

Ocular health status, knowledge and barriers to uptake primary eye care services among Orphans and Destitute children of Ramu Upazila, Cox's Bazar

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Abstract

Purpose: The purpose of this study was to find out the ocular health status, knowledge and barriers to uptake eye care services among tribal orphans and destitute children of ethnic community in Ramu, Cox's Bazar.

Methods: It was a community based descriptive study. The sampling method was purposive. This study was conducted among tribal orphanage center named "JOGOTJYOTI SHISHU SODON" consists of tribal orphan children and some tribal destitute children at Ramu, Cox's Bazar. A total of 120 children were examined by Ophthalmologist and Optometrist to determine the ocular health status of the children. Nutritional health was also taken according to B.M.I method through recording height and weight of the respondents. Qualitative data were collected by a well design questionnaire from the children itself, caretaker or guide of the respondents.

Results: Among 120 subjects, 85 were orphan and 35 destitute children; 45.0% were male and 55.0% female and the age range was 06-16 years (Mean 11.2±2.35 years). Majority of children (60.8%) were in the age group of 11-16 years. Unaided VA of the respondent 6/9 was observed in 11.25% and rests were 6/6 (88.75%). About 45.80% of the respondents found with ocular morbidity. The common Ocular morbidities were Refractive Error (14.0%) and Conjunctivitis (10.1%). Other significant ocular morbidity like Strabismus (5.4%) and Amblyopia (8.1%) were also observed. Ocular morbidities were more common in 11-16 years age group (66.60%). Among all respondents 42.4% were nourished, 43.3% were malnourished, 9.2% were in border line and 5% had overweight according to B.M.I. Orphans and destitute children had poor knowledge about eye care facilities and nutritional food, only 38.3% respondents had knowledge about eye care center where they could get eye treatment.

Conclusion: Results shows that refractive error represents the most common ocular morbidities in orphans and destitute children. Prevention, early recognition and prompt treatment of ocular disease should be ascertained to avoid preventable blindness. The government should provide sight test screening programmed through community resources to detect early sight related problems.

Keywords: Orphans, Destitute children, Tribal Communities, Malnutrition, Refractive Error.

Introduction

An orphan is someone who had lost their parents or died, are unknown or abandoned them. UNICEF (United Nations International children Emergency Fund) defines an orphan as a child under 18 years of age that has lost one or both

parents to any cause of death. Child who has one parents either father or mother is termed as single orphan and child who has lost both parents is termed as Double orphan¹.

According to UNICEF in 2015, worldwide there were 140 (150 Nowadays) million orphans,

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regarding 61 million in Asia, 52 million in Africa and 7.3 million in Eastern Europe and Central Asia¹. This massive number represent that not only children who had lost both of their parents, but also those who has a single surviving father or mother.

There are 61 million orphans in Asia region¹, in some countries, children are devoid at alarming rates, due to poverty, restrictive population control policies and cultural believes that value boys more than girls. In Bangladesh according to 'Save an Orphan' approximately 4.9 million children in pediatric age group work often in very risky situation with very low wages².

"Jagatjyoti Shisu Sadan" is an orphanage for child welfare that does not have parents or abandoned by their parents or their parents are poor to nourish their children, located in Ramu, Cox-Bazar, Bangladesh. Padre Luppi an Italian Catholic Priest inaugurated and supported to run this orphanage with the help of VZW (Education International Belgium) an international organization that supports child education and development of under developing countries. Eighty five small school going girls and boy's residing inside the home and more than 60 college going youths are studying in different colleges of the area. All are supported by the same project.

