

## Ocular Status, Health Seeking Behaviours and Barriers to Uptake Eye Care Services among Children of Slum Community in Chittagong, Bangladesh

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### Abstract

**Purpose:** The purpose of this study was to find out the ocular status, ocular health seeking behaviors and barriers to uptake eye care services among children of slum community in Chittagong, Bangladesh.

**Methods:** The study was conducted in several urban slums in Chittagong city, which is home of slum children. A total of 410 children aged 5 to 16 years were clinically examined. Their accompanying guardians were also interviewed for collecting data about health seeking behaviors and identifying the barriers, if any, to uptake eye care services. Three focus group discussions were also held with guardians.

**Results:** About 47.3% of the sampled children were male and 52.7% female. About 40% of the children had some complain where we found 36.6% having some ocular abnormalities. Among the respondents (n=410), related with ocular abnormalities (n=150), the diagnosed problems were; Refractive Error (26.7%), Allergic Conjunctivitis (21.3%), Blepharitis (16.0%), Squint (7.3%), Convergence Insufficiency (6.6%), Meibomian Gland Dysfunction (8.7%), Dacryocystitis (3.3%), Conjunctivitis (4.0%), Congenital Cataract (2.7%), Corneal scar 2.0%, Pseudophakia 2.0%, Xerophthalmia (1.3%). Infrequently Entropion, Ptosis, Corneal Opacities, Retrobulbar Neuritis, Retinal Detachment, Episcleritis, Scleritis, Microphthalmos, Ocular FB, Chalazion, Stye, Nystagmus and Proptosis were also present in limited percentage. However 25.70% were referred to tertiary eye care center, 39.60% were treated with medicine, 22.20% were given optical correction, and 25.70% were given general measure. Most of them (73%) never went to an eye care specialist. The main reasons assigned for not going to a doctor were: financial constraints (16.30%), didn't feel necessary (33.70%), lack of escort (3.4%), lack of time (3.7%), traditional belief (0.3%) and not aware of hospital doctor (4.5%). The Guardians consider recent cost of treatment is very high. They want low cost treatment, provide free spectacle, increase more hospital facilities and hold free eye camps.

**Conclusion:** This study found very high ocular morbidities among slum children, the vast majority of the guardians' cannot afford medical treatment for lack of money, awareness, escort, time and indifference to eyes. Though adequate eye care facilities are available in Chittagong city compared to many other urban and rural areas in Bangladesh, most of the slum dwellers can't take advantage of it for financial reason and lack of knowledge.

**Keywords:** Slum dwellers, Behaviors, Eye care, Refractive error, Allergic conjunctivitis, Squint, Medical treatment, Traditional treatment, Spectacles

### Introduction

In developing countries like Bangladesh, a large segment of population is deprived of fundamental rights to basic health care. Visual impairment is a worldwide problem that has a significant

socioeconomic impact. Childhood blindness is a priority area because of the number of blindness has increased in recent decades. According to WHO, About 90% of the world's visually impaired people live in developing countries and 80% of all causes are either preventable or curable [1]. WHO also estimated that, about 12.8 million children are visually impaired from uncorrected or inadequately corrected refractive errors [1].

In Bangladesh about 0.75 million people are blind where 40,000 are children, which are avoidable through proper treatment and care [2]. In 2000, Bangladesh National Blindness and Low Vision Survey showed that cataracts were the predominant cause of bilateral blindness, with cataracts and refractive errors being the main causes of low vision [2]. Based on the prevalence of refractive error in Bangladesh, it is estimated that there are around 4.6 million adults and children visually impaired due to refractive error [2]. This can result of limited awareness, availability; illiteracy, poverty and affordability are often barriers to accessing eye care services for poor communities. As per 2005 survey on Census and mapping of slums (CMS) in Bangladesh, about 5.2 million people live in slums area of Bangladesh, where approximately 1.3 million were children and the rate is increasing day by day with increase in urbanization [3].

Children do not concern about defective vision and may not even aware of their problem. Numbers of urban slums in Bangladesh are growing much faster than the overall rate of urbanization, which lead to deprive the children living in these areas of basic health care and primary education [4]. In a study in an urban slum of central India, 41.33% were children and the prevalence of ocular morbidities was 40.38% [5]. According to UNICEF report on Bangladesh, net secondary school attendances was 48% in rural areas and 53% in urban areas-but in slums, this number fell to 18% [4]. With one of the highest urban populations in the world, the development of slums in Bangladesh had not received proper attention from the authorities. Therefore, the condition continues to worsen for an increasing number of urban poor living in slums and colonies. For that reasons, it will become serious crisis in having the basic needs met. So, this study is to determine ocular health status, eye health seeking behaviors and knowledge of eye care services among children of slum community.

