

CHAPTER II

Generating Demand for Cataract surgery: Involving the Community in an Innovative Approach.

2.1 Introduction

Cataract is a major cause of blindness in Nepal. About 73% of people are being blind due to cataract of the total blindness. Cataract can be cured by surgery, which is simple and immediate give result, but the issue is people are not demanding service for cataract surgery. It is not that they are happy with living in blind, but there are some factors or barriers, which are forcing them to live in blind. The barriers are not the same of the entire cataract patient. In other words, different cataract blind are having different barriers.

The main underlying reasons of having high prevalence of cataract blindness in Lumbini is, people are not seeking treatment due to various barriers. Such as operation fears, belief, and not having information about the services. Furthermore not affordability or less priority to eye health care due to poverty and not having family as well as social support among elderly people for cataract surgery. Lastly, poor visual outcome after cataract surgery and poor visual rehabilitation due to not correcting refraction are other barriers. To create and increase demand for cataract surgery, breaking down the various barriers, is essential by applying appropriate strategies.

Early retirement from the jobs, unproductive life, family burden, social discrimination and poor quality of life in results early death are the major consequences of cataract blindness in the society. However, removal of cataract and replacement with IOL improves all measurable quality of life regardless of age and

gender. A study shows those 85% men and 58% women who had lost their jobs, as a result of blindness and regained those jobs after cataract surgery. The same study shows that 1500% increase in productivity during the first year following surgery (Javitt, 1996). Another study shows that management costs per cataract patient per year is US \$ 365 whereas the cost of cataract surgery is only US \$ 25 (World Blindness and its Prevention).

Intervention will focus on, training and empowerment for the Pseudophakic Motivators who can explain the real experience of cataract blindness as well as experience after cataract surgery. Formulation of self-help group, who will discuss and share feelings among themselves and will try to find out the solution of the problem. They will help among each other to solve the problems. Local authority (Village Development Committee) and eye care service providers will work as a partnership, which will share responsibility and use the resources with the mutual understanding and cooperation between each other. All those efforts will reduce the barriers and increase the demand for cataract surgery in the community.

2.2 Cataract Blindness Situation in Nepal

The 1981 Nepal National Blindness Survey showed that almost one percent of the Nepalese population was bilaterally blind (having visual acuity $<3/60$) and in those aged 45 years and older, the percentage was 3.77. It was estimated that 80% of this blindness is either curable or preventable. The major cause of blindness in the 45 years and older age group was cataract, 83% in those more than 45 years and (65.4%) in the all ages groups. The 1981 survey led to the establishment of a national eye care program for the control and prevention of blindness in Nepal. The program was launched with two main strategies; (i) the development of training program for eye care professionals of staff hospitals and eye care centers, and (ii) The establishment of primary, secondary and tertiary eye care centers for early detection and treatment of all eye diseases in areas where services were most in need. For both these activities the national eye care program obtained substantial support from international non governmental organizations with mutual cooperation and coordination of Nepal Netrajyoti Shangh and international non governmental organization and local based organizations who have been successfully carrying out the eye care program in the country (Pokharel et al., 1998).

Whatever effort is being done it is still not enough. Presently the backlog (the number of cases) of cataract cases is about 125,000. Recent study shows that, 16,000 Nepalese are becoming cataract blind each year (Upadhaya, 1997). The prevalence of blindness among women is very high (74/1000 female) compared to males (53/1000). Male are educated and more exposed to the outer world compared to females which result in a higher health seeking behavior. The other reason may be, males are the decision maker and money holder in most of the families of Nepal, which encourage

them to use more health care services than females. This may be a result of higher utilization of service for cataract surgery by males.

The same holds for illiterate population where the difference is even more pronounced (72/1000 verses 31/1000) (Pokharel et al., 1999). Due to geographical difficulties and limited resources, the eye care service is not accessible in the remote areas of Nepal, there are no alternatives except waiting in a eye camp in the nearby district. The prevalence of visual impairment due to cataract is significantly higher among extreme low socioeconomic stratum than higher economic stratum (Dandona et al., 1999). Poverty is one of the major causes of various public health problems of Nepal, one of which is cataract blindness. It is similar to a cycle: poverty--illiteracy--lack of awareness--poor health--poverty. Due to poverty and limited resources cataract blindness may not get as high priority as food or clothes.

Often even people on the priority list do not get service because inaccessibility. Accessibility refers here particularly to distance, affordability, and quality of care. Currently because of illiteracy, ignorance, not getting chance to exposure with outer world and deep-rooted culture, and custom, many people express fear of cataract surgery. In summary these are the main contributing factors for the high prevalence of cataract in Nepal.

2.3 Prevalence of Blindness in South East Asia

Rapid demographic and epidemiological changes have affected the magnitude and the pattern of blindness among the people of South East Asia Region. It is estimated that there are approximately 11.7 million blind people in the region. Cataract is the main predominant cause of blindness in all the South East Asian countries. Cataract as a proportion of all causes of blindness ranges from 50% in DPR

Korea to 80.1% in India. The prevalence of cataract blindness ranges from 0.31% in Thailand to 1.47% in Indonesia. The cataract number of cases throughout the region is estimated to be 8.2 million cases. With an aging population and inadequate surgical intervention, this backlog is likely to increase in many countries in this region (WHO, 1999).

Table 2.1 Estimated Blindness and Cataract Prevalence South East Asian

Region.

Country	Population in (thousands)	Prevalence of Blindness (%)	% of blindness due to cataract	Prevalence of cataract per 10,000 Pop.	Cataract backlog (No. of cases)
Bangladesh	120,073	1.00	60.0	60	720,438
Bhutan	600	0.80	74.0	59	3,552
DPR Korea	22,466	0.40	50.0	20	44,932
India	944,580	0.70	80.1	56	5,296,260
Indonesia	200,453	1.47	53.0	78	1,561,729
Maldives	263	0.80	64.0	51	1,347
Myanmar	45,922	0.90	63.6	57	262,858
Nepal	22,021	0.80	71.0	57	125,079
Sri Lanka	18,100	0.50	69.5	35	62,898
Thailand	58,703	0.31	74.5	23	135,593

Source: WHO, Regional office for South East Asia, New Delhi, 1999.

The above table shows that, Indonesia has the highest prevalence of cataract blindness, i.e. 78/10,000 population and Nepal occupies the 4th highest position with cataract blindness being 57/10,000 population of the member state of South East Asia. The prevalence of cataract blindness of Nepal is nearly three times higher than Thailand.

Table 2.2 Causes of Blindness in Nepal

<u>Rank</u>	<u>Causes of blindness</u>	<u>Percentage</u>
1	Cataract	66.8
2	Cataract sequeale	5.3
3	Retinal disease	3.3
4	Glaucoma	3.2
5	Infection	2.8
6	Trachoma	2.4
7	Others (Trauma Smallpox ,Amblyopic Nutritional etiology)	16.1

Source: Nepal Blindness Survey, 1981.

Nepal has a high prevalence rate of blindness, more than 20 times higher than in the developed countries (NBS Report, 1981). The major cause for this high prevalence of blindness is un-operated cataract. As shown in Table 2.2 cataract and its sequelae occupy higher positions of causes of blindness in Nepal. Cataract is the dominant cause of blindness in Nepal with 68.8% attributable to cataract and another 5.3% to unsuccessful cataract intervention couching and surgery which have left people incurable blind

Table 2.3 Typology of Cataract in Nepal

Etiology	Right eye		Left eye	
	Number	Percentage	Number	Percentage
Trauma	0	0.0	0	0.0
Congenital	11	1.3	12	1.3
Infection	1	0.1	4	0.5
Senile	709	82.5	737	82.9
Miscellaneous	2	0.2	2	0.2
Unknown	136	15.9	134	15.1
Missing Data	1	NA	0	NA
Total	860	100	889	100

Source: Nepal Blindness Survey, 1981.

The above table shows that the distribution of cataract by type, over 82% of cataracts shown as senile cataract, whereas 1% congenital cataract and less than 1% are infectious. Senile cataracts accounted 98% of cataracts for which any cause other than unknown etiology was given (Pokhrel et al., 1981). Taking into account of the above statistics of the senile cataract, the intervention need to be focused among aging population for sight restoration. To increase the number of cataract surgery and provide them sight restoration, there are only two options; (i) Either surgical team need to go to the community, such as mobile eye camps and (ii) The other option is to bring the cataract patient in the hospital by creating demand for surgery. Many studies show that the quality of care and surgical outcome is poorer in the mobile surgical eye camp compared to hospital service. To minimize post operative infection, maintain the quality of care and maximum utilization of limited resources for the high volume

and high quality output and sustain the program, it is wise to bring the cataract patient in the hospital for surgery by creating demand for the eye care services.

