

CHAPTER V

DISCUSSIONS

Eye injury is a major cause of monocular blindness in Nepal (Nepal Blindness Survey 1981). Many of the circumstances of eye injury can be prevented, or its impact minimized, by seeking appropriate care and treatment. The purpose of this descriptive cross-sectional study was to investigate treatment-seeking behaviors, and to assess the extent of severity of eye injuries among patients at presentation to hospital, and related factors.

In the current study, eye injury was found to be common among the younger age groups (15-29 years). Males were more greatly affected (Wong *et al.*, 1999). The old-age group was the second most common group suffering eye injury, which was similar to a study conducted in Singapore (Lau *et al.*, 1999). However, the striking distinction from the older age in the Singapore study (≥ 70 years), differed from the > 50 years of the current study. The reason may be that Singapore is a developed country where people live longer, whereas people living in this developing region of the world, with poor standards of living, have lower life expectancy. In the current study age was associated with the severity of eye injury among younger patients mostly affected by mild and moderate injuries, whereas older patients were affected by severe injuries (p-value < 0.05). This contrasted with study conducted in Croatia, where severity of injury was not

related to age (Karaman *et al.*, 2004). However, a study in Sarlahi District, in Nepal, found an apparent association of poor visual acuity with increasing age, which the author argued may have been due to several factors, such as socio-economics and, access to care (Khatry *et al.* 2004).

Several studies have shown that males are more susceptible to injuries than the females (Malla *et al.*, 2003). Gender was also related to time interval for treatment seeking; more male patients arrived within one day, whereas more female patient arrived after one day (p-value < 0.05). This may be because males are more mobile than females and they possess the decision power in the family.

Most injured patients were of Indian origin, and most belonged to the Terai caste, which can be explained by the location of the hospital near the Indian border in the Terai region. Indians comprised the majority (65%) of daily outpatient visits. Nationality was associated with severity of eye injury (p-value < 0.05) since Nepali patients were nearby and came to the hospital in the earlier stages, whereas Indian patients were far away from hospital and it took a longer time to reach hospital, making injury more severe. Caste/ethnicity was associated with treatment-seeking behavior (p-value < 0.05) as more hill patients (Brahmin/chhettri, indigenous, Dalit) arrived within one day, whereas more Terai patients (Terai caste, Muslims of Indian origin) arrived for treatment after one day. This may be related to the distance of the patient homes to the eye hospital.

Regarding education, most of the patients had never attended school, and few patients had a higher education. A population based study in South India showed higher rate of trauma was related to lower level of education (Nirmalan *et al.*, 2004). Although

educational status did not show any association with severity of eye injury, there was a distinct trend of decreasing order in severity and lesser time interval for treatment seeking after injury with higher level of education. Most injured patients were farmers, followed by farm/factory workers, students, and housewives. This is consistent with a study that showed the most common occupation for injury was either agriculture or domestic work. This suggests the need for better monitoring of rural occupational injuries (Khatry *et al.*, 2003). Occupational status showed a relationship with severity of eye injury affecting mostly farmers and housewives (p-value < 0.05). Therefore, efforts should be made to educate these vulnerable groups about the proper place and timing of treatment to improve visual outcome. The majority of the respondents did not disclose their monthly income (65.6%), while of the remainder most (15.3%) earned 1501-4000 NRS (1\$=75NRS) No association was found between income level and severity of eye injury or treatment-seeking behavior.

In the current study, the knowledge level of the patients regarding eye injury was found to be moderate; information level was high and the perception level was moderate. There was no similar study to compare the result. However, an urban population-based study conducted in Southern India, on awareness and knowledge of eye diseases (cataract, night blindness, glaucoma, diabetic retinopathy), found poor levels of knowledge among the respondents (Dandona *et al.*, 2001). Another study was conducted in Hong Kong among the Chinese population, on knowledge about cataract, glaucoma and age-related macular degeneration, and found low level knowledge about these conditions (Lau *et al.*, 2002). In the current study, all patients enrolled were eye-injury cases who had come to hospital for treatment. This shows differences in level of knowledge between hospital arrivals patients and the community based population.

Perhaps patients who come to hospital are more motivated and have better understanding and knowledge about the injury, since they are the ones most affected. No association was found between knowledge, information, and perception level, and severity of eye injury. However, there was a relationship between knowledge level and time interval for treatment seeking, with more patients having moderate knowledge visiting hospital within one day (p -value < 0.05). A discrepancy was observed with a small percentage of patients with high levels of knowledge visiting hospital after one day. This is difficult to explain, but other factors could have influenced their actions, such as distance and, economic constraints. No relationship was found between information and perception level with time interval for treatment seeking after injury.

One important aspects of this study was to determine treatment-seeking behavior, in terms of first place to seek treatment, and time interval taken by patients to visit the eye hospital after injury. Previous studies have shown that timely visits to the appropriate center can salvage visual loss from serious eye injury (Karaman *et al.*, 2004). This study found that over half of the patients visited the eye hospital in one day, which was a very good indication in terms of treatment-seeking behavior, it meant most of the patients came from the surrounding area and had good access to the hospital. It also indicated that people had good levels of confidence in the hospital and received adequate services in time. The reasons may have varied, but this was an encouraging trend and the hospital should put more effort into making patients aware of the need for immediate treatment if eye injury is sustained. There was a statistically significant association between first time treatment seeking and severity of eye injury (p -value < 0.05). Most mildly and moderately injured patients opted for the eye hospital as the first place to seek treatment,

whereas severely injured patients visited other centers before arriving at the hospital for treatment.