The nutritional status and life styles of the orphans in Bangladesh are so poor. A large number of orphans are living in the country both rural and urban area. But lack of sufficient number of orphanage, balance food dietary pattern, behavior, proper educational system as well as over all life style and nutritional status (growth and development) is markedly considerable for nation³. Ocular morbidities mostly originate in childhood and if undetected it may cause serious ocular disabilities in his or her future life. Due to lack of health care knowledge, appropriate accommodation and food, poor hygienic behaviors, lack of guidance orphan child have been shown with several types of health problems. All of those issues have impact on the ocular health. The Children do not know about their defective vision and may not even aware of their

problem which leading to visual impairment or permanent loss of vision. According to "Vision 2020: The Right to Vision" every children and adults should get extensive, and secure eye care services equally. But orphans and destitute children's are abandoned to get those services. This situation highlights that this population need more precise concern. In order to assess ocular and nutritional health status of these respondents this study has been conducted. Early detection of such problems may save them from irreversible impairment and improve quality of life. Although every child in early childhood needs parental support massively for their mental and physical growth, an orphan lacks those services because of having no parents. Population of orphans is increasing as there increasing social ignorance, uncontrolled family planning and poverty. Though many multinational Non-governmental Organizations (NGO) running some orphanages to serve these homeless children, sometimes they fail to do so because of insufficient donation, social and governmental support. Orphanages in urban area are benefited from many things like environment, shelter, food habit etc. But orphanage located in rural area lack those services. My modest step towards this study was to find out ocular health status of orphans located in remote area like Ramu, Cox's Bazar of Bangladesh.

Methodology

The study was approached as both qualitative & quantitative method. study design was community based descriptive study. An orphanage named 'Jagatjyoti Shishu Sadan' consists of tribal orphan children at remote area of Ramu, Cox's Bazar. There were 85 Children in orphanage and 35 were destitute children from surrounding area. All over there were examined a total of 120 Children at above mentioned orphanage. Orphans children of 'Jagatjyoti Shishu Sadan' and destitute children of surrounding area were purposively collected as data for the study. Study period was November 2018 to October 2019.. Sample size was 120. All the children were within an age range of 06-16 years.

Data collection technique: Both qualitative and quantitative data was collected through visiting in target tribal orphanage of Ramu, Cox's Bazaar. We gather in the orphanage and collect some destitute children of surrounding area, called them in the orphanage for ocular and nutritional health assessment. All relevant demographic information, knowledge about eye care, nutritional and health education was noted in well-designed data collection format. It has two part; first part included demographic data and ocular health assessment indices was collected from respondent itself and second part has questionnaire related to knowledge about eye care facilities, nutritious food sources and health education that was collected through interview schedule from respondents or concern guide.

Ocular Examination: Clinical examinations were conducted by qualified Ophthalmologists and Optometrists to determine ocular health status. Presenting distance visual acuity (VA), Pinhole VA was recorded with the help of Snellen VA Chart and Tumbling-E chart. Children who don't respond with Snellen Charts, their vision was recorded by Key picture test (KPT) chart. Near vision was recorded by N-acuity chart. Anterior segment was assessed with the help of a torch light and posterior segment was assessed by ophthalmoscope. Refractive status was determined with the help of Streak Retinoscopy; both dry and cyclo refraction were conducted. Cover test was performed with translucent occluder as well as near point of convergence (NPC) and near point of accommodation (NPA) were also assessed.

Anthropometric assessment: Nutritional statuses of the respondents were measured with applying formula of Body Mass Index (BMI). Weight was measured by a digital weighing machine. Each participant was weighted with minimum clothing and without shoes, standing upright with arms hanging by the sides. Height was measured by a flexible tape. The respondent was asked to stand upright on a firm level ground, against a flat vertical surface without shoes.

Data Analysis

All quantitative data were entered in SPSS version 16.0 and Microsoft Excel. Frequency, mean, cross tabulation and chi square test were conducted to analyzed quantitative data. Table & figure were used to present both quantitative and qualitative data by using Microsoft office excel and word. Qualitative data were analyzed and interpreted with the help of supervisor and co-supervisors of this study. Both univariate and bivariate analysis were done to analyze the data to describe and show relationships between them.