A recent cost effectiveness study of public funded options for cataract surgery in Mysore South India shows that, almost half the patients operated in the mobile surgical eye camps dissatisfied with the visual out come (49%). More than one third were blind in the operated eye. User satisfaction was higher with other providers (Medical College Hospital 82% and Non Governmental Hospital 85%) and fewer patients remained blind. Mobile surgical camps were low cost but with poor outcome. The same study suggested that instead of organizing mobile surgical eye camp, consider alternatives such as transporting patients to better permanent facilities (Singh et al., 2000).

Table 2.4 Distribution of Cataract by Zone in Nepal

S. No	Zone	Prevalence Per 100	Percent of all Cataract in Nepal
1	Mechi	1.5	3.2 %
2	Koshi	3.0	9.8 %
3	Sagarmatha	3.3	10.4 %
4	Janakpur	3.1	12.1 %
5	Bagmati	1.5	7.2 %
6	Narayani	4.4	16.8 %
7	Gandaki	1.3	4.4 %
8	LUMBINI	3.0	12.1 %
9	Dhaulagiri	2.1	1.2 %
10	Rapti	1.9	2.7 %
11	Karnali	4.1	1.5 %
12	Bheri	3.7	7.8 %
13	Seti	2.9	4.3 %
14	Mahakali	2.8	6.3

Source: Nepal Blindness Survey, 1981

The above table shows that the distribution of cataract prevalence by administrative Zone. Narayani Zone has both the highest prevalence rate (4.4%) and largest share (16.8%) of cataract in Nepal. Lumbini, Sagarmatha, Janakpur and Karnali Zones all have prevalence rates over 3 per 100. The prevalence of cataract is high in Terai and is high in high altitude area i.e. in Karnali compared with mid hill regions of Nepal. Prevalence of cataract in mid hills region is low compared to Terai and Karnali Zone. The assumption is in mid hills region there is no strong sunlight like Terai and very favorable climate round the year may be the reason of having low prevalence of cataract.

Karnali Zone is one of the most remote and least developed regions of Nepal. Socioeconomic status and literacy rate is extremely low compared to other part of Nepal. It is one of the highest vitamin A deficiency (15%) areas of Nepal. Low nutrition status and low socioeconomic status may be one of various contributing factors of having high prevalence of cataract in Karnali Zone.

2.4 Cause, Consequences and Remedies of the Problem

Cataract is opacity in the lens, which interferes with vision. Health status plays a major role in the development of opacity in the lens of the eye. Health status is determined by a combination of biological, behavioral, environmental and social risk factors. Biological risk factors are those individual physiological and structural features often genetic that determines special propensities, susceptibilities or immunities in various circumstances. Behavior risk factors are those specific behaviors that may increase or decrease an individual's risk of disease. Environmental risk factors are those potentially hazardous agents or factors in the environment,

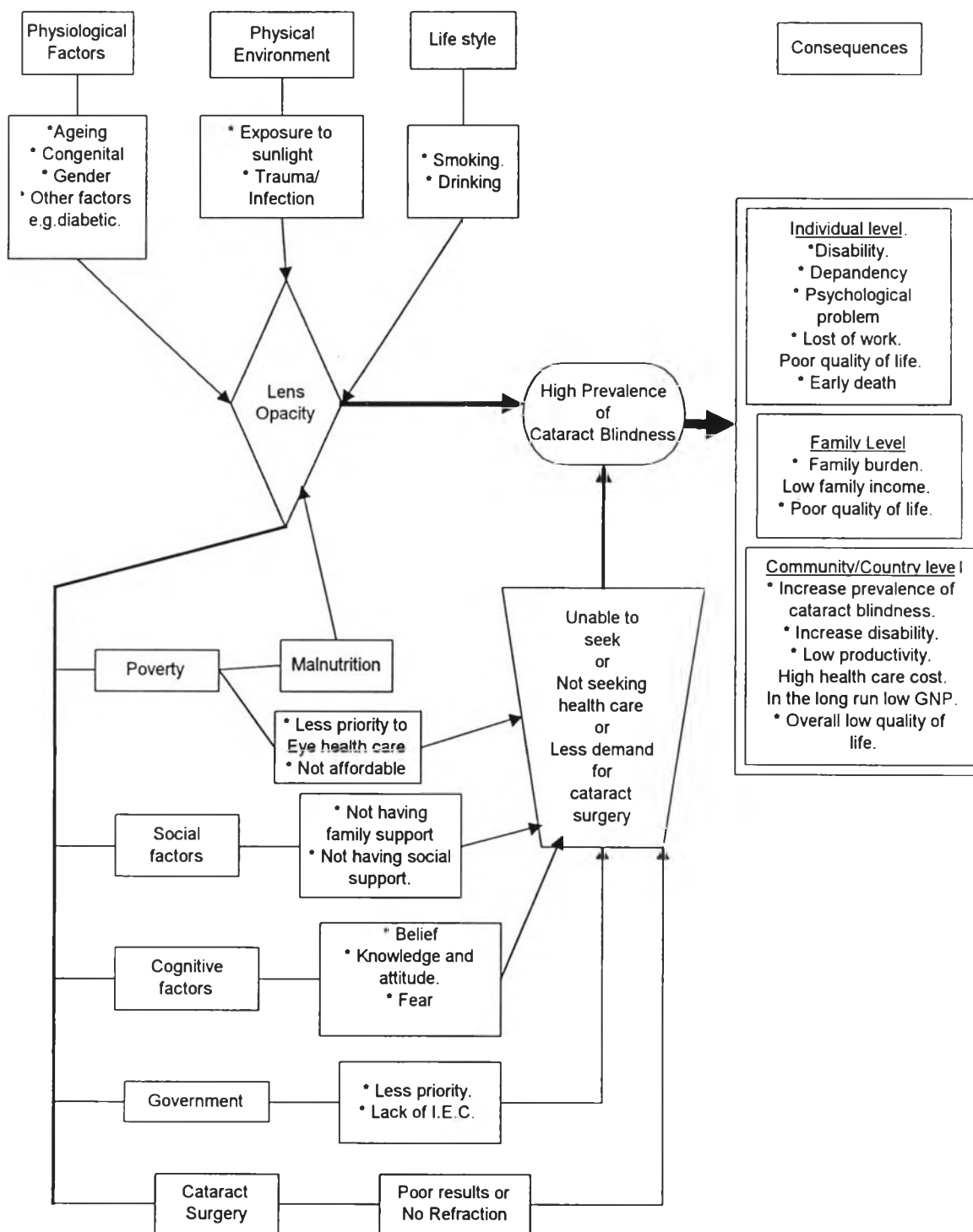
naturally occurring, which affect the risk of disease or disability. Social risk factors include many such as economic status, educational level, geographic isolation, social support system, access to health care service, and their food supply (Ginnis et al., 1997).

However physical environmental factors, physiological factors, and individual life style or behavior is responsible for forming a opacity in the lens of the eyes. When the crystal lens slowly becomes hazy (cloudy) then develops diminishing of vision gradually the lens become more hazy. In the course of time the individual will unable to count fingers at a distance of three meters ($VA < 3/60$) which stage called cataract blindness. Science has developed modern technology in which that opaque lens can replace by an artificial plastic lens and can see as normal as before.

Despite of that a large number of people remain blind in the community. They are not seeking health care or unable to seek health care due to various reasons. In brief poverty, cognitive factors, social factors, not having sufficient awareness activities from the government authority and poor surgical outcomes are the main reasons. Whatever component shown in the casual web (figure 2.1) I have put in the conceptual frame work in a organized manner such as non behavior factor, behavior factors, predisposing, reinforcing and enabling factors, for the purpose of better explanation and easy understanding. For this, I have used the health utilization model of Anderson and Newman (1973) as a conceptual frame work The reason for using this model is that, a it gives clear picture, what are the factors determined demand or not to demand (use or not to use) health care service. So that program planner can identify or can analysis, where intervention is needed, and what are the main