When asked about the source of information that helped the patient to come to hospital and self-attendance or referral by health facilities, an interesting phenomenon was observed; most patients received information from former patients and came to the hospital for treatment under their own volition. This showed that former patients acted as ambassadors of the hospital, possibly because they were satisfied with the services rendered by the hospital. A study was conducted to teach patients who had undergone cataract operations (intraocular lens implants) to motivate other cataract patients from their hometowns to undergo cataract surgery (Kandel, 1999). The study showed very encouraging results on the cataract patients, and this method can also be used with eye injury patients. Although the source of information showed a positive trend, no statistical association was found with severity of eye injury. However, an association was found for referral of patient and severity of eye injury (p -value < 0.05); more severe patients were referred for treatment. No association was found between source of information and referral status of patient with time interval for seeking treatment.

Since most patients arrived at the hospital in one day, it was important to inquire about accessibility status. Most patients arrived by bus, which was the most common and least expensive means of travel. Most patients had to travel 21-160 km, which could be covered within one to five hours in the setting, and the cost incurred was 46-200 NRS. An association was found between mode of transport, distance, and cost of travel, with severity of eye injury (p -value < 0.05). More severe patients used bus/train transport, while mildly injured patients came to the hospital by bicycle/rickshaw. Mild patients had to travel lesser distances and, pay lower travel costs, whereas moderate and severe

patients had to travel longer distances and pay higher travel costs. It was interesting to note that no association was found with travel time, since time is difficult to judge and depends on many factors. No association was found between accessibility and time interval for seeking treatment, as there were no significant differences

Clinical examinations of the patients were conducted to assess severity and type of eye injury. The larger proportion of cases who attended the hospital were severe cases. Closed globe injuries predominated, which means the majority of persons sustaining eye injuries in the vicinity visited the eye hospital. It was interesting to note that very few patients had ocular burns (thermal and chemical), which usually cause severe eye injuries with loss of vision. This maybe because of seasonal variation or coincidentally fewer such patients arrived during that month. Previous hospital records showed that this was not a frequent cause of injury. Visual acuity (VA) among the patients was 6/6-6/18 (41.8%), 6/18-6/60 (13.2%), 3/60-1/60 (5.8%), 1/60-Finger count (33.3%) and No perception of light (5.8%) (WHO, 1977). The high rate of blindness (33.3%) among the patients was because many injured patients came to the hospital with corneal ulceration and hypopyon. One-eyeball injuries predominated, and the most common sources of injury were persons, plants, and animals. One study found that most cases of microbial keratitis were reported to follow minor ocular trauma sustained during agricultural work or domestic activities (Upadhyay *et al.*, 2001). A large majority of patients did not use any safety devices for the eyes or face, which was a grave concern, and challenge to the authorities. This study shows that, even in developed countries, this problem exists and it is difficult to convince the populations about the importance of using safety wear. One study found that although work related exposures could result in eye injury, a large proportion of patients did not wear any eye protectors, even though they believed that

such protectors were required (Yu *et al.*, 2004). Therefore, concerted efforts are needed in all sectors to promote the use of eye safety wear, and to increase the awareness protecting against eye injuries.

RECOMMENDATIONS

The recommendations based on this study are as follows:

In this study, the older age group and the occupational group comprising farmers, and housewives were the most vulnerable to severe eye injury. Therefore, a focused program needs to be developed to support these people:

- (1) A counseling section and ongoing outreach DST (diagnostic, screening, and treatment) camp should be established. The counselor would be responsible for educating these vulnerable groups and their families about the importance of early and appropriate treatment.
- (2) These vulnerable people and their relatives should be counseled in the hospital.
- (3) The referral system needs to be strengthened for timely and effective transfer of these injured patients from DST camps, primary eye care centers/other health facilities to the hospital.
- (4) On arrival at the hospital, such patients should be given special priority, so that they need not wait in line for examinations, minor interventions or surgical procedures.
- (5) It was also found that younger age groups were most affected by eye injuries. More health education program targeting these groups should be developed and implemented in schools and, colleges. Targeted messages and information should be disseminated through media to the at risk groups, to alert them to the potential threats of eye injury and the appropriate ways to prevent such injuries.

(6) Farmers, farm/factory workers, and housewives were vulnerable occupational groups; therefore, a program needs to be developed to educate them about preventing eye injury. All sectors, such as government, INGO/NGO, health departments and the general community should bear responsibility, and collaborate to alert these groups to the risk of injury. Important issues need to be addressed effectively by government, e.g., strict legislation and regulation to protect worker rights. Extensive efforts should be made to provide health education to these groups by involving the community. Education and training programs regarding the compulsory use of eye safety devices while working should be initiated and followed-up regularly.

(7) More research in this field should be conducted for a better understanding of the problem and to develop appropriate solutions. For future research in this field, some important aspects, such as sample size, length of research period, and the inclusion of more hospitals from different locations should be considered.