Prevalence of Eye Problems and Knowledge about Eye Health among Patients Visiting an Eye Hospital in Dhaka, Bangladesh

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ABSTRACT: Eye problems are prevalent among Bangladeshi population due to their ignorance regarding eye health. This study investigated the reasons for patients' visit to an eye hospital and their knowledge about maintaining healthy eyes. Using a questionnaire, data were collected from 110 patients visiting a secondary eye care hospital situated in Savar, Dhaka, Bangladesh. Common reasons behind their hospital visit were blurry vision (45.5%), itchy eye (45.5%) and swollen or red eye (40.9%). Positive history of refractive errors and conjunctivitis were observed among the patients as well as their families. All adult patients (n = 92) knew that eating fruits, vegetables and fishes is good for the eyes. Majority of them were also aware of the importance of wearing protective eyewear (90.2%), knowing family eye health history (85.9%) and giving rest to eyes after electronic device use (81.5%). The positive impact of avoiding or quitting smoking and maintaining a healthy weight on eye health were known to less than half of them. Significantly higher ($p < 0.05$) knowledge score about eye health maintenance was related to young age, positive family history, male gender, higher education level and higher monthly family income. Therefore, improving the knowledge about maintenance of eye health needs to be addressed with highest importance to lower the continuing burden of visual impairments.

Key words: Eye problems, visual impairment, refractive errors, knowledge, eye health, Bangladesh.

INTRODUCTION

Eye health is a significant public health priority since visual impairment can have an adverse influence on the overall wellbeing of a person.[1] Worldwide, approximately 2.2 billion individuals suffer from vision impairment, of which, at least 1 billion cases were preventable.[2] In 2020, 596 million people had distance vision impairment including 43 million suffering from blindness. By 2050, this number is projected to be increased to 895 million for distant vision impairment with 61 million blind people due to population growth, aging and urbanization.[3]

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Globally, refractive errors and cataracts are the leading causes of vision impairment and blindness which can be easily prevented and managed through effective interventions.[2,4] Other major causes include diabetic retinopathy, glaucoma and age-related macular degeneration.[2,5] Although the causes behind vision impairment varies between and within countries based on the accessibility to eye care services, treatment expenditure and education level of the people, uncorrected refractive error is among the possible leading causes irrespective of all age groups of global population.[2] Geographically, there are also significant variations in the prevalence of eye diseases, with low-income nations having the highest frequency.[6]

An estimated 90.5 million people with visual impairment and 12 million blind adults were thought

to reside in South Asia in 2010. The National Blindness and Low Vision Survey of Bangladesh found that 1.53% population over 30 years old were blind and 21.66% had low vision with a visual acuity less than 6/12. The prevalence of blindness was higher among participants who were old, female, illiterate and from lower socioeconomic class.[7] The two most common causes of vision impairment were reported to be refractive errors (18.87%) and cataracts (73.39%).[8] Another nationally representative survey also reported 1% prevalence of blindness and 12.1% prevalence of low vision among Bangladeshi people aged ≥40 years. Cataract, age-related macular degeneration and diabetic retinopathy were among the leading causes of blindness.[9]

Increasing public awareness of prevalent eye disorders is crucial for lowering the global burden of eye diseases.[10] Numerous eye conditions might have minimal or no symptoms for an extended period of time.[11] Lack of knowledge about eye conditions might cause delays in seeking medical attention and increase the amount of time between the initial onset of symptoms and diagnosis[12] which may jeopardize the success of the therapeutic interventions. Previous studies have identified that age, gender, level of education, socioeconomic status were the main predictors of awareness related to eye disease.[13-15]

Vision impairment impacts general well-being and quality of life as well as several functional domains, including the physical, cognitive, psychological and social.[16] A healthy vision can be accomplished through consuming foods like vegetables, fruits, nuts, eggs, dairy products, fishes etc. which are rich in vitamins, carotenoids, minerals, omega-3 fatty acids and antioxidants.[17,18] Regular eye checkups and practicing some easy lifestyle habits to preserve healthy eyes and vision are crucial ways to help prevent eye health issues from worsening. To promote better eye care habits and access to care, it is essential to be aware of the significance of eye health.[19] Knowledge and practices related to eye health were found to vary with gender, education level, marital status and sufferings of a family member from eye disease.[20] Age, sex, knowledge of eye disease and family income were also reported as factors that could influence a person's self-care practice.[13] A study from Bangladesh observed that better educational attainment and social standing increase the likelihood of visiting an eye care facility.[14]

A limited number of studies have been carried out in Bangladesh concerning the general public's and a particular afflicted population's knowledge, attitudes, and practices about prevalent eye illnesses.[14,21-23] However, as there is a scarcity of data regarding eye health awareness among Bangladeshi patients, this research was carried out to evaluate the causes of individuals' visits to an eye hospital and to assess their level of knowledge for maintaining eye health.