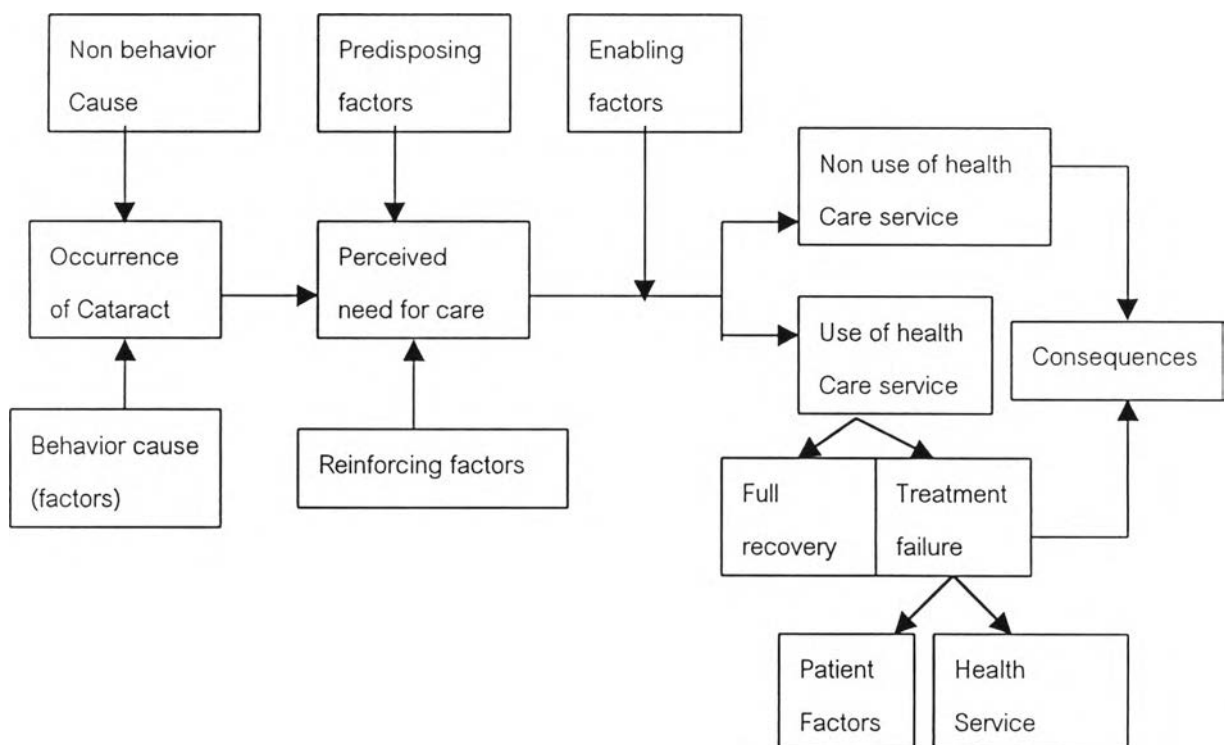
component to be covered, and here need to be more focused such as awareness, quality of care, accessibility or affordability.

Fig.2.1 Causal web



When cataract patients do not come forward themselves to the medical service for surgery or treatment, it is not because they are happy living with blindness. But due to; (i) operation fears, (ii) not getting family and community support, (iii) poverty and (iv) past negative experience with doctor/medical staff or the result of the treatment, which lead them to believe it was a waste of time and resources. In the following sections an attempt will be made to look in to the dynamics of the different factors contributing to the people suffering from cataract blindness with the special reference of Nepalese situation. To address the problem more clearly an adopted version of the health utilization model by Anderson Newman (1973) will be used.

Fig. 2.2 Conceptual frame work of determinants of demand of cataract surgery.



Adapted From: Anderson and Newman (1973).

2.4.1 Non Behavior Cause

a. Aging

Age is by far the strongest known risk factor for cataract (Javitt et al., 1996). The older a person, the more chance there is of developing a cataract. The majority of people with cataracts are over 50 years of age. This means that as life expectancy increases, more people will develop cataract and the number of blind will increase (WHO, 1997). Although there may be many causes, most cataracts among older individuals are the reason of biomedical changes to the fibers of the lens that occur gradually over time. This lens becomes less uniform, creating variations in its refractivity at different points. This intern makes the light travelling through the lens scatter, so that the lens is becomes less transparent. These changes are a nearly universal product of aging with 95% of those over 65 losing some clarity in one or both lenses (Consumer Research Magazine, 1993). Notably, 80 percent of the cataracts are found are in those above 45 years of age group in Nepal (Upadhyya, 1997).

b. Gender

A small excess risk of cataract for women compared to men has been found in several studies. The gender specific risk is associated with cortical cataract, which may explain the 10-20% excess risk of cataract diagnosis and surgery among women (Javitt, 1996). Female population is more likely to have visual impairment due to cataract than the men. For the group without visual impairment and severe visual loss it is the male population that readily accepts surgery. This is probably the result of differences in the roles of males and females of the age group affected, with the male population being more mobile and the female population being traditionally more

confined to the house hold (Snellingen, 1998). There is also a trend toward higher prevalence of moderate visual impairment in females than males because of cataract (Rakhi et al., 1999).

Cataract accounts for a slightly higher percentage of blindness in females than in males (60.3% male and 71.2% female), but cataract and cataract sequelae are the main causes of blindness in both men and women (Pokhrel et al., 1981). A research of South India identified that, the females had significantly higher odds of having moderate visual impairment may be reflective of their relatively disadvantaged social status.

c. Congenital Cataract

Cataract some times occurs at birth or early child hood as well. It may be due to genetic factors, developmental abnormalities and infection during pregnancy (Upadhyay, 1997). Cataract in infancy is an important avoidable cause of visual handicap worldwide (Foster and Gilbert, 1997).

Many studies show that rubella infection during pregnancy is the major cause of congenital cataract among children. A study "Congenital Rubella in South India" which deals with diagnosis using saliva from infants with cataract shows that 45% of women child bearing age are susceptible to rubella and potentially at risk of infection during pregnancy. Twenty-five of the 95% infants (26%) had congenital rubella infection confirmed by detecting of rubella specific IgM in saliva. None of the controls had raised rubella specific IgM ($p < 0005$) congenital rubella was suspected clinically in 19 of the 25 cases of congenital cataract in which rubella specific IgM was detected. The study suggested that rubella is a significant cause of congenital cataract (Eckstein and Brownat, 1996).

2.4.2 Behavioral Factors (Cause)

a. Diabetic

Diabetics is a well recognized risk factors for all forms of lens opacity, (Javitt et al., 1996), however, diabetes related cataracts account for only 6% of all cases in United States of America and even lower proportions of cases world wide. Despite this, cataract formation in diabetics is of substantial research interest because of evidence that the underlying biochemical mechanism may involve the abnormal formation of sugar alcohol in the lens resulting in subsequent lens swelling and opacification.

Human studies are now under way to determine if such inhibition of this biochemical pathway is feasible and if such inhibition reduces the rate of cataractogenesis in humans. The longevity of diabetics in the developing world is substantially lower than elsewhere and thus diabetes is unlikely to account for the excess cataract rate (Javitt, 1993). Diabetic is the leading cause of blindness and visual disability in adults in economically developed societies. Diabetic is estimated to affect around 120 million people worldwide. Findings consistent from study to study, make it possible to suggest that after 15 years of diabetes, approximately 2% of people become blind while about 10% develop severe visual disability. Diabetes mellitus is associated with damage to the small blood vessels in the retina resulting in loss of vision, furthermore, loss of vision due to certain types of glaucoma and cataract may be more common in people with diabetes than those without the disease (WHO, 1997).

b. Trauma

Another associated cause of cataract is trauma/ injury being a agricultural country while performing agriculture work, many Nepalese get trauma/injury in the eye which may result traumatic cataract. Study has not being done to address this issue so it is difficult to estimate what percent of cataract occurs due to trauma in Nepal.

c. Nutrition

Although nutritional factors might be intuitively associated with cataract, their significance is quite difficult to prove. Blood levels of vitamins reflect only current nutritional status and can not detect previous periods of hypovitaminosis. An association between cataract and diet was observed in the Nepal blindness survey, in which vegetarians who never ate meat or fish were found to have twice the cataract prevalence of those who ate fish or meat, even if it was only occasionally (James et al., 1988).

A study in Punjab (India) Chatterjee et al. (1982) reported a relative increase in prevalence of cataract among individuals with low protein consumption. The same researcher detected that, an increase risk of posterior sub capsular and nuclear cataract in those individuals who had a history of diet deficient in protein. Biochemical analysis from the same study detected an association with lower levels of ascorbic acid. In a case-control study of Americans with and without senile cataract reported by Jacque et al. 1991, the risk of cataract reduced for individuals with higher blood levels of carotenoids, Vitamin D, and Vitamin E, where the risk was increased for those with lower levels of Vitamin C (Javitt, 1993).

A study at Tufts University in Boston found that long-term use of Vitamin C supplement might reduce cataract risk. Researcher studied the vitamin C intake of 247 Bostonians between the ages of 56 and 71. Those who took daily Vitamin C supplement for more than 10 years had a 77% lower incidence of early cataract development. Although the study did not determine what level of Vitamin C intake was best, others recommended that men take supplements totaling 250 milligrams per day (Men's Health, 1998). A recent study recommended that the recommended dietary allowance (RDA) for vitamin C (60 milligrams per day) should be officially double to a new level of 120 milligrams per day with potential benefit for cataract. The study also mentioned that 200 mg Vitamin C preferably from fruits and vegetables is recommended as a supplement to take care of all antioxidant needs. And also clearly mentioned that, people take up to 2000 mg per day or even more with no apparent ill effects (USA Today, 2000).

