VDC, Sindhupalchok



Source: Photograph taken by Nabaraj Mainali, 2015

Photo No. 11: Interview with a woman in Ramche VDC, Sindhupalchok



Source: Photograph taken by Nabaraj Mainali, 2015

Photo No. 12: Key informant interview with Krishna Bdr Mijar in Dhunche VDC, Rasuwa



Source: Photograph taken by Gaurav Sapkota, 2015

Photo No. 13: Visual acuity testing by researcher in Dhunche VDC, Rasuwa



Source: Photograph taken by Gaurav Sapkota, 2015

Photo No. 14: Key informant interview with Sanjeeb Mahat, Dhunche VDC, Rasuwa



Source: Photograph taken by Gaurav Sapkota, 2015

Photo No. 15: Focus Group Discussion, Dhunche VDC, Rasuwa



Source: Photograph taken by Gaurav Sapkota, 2015

Photo No. 16: Focus Group Discussion, Dhunche VDC, Rasuwa



Source: Photograph taken by Gaurav Sapkota, 2015

Photo No. 17: Interview in Dhunche VDC, Rasuwa



Source: Photograph taken by Gaurav Sapkota, 2015

Photo No. 18: Interview in Dhunche VDC, Rasuwa



Source: Photograph taken by Gaurav Sapkota, 2015

Photo No. 19: Interview in Ramche VDC, Sindhupalchowk



Source: Photograph taken by Nabaraj Mainali, 2015

Photo No. 20: Eye examination of a man in Basdilwa VDC, Parsa



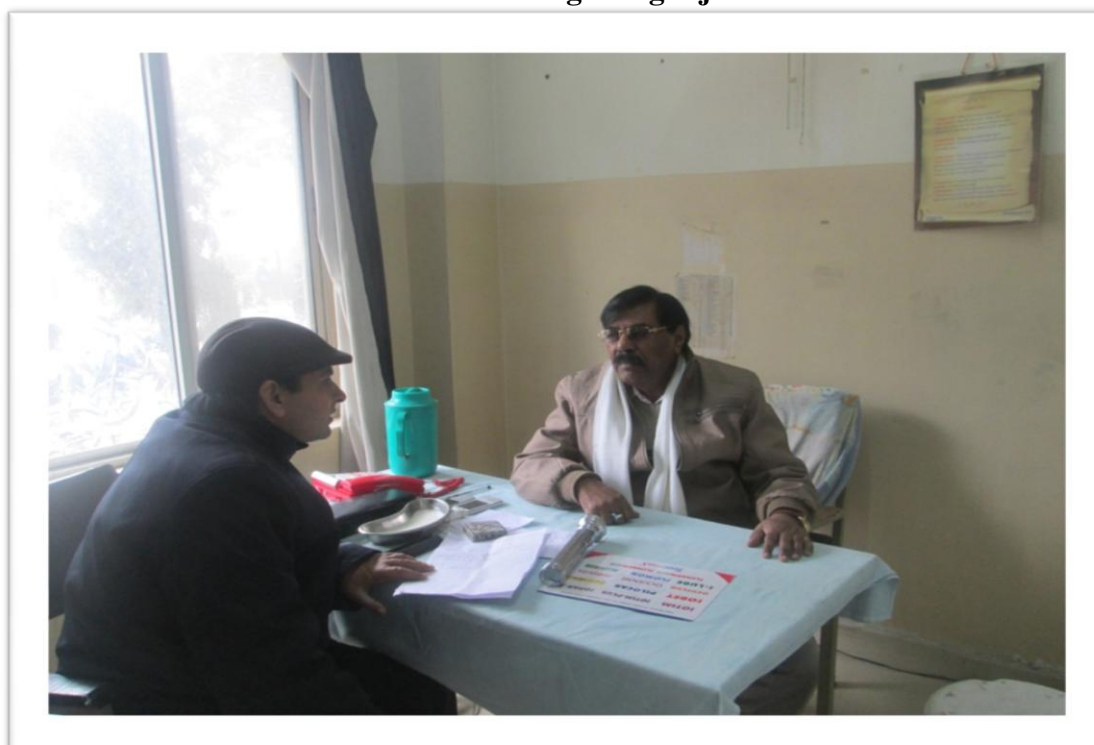
Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 21: Focus Group Discussion in Drishti Eye Hospital Birgunj, Parsa



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 22: Key informant interview with Head of Department in National Medical College Birgunj



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 23: Key informant interview District Public Health Office Dhunche, Rasuwa



Source: Photograph taken by Gaurav Sapkota, 2015

Photo No. 24: Eye examination of a woman in Ramche VDC, Sindhupalchowk



Source: Photograph taken by Nabaraj Mainali, 2015

Photo No. 25: Visual acuity testing in Basdilwa VDC, Parsa



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 26: Focus Group Discussion in Basdilwa VDC, Parsa



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

Photo No. 27: Eye examination of a man in Ramche VDC, Sindhupalchowk



Source: Photograph taken by Nabaraj Mainali, 2015

Photo No. 28: Key informant interview in Kedia Eye Hospital, Birgunj



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

**Photo No. 29: Key Informant interview with District Public Health Officer,
Parsa**



Source: Photograph taken by Sanjaya Kumar Chaudhary, 2015

**Photo No. 30: Eye Examination of a woman by Researcher, Ramche VDC,
Sindhupalchowk**



Source: Photograph taken by Nabaraj Mainali, 2015

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