MATERIALS AND METHODS

The study was conducted in a secondary eye care hospital situated in Savar, Dhaka, Bangladesh. A structured questionnaire was developed to collect data for this study after a literature review of studies related to eye disease and eye health knowledge. It was prepared in English and then translated to Bengali for easy understanding of the respondents. There were two segments in the questionnaire. The first segment was designed to gather information about the sociodemographic characteristics of the patients, their medical history and reasons for their eye hospital visit. The second segment contained questions related to knowledge regarding maintaining good eye health which was prepared based on the simple tips shared by the National Eye Institute.[24] The study adhered to the Declaration of Helsinki. Verbal consent was obtained from each respondent and confidentiality of all the collected data was strictly maintained.

Data were collected applying convenience sampling method from 110 outdoor patients who visited the hospital between March to April 2018. Responses were obtained through interviewing the patient or his/her primary caregiver (if the patient was below 18 years) using the developed questionnaire. Data analyses were done using SPSS

Statistics for Windows, Version 17.0 (SPSS Inc., Chicago).

Only adult patients' responses (n = 92) were scored for assessing their knowledge level about eye health. As responses were not collected directly from the under 18 years patients, their knowledge assessment could not be done. Respondents were assigned 1 point for choosing the "Yes" option and 0 point for choosing the "No" or "Don't know" option in each question. If the total knowledge score of a patient was 6 or greater (out of 8), it was considered that she has good knowledge about eye health. Chi-square test was used to find out the association between knowledge score and categorical variables. A *p*-value of less than 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

A total of 110 patients participated in this study with an almost equal proportion of males and females. Majority of them were between the age of 21 to 30 years (27.3%) with diverse socio-demographic status as summarized in table 1. Blurry vision (45.5%), itchy eye (45.5%) and swollen or red eye (40.9%) were the commonly mentioned reasons by the respondents for reaching out to the hospital. A slightly higher portion of patients visited the eye hospital for the first time (52.7%) and for the remaining it was a follow-up visit. Most of them (61.8%) came to the hospital after experiencing the symptoms over some time while around one-fourth of them did so after sudden development of the symptoms (Table 2).

Table 1. Socio-demographic characteristics of the patients visiting a secondary eye care hospital in Bangladesh (n = 110).

Characteristics		Responses No. (%)
Age	≤10 years	13 (11.8)
	11 - 20 years	16 (14.5)
	21 - 30 years	30 (27.3)
	31 - 40 years	21 (19.1)
	41 - 50 years	18 (16.4)
	51 years and above	12 (10.9)
Gender	Male	53 (48.2)
	Female	57 (51.8)
Living area	Rural	23 (20.9)
	Urban	35 (31.8)
	Sub-urban	52 (47.3)
Occupation	Unemployed	10 (9.1)
	Student	24 (21.8)
	Businessman	8 (7.3)
	Teacher	3 (2.7)
	Housewife	31 (28.2)
	Day labor	6 (5.5)
	Others	28 (25.5)
Education	No schooling	24 (21.8)
	Primary	33 (30.0)
	SSC	16 (14.6)
	HSC	26 (23.6)
	Bachelor and above	11 (10.0)
Monthly income	<10000 BDT	5 (4.5)
	10000 to <30000 BDT	75 (68.2)
	30000 to <50000 BDT	30 (27.3)

About 20% of all respondents had no previous history of eye problem while others informed about having mainly refractive errors (37.3%), conjunctivitis (20%), cataracts (3.6%) etc. Interestingly, majority of them also mentioned to have a family history of refractive errors (38.2%) followed by cataracts (11.8%). None of the respondents mentioned to have glaucoma, night blindness or diabetic retinopathy themselves or in their family. Although most of them (70%) were not suffering from any other medical problem at the time of their eye hospital visit, some of them reported about having diabetes (10.9%) and high blood pressure (6.4%). About 36.4% were wearing spectacles as a corrective measure for their refractive errors. Majority of the respondents (63.6%) went for a sight test within last 2 years and as expected, it was higher among those using spectacles (Table 2).