People with lower level Vitamin E in the blood have high risk of cataract reported researchers from university of Wisconsin and elsewhere (Liberian, 1999). Various studies show that there is significant relationship with body mass index and lens opacity. A hospital based case control study of 1,514 women admitted for cataract surgery in Northern Italy reported that elevated Body Mass Index (BMI) was associated with an increased risk of cataract extraction. Women with current BMI greater than 30 were twice as likely to have had a cataract extraction than women with BMI less than twenty.

Three cohort studies have also examined the relationship between BMI and lens status. The Nurse Health study found a higher rate of cataract surgery of women with BMI level of 23 or greater compared with women with lower level. The

physician health study of 17,764 male physicians reported that the relative risk of incident cataract increased with higher level of BMI. The risk was double for those with BMI level greater than 27.8 compared with person whose BMIs were less than twenty-two.

Data from the nurse health study, which tracked more than 50,000 females Nurse for an average of nine years, indicates that the antioxidants Vitamin A and carotene can reduce the incidence of cataracts. Researcher at Harvard Brigham and women's hospital and the Massachusetts Eye and Ear Infirmary found that the risk was 39 % lower for women with the highest intake Vitamin A in rich food than for those with the lowest (Lawrence et al., 1993).

d. Medication

Many drugs are suspected to increase cataract formation. These include steroids, phenothiazines, miotic cholinergic compound allopurinol, diuretics, major tranquilizers, and cholesterol lowering medications, cancer chemotherapy agents, photosensitizing drugs and many others. Systematic use of corticosteroid is associated with PSC (posterior sub capsular cataract) opacities (Javitt, 1996).

e. Smoking

An increased risk of lens opacities in smokers has been demonstrated in cross sectional, case control and prospective studies. These studies documented significant association of heavy smoking and even greater association of currently smoking with nuclear cataract. In the Maryland. Waterman study, the risk of nuclear opacities increased with increasing cigarettes dose (odd ratio = 1.11 per increment of 20 pack-years) and decreased if subjects had quit smoking for more than 10 years. An

association of smoking and PSC (posterior sub-capsular cataract) was observed in three studies. A dose response relationship of increasing pack years and prevalence of PSC opacities was found for men and although not significant for women in the Beaver Dam study. Currently 26% of the US population smokes cigarettes suggesting that as much as 20% of the cataract are attributable to smoking in USA (Javitt, 1996).

Cataracts associated with smoking along with other factors. Yet researchers monitored nearly 18,000 male physicians and more than 50,000 females nurses did for five and eight years respectively, asking about smoking behavior and checking the incidence of cataract surgery. The conclusion: indicate that men who smoked more than a pack a day ran twice the risk of non smokers for developing lens cloud enough to require their removal, and women who so indulged had a 60% greater risk than their abstemious counterparts. Both women and men lowered their chance of developing cataracts if they stopped smoking but still has a greater chance than those who never smoked.

The actual mechanism by which smoking induces cataracts is still unclear. One theory argues that blood is starved of important nutrients, but that is guess, more certain is that there is now yet another good reasons not to smoke (Time, 1992).

Nepal has one of the highest smoking prevalence rates in the world. Rates are as 84.7% for males and 71.7 % for females (WHO, 1999). This may be the one of many reasons of having a high prevalence of cataract in Nepal.

f. Exposure to sunlight

The association of cataract and sunlight has long been suspected as a casual factor on the basis of case control studies (Javitt, 1993). Nepal is a agriculturist

country with more than 80% people engaged in agriculture and 90% of the population living in the rural areas (Statistical Pocket Book, 1998). Most people are exposed to sunlight because of agriculture occupation. Researcher in Nepal Blindness survey calculated mean sunlight exposure for each village sampled on the basis of altitude, skyline obstructions, and cloud cover. As can be seen in the following table there was a strong association between average daily sunlight hours and cataract prevalence (Brilliant, 1983 and 1988) even so this study controlled only for the sunlight exposure of the village and did not take in to account the exposure of individuals based up on their occupation and use of protective clothing hats.

Table: 2. 5 Exposure to Sunlight

Sunlight*	Population examined	Cataract cases	Prevalence per 100	Odd ratio
Low (7 to 9 hrs)	7,236	113	1.84	1.0
Medium (10-11hrs)	10,236	221	2.15	1.2
High 12 hrs	10,286	476	4.63	2.6

* Based on sunlight exposure for life long residents of 97 rural villages

Source: Brilliant, 1988 in Javitt (1993)

Lens pacification has been linked to ocular exposure to ultraviolet radiation particularly ultraviolet B (UV-B). The question of whether long term chronic exposure UV-B in sunlight might increase the risk of cataract in humans has been studied in a series of epidemiological investigation. Early studies noted that cataract occurred more frequently in tropical or sunny regions (Javitt et al., 1996).

Evidence has been presented that cataract occurs earlier and is more common in areas with higher light exposure. There is overwhelming evidence of higher incidence of cataract in people working in high temperature environments. In India, Chatterjee found incidence of cataract to be higher in plain regions than in mountain where there is more ultra violet light but lower temperature.

Cataract is more prevalent in southern India where light exposure and temperature are higher through out the year. In another study from northern India, the incidence of cortical cataract was found to be higher in women, compared with men which is attributed to prolonged exposure of women to heat while cooking on open hearts in rural India. It has been shown that in India cataract tends to be more common in out door workers compared with those who work indoors (Vajpayee, 1994).

Cataract or clouding of the lens of the eye is common in people over 65, studies have found an increased prevalence of cataract among individuals who have had long term exposure to the sun's ultraviolet- B (UV-B) rays, such as people who have worked out doors all their lives. Recently the researchers from Johns Hopkins University identified that the risk of developing cataract rose by 10% for each incremental increase in the amount of UV-B the people had been exposed to annually (Harvard Health Letter, 1998).

g. Alcohol Consumption

An association between regular alcohol consumption and cataract has been found in two cross sectional studies. The high risk of cataract among heavy drinkers has been confirmed by other studies with odd ratios ranging from 1.34 to 4.6. Light

consumption of alcohol was found to have no association with posterior sub capsular cataract (Javitt, 1996).

A prospective cohort study of American Physicians by postal questionnaire found a modest increase risk of a cataract in-patients who consumed alcohol daily compared with those who did not. The Beaver Dam study found a significant association between past heavy drinking and severity of the lens opacity but not current heavy drinking. The same study identified that 15% of men developed cataract requiring surgery 15 years prior to their non-drinking counter parts (Wilking and Devis, 1998). Study showed that drinking alcohol and formation of cataract have significant relationship. Alcohol is common in Nepal since ancient time and it has been culturally accepted in various communities. Therefore, consumption of alcohol may be a contributing factor to the high prevalence of cataract in Nepal.

2.4.3 Predisposing Factors.

a. Poor Results and Poor Visual Rehabilitation

There is no any hard and fast rule in which eye will develop cataract earlier in individuals, right eye or left eye or both eyes together. But surgeries usually done one at a time. Due to the factors of the patient or the health care service, even after cataract surgery the patient may still have poor visual acuity. When failure does occur, it is generally for one of two reasons. First, the cataract occurring in elderly individual who may have other blinding conditions, such as macular degeneration, or glaucoma may not benefit from cataract surgery. If the eye is blind with cataract but not because of the cataract, cataract surgery will not restore sight. Unfortunately it is

not always possible to detect cause of blindness during the pre surgical examination. The second factor is the surgical complications, such as vitreous loss, early post operative complications such as wound leakage, hyphema, endophthalmitis and late post operative complication such as, retinal detachment maculae edema which can arise in up to 7% of operated cases (Kupfer et al., 1995). Considering the risk factors of operative and post operative complications plus pre operative examination, the expected sight improvement in the operative eye is only 90-94% of cases (Javitt, 1993). Therefore, those patients who had cataract surgery and having a poor visual outcome, hesitate or may not seek second eye cataract surgery. Not only that, other cataract blind patient surrounding his/her village will also hesitate to seek health care.

As mentioned earlier, currently there are two methods of cataract surgery practices in Nepal. Intra capsular cataract surgery (ICCE) or non-intraocular lens cataract surgery, in which patients need to wear thick glass. In Nepal, very few people use contact lens. Usually glasses are prescribed by refraction, one month after cataract surgery, during follow up visits. Unfortunately a few patient (about 5 to 10%) fail to attend the follow up visit with the result that, they can not get glasses. So these patients can not get desirable visual acuity even though they have favorable cataract surgery outcome. The other method of cataract surgery (recently being very popular) is extra capsular cataract extraction with intra ocular lens. Kerato reading (measurement of the power of the lens) is not possible in the field situation (eye camps). Therefore ophthalmologists inserts the lens using their best judgement where there is no Kerato reading facilities, at that situation after cataract surgery with intra ocular lens also may need refraction for the best corrected vision. Due to various reasons, when patients failed to attain follow up visit after one month of cataract surgery and failed to get refraction, patient may have poor visual outcome.