### Rationale

Life of slum people is full of miseries and sufferings. Slums in Bangladesh are growing much faster than the overall rate of urbanization, depriving the children living in these areas of basic health care facilities. In the developing countries, data on the prevalence of ocular morbidities are derived mainly from institutions like blind homes, hospitals, school etc. Hence very little information is available on prevalence of ocular morbidities in the general population, especially in an urban slum. So purpose of this study is to determine ocular status, eye health seeking behavior, knowledge of eye care services and factors responsible for barriers in slum children.

### Literature Review

Ocular problems in children are common, but it is frequently seen in underprivileged young children in the developing countries. Children unlike adults are unaware of their problems and rarely complain. Screening for these disorders, which are silent in manifestation for which timely intervention is effective. Although there are numerous studies have done, we have reviewed few studies in given below.

In several study found that, there had significant percentage of ocular morbidities among children were 21% to 49% [5-8]. There had also complained with poor vision (61.5%), allergy or infection (43.7%) and watery eyes (27.6%). The common ocular morbidities were Refractive error (3.3% to 22%), Conjunctivitis (0.8% to 3.3%), trachoma (4.3% to 4.9%), Xerophthalmia (3.6% to 4.1%), Stye (0.2% to 1.3%), Blepharitis (1.0% to 3.3%), Color blindness (1.0% to 2.3%), Chalazion (0.5% to 2.7%), squint (0.5% to 2.5%), Corneal

opacity (0.4% to 3.3%), Exophthalmos (0.1%), Coloboma (0.1%), Pingiculai (0.1% to 2.9%), Subconjunctival hemorrhage (0.1%), Scleritis (0.1%), Episcleritis (0.1% to 1.1%), Dacryocystitis (0.3% to 1.9%) [5,6,8-11].

The common causes of Blindness was Cataract (13.4% to 42.86%), Corneal opacity (42.86%), Ocular trauma (11.4%), Refractive errors (3.3% to 22%), Trachoma (4.3% to 4.9%), Vitamin A deficiency (3.6 % to 10.5%), Congenital anomalies (1%), glaucoma (3.5% to 16.8%) [5,6,8,9,11]. Around 38% sought no eye care, the main reasons being financial constraints (40% to 45%), not taking the problem seriously (25% to 31%) and lack of time (10% to 16%) [5,7,11].

The above findings indicate that many slum children have ocular problems but receive no service for variety of barrier in developing countries.

### Objectives

**Main Objective:** To determine the ocular health status and factors that influence to uptake eye care services among slum children.

### Specific Objectives:

- To determine the demography and socio-economic condition of slum children
- To assess ocular health status of slum children
- To explore ocular health seeking behaviors
- To identify the barriers of eye care services

### Methodology

#### Approach

The study design was descriptive where both qualitative and quantitative data were collected from slums children. Quantitative data were collected by examining the health status and qualitative data were collected by interview.

**Study Location:** Slum of Chittagong city, Bangladesh.

**Study Population:** Slum Children age (5 to 16) years.

**Study Period:** The study period was 1 year (September, 2015 to August, 2016).

**Inclusion Criteria:** Children age group within 5 to 16 years.

**Exclusion Criteria:** Children below 5 years, above 16 years and non cooperative were excluded from the study.

### Sampling

Respondents for the survey were selected through non randomized and purposive sampling from the selected slums. The slum areas were selected purposively according to sample availability, convenience and cooperation with the headmen of slum dwellers. A total of 410 children were clinically examined. Their accompanying guardians were also interviewed with an interview schedule for collecting data on health seeking behaviors and identifying the barriers, if any, to uptake eye care services.

### Sample Size

As the slum areas were selected purposively, the sample size was dependent on the presence of the slum dwellers of respective age group. Among the selected days of data collection, all the respondents were included who fulfilled the inclusion criteria and the serial number of the last respondent was 410.

### Data Collection Technique

Different kinds of data collection techniques used for the study, such as clinical examination, survey, in-depth interview, focus group discussions (FGDs) and case study.