Results

About 120 children were included in this study age ranged between 6-16 years (mean age 11.2 ± 2.35 years) where 45% male and 55% female. The study subjects were classified into two groups. It is shown in table 1 that highest percentage of children were in the age group of 11-16 years (60.8%) followed by 39.2% children in the age group of 6-10 years. (Table no-01)

Table-1: Percentage distribution with the age range of the children

Age Group	Sex		Total percentage (n=120)
	Male Percentage (n=54)	Female Percentage (n=66)	
6-10	17.5	21.7	39.2
11-16	27.5	33.3	60.8
Total	45	55	100

In this study, all the children's of Orphanage and Destitute children were school going. They study in a school nearby the orphanage at free of cost. About 49.2% children were studying in primary section and 50.8% in secondary section respectively. (Table no-2)

Table-2: Educational status of the respondents.

Educational Status	Percentage
Primary	49.2
Secondary	50.8
Total	100

Ethnic group of the Respondents: All the orphan children of study population were from different tribal community. Ethnic group among respondents were Chakma (43.30%) Marma (53.30%) Sawtal (2.50%) and Garo (0.80%) respectively. (Figure no-1)

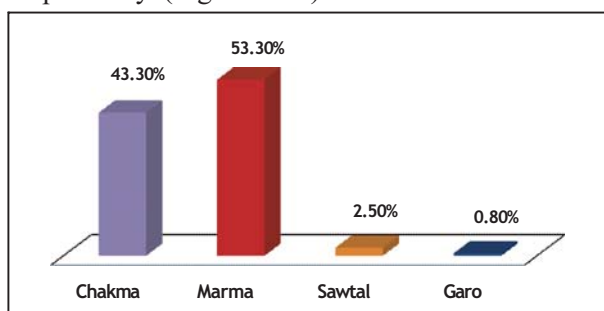
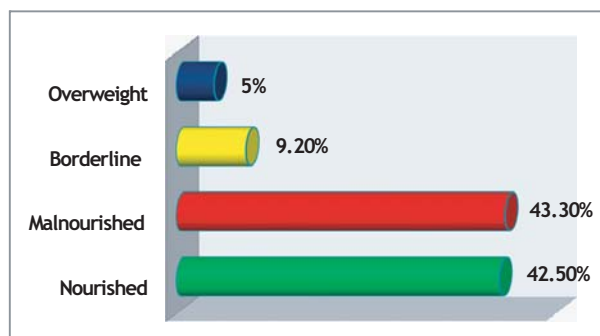


Figure01: Percentage Distribution of Ethnic group of the respondents.

Nutritional Status

Total Nutritional Status of the respondent: According to BMI method among 120 children, 43.3% were found malnourished, 9.2% were at border line, 42.5% nourished and 5% overweight. (Figure no-2)



*Reference-Preventive and social medicine. Park, k.(24th edition,2017)⁹

Figure-2: Percentage distribution of total nutritional status of the respondents.

Cross tabulation of nutritional status with sex of the respondent: Among all orphans and destitute children 54 were male and 66 were female children. In Table 03 it is found that 19.2% nourished, 18.3% malnourished, 4.2% border line and 3.3% overweight were in male respondent 23.3% nourished, 25% malnourished, 4.2% border line and 1.7% overweight in female age group

respectively. (Table no-3)

Table-3: Cross tabulation of nutritional status with sex of the respondent.

Sex	Nourished	Malnourished	Border Line	Overweight	Total
Male(n=54)	19.2%	18.3%	4.2%	3.3%	45%
Female(n=66)	23.3%	25.0%	5.0%	1.7%	55%
Total(n=120)	42.50%	43.30%	9.20%	5.0%	100%

Chi square=1.291 (p>0.05); Phi and Cramer’s V=0.731 (p>0.05)

B.M.I of the Respondents: All the children from both age groups were measured their Nutritional status by Body mass index (BMI) methods. BMI method is applicable for the age group above 5 years. In the age range 6-10 years,10.0% were malnourished, 25.8% were nourished, 8.51% border line and 3.3% were overweight.In11-16 years age group there were 32.5% malnourished, 17.5% nourished, 9.58% border line and 5.8% Overweight respectively. (Table no-04)

Table-4: Percentage distribution of Nutritional status among age group according to BMI

Age Range	B.M.I	Percentage (n=120)	Nutritional Status
7-10 (n=47)	<18.5	10.0	Malnourished
	18.5-24.9	25.8	Nourished
	17.5-18.5	8.51	Border Line
	>24.9	3.3	Overweight
11-16 (n=73)	<18.5	32.5	Malnourished
	18.5-24.9	17.5	Nourished
	17.5-18.5	9.58	Border Line
	>24.9	5.8	Overweight
Total		100	