Loosing, missing, breaking glasses are another very common problem and replacement is very difficult particularly in the remote part of Nepal. As the result, patients who do not have a glass they can not get manageable visual acuity and may become dissatisfied with the surgical outcome. This in turn leads to their unwillingness to seek cataract surgery for the other eye. Therefore poor outcome or poor visual rehabilitation results in failure in seeking health care among the cataract blind.

b. Education, Economic Condition, Family and Social Support

Health care seeking behavior is partly determined by the education, socioeconomic status, family and social support system (Evans and Stoddart, 1994). It is similar to a cycle like: poverty--low education--low level of awareness--low health status--and again poverty. Better education and awareness among communities would breakdown some of the current barriers in order to increase utilization of existing services. Available and affordable technologies that provide better quality of eye care will further induce more patient to seek treatment and often at an earlier stage (WHO Fact Sheet, 1997). The major barriers of cataract patients of Nepal receiving cataract surgery are the illiteracy, low level of awareness, misconception, not having social support lack of information and inaccessibility to health care facilities.

Most of the cataract blinds in the country are in the rural areas while the surgical service delivery net work is concentrated in the urban areas (except few eye camps in hills and remote area in the winter season). Thus a large proportion of patients in the rural areas continue to remain blind because of not having accessible health care services. This situation has many social implications. There is loss of productivity, breakdown of interpersonal relationships, depression, loss of self esteem

and most patients lead an isolated humiliating life. Patients lack of information on the available services, and continue to remain blind for years even after being diagnosis as operable (Angra et al., 1997).

In developing countries like Nepal the shortage of resources, mal distribution, and inefficiencies of eye care manpower, and facilities are the major barrier to cataract surgery, include unwillingness to undergo cataract surgery, and limited social and economic support. In India more than 80% of persons who were blind from cataracts and referred for surgery did not comply because of social constraints. In Nepal, nearly half of the blind persons from unoperated cataract did not know that cataract surgery was available to restore vision. Even among those who know about surgery many can not afford it even though cataract surgery is inexpensive in Nepal. Women and those with limited community resources are more likely to be blind from cataract. In the areas where transportation is poorly developed the longer the distance that patient must travel the lower the rate of participation. Increasing awareness of surgery as a cure of cataract blindness and the economic advantage have proved to be effective in improving patient compliance (Javitt, 1996).

A recent study in South India findout a interesting barriers of up take of cataract surgery. Previous studies concluding the main barriers were curse of God, fear, no faith, need not felt, no time, one eye operated, waiting for cataract to mature, no service, no one to accompany and no information as well as cost and affordability. This recent studies the wide variation in the barriers between the districts in Karnataka and the shift in barrier perception between the two studies over nearly a decade, not only show a general increase in awareness of surgical care for cataract but also the need for a district specific understanding of the barriers. Even among

communities with similar social cultural practices within a single state the perception of barriers to the uptake of cataract surgery has been found to differ. The study has demonstrated that in Karnataka awareness, attitudes, and the affordability of surgery are no longer the major barrier in the most districts. The community feels that there is a need for surgery, but patients are often turned away because they are considered by the providers to be not yet blind enough for cataract surgery.

Eye camps are still a major source of service delivery in the periphery and are still popular among the rural poor. Camps however have a limited capacity and many surgeons prefer to operate when the vision is 1/60. This has become a norm for case selection and regulate the capacity in camps with the change in the strategy in favor of institution surgeries through the base hospital approach. It should be possible for the service providers to take more cases operate early with IOL and provide better quality of services to the cataract blind population (Vaidyanathan et al., 1999).

A recent study in Nepal found that, less than 50% of the population illiterate farmers in rural areas even when offered free transport, under half of the population accept surgery within one year. Although a majority of the non-acceptors said they were willing to have surgery, even with the promise of free treatment, only 24% actually had surgery within the following year. For this population the promise of free surgery did not seem to be the main motivational factors to accept treatment. Other considerations such as the opportunity costs of being away from daily income earning activities together with the lack of the patient's own motivation seem to be more important. The study also demonstrates typical farming population of rural Nepal with intense counseling and offer of logistic support in the form of free transport the surgical coverage was 46%. This increased by 13% when further counseling and

economic incentive of offering free surgical treatment was included. The study further suggest that to increase surgical up take will most likely be influenced first and foremost by changes in perceptions of the benefits of cataract surgery in the local community. This is influenced by the quality of previous surgery with resulting positive propaganda of the successfully operated cataract patients or Aphakic/Pseudophakic Motivator. In addition as has also been shown in previous studies factors like literacy, and education are important determinants for accepting surgery (Snellingen et al., 1998).

2.4.4 Reinforcing Factors

a. Belief

In the remote parts of Nepal, very few people still believe that blindness is due to God or Devil, occurring as a product of evil behavior during previous life. They believe that, God has made them blind, no one can cure and, if one tries it is against God or a super natural power. So they do not seek health care for treatment for these reasons.

b. Traditional Healer

Traditional healers continue to play vital role as health care providers They are the first contact persons for consultation of any health problem in the remote parts of Nepal. People have substantial faith in the traditional healers. Traditional healers are culturally accepted, affordable, available and accessible within the community. Because of having strong faith, still many people follow traditional healers instead of using modern health care system particularly in the remote part of Nepal. Due to not

demanding (utilizing) modern health care and under going long time treatment with traditional healers many eyes are becoming incurable blind (due to hyper mature cataract).

c. Past Bad Experience/Experience Gained From Others

Cataract surgery some time result in poor outcome and patient may not get good vision. It can happen due to patient factors or health service factors. For example, if the patient did not follow all the instructions given by the ophthalmologist or assistants during the postoperative period, visual outcome can be very poor. Similarly if the ophthalmologist fails to get all the medical history from the patient due to various reasons, or misdiagnosis then there is a higher chance to have poor visual outcome after cataract surgery. In addition to surgical complication during surgery and infection during post operative period may result in poor visual outcome. Consequently, when patient get poor vision after cataract surgery or get news of poor surgical performance from other people, the patient may not seek health care service for their eye problem.

2.4.5. Enabling Factors

Everybody's treatment seeking behavior is influenced by several factors, which include their level of health awareness and their perception of disease, sickness and health as well as their accessibility to health services. Access to health services in turn is affected by several factors such as;

a. The physical distance or travel time between the patient's home and health providers. Due to Nepal's geophysical characteristic of being a mountainous country

patients face difficulties in reaching particularly those who live in the remote area of Nepal.

b. The social acceptability of the services to the patient, which includes attitudes, behavior and gender of the service providers, which has been accepted in the community, particularly in the context of eye care service of Nepal.

c. The patient's perception of the appropriateness of effectiveness of the services in relation to their health condition namely quality of care. All the Terai part of Nepal is close with Indian border. Frequently Indian local authority organize free eye camps near to Nepal border, due to open border Nepalese cataract patient also access this service. They provide free eye care service during eye camp but most patients (50%) do not get vision because of poor quality of service (Sing et al., 2000). Study has not done, what percentage of Nepali cataract blind go to Indian to take such free eye camp service, but frequently patient comes in the OPD of Lumbini eye hospital after complication of Indian eye camps. When these patients go back to their community with poor surgical outcome, the other cataract patient of the community disappoint to demand for cataract surgery.

Five to ten percent of the total surgery, patients do not get good vision due to various factors even having high quality of services (due to patient factors or service factors) even though maintaining quality of care. To some extent the quality of eye care service of Nepal is satisfactory though there is large room for improvement.

d. The patient's ability to pay for the required services, namely, the cost of care. Among these factors stated above the cost of health services seems to be the most crucial variable affecting the patient's decision to use or not to use the services. This includes both the direct cost which the person pay to the service provider, and indirect

costs which the patient is obliged to bear, such as travel time, and cost of transport, deductions from salaries or wages etc (Hassouna, 1994).

Most of the headquarters of the district of Nepal there are primary eye care center, at where people can get primary eye care services year round. However surgical service are not available at this facility For cataract surgery either they have to wait for the eye camp at the nearby district or travel long distance where eye hospital exist specially remote part of Nepal. Surgical cost in the hospital is affordable to all to some extent. Those who are not in a position to pay the cost of the hospital there is a provision of free of cost of service. Particularly in the case of Lumbini not affordability may the not reason of not demanding for cataract surgery

2.5 Is There Any Treatment for Cataract?

Once cataract has developed there is no known treatment of cataract except surgical removal of the lens (Kupfer and Ellwein, 1995). This procedure has been in practice for 2000 years in South India. Removing cataract is the only treatment protocol since ancient time (Willson, 1988). There are two main methods of cataract extraction today: (i) Extra-capsular cataract extraction (ECCE) which is known as advanced method adopted by all developed countries comprised of (ii) Intra-capsular cataract extraction (ICCE) which is an older practice in most developing countries.