### Data Collection Tools

The clinical data were collected with the help of a well designed data collection format. The team assessed ocular status of children of 5-16 years of age through spot examination. The examinations included ocular status like visual status, refractive status and ocular abnormalities. Visual Acuity was recorded with Snellen Acuity Chart, Refractive Status were determined by Dry and wet Retinoscopy, Anterior Segment examined by Torch Light, and Posterior Segment examined by Ophthalmoscope.

### Interview Schedule (Non Clinical Data)

Non-clinical data was collected with an interview schedule, where the major indications were included demographic, socio economic background, family condition, knowledge of eye health, eye health seeking behaviors, utilization of eye care services and factors responsible for barriers.

### In Depth Interview

A total of 3 in-depth interviews and 3 case studies were conducted with separate interview guides. Reports of in-depth interviews, FGDs and case studies were coded thematically in order to put together for interpretation.

### Data Analysis Plan

All quantitative data was processed using SPSS statistical package with the help of Microsoft office (excel and excess). Both univariate and bivariate analysis was done to describe and show relationships. Interpretation of qualitative data was done under guidance of a senior researcher. Graphs, Charts and Tables were used for easy understanding of the findings.

## Results

### Demographic and Socioeconomic Information

#### Gender, Age and Places

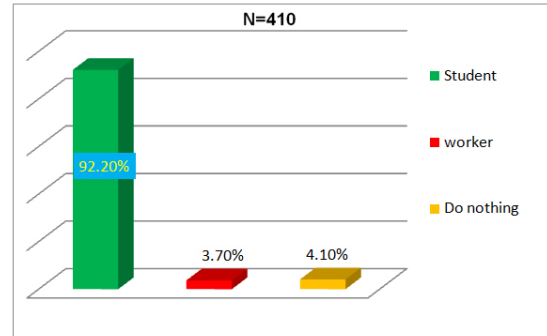
Among the study respondents, about 410 study subjects were selected from 2 Thana and there has about 47.3% of the sampled children were male and 52.7% female (Table 1.1).

**Table 1.1: Percentage of Age vs. Gender of the Respondents**

Age Group	GENDER				TOTAL	
	MALE		FEMALE		N	%
	N	%	N	%		
5 - 8	61	14.90	50	12.20	111	27.10
9-12	49	12.0	63	15.40	112	27.30
13-16	84	20.50	103	25.10	187	<b>45.60</b>
TOTAL	194	47.30	216	52.70	410	100

The study subjects were classified into 3 age groups with gender; about 27.1% of the respondents were 5 to 8 years old, 27.3% of the respondents were 9 to 12 years old and 45.6% of the respondents were 13 to 16 years old. Among the slum children, 13 to 16 years age group was more than others.

### Occupations of the Respondents



**Figure 1.1: Percentage of Occupations of the Respondents**

The above figures shows that about 92.20% of the total children were working students, 3.70% were working children. Remaining 4.10% children were neither school going nor working children (Figure 1.1). So, in explanation it shows that most of the slum children are school going. The reason is that recently more NGO schools are established in slum areas.

### Ocular Health Status and Related Information

#### Chief Complain of the Respondents

#### Percentage Distribution of Chief Ocular Complains of the Children

Complain	Number	Percentage (%)
Blurring of Vision	41	25.0
Night vision problem	9	4.9
Headache & Eyeache	38	23.2
Watering eye	36	22.0
Itching & Burning sensation	31	19.0
Deviation of eye	4	2.4
Others	5	3.5
Total	164	100

\*complain was 40%, out of the total (N=410) respondents

Among the respondents, about 40% of the children had some complain. Respondents were asked to tell what kinds of problem they had with regards to their eye health. Every complaint did not mean they really had the diseases. The problems they mentioned were; blurring of vision (25.0%), night vision problem (4.9%), headache and eyeache (23.2%), watering eye (22.0%), itching and burning sensation (19.0%), deviation of eye (2.4%) and others (3.5%). After clinically examined ocular morbidities were diagnosed.