Table 2. Medical history of the patients visiting a secondary eye care hospital in Bangladesh (n = 110).

Variables		Responses No. (%)
Type of visit	First time	58 (52.7)
	Follow-up	52 (47.3)
Symptoms experienced[a]	Blurry vision	50 (45.5)
	Headache	28 (25.5)
	Double vision	3 (2.7)
	Watery eyes	22 (20.0)
	Itchy eye	50 (45.5)
	Swollen/red eye	45 (40.9)
	Seeing flashes	1 (0.9)
	Dry eye	4 (3.6)
	Burning sensation	8 (7.3)
	Others	30 (27.3)
Development of symptoms	Sudden	27 (24.5)
	Accidental	10 (9.1)
	Over some time	68 (61.8)
	Others	5 (4.6)
History of eye problem[a]	Refractive error	41 (37.3)
	Cataracts	4 (3.6)
	Conjunctivitis	22 (20.0)
	Others	27 (24.6)
	None	22 (20.0)
Other medical condition	Diabetes	12 (10.9)
	High blood pressure	7 (6.4)
	Others	14 (12.7)
	None	77 (70.0)
Family history of eye disease[a]	Refractive error	42 (38.2)
	Cataracts	13 (11.8)
	Others	11 (10.0)
	Don't know	23 (20.9)
	None	28 (25.5)
Using spectacles/lenses	Yes	40 (36.4)
	No	70 (63.6)
Sight test within last 2 years	Yes	
	Spectacle wearers (n = 40)	30 (75.0)
	Spectacle non-wearers (n = 70)	40 (57.1)
	No	
	Spectacle wearers (n = 40)	10 (25.0)
	Spectacle non-wearers (n = 70)	30 (42.9)

[a]multiple responses.

Out of 110 respondents, 92 patients were adults (aged 18 years or above) and hence their knowledge about maintenance of eye health could be judged (Figure 1). All of them were aware of the role of eating fruits, vegetables and fishes for having a good eye health. Higher knowledge about wearing protective eyewear when needed (90.2%), being aware of family eye health history (85.9%) and giving rest to eyes after electronic device use (81.5%) were also observed among them. But none of them could correctly explain the 20-20-20 rule for eye rest.

Surprisingly, many of them thought that wearing sunglasses (59.8%), maintaining a healthy weight (19.6%) and being a non-smoker or quitting smoking (13%) were not important for having healthy eyes. Moreover, there was a lack of knowledge about most of these tips for maintaining good eye health among the respondents, specially about cleaning hands and lenses (68.5%), being a non-smoker or quitting smoking (46.7%) and maintaining a healthy weight (40.2%).