Intra-capsular cataract extraction (ICCE) involves the entire lens with disruption of the zonular fibers, which form the attachment of the lens capsule to the surrounding structures. In the extra capsular cataract extraction (ECCE), the procedure includes incising the lens capsule expressing the lens nucleus and

aspirating the remaining lens cortex, leaving intact (if all goes well) the lens capsule and zonular attachments. The Extra capsular cataract extraction (ECCE) method enable the surgeon to insert an intraocular lens (IOL) into the remaining lens capsule and thought to preserve better the anatomy of the eye. Extra capsular cataract with low cost intraocular lens has been rapidly introduced even in the developing countries with the substantial support of the developed countries, such as transforming skills and knowledge through training (Javitt, 1996).

A replacement lens is usually inserted at the time of surgery. A plastic artificial lens, called an intraocular lens (IOL), is placed in the remaining posterior lens capsule of the eye. When the intra capsular extraction method is used an IOL may be clogged on to the iris (intra-ocular lens in the anterior chamber). Contact lens and cataract glasses (aphakic lenses) are prescribed if an IOL was not inserted. Recently there is another one new method has been developed known as phacoemulsification. This type of extra capsular cataract extraction needs a very small incision, resulting in faster healing. Ultrasonic vibration is applied to the lens to break it up in to very small pieces which are then aspirated out of the eye with the suction by the ophthalmologist. A folding IOL is used when phacoemulsification is performed to accommodate the small incision (www.mylifepath.com/topic/cataract).

The affected lens can be removed surgically in a procedure that takes 5 to 20 minutes depending on the technique used. In intra capsular cataract extraction (ICCE) mentioned above, the entire lens including its capsule is removed. This is the standard surgical procedure in this method. Sight in the aphakic eye is, then; restore through spectacles. With aphakic glass, patient can have central visual acuity but peripheral field vision, which is effectively limited to the area seen when looking straight ahead.

However, this surgical solution suitable only the bilateral blind cases. If the individual is unilateral blind, in that situation the cataract glass does not help. The other serious limitation is that it produces 30% larger retinal image. (Javitt, 1993) Because of the difference between the magnified image and the normally sighted eye, unilaterally blind case experiences a serious vision fusion problem. Due to all these limitation ECCE with low cost IOL has been introduced with increasing rates in the developing countries.

2.6 Consequence of the Problem

Cataract is the leading cause of blindness worldwide. When person become blind due to any reason, it does not affect only that individual but also the family and society. It may affect financially, socially and mentally. The economic burden of blindness and visual impairment interferes with various activities of daily living. Blind children have to face developmental challenges. In adult life, employment opportunities for the visual disabled are extremely limited and their host of leisure activities is seriously hampered. In addition, in many societies visual impairment results in a loss of status and self-esteem. These physical and specially the psychological implications of visual impairment and blindness can be accurately quantified in monetary terms. However they do erode the quality of both the affected individuals and their families (WHO Fact Sheet, 1997).

A study in United Kingdom indicated that visually disabled were poorer on average, had lower education levels, lower employment and less social life than sighted people. These findings probably hold true in all societies. Also in American settings it has been reported that blind persons die earlier compared to sighted population (WHO Fact Sheet, 1997).

2.7 What Could be Done to Improve the Situation?

2.7.1 Screening Camp.

Screening camp is one, which helps to early case detection and treatment in the community. United state commission on chronic illness 1957 has defined screening camp as "the presumptive identification of unrecognized disease or detect by application of test, examination or other procedures, which can be applied rapidly.

McKeown, 1968 defined it as "medical investigation which does not arise from a patient's request for advice for a specific complaints." The aim of screening camp is to detect disease before symptoms present and before the patient present with the disease. The initiative lies essentially with the medical professional not the patient (Austoker et al., 1997). Some of the eye hospital of Nepal has been organizing screening eye camp for many years particularly in the plain area of Nepal, e.g. Lumbini eye cares program. The basic principle and criteria of screening camp should be as given below.

Aspect	Requirements
Disorder	Well defined.
Prevalence	Known
Natural history	Medically important disorder, for which there is an effective remedy
Financial	Cost effective
Facilities	Available or easily installed.
Ethical	Procedure following a positive result generally agreed and acceptable.
Test	Simple and safe.

(Source: Suckle and Wald, 1997)

Due to geographical situation and the existing infrastructure of the country, at present situation screening eye camp is not cost effective. The other important issue is, in this method patient does not take any initiation or interest to solve their health problem, only health personnel need to take initiation. Until and unless not taking responsibility of their own health of the community, it will hard to bring change in the health of the community and health seeking behavior. The other issue is the sustainability of the program because of community involvement.

2.7.2 Involving Female Community Health Volunteers

The Female Community Health Volunteers Program (FCHVP) was initiated in Nepal during 1990 with the objectives of increasing involvement of rural women in promoting primary health care services focusing on Family Planning and maternal child Health. The role of FCHV includes IEC, support to PHC out reach, EPI clinics, Family Planning camps, distribution of ORS packets, condoms, Pills, IEC materials, minor treatment and referral service for health care (Annual Report of Health Service, 1996). Government of Nepal, Ministry of health has been providing basic primary health care in the grass root level of the community particularly maternal child health and family planning through female community health volunteers Main Purpose of FCHV is to bring health related awareness to their respective communities. Now they are the main health care provider at the community level particularly they are taking care maternal child health and family planning, immunization, nutrition, even community development such as income generating program. They are getting additional responsibilities day to day because of easy approach to them for the

Government and no need to pay them. However as they gain more and more responsibility each day, they started to express frustration than the pleasure.

As per the culture of Nepal people can not discuss openly sex and sexuality particularly in front of opposite sex. Therefore Female community health volunteers are very appropriate for family planning and maternal and child health care program, but it is difficult to apply on demand generation and motivation to cataract blind patient for sight restoration. The main reasons are; (i) most of the community of Nepal is male dominated and they may not listen to FCHVs, (ii) male are the decision makers of the family, particularly in the financial matters, if FCHVs could motivate to some female cataract blind, they themselves can not make decision to go to the eye hospital for sight restoration, (iii) As Nepali culture people follow and pay highly respect the advice /suggestion of the senior citizen of the village or community. All most all FCHVs are very young, therefore most of the cataract blind old people may not follow the advice of the FCHVs. Therefore perhaps FCHVs are not appropriate in this proposed program, even though they are very appropriate and effective in MCH and FP programs.

2.7.3 Strengthening the Health Post System

Now, every village development committee has one health post or sub health post. Health post/sub health post is the first grass root level health care unit in the community. In order to provide primary eye care service in the community, health post staff may be appropriate. Recognizing the value of the health post staff, some eye health care service providers of Nepal have been working through health post staff.

Lumbini eye care program has been conducting primary eye care training for the health post staff since 1990. The main purpose of the program is to provide primary eye care service at the patient's door step while keeping close relationship with the other government health personnel who are working in the same working area (Lumbini Zone). For other eye diseases like trauma, detection of vitamin A deficiency, and eye infection this program seems effective. But the achievement is not significant particularly with respect to increasing the demand for cataract surgery.

The main reason of less success of health post staff to create a demand for cataract surgery is that the health post staff may not come from the same community therefore there may be culture barrier, language barrier, big gap in knowledge. Again the cataract patient need more motivation to understand the importance of cataract surgery. Health post staff may not able to give enough time for motivation, because they have to take care other various public health programs in the community. The other factors is health post staff can not deal and may not deal with the family of cataract patient and may not access with all the family members of the cataract patient of the community.

2.7.4 Involving Pseudophakic Motivator in Health Education.

Operational Definition of Pseudophakic Motivator

Pseudophakic Motivator is a person who had, cataract surgery with intra ocular lens insertion and who is satisfied with the visual outcome after surgery. After preliminary motivational and primary eye care training, this person works as a cataract Motivator in her/his community with small incentive or without incentives.

a. Effectiveness

Pseudophakic Motivator may be an appropriate intervention strategy to solve the problem of the cataract blindness in Nepal. The rationale behind this argument are as follows. The quality of surgical outcome plays a vital role in creating a demand for health care services. Perhaps, the most effective Motivator is a previous blind patient who had had a successful vision for restorative operation who then can educate and motivate others (Arnold, 1998). Pseudophakic Motivators can be more acceptable in the community and high effectiveness in the social determinants of cataract surgery. A study of Arvinda Eye Hospital South India shows that house to house visit by an aphakic Motivator is more accepted than other programs such as house to house visits by a basic eye health workers, screening eye camps at central location of the village, mass media campaign at weekly market place, and economic incentives.

Table 2.6 shows that the control group had an acceptance rate of 13.6% reflecting the number of patients with cataracts who sought surgery in absence of any intervention. The most effective intervention was the aphakic Motivator with full economic incentives up to 33.3% acceptance (Brilliant et al., 1991).