Chi square=18.259 (p>0.05); phi and Cramer’s V=0.390 (p>0.05)

Ocular Health Status

Chief Complain of the Respondent: About 34.1% (n=41) of the respondents had some complain related to ocular health. Children and their caretaker were asked to tell about their complain related to eye health. Results shown that maximum complains were Blurring of vision (21.9%), Headache and eyeache (21.9%); and the rests were Itching (17%), Redness (14.6%),

Watering (9.7%), Burning Sensation (12.1%), Abnormal growth on lid (0.8%) and Deviation of eye(1.7%). (Table no-05)

Table-5: Percentage distribution of chief ocular complains of the respondent

Chief Complains	Percentage
Blurring of Vision	21.9
Headache and Eye ache	21.9
Itching	17
Redness	14.6
Watering	9.7
Burning Sensation	12.1
Abnormal Growth on lid	0.8
Deviation of eye	1.7
Total	100

Unaided Visual acuity of the Respondent: Unaided visual acuity was taken from each respondent. Around 88.75% had normal visual acuity. A small percentage of the respondent (11.25%) had sub-normal visual acuity. (Table no-06)

Table-6: Percentage distribution of unaided and aided Visual Acuity of the respondents.

Visual Acuity	Unaided VA		Aided VA	
	Frequency	Percentage	Frequency	Percentage
6/6	213	88.75	21	70.0
6/9-6/18	25	10.41	9	30.0
6/24-6/60	2	0.84	-	-
Total	n=240 eyes	100.0	n=30 eyes	100.0

*eyes were counted individually from the respondents including both right and left eye.

Visual Acuity after giving optical correction: After giving optical correction on respondent’s who had refractive error, about 72.2% gain 6/6 vision. Rest of the children who had refractive error along with amblyopia or corneal scar (27.8%) doesn’t improve to 6/6 vision. (Table no-07)

Total ocular morbidities among respondents: Orphans and destitute children do not get proper eye health treatment but results shows that more than half of the children (54.2%) were normal.

45.8% were found with some ocular morbidity and definitely it’s a matter of concern. (Figure no-3)

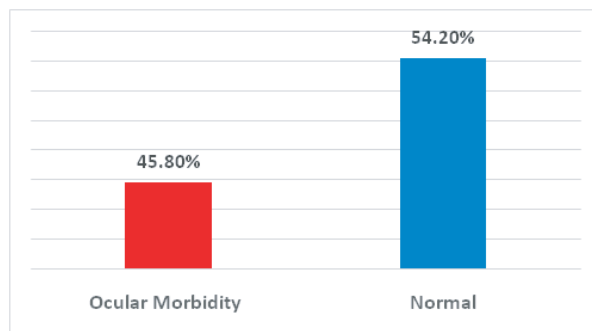


Figure-03: Percentage distribution of total ocular morbidity of the respondents

Diagnosis of ocular Morbidities: Among 120 respondents, 40.8% (n=37) were found with some ocular problems. The frequencies of diagnosed abnormalities were Refractive error (48.6%), Conjunctivitis (35.1%), Mebomian gland dysfunction (21.6%), Amblyopia (8.1%), Strabismus (5.4%), Corneal scar (5.4%), and others (Stye, Blepharitis) 7.4%. (Table no-07)

Table-7: Percentage distribution of ocular morbidities of respondents.

Morbidities	(%) Percentage
Refractive Error	48.6
Conjunctivitis	35.1
Mebomian Gland Dysfunction	21.6
Amblyopia	8.1
Strabismus	5.4
Corneal Scar	5.4
Others (Blepharitis, Stye)	7.4
Total	131.6

*total percentage exceeds 100% as because of multiple diagnosis of a single respondent.