## Unaided and Aided Visual Acuity of the Children

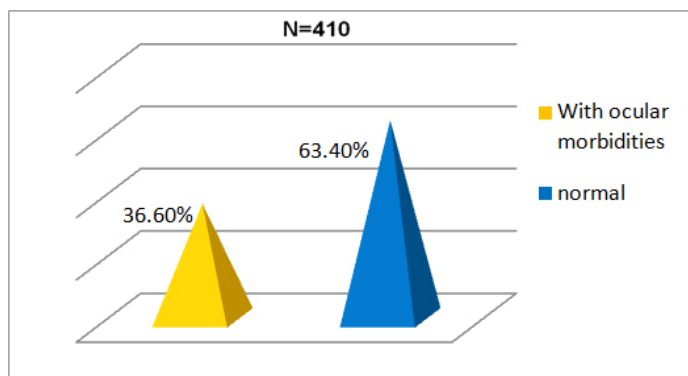
**Table 2.2: Percentage Distribution of Unaided and Aided Visual Acuity of the Children**

Visual acuity	Unaided		Aided	
	Number (N=820 eyes*)	Percentage (100%)	Number (N=86eyes*)	Percentage (100%)
6/6	735	<b>89.6</b>	76	<b>88.40</b>
6/9 - 6/18	64	7.80	7	8.20
6/24 - 3/60	19	2.40	1	1.10
<3/60 - PL	1	0.10	1	1.10
NPL	1	0.10	1	1.10

\*Eyes were counted individually where right eye and left eye were 820

Among the study respondents, about 89.6% of the children had 6/6 visual acuity, 7.8% had visual acuity from 6/9 to 6/18, 2.3% had visual acuity from 6/24 to 3/60, 0.1% had visual acuity from <3/60 to PL and 0.1% had NPL. Refraction was done for all of the children whose visual acuity was less than 6/6 and as required. After giving refractive correction, 88.4% children got their vision normal. Among them 11.6% had their visual acuity beyond normal or less than 6/6 which means they were amblyopic. Concerning fact was that about 3.3% of those children with abnormalities had their visual acuity less than 6/18 or in the category of low vision (Table 2.2).

### Ocular Morbidities



**Figure 2.1: Percentage Distribution of Ocular Morbidities among Study Subjects**

The above figure shows that amongst 410 study subject, 150 were having some ocular morbidity. Thus percentage of ocular morbidities was found 36.6% (Figure 2.1). All clients were clinically examined after hearing their problems and found following problems after diagnosis. The diagnosed problems were; Refractive Error (26.7%), Allergic Conjunctivitis (21.3%), Blepharitis (16.0%), Squint (7.3%), Convergence Insufficiency (6.6%), Meibomian Gland Dysfunction (8.7%), Dacryocystitis (3.3%), Conjunctivitis (4.0%), Congenital Cataract (2.7%), Corneal scar (2.0%), Pseudophakia (2.0%), Xerophthalmia (1.3%). Infrequently Entropion, Ptosis, Corneal Opacities, Retrobulbar Neuritis, Retinal Detachment, Episcleritis, Scleritis, microphthalmos, Ocular FB, Chalazion, Stye, nystagmus and proptosis were also present in limited percentage (Table

2.3). Concerning fact was that most of the refractive errors were uncorrected among the respondents.

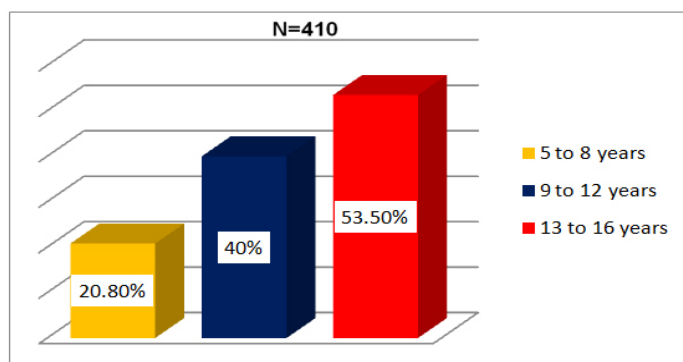
**Table 2.3: Percentage of Diagnosis of the Respondents**

Ocular morbidities	Study subjects (N=410)	Percentage of cases (%)
	Number of problems (N=150)	
Refractive Error	40	26.70
Allergic Conjunctivitis	32	21.30
Blepharitis	24	16.0
Meibomian Gland dysfunction	13	8.70
Squint	11	7.30
Congenital Cataract	4	2.70
Conjunctivitis	6	4.0
Dacryocystitis	5	3.30
Convergence insufficiency	12	6.60
Pseudophakia	3	2.0
Corneal scar	3	2.0
Xerophthalmia	2	1.30
others	15	12.10
Total	170	<b>114.0*</b>