Table 2.6 Surgical Awareness and Acceptance by Intervention and Control

Intervention	Economic Incentive	Surgical acceptance	Surgical awareness
		No(%)	No.(%)
Aphakic Motivator	Partial	194(14.4)	1849(7.9)
	Full	147 (33.3)	1491(5.7)
Basic Eye worker	Partial	151(20.5)	1862(5.3)
	Full	194(27.8)	1757(9.3)
Screening camp	Partial	126(18.3)	1421(16.9)
	Full	182(28.0)	1875(21.4)
Mass media	Partial	147(14.3)	2575(11.7)
	Full	150(13.6)	1765(7.6)
Control	-	150 (13.6)	1765(7.6)

* "Partial" indicates free surgery and eyeglasses and "Full" indicates partial incentives plus free transportation and food.

Source: Brilliant et al. (1991).

Providing free of cost surgery to all the cases, does not necessary help the community in the long run because it can develop the habit of dependency and less responsible of the health of the individuals, as well as, it may not be sustainable at the present economic condition of the country. The involvement of Pseudophakic Motivators with small motivation and technical skills, and keeping close coordination with opinion leaders of the community, can be more successful even with the charging of the minimum affordable service cost. This has been supported by a recent study in Nepal. Snellingen et al. (1998) found that free surgery is not the main motivational factors to acceptable of treatment among cataract blind patient. Even

providing free surgical treatment facilities, only 24% of the total patients accepted actual surgery within the following year.

Increase surgical up take will be the most likely influenced first and foremost by a change in the perception of the benefit of cataract surgery in the local community. The same study identified that, most influenced by the quality of previous surgery with resulting positive propaganda of the successfully operated cataract patient or aphakic Motivator. Therefore, at present, Pseudophakic Motivator may be one of the most effective methods situations to create demand for cataract surgery among the community.

b. Local Residential

Pseudophakic Motivators reside in the same community. They are familiar with each other and know their relatives, and family members, and the actual economic status, culture and individual difficulties of other people of the community. Pseudophakic Motivators can create the need of a cataract blind. The cataract blind patient himself/herself may not be perceived any further need of sight restoration. But, by recording his own personal experience he can create felt need among cataract blindness and slowly it may convert to express need. Express need is what people say they need, in other words, it is felt need which has been turned in to an expressed requested or demand (Ewles and Simnett, 1998).

Most of the barriers can be broken down by the Pseudophakic Motivator by providing health education and new scientific discovery regarding eye health care to the cataract blind patient as well as can convey the facts by demonstrating his own condition and quality of life before and after cataract surgery. These statements may be very effective to change the knowledge, attitude and behavior of the cataract blind

patient and the feeling of the family members of the cataract blind Therefore Pseudophakic Motivator can create demand for cataract surgery in the community.

c. Involving community

Involving the community in the health work for the betterment of their own health is the need of today, which we called community participation. "Community participation is a social process in which specific groups with share needs living in a defined geographical area actively pursue identification of their needs and takes decisions and establish mechanisms to met them" (Wolfgang et al., 1989). Pseudophakic Motivator can create appropriate environment to take the active part in the health care program of the community. They can create self-support environment by formulating a self-help group for their better and productive health.

The satisfied and loyal clients can add much to the future marketing efforts by providing word of mouth advertising. They can provide a lot of favorable advertising free of charge. The other important outcome of involving target population in the program is, the empowerment of the community. Degree of community participation varies from situation to situation, community to community and neighborhood to neighborhood, but preventing such community health problems not likely to be effective without active involvement of individuals, families and local groups. Through organized community efforts and social machinery only can break down all the barriers of the utilization of health care service (Marshall et al., 1998). They can make their own decision by consulting among each other with open discussion. Therefore Pseudophakic Motivator can play a vital role in establishing community participation mechanism by formulating self-help group and keeping close relation with local authority as well as local leaders.

d. Change Agent

A Pseudophakic Motivator can play a role as a change agent in the community. Change in knowledge, attitude and practice is not possible without effective communication. For effective communication, there should not be any barrier between communicator and receiver. Being the member of the same community Pseudophakic Motivator may not have communication barrier with cataract blind patient, their families, and formal and informal leaders of the community. They are from the same community, grow up in the same culture, and more or less have the same socioeconomic status. Pseudophakic Motivator can then provide face to face individual counseling among cataract blind patient as well as their families and as per the need of the situation they can take the extra motivation help or can create pressure from the community leaders of the community for the sight restoration.

The cataract blind patient will motivate by the efforts of the Pseudophakic Motivators, family members and the leaders of the community. Pseudophakic Motivators can change the knowledge, attitude and behavior of the cataract blind patient so that cataract blindness may be reduced in the community. Pseudophakic Motivators can close the gap between health care service and the community, and they can play a role as a bridge between the hospital and the community.

In one hand, they will play a role as a counselor or Motivator in motivating the cataract patients for surgery, which eventually have a positive outcome in reducing cataract blindness in the community. On the other hand, they also play a role as a health educator by providing information, education, and communication regarding eye health among community, such as not to smoke, not to drink excessive alcohol

and use hat and sun glass while working in the sunlight, which may lead to a change in knowledge, attitude, and behavior of the people. All these efforts are direct towards reducing the incidence of cataract blindness in the community.

e. Health Education and Health Promotion among Community

Health education is the process of educating people about health. It is recognized as an important tool to change the knowledge, attitude behavior and the risk factors associated with disease and injury and to help to control medical cost. Health education can be defined as "Process of continuum of learning which enable people as individual and members of social structures, to voluntarily make decisions in ways which are health enhancing" (Joint committee on health education terminology report 1991).

Recent decades the word health promotion has become popular in the field of disease prevention and prolonging life. In fact health promotion is a broader term than health education. Health promotion is about raising the health status of individuals and communities. So health promotion means improving health, advancing, supporting, encouraging and placing personal and public agenda (Ewles and Simnell, 1996). Green and Kreuter (1991) defined health promotion as "the combination of education and environmental supports for actions and conditions of living conducive to health." In this definition, educational refers to health education and environmental refers to social, political, organizational policy, economic and regulatory circumstance bearing on health (McKenzie and Smeltzer, 1997). World Health Organization (1995) defined health promotion as "the process of enabling people to increase control over and to improve their health." Mainly it looks at the following three areas:

- i. It is concerned with promoting health by seeking to influence life style, health service, and environment. It is expected that, Pseudophakic Motivators can play as role of change agent to change the life style, belief and misconception by providing scientific health related information which help to create demand to utilize health care services effectively.
- ii. Health promotion is not only concerned with the physical environment but also with the culture, socioeconomic circumstances that substantially determine the health status. Pseudophakic Motivator being a member of the same community can play a vital role in promoting the health of the community by involving and sharing ideas with the people the for the betterment of their own health.
- iii. The empowerment of communities and individual. Through the process of becoming actively involved in fostering their own and the health of their communities, the people should acquire an increasing sense of control over their lives.

In short five principles encapsulate the world health organization's ideology of health promotion is given below:

- Health is a positive state, it is an essential commodity, which people need in order to achieve a socially and economically productive life.
- Substantial progress in health promotion depends on rectifying inequalities, in health within and between nations.
- Health promotion depends on the existence of an active empowered community.

- Medical service should be reoriented, the focus should be on empowerment, cooperation and quality of life.
- Health is not just individual's in to taking responsibility for their own health. To see to appreciate individuals in to taking responsibility for their own health, while ignoring the social and environmental circumstances which conspire to make them ill, is a fundamentally defective strategy and unethical.

Being the member of the same community with knowledge and experience, Pseudophakic Motivator may be the most appropriate and effective cadre to transfer information and ideas in the community for the betterment and health gain of the community. According to Tones (1997), main expected health gain are as below;

- Adding years to life--reduce avoidable deaths.
- Adding health to life--reducing disease and disability.
- Adding life to years--enhancing quality of life.