Cross tabulation of ocular morbidities with age group of the respondent: Ocular morbidities were more common in (11-16 years) age group. (Figure no-04)

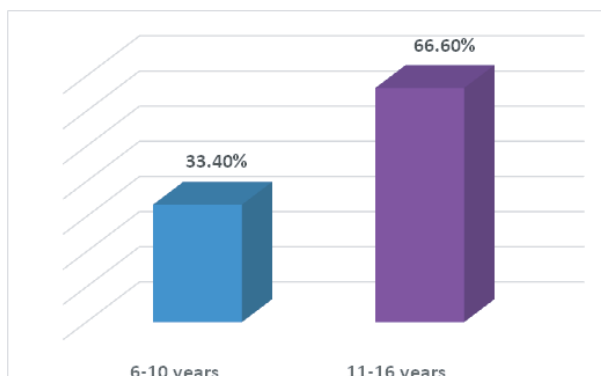


Figure-04: Cross tabulation of ocular morbidities with age group of the respondent. **Pattern of Refractive Error:** Among all respondents, 48.6% were diagnosed with different types of refractive error. Majority of these children (38.8%) had compound myopic astigmatism. (Table no-08)

Table-08: Percentage distribution of pattern of refractive error.

Pattern of Refractive Error	Percentage
Simple Myopia	16.6
Simple Hypermetropia	16.6
Simple Myopic Astigmatism	22.2
Compound Myopic Astigmatism	38.8
Compound Hyperopic Astigmatism	16.6
Total	100

Percentage distribution of types of amblyopia among respondents: About 8.1% of the respondent found with Amblyopia. Among them 66.60% were amblyopic due to Refractive error and 33.40% due to stimulus deprivation e.g Corneal Scar. (Figure-05)

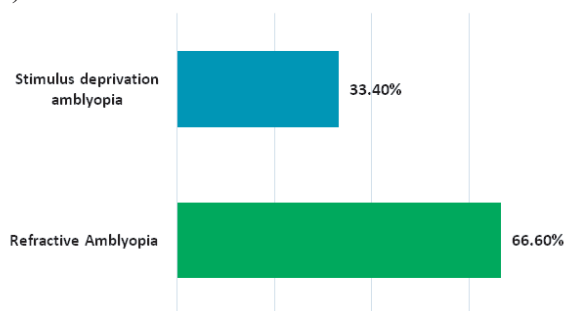


Figure-05: Percentage distribution of types of amblyopia among respondents.

Management: Among all the children facing ocular morbidities, primary medicine was given to 44.8%. Around 20.4% were managed by optical correction. Massively 79.5% were given general measurement like lid hygiene, cold and hot compression, convergence exercise etc. For further investigation, some were referred to tertiary eye hospital and that was 16.3%. (Figure no-06)

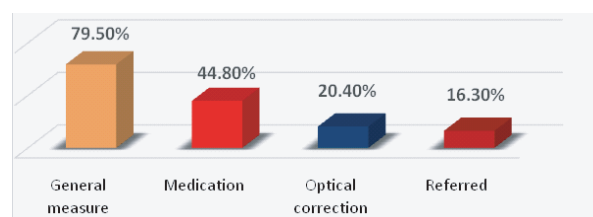


Figure-06: Percentage distribution of management protocol Information Based On Designed Questionnaire

Knowledge about Eye Care Centre Facilities: Through a design Questionnaire all orphans and destitute children were asked from where they could get Eye health services. About 38.3% respond that they knew some place where they could get eye health service but most of the children (61.7%) had no idea about it. (Table no-09)

Table-09: Percentage distribution of knowledge about eye care center facilities.

Content	Percentage
Knew	38.3
Didn't Know	61.7
Total	100

Knowledge about places related to eye care center facilities: Children who respond that they know some place where they could get eye care services. They are asked to tell name of those place, 47.2% said about Cox's Bazar ZilaSadar Hospital, 39.13% about BaitushSharaf Community Eye Hospital and 13% tell other hospital name like Islamia Eye Hospital, Chittagong Eye Infirmary & Training Complex etc. (Figureno-07)

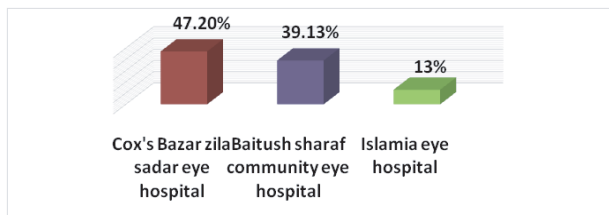


Figure-07: Percentage distribution of knowledge about the places facilitate with eye care.