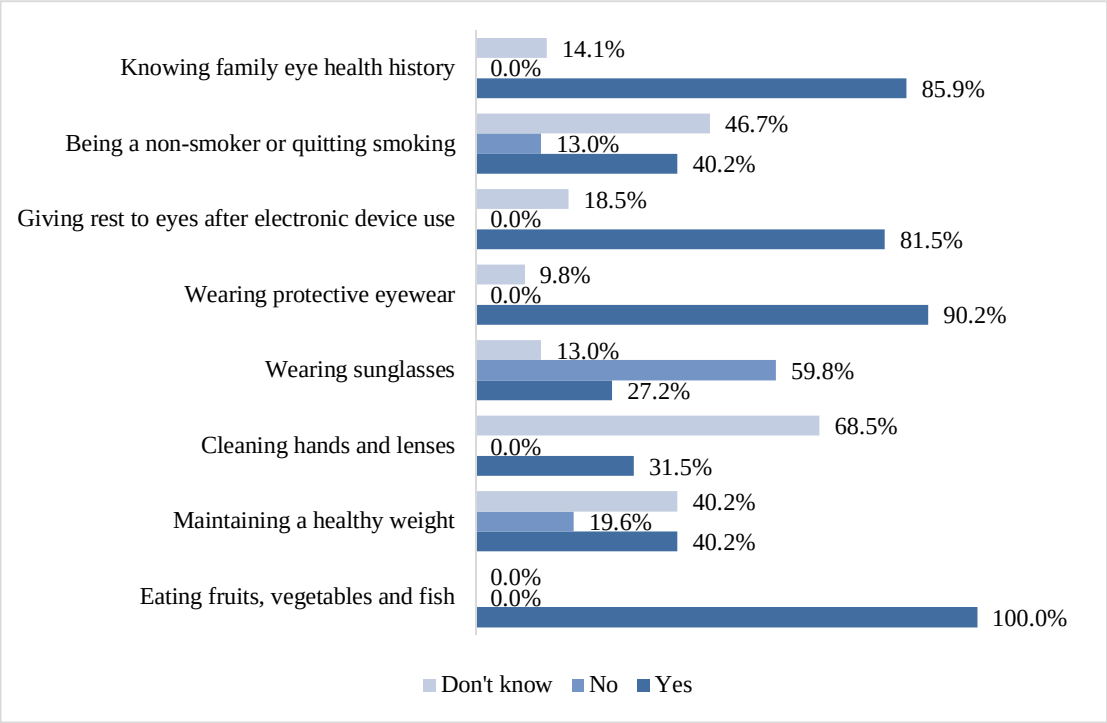

Figure 1. Knowledge about eye health maintenance among adult patients visiting a secondary eye care hospital in Bangladesh (n = 92).

Significantly higher percentage of younger patients (p = 0.025) and those having a positive family history of eye disease (p = 0.043) demonstrated better knowledge. Adult male patients also had better knowledge compared to adult females (55.6% vs 27.7%, p = 0.007). Respondents who have completed at least HSC level of education had better knowledge compared to those having no schooling (75.8% vs. 19.0%, p < 0.001). Moreover, patients with higher monthly family income were found to possess better knowledge compared to those with lower levels of income and this relation was statistically significant (p < 0.001). Although larger percentages of patients wearing spectacles showed a higher eye health knowledge score than the non-wearers, this difference was not statistically significant. Also, the living area of the patients was not found to be significantly related to their knowledge level (Table 3).

Table 3. Characteristics of the adult patients visiting a secondary eye care hospital in Bangladesh and their knowledge level about maintaining eye health (n = 92).

Characteristics	Knowledge score (out of 8)		*p*-value
	Score < 6 No. (%)	Score ≥ 6 No. (%)	
Age			0.025
18 - 30 years (n = 41)	19 (46.3)	22 (53.7)	
31 - 40 years (n = 21)	14 (66.7)	7 (33.3)	
> 40 years (n = 30)	21 (70.0)	9 (30.0)	
Gender			0.007
Male (n = 45)	20 (44.4)	25 (55.6)	
Female (n = 47)	34 (72.3)	13 (27.7)	
Living area			0.809
Rural (n = 19)	12 (63.2)	7 (36.8)	
Sub-urban (n = 47)	28 (59.6)	19 (40.4)	
Urban (n = 26)	14 (53.8)	12 (46.2)	
Education			<0.001
No schooling (n = 21)	17 (81.0)	4 (19.0)	
Up to SSC (n = 38)	29 (76.3)	9 (23.7)	
HSC or above (n = 33)	8 (24.2)	25 (75.8)	
Monthly family income			<0.001
<10000 BDT (n = 5)	5 (100.0)	0 (0.0)	
10000 - <30000 BDT (n = 61)	42 (68.9)	19 (31.1)	
30000 - <50000 BDT (n = 26)	7 (26.9)	19 (73.1)	
Spectacle wearing condition			0.095
Wearer (n = 39)	19 (48.7)	20 (51.3)	
Non wearer (n = 53)	35 (66.0)	18 (34.0)	
Family history of eye disease			0.043
Yes (n = 49)	24 (49.0)	25 (51.0)	
No/Don't know (n = 43)	30 (69.8)	13 (30.2)	

According to World Health Organization[2], refractive error is amongst the main causes of visual impairment worldwide and National Eye Institute[25] has identified blurry vision as the most common symptom of this disease. Our study results also corroborated with this as majority of the respondents (37.3%) were suffering from refractive errors and visited the hospital with blurry vision (45.5%). Similar findings were observed for conjunctivitis, the most common eye infection for visiting healthcare professionals[26] and its classic symptoms like itching, swelling and redness of eye[27], as these were also presented by a high proportion of our study participants (Table 2). Refractive errors followed by cataract and allergic conjunctivitis were observed as the major causes of hospital visit in a study conducted in Uttarakhand, India by Bharadwaj et al.[28] A previous study identified refractive error as one of the major reasons behind low vision among Bangladeshi people of 30 years age or older.[7] Another study conducted in an urban hospital of Dhaka, Bangladesh also indicated highest prevalence of allergic conjunctivitis among the patients visiting ophthalmologists.[29]