\*about 20 of the cases had multiple diagnoses, so the percentage is 114% rather than 100%

### Ocular Morbidities with Age

Among study population, it is observed that with the increase of age the numbers of ocular morbidities were also increased. In the age group of 5 to 8 years, it had 20%, which increased to 40% in the 9 to 12 age group and maximum 53.5% in 13 to 15 years age group (Figure 2.2). It's also observed that, among slum children ocular morbidities were found more in female (56.7%) than male (43.3%). So, in this analysis, it shows that the children ageing between 13 and 16 constitute the biggest portion.



**Figure 2.2: Percentage Distribution of Ocular Morbidities with Age**

### Pattern of Refractive Error

After performing refraction with Retinoscopy, among 150 of the ocular problems about (N=40) 26.7% was refractive error; myopia was the most common (45.3%) type of refractive error among children, about 42.3% was Astigmatism and about 12.4% was hyperopia (Figure 2.3). In this study found that, Refractive error was maximum (62.5%) in the age group 13 to 16 years than other age groups, because refractive error was manifested in later age group. It's also observed that refractive errors were more in female (70%) than male (30%).

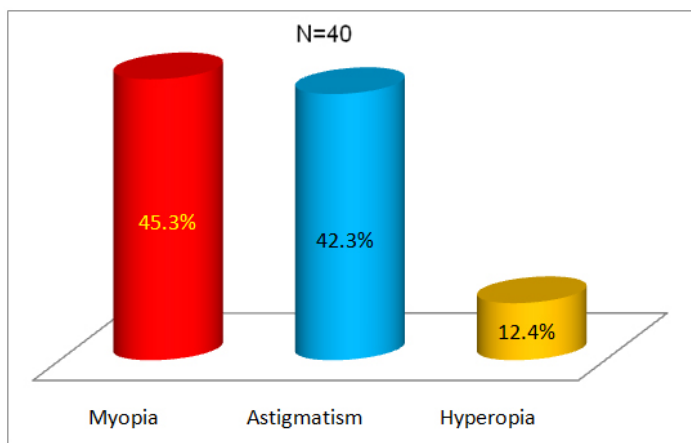


Figure 2.3: Percentage Distribution among Types of Refractive Error

### Treatment Protocols

Treatment protocols were little bit different for the children as the community program was not as well equipped that all type of examination, investigation and diseases management were not possible. However 25.70% were referred to tertiary eye care center for further investigation and treatment including medical and surgical management. Rests of them, about 39.60% were treated with medicine, 22.20% were given optical correction, and 25.70% were given general measures including counseling, maintain lid hygiene, hot and cold compression (Figure 2.4).