Activities of Orphanage regarding Ocular and General Status of Orphans and Destitute Children: Orphanage committee does something when any orphan children face some ocular problem. Already 61.1% children had visit Doctor at orphanage, 22.2% visit Hospital and 16.7% taken medicine from pharmacy. Destitute children were asked to tell what they do when facing some ocular problems. All children respond that they do nothing. (Table no-10)

Table-10: Percentage distribution of activity of orphanage regarding health status of orphans.

Activities	Percentages
Calling doctors at orphanage	61.1
Visiting Hospital	22.2
Taking Medicine from Pharmacy	16.7
Total	100

Percentage distribution of response if they visit eye hospital or doctors earlier: About 12.5% respondents respond they visit eye hospital or eye doctors earlier because of arising some problems but about 87.5% had not visit those yet.

Reason behind not visiting to any Eye Care Center: Guide of the children or children itself were asked what the reasons behind not seeking eye care services are, they are not aware of Hospital or Eye Doctor(0.8%), Lack of escort (1.7%), Distant(0.8%), Financial(0.8%), Social Belief(0.8%) and did not feel necessary (94.3%) (Table no-11)

Table-11: Percentage distribution of barriers to uptake eye care treatment from eye care center.

Reason	Percentage
Did not Feel Necessary	94.3
Social Belief	0.8
Lack of Escort	1.7
Distant	0.8
Not aware of Hospital or Eye Doctor	0.8
Financial	0.8
Total	100

Table-12: Percentage distribution of knowledge of children

Contents	Knew (%)	Didn't Know (%)
Knowledge about Nutritional Food	85	15%
Knowledge about Vitamin-A Containing Food	75%	25%
Receiving Vitamin-A Supplement	Yes	No
	80.8%	19.2%

Among all destitute and Orphan children, 85% knew about nutritional food and 15% didn't know about it. About 75% knew about Vitamin-A containing food and 25% didn't know about it. But 85% who had response about food that contains Vitamin-A was wrong. We have found that 80.8% respondents received Vitamin A Supplement whereas 19.2% didn't received. (Table 12)

Discussion

Orphans in a under developing country like Bangladesh are vulnerable due to lack of parental care, sufficient accommodation, food availability etc. orphanages in our country are not up to same level with orphanage of developed country. They face problem providing nutritional food, healthy habitats and medical services. This is the only study held in our country about ocular health status of orphans and destitute children and identified that they are experiencing some types of ocular problems along with nutritional health problem.

Among the 120 study respondents, 85 were orphans and 35 were destitute children. About 54 were male (45%) and 66 were female (55%).

Totals of 120 study subjects, 06-16 years were included in this study. Mean age was 11.2 ± 2.35 years. Here we divide the respondents in 2 groups, first one is 7-10 years ($n=47$, 39.2%) and second one 11-16 years ($n=73$, 60.8%) Majority of the children were found in 11-16 years of age group, this is similar to an study in Kathmandu, Valley where they found most of the respondent ($n=154$, 59.1%) in 12-14 years of age group⁸. Prevalence of ocular morbidity in this study were found 45.80% which is higher than studies held in Nepal (17.9%) among orphans children⁴, another study also held at Nepal, Kathmandu among street children they also found less ocular morbidities than us⁸. Another study in North Maharashtra in India where ocular morbidities were found 27.65%¹⁰. The prevalence of ocular morbidity can vary because a study depends on the surveyed area.