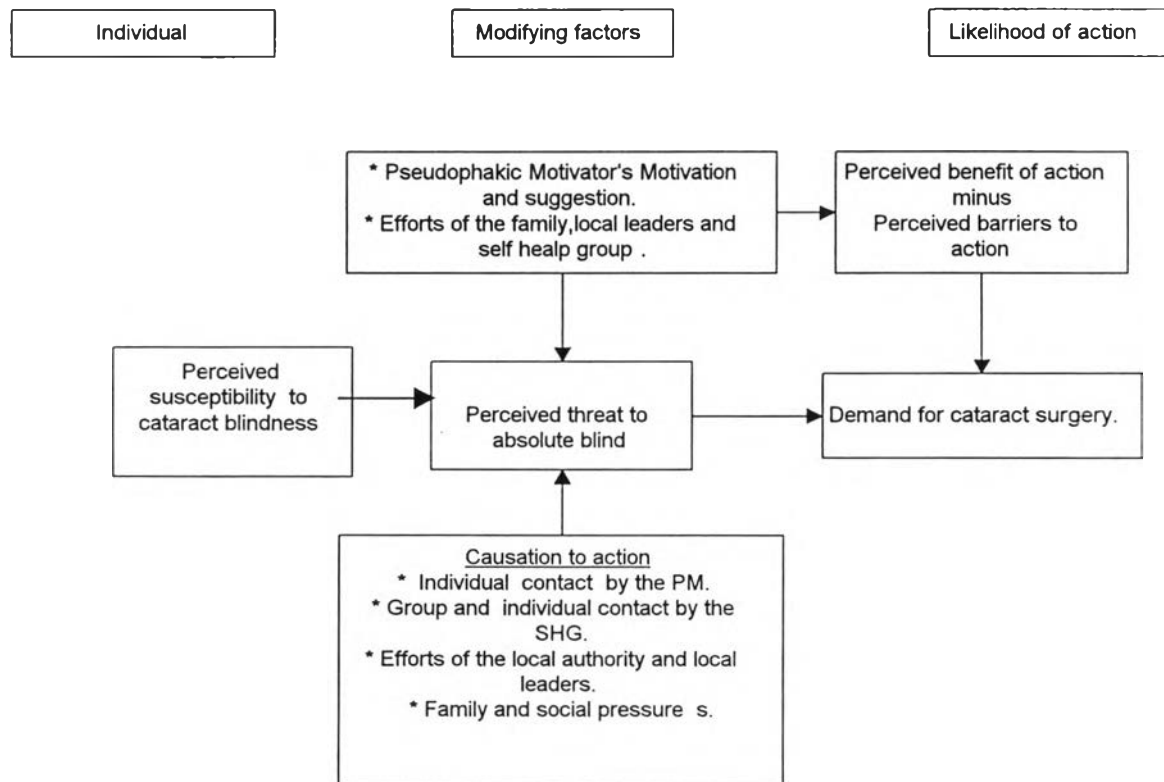
Public health has learned that all interventions to promote health must be culturally relevant. For an example ethnic, racial, culturally defined groups, may have different perspectives. In most communities, new emphasis was being placed on concerns with the environment and with housing, and other conditions of living that shape the life styles, health, and quality of life of the community. More and more cooperation, coordination, collaboration among sectors, organizations, and individuals are needed to promote the health of all individuals. To some extent health personnel have realized the reality and slowly they are looking back to the individuals, families, Schools and work site and taking in to account the whole environment to empower/involve the community to solve their health problems by themselves.

2.8 How does it Work

One of the major problems of the cataract blind patient is that they do not seek treatment. Either they do not access health care for treatment or they come at the late stage when they turn absolute blind due to hyper mature cataract in which nothing can be done. How can these patients be motivated by changing knowledge, attitude and practices. Knowledge, attitude and practice are affected by the perception of the individuals i.e. perceived susceptibility to the disease, perceived benefit of the action and perceived barriers to the action (Kaplan et al., 1993). To explain about how Pseudophakic Motivator can create positive environment to generate demand of cataract surgery among cataract blind and how the people apply preventive measure of cataract, here I have tried to integrate Health Belief Model in this Health Promotion program. In fact, Health Belief Model was developed to explain why people would or would not use health care service. The Health Belief Model also has been using to explain variety of health behavior. This theory assume that to use health care services sufficient motivation, perceived vulnerable belief that particular recommendation/suggestion, and advice would be beneficial in reducing the perceived threat, and acceptable cost. Cost refers to the perceived barrier that must be over come in order to follow the recommendation. The ultimate goal of this proposed program is to change in knowledge, attitude, and behavior of cataract patient for their better quality of life by creating a demand for cataract surgery. This study is integrated with health promotion and health behavior because Pseudophakic Motivators are key people who works as a change agent They are the people who supports, encourage, placing the problem in-front of the local leaders as a public agenda in order to create a demand for cataract surgery. Principally all these activities are under the health promotion program.

Most of the cataract blind of Nepal resides in the remote part of the country. They are poor, illiterate and having low socioeconomic status and low level of health related awareness. Until and unless not changing their behavior by applying integrated approach, no one can expect their better quality of life and improved health status. The immediate need of the community is to create a demand for cataract surgery by utilizing existing health care service. And health promotion is the next integral part. To meet this unmet need, I have used health belief model, which has been explained, in the following section.

Figure 2.3 Determinants of Health Seeking Behavior in Relation to Cataract Surgery



Adopted from Health Belief Model of Rosenstock Source: Kamplan, R.M., Salis, J.F. and Patterson, T.L. (Eds.) (1993). Health and Human Behaviour, McGraw Hill.

2.8.1 Perceived Susceptibility to Cataract

When the people reach 45 to 50 years of age, they then may start to experience defective vision, which is the first sign of the eye health status of the individual. In their own home, relatives, or surrounding community they can come across blind people and their miserable condition that may make them more conscious about blindness. They also can come across cataract blindness and eye care service through different media like: Radio, posters, personal communication with health personnel.

Noticing all these events, people can perceive susceptibility to cataract. Memories of their blind father, mother or grand parents or relatives or neighbor living in unacceptable environment with poor quality of life, then they may perceived seriousness or severity of the disease.

2.8.2 Perceived Threat

Absolute blind (incurable blind) due to hyper mature cataract are very common in the community. When Pseudophakic Motivator gives example of some that are affected with both eyes incurable blind due to not seeking treatment in time. When cataract patient see those incurable blind, then it may create a feeling of vulnerable of cataract absolute blind among cataract patient. The family members of the cataract patient also may tells the similar story about the incurable blind, poor quality of life, those who sees by themselves, which also may help to create threat of the problem of the diseases.

2.8.3 Perceived Benefit

The perceived benefit of the behavior generally refers to how effective the barrier is in producing a health benefit. Satisfied client can play a vital role in the success of the intervention program. Pseudophakic Motivator (PM) can share their experiences. PM can tell the actual situation such as, monetary gain (productivity) and quality of life before and after cataract surgery. PM can demonstrate many examples by showing those who had returned after cataract surgery and their quality of life. All these citation may help them to perceived benefits of the treatment. Perceived benefit and perceived barriers can be considered together in a cost benefit analysis. When cataract blind listened from PM about improved quality of life, increase family

income, the cataract blind also restart earning money after cataract surgery. Then the cataract blind may perceive benefit seeking a timely treatment of cataract surgery.

2.8.4 Perceived Barriers

Perceived barriers to the behavior also influence with various condition or situation such as, feasible, available, affordable, and accessible. The main barriers of to take up a cataract surgery is: operation fear, misconception, not having escort, lack of family and social support, cost of service and accessibility as well.

People do afraid with the word of "operation" due to lack of information, illiteracy. People perceived cataract surgery as heart surgery in the remote area of Nepal. This barrier will decrease when the actual situation will share by the PM. Many cataract blind do not know that, after cataract surgery sight can be reversed. By involving PM these barriers also can minimize. Some of the cataract blind are not demanding service due to not having escorted. This barrier will reduce by formulating self- help group and community self support system. Cost of the health care service and not getting family support are other barriers of cataract surgery. To reduce these two barriers self help group, local authority and eye health care service providers need to work with close cooperation and coordination among each other.

Perceived barriers can be broken down when perceived benefit is higher than the perceived barriers. With the continue efforts of PM, and SHG, cataract blind will mentally and psychologically perceived benefit to likely hood action.

2.9 Conclusion

As discussed in the above various sections, the major issue of this proposed program is the cataract blind are not demanding service for sight restoration due to various factors. To create demand for cataract surgery I have purposed four possible solutions. That is screening eye camp, involving female community health volunteer, strengthening health post system and involving Pseudophakic Motivators (PM) in health education. Taking into account of the culture, geographical situation and infrastructure of the country and available resources of the health care provider organization perhaps: Pseudophakic Motivator in health education will be among the best of those four alternatives.

The main reasons of choosing this alternative is, it could be high effectiveness. Because PM can share the real experiences with other cataract blind and they can establish relation by individual contact with two-way communication. Being the member of the same community there will be minimal communication barriers or no communication barriers among cataract blindness and PM. Furthermore, PM can used formal and informal leaders to create social pressures as and when necessary. As a result, many barriers will be broken down.

Success of the program depends on the mutual cooperation and coordination of efforts among the PM, self-help group, local authority and service provider organization. However, dissatisfaction and disappoint can be minimized by regular encouragement and a close supervision system. The other limitation is that efforts and quality of service of the service provider organization. It is beyond the direct control of the community. The reputation and sustainability of the organization depend on

quality of service of the organization. Developing standard operating procedure and providing regular feed back on the visual outcome of the surgery will optimize this.

To increase demand for cataract surgery I have proposed multifaceted approach keeping a central focus on Pseudophakic Motivators. Communication and motivational training for Pseudophakic Motivators, diagnostic screening, and treatment camp and establishment of self-help group is proposed to break down the various barriers to increase demand for cataract surgery. The following chapter will propose the means for establishing this program to increase demand for treatment.

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