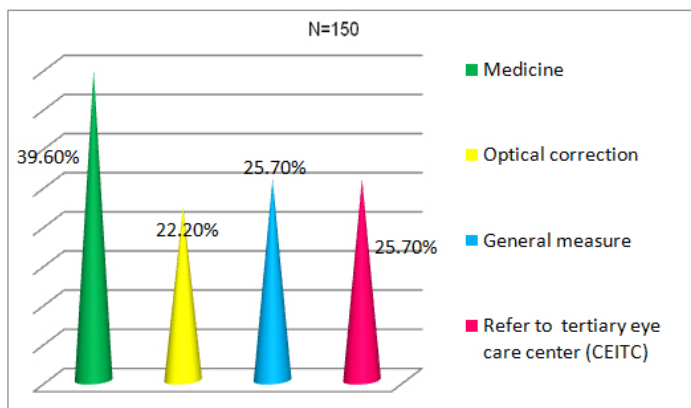


Figure 2.4: Percentage Distribution of Treatment Protocols

### Information Based on Qualitative Assessment

#### Knowledge about Eye Care Center Facilities

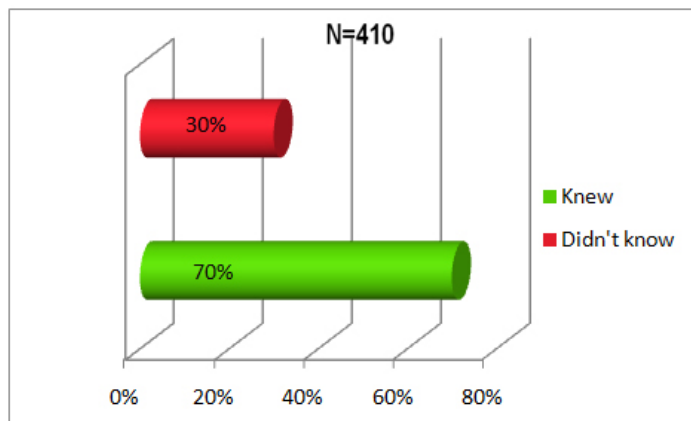


Figure 3.1: Knowledge about Eye Care Center Facilities

The above figure shows that most (70%) of the respondents were known about the eye care center for treatment. Moreover (30%) of the respondents didn't know about the care center (Figure 3.1).

The respondents were also asked to know about the nearest eye care center. Most of the respondents, about 86% of the respondents were known about the eye care center and 14% of the respondents were known about general medical center.

#### Reasons of Not Going to Doctor

The main reasons assigned for not going to doctors were: financial constraints (16.30%), didn't feel necessary (33.70%). Infrequently other reasons for not going to doctor were lack of escort (3.4%), lack of time (3.7%), traditional belief (0.3%) and not aware of hospital doctor (4.5%). Rest of them did not assign any reasons, because they did not need to go. It was observed that most of the guardians were not concerned about their children's ocular problem.

#### Opinions of the Study Population Guardians Regarding Eye Treatment

About 27.6% of the respondents and their guardians were given opinions. Most of the guardians reported to reduce treatment cost, want free spectacle. They also reported that they have to take treatment in time, Necessary to visit hospital, Careful to eye, Should avoid ocular trauma and freer eye camp.

#### Community Participation and Perception

In order to understand peoples' demand, expected behavior and provision of eye care services, the team went to several urban slums in Chittagong city. The slum dwellers were very interested and participated willingly with their children to examine and give interview. The participants helped the team to arrange a screening camp in the slum and the team able to examine the respondents. The teams were consisted of Ophthalmologist and Optometrist. The guardians and their children took part on the interview and they gave their socioeconomic information, knowledge and barriers about uptake eye care services.

## Focus Group Discussions (FGDs)

Three FGDs were conducted with slum-dwellers who did not take part in the survey: two with men and one with women aged below 30 years. A total of 34 participants took part in FGDs with 10 to 12 participants in each group. All discussions were audio recorded and field notes were taken during discussions on the presence of Ophthalmologist and Optometrist. The respondents were asked some questions about their socioeconomic information, knowledge of eye care services and barriers to uptake eye care services. Most of the guardians reported that their financial condition is very poor and they lead very miserable life. Most of the guardians know about the eye care services, but they cannot go to hospital or doctor due to their financial crisis, lack of awareness, lack of escort, lack of time and traditional belief. Some of the respondents reported that they went traditional healer of having some eye problems. They also thought that, they could be getting low cost treatment from traditional healer then hospital or doctors fees. Some of the respondents were also reported that during any ocular trauma or eye problems they give breast milk, fresh oil, blood, hot compression and so on, which is ethically prohibited. They were asked regarding use of spectacles of their children, and they answered if they use the spectacle it could be a social stigma, some respondents stated that they had been discouraged from using eye glasses by their families and peers. Others felt that using spectacles was a fashion rather than a necessity, so they were not interested to use spectacle.

## Discussion

In the present study, there were total 410 study subjects out of which 194 (47.3%) were males and 214 (52.7%) were females, so the sex ratio was almost similar to national population survey [12]. In the present study subjects below 5 years of age were excluded for studying education status. In the present study literacy rate was found to be 92.2%. It is higher than National literacy rate this may be attributed to the available for increasing education facilities. Similar findings were also found in study, which was conducted by Talsania, et al. 2012, Gujrat; where about 86.6% of the slum children were schools going [6].

Ocular morbidities are responsible for partial or total blindness. Refractive errors, Cataract, Xerophthalmia, Entropion, Corneal scar, Retinal detachment, Optic neuritis and Ocular injury are the important causes of blindness among children and young age group. In this study the percentage of ocular morbidity was 36.6%. Similar prevalence of ocular morbidities were observed in several study and found that ocular morbidity among children was 21% to 49% though most of the studies the prevalence rate was done with overall population, but this study is done with children aged 5 to 16 years old [5-7,10,11].