Prevalence of uncorrected visual acuity 6/6 was found 70.2%, slight higher prevalence were reported in a study in Nepal was 87.3%⁸. This study reported highest ocular morbidity in 11-16 years age group compared to a study conducted in Nepal where they reported highest ocular morbidity greater in more than 15 years of age group⁸ and in a study from rural area of Tanzania, at Africa lower prevalence of 15.6% of ocular morbidity was reported in children aged 7-19 years¹¹. In this study Refractive error was the common cause of ocular morbidity followed by Conjunctivitis. In a study in Maharashtra, India Refractive error was the commonest ocular morbidity followed by conjunctivitis^{10,15}. Refractive error is one of the most common cause of visual impairment and second leading cause of preventable blindness^{10,14}. But a study in Nepal Kathmandu they found conjunctivitis as prime ocular morbidity followed by Refractive Error⁸.

Globally uncorrected refractive errors are one of the main causes of visual impairment and Amblyopia. Early detection of those problems can prevent the social and intellectual development of the children. However, 48.6% of refractive error was found in this study. There are different factors that assist this percentage of refractive error such as malnutrition, staying/working in dim light, child's growth parameters, urbanization etc¹⁰. We found compound myopic astigmatism as highest and in other studies at Southern Nigeria they also found myopic astigmatism as predominant refractive condition¹². This issue regarding

refractive error has to be tackled early, and with provision of proper correction to prevent a child from developing visual impairment.

In this study, the 3rd highest morbidity was observed Meibomian gland dysfunction 21.6% which is not found in any other relevant studies.

Amblyopia and strabismus was found in 8.1% and 5.4% of the children and amblyopia was due to uncorrected refractive error and corneal opacity. Amblyopia and strabismus was found lower in a study held in Nepal 2.5% and 3.00% respectively⁸. another study held in North India they found 2.5% Strabismic children¹³. Nepal BP et al 2003 conducted a study in Kathmandu city they found 12.4% amblyopic and 1.4% strabismic children in their study¹⁴. Orphans and destitute children had poor knowledge about eye care service, poor Socio-economic knowledge or financial problem that's why they suffer from condition like amblyopia because of not getting proper treatment in due time.

Nutritional health statuses were markedly poor in orphans and destitute children almost 43.3% children were found malnourished and that is quite similar with an study held in Bangladesh where they found 43.1% malnourished children⁷. Study held on Santal tribal children about their nutritional health status, they found 38.2% children with underweight¹³. This study also shows female were more malnourished than male and it is dissimilar with the study that held in Dhaka where they found male children to be more malnourished than female.⁷

Among all orphans and destitute children 21.9% had complain of Eye ache and Head ache, 10% respondent were identified with very poor convergence demand and that was more prevalent in 11-16 years age group. They are primarily treated by convergence exercise and advised to visit eye doctor if problems arise further.

Among all orphans and destitute children only 38.3% had idea about where they could get eye care facilities and rest 61.7% had no idea at all. When all the respondents were asked what they do or their guardian do when they face any eye health related problem. All destitute children respond that they didn't do anything when ocular problems arise. Orphans children respond that their care-taker do something when they face eye problem, through

analysis on response of respondents we found that 61.1% visited Doctors that came at orphanages, 22.2% visited nearby hospital and 16.7% had taken medicine from pharmaceutical shop.

About 85% respondents said they know about source of nutritional food and 15% had no idea about nutritional food. We noticed that respondents who had knowledge about nutritional food had some misconception about it. In this study, it is a great news that 80.2% respondents received Vitamin A Supplement whereas 19.8% didn't. The National Vitamin A plus Campaign in Bangladesh is struggling to achieve and maintain high coverage of Vitamin A supplementation. Mass awareness must be created so that the all orphan and destitute children from every area are covered within this Vitamin A plus Supplementation program.

Conclusion

Orphans and destitute children were found with some ocular morbidity. Refractive error and ocular infections were found more common among respondents. Majority of the observed ocular morbidities were either preventable. Due to lack of timely treatment they are suffering from some preventable illness. Cost effective community based eye care programmed will help vastly this vulnerable group of children.

Recommendation

1. The supporting organizations should organize regular eye screening programmed along with general health checkup. Orphanage committee should collaborate with local eye hospital to set up routine eye examinations for orphans and destitute children aiming vision, ocular health screening.
2. The government should provide health care for these vulnerable group of children in public hospitals

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