In our study, majority (80%) of the respondents had a positive history of suffering from eye related problems and about 36.4% of them were using spectacles as a corrective measure for refractive

errors. Among other existing medical conditions, diabetes (10.9%) and high blood pressure (6.4%) were mentioned by some of the respondents. Suffering from diabetes is linked to a high chance of developing diabetic retinopathy, diabetic macular edema and other eye related complications which can lead to even blindness.[30,31]

Regular eye examinations are essential for maintaining good eye health since many eye conditions can develop and worsen without a person's awareness until significant vision loss has occurred.[32] It is recommended that adult persons, who are asymptomatic or at low risk, should have an eye examination at least every 2 years. This gap is even shorter particularly for children and people who are comparatively at greater risks of developing eye problems.[33] About 63.6% respondents went for an eyesight test within the last 2 years and evidently the percentage was higher among the spectacle wearers/users (75% vs. 57.1%). An Australian study[13] also found that 61% of 40 years or older population had undergone a visit to eye practitioner within the past 2 years which is similar to the results of this study. A previous study from Bangladesh observed that 57% of the participants (aged between 20-60 years) never went for an eye test.[22] The scenario was worse among rural Bangladeshi population (aged ≥ 30 years) as reported by Islam et al. About 96% of the participants in their study never had an eye examination and majority (62%) of the remaining participants went for a checkup due to facing an eye problem.[14]

All adult respondents (n = 92) of the present study were aware that eating green leafy vegetables and fruits is good for eye health. Their awareness about using protective eye wear (90.2%) and knowing about family eye health history (85.9%) to maintain a healthy eye were also very high. But family history of eye diseases was reported by 60% of the respondents in this study while one-fifth of them did not know about this. Although 81.5% of them had knowledge about giving rest to eyes after using an electronic device but none of them were able to correctly explain the 20-20-20 rule of eye rest. The positive role of being a non-smoker or quitting smoking, maintaining healthy weight, wearing sunglasses, cleaning hands and lenses on eye health were noticeably low. Nasrin *et al.* also reported that participants' awareness regarding the eye health condition prevailing in their family was quite high (77%) whereas their knowledge about the necessity of regular nutritional food intake (32%) and maintaining body weight (36%) was not satisfactory.[22]

In the present study, having a good knowledge about eye health maintenance was observed among 38 adult patients (out of 92) which was not satisfactory. Respondents with higher education level ($p < 0.001$), higher monthly family income ($p < 0.001$), younger age ($p = 0.025$), male gender ($p = 0.007$) and a family history of eye disease ($p = 0.043$) had significantly higher knowledge score about maintaining healthy eyes. Although better knowledge scores were observed among spectacle wearers compared to the non-wearers and among the patients living in an urban area than those from a rural or sub-urban area, these relationships were not statistically significant. A previous study conducted in Comilla, Bangladesh found that prevalence of eye diseases depends on education, region, family history and knowledge about eye care services. This study also mentioned that people with minimal knowledge about the risk of eye diseases will suffer from severe complications in near future.[23] This observation corroborates with the reports of a previous study where the prevalence of blindness was also found greater among older people, women, illiterate and economically disadvantaged adults of Bangladesh.[7] Moreover, the study from Australia reported correct knowledge of eye diseases were significantly related to younger age, higher level of education and female gender.[13] Significantly better knowledge about eye disease and eye care was also observed among Saudi adults who were females, had high education level, were ever married and had a family member with eye disease.[20]

Although this study was limited only to a single eye hospital, it indicated the urgent need to further

investigate the scenario of eye health related knowledge among not only the patients but also the general population of Bangladesh.

CONCLUSION

In conclusion, it can be stated that there is a large knowledge gap among the patients about maintaining good eye health. They were visiting the eye hospital with common problems, occurrence or progression of which could be easily reduced by practicing simple tips related to eye health. So, educational programs should be designed to promote awareness about common eye diseases and eye health preserving methods to address and thereby minimize the knowledge gap. Mass communication as well as social media could play a crucial role in this aspect. Improving the knowledge regarding maintenance of healthy eyes could create a greater understanding and acceptance of the significance of routine eye exams. This would lower the chances of visual impairment as well as the cost for eye care due to early diagnosis and treatment of eye problems. These data could serve as steppingstones for developing effective health education programs to create awareness about eye health among the population of Bangladesh.

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DECLARATION

The authors declare no conflict of interest.

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