



Common Eye Diseases in children attending Makkah eye hospital in Aden, Yemen

Reem Alkhadher Saleh¹, Ibtihal Aidroos Zain Gaffer¹

¹Department of Special Surgery, Eye Unit, Faculty of Medicine, University of Aden, Yemen.

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ABSTRACT

Corresponding author:

reemalkhadher78@gmail.com

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Background: Eye diseases in children are important cause of medical consultation. This study aimed to determine the distribution and spectrum of childhood eye diseases at the pediatric outpatient clinics of Makkah eye hospital in Aden. Materials and method: This is an observational retrospective study. The medical records of all patients aged 16 years or younger who were seen at the pediatric ophthalmology outpatient clinics during the year 2021, were reviewed. The following data were recorded for each patient: sex, age, residency, site of trauma, site of disease, and diagnosis. Descriptive statistics were computed for continuous and categorical variables. The statistics computed included mean and standard deviations (SD) of continuous variables and are presented as mean \pm SD, frequencies and percentages of categorical factors. Results: Total study patients were 146 (males were 61.6% and females were 38.4%). Most of them 58.2% were from rural areas. Their age ranged between 1 month to 16 years and their mean age was 7.1 ± 4.1 years. Children aged ≤ 5 years were (37.7%), of the age group 6 – 10 years were (35.6%) and of the age group 11 and 16 years were (26.7%). The most common eye disorders were ocular trauma in (43.2%) children. Squint was the second commonest disease and accounted (14.4%). Congenital glaucoma found in (11.6%) children, refractive error found in (9.6%) patients, and congenital cataract in (6.9%) children. Ocular trauma was predominant (19.9%) in the age group 6-10 years, while squint was predominant (6.8%) in the age group 10-16 years old and congenital glaucoma was predominant (10.2%) in the age group ≤ 5 years. The highest frequency of refractive errors were found in children aged between 6 to 10 years and children aged between 11 to 16 years, ($P = 0.000$). Conclusion: The most common eye diseases in our study were ocular injuries, squint, congenital glaucoma, refractive errors and congenital cataract, respectively.

1.0 Introduction

Eye diseases in children are an important cause of medical consultation (Nwosu., 1999). Children should receive prompt and proper eye care in order to avoid vision problems and eye morbidities, which could affect their learning ability, personality and adjustment in school (Adegbehingbe et al., 2005). Vision is an important requirement for learning and communication (Narayana et al., 2003). Childhood blindness is second only to cataracts in terms of "blind years." (Gilbert, 1998). The pattern of children's eye diseases varies greatly around the world and is largely determined by socioeconomic development and

the availability of primary health care and eye care services (WHO, 2022). In high-income countries, lesions of the optic nerve and higher visual pathways predominate as the causes of blindness, while corneal scarring from measles, vitamin A deficiency, the use of harmful traditional eye remedies, and swelling of the child's eyelids due to infection during birth are the major causes of blindness in developing countries. Retinopathy of prematurity is an important cause in middle-income countries (Gilbert et al.,

1999). Other significant causes in all countries are congenital abnormalities, such as cataracts, glaucoma, and hereditary retinal dystrophies (WHO, 2022). Data on causes of vision impairment are essential for the development of public health policies and health service planning (Bourne et al., 2013, Pascolini & Mariotti., 2012). Worldwide, the leading causes in 2010 for visual impairment were uncorrected refractive errors, cataracts, and macular degeneration (Bourne et al., 2013, Pascolini & Mariotti., 2012). Several ocular morbidity studies have estimated the magnitude of eye diseases among children. In the United States of America, the most common vision disorders reported among children were strabismus, amblyopia and optical problems (Castenes, 2003). In a study in Tikrit, Iraq, allergic conjunctivitis, refractive errors, ocular trauma, infection, squint and nasolacrimal duct obstruction were the most common ocular conditions treated in an outpatient department (Salman, 2010). Data on patterns of eye diseases in children might be useful in improving any existing primary eye care facilities and provides useful information for planning child eye care services in a given region or the whole of a country. Understanding the specific causes of visual reduction also helps in the proper and efficient allocation of resources for preventive and control measures as well as treatment (Banayot, 2016). Therefore, this hospital-based descriptive study aimed to determine the distribution and spectrum of childhood eye diseases at the pediatric outpatient clinics of Makkah eye hospital in Aden, Yemen

2.0 Materials and Methods

This is an observational retrospective study of all patients who presented to the pediatric outpatient clinics of Makkah eye hospital, in Aden between January and December 2021. The medical records of all patients aged 16 years or younger were reviewed. The study included 146 children treated in the pediatric ophthalmology clinic of the hospital. The following data were recorded for each patient: sex, age, residency, site of trauma, site of disease, and diagnosis. All data were entered in SPSS version 17 and analyzed. Descriptive statistics were computed for continuous and categorical variables. The statistics computed included mean and standard deviations (SD) of continuous variables and are presented as mean ± SD, frequencies and percentages of categorical factors. P-value < 0.05 was considered statistically significant.