In this study found that about 40% of the children had some complain where we found 36.6% having some ocular abnormalities. It is thought that every complaint wasn't true, because they weren't clinically assessed. Similar prevalence of ocular morbidities were observed in this study, where almost (49%) of survey respondents self-reported an eye problem at the time of the survey [11]. The complaints from respondents were blurring of vision (25%), watering eye (22%), and allergy or itching sensation (19%). Several studies were observed poor vision complaints (61.5%), allergy or infection (43.7%) and watery eyes (27.6%). The majority of the respondents (75.9%) reported doing nothing when first experiencing the problem which is in agreement with the findings of the present study [5,8,11].

Rather than the respondents also complain night vision problem, headache and eyeache, deviation and photophobia and discharge complaints.

In the present study, amongst 410 study subject, 150 (36.6%) were having some ocular morbidities. The diagnosed problems were; Refractive Error (26.7%), Allergic Conjunctivitis (21.3%), Blepharitis (16.0%), Squint (7.3%), Convergence Insufficiency (6.6%), Meibomian Gland Dysfunction (8.7%), Dacryocystitis (3.3%), Conjunctivitis (4.0%), Congenital Cataract (2.7%), Corneal scar 2.0%, Pseudophakia 2.0%, Xerophthalmia (1.3%). Infrequently Entropion, Ptosis, Corneal Opacities, Retrobulbar Neuritis, Retinal Detachment, Episcleritis, Scleritis, microphthalmos, Ocular FB, Chalazion, Sty, Nystagmus and Proptosis were also present in limited percentage. Similar prevalence of ocular morbidities conditions were observed in studies by [5-8,10,11]. Majority of the ocular diseases observed in the subjects were either preventable or treatable. However, in this study, there wasn't found any Glaucoma patient. Similar findings were observed among the children included in the study of Gupta, et al. 2009; Talsania, et al. 2012 [6,7]. In this study, the commonest cause of ocular morbidity was refractive errors, among study subject (n=410) myopia was 4.40%, astigmatism was 4.20% and hyperopia was 1.2%. Similar finding reported by found that myopia was 5.71% and hyperopia was 2.67% [5,10]. If we could detect refractive errors early in life, not only will we be reducing the disability but also reducing the chances of developing amblyopia. Interestingly in this study we found the rate of ocular morbidities increased with increase in age. In the age group of 5 to 8 years, it had 20%, which increased to 40% in the 9 to 12 years age group, and maximum 53.5% in 13 to 15 years age. So, the highest portion of ocular morbidities was age group between 13 to 15 years. Similar findings was reported by found that the prevalence of ocular morbidity increased with age, being minimum (17.5%) in 5-6 years age group and maximum (37.5%) in 13-14 years age group [10].

In this study, the leading causes of blindness among slum children were congenital cataract (0.25%) and retinal detachment (0.25%), similar causes of blindness were also observed in a study done by and found cataract was 0.57%, Refractive error was 0.19% and corneal scar was 0.57% [10]. In this study found that among 36.6% abnormality about 73% of them never went to an eye care specialist, which is higher than other study they found 38% never sought no care at all [11]. However reported the main reasons for not going to a doctor were; financial constraints (45%), not taking the problem seriously (31%) and lack of time (16%) [11].

In this study were observed Majority of the ocular diseases either preventable or treatable. Social awareness must be important to prevent these avoidable blindness and low vision. If these morbidities are not detected at the right time they may progress to severe disabilities or leading to blindness and may also affect the child's daily activities. As the burden of blindness is already high in our country we have to have a blindness prevention approach, beginning right from the childhood and eye screening program should be an integral part of it.

## Conclusion

This study found very high ocular morbidities among slum children. The majority of the guardians' cannot afford medical treatment for lack of money, lack of awareness, escort, time and indifference to eyes. Though adequate eye care facilities are available in Chittagong

city compared to many other urban and rural areas in Bangladesh, most of the slum dwellers can't take advantage of it for financial reason and lack of knowledge. The demand for services however is low and constrained by both individual and community factors, including knowledge and education, direct and indirect costs of services and perception of treatment in the light of other competing needs. It is also observed that the lack of awareness and low priority given to eye care are important factors influencing eye health seeking behavior of slum-dwellers. So, periodic screening of population and early referral for diagnosis and specialized ophthalmic care is emphasized. More emphasis should be given to awareness campaigns and changing behavior in order to increase service uptake.

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