3.0 Results

A total of 146 children who attended the pediatric outpatient clinic of Makkah eye hospital for eye diseases during the year 2021 were retrospectively studied during the period from 1st June to 31 July 2022. Regarding sex characteristics of the study children, males included in the study were 90 (61.6%), while females 56 (38.4%) and male: female ratio was 1.6: 1. The majority of children 85 (58.2%) attended the pediatric outpatient's clinic were residing in rural areas and children residing in urban areas were 61 (41.8%), The age of study children ranged between

1 month to 16 years and the mean age of all study children was 7.1 ± 4.1 years. The mean age of males was 7.2 ± 4.1 years and the mean age of females was 6.9 ± 4.2 years. There was no statistically significant difference between mean ages and sex (p >0.05). Children aged 5 years and less than five years were 55 (37.7%). Children of the age group 6 – 10 years were 52 (35.6%), and children aged between 11 and 16 years were 39 (26.7%) as shown in Table 1 and Figure 1.

Table 1: Demographic characteristics of the study patients (n=146)

Variables	Mean & range (years)	No	%
Sex:			
Males		90	61.6
Females		56	38.4
Residency:			
Rural		85	58.2
Urban		61	41.8
Age (years):			
Mean age of all patients ± SD*	7.1 ± 4.1		
Range of age of all patients	0.1 - 15		
Males mean age ± SD	7.2 ± 4.1		
Females mean age ± SD	6.9 ± 4.2		
Males age range	0.1 - 15		
Females age range	1 - 14		
P-value between groups	> 0.05		
Age groups (years):			
≤ 5		55	37.7
6 - 10		52	35.6
11 – 16		39	26.7

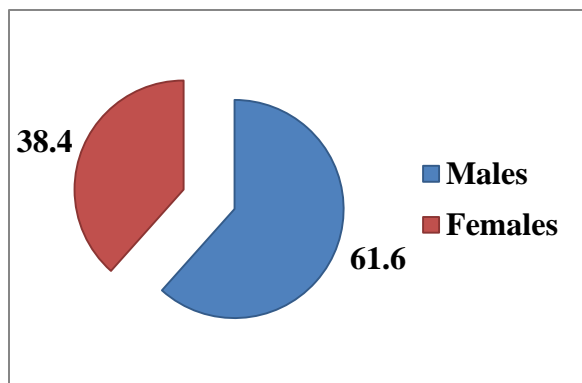


Figure 1: Distribution of study children related to sex

Table 2 showed the distribution of eye conditions according to sex. The most common eye disorders in the study group were ocular trauma, found in 63 (43.2%) children. Bilateral ocular trauma was observed only in 5 (3.5%) patients and unilateral ocular trauma was found in 58 (39.7%) patients.

Forty-six (31.6%) of these children were males while females were 17 (11.6%). Squint was the second commonest disease and accounted for 21 (14.4%) patients. Out of them, female children were more affected 13 (8.9%), than male children 8 (5.5%). Congenital glaucoma was found in 17 (11.6%) children, which was found more in male children 10 (6.8%). Refractive errors were found in 14 (9.6%) patients distributed equally between males and females with 7 (4.8%) in each patient. Congenital cataract was found in 10 (6.9%) children and of these 7 (4.8%) were males and 3 (2.1%) were female children. Lid diseases were found in 5 (3.4%) children, out of these 4 (2.7%) were male children. Allergic conjunctivitis found in 3 (2.1%), retinoblastoma found in 2 (1.4%) and retinitis pigmentosa in 2 (1.4%) Less frequent eye disorders were collected under the term “others” and they were 9 (6.1%), the difference in frequency of eye conditions by gender was not statistically significant with a p-value being greater than 0.05

Table 2: Distribution of eye conditions according to sex (n=146)

Eye diseases	Sex				Total		P-value
	Females		Males		No	(%)	
	No	(%)	No	(%)	No	(%)	
Bilateral ocular trauma	2	(1.4)	3	(2.1)	5	(3.5)	0.112
Unilateral ocular trauma	15	(10.2)	43	(29.5)	58	(39.7)	
Sub-total	17	(11.6)	46	(31.6)	63	(43.2)	
Squint	13	(8.9)	8	(5.5)	21	(14.4)	
Congenital glaucoma	7	(4.8)	10	(6.8)	17	(11.6)	
Refractive error	7	(4.8)	7	(4.8)	14	(9.6)	
Congenital cataract	3	(2.1)	7	(4.8)	10	(6.8)	
Lid diseases	4	(2.7)	1	(0.7)	5	(3.4)	
Allergic conjunctivitis	1	(0.7)	2	(1.4)	3	(2.1)	
Retinoblastoma	0	(0.0)	2	(1.4)	2	(1.4)	
Retinitis pigmentosa	1	(0.7)	1	(0.7)	2	(1.4)	
Others*	3	(2.1)	6	(4.1)	9	(6.1)	
Total	56	(38.4)	90	(61.6)	146	(100)	

* Others include: Epidermoid / lipodermoid (1), Surgical aphakia with occlusive pupille (1), blepharophemosis (1), congenital nasolacrimal duct obstruction (2), periorbital cellulitis (1), corneal ulcer (1), megalocornea (1) and conjunctival nevus (1).

Table 3 revealed that ocular trauma among children aged between 6 and 10 years found more than other study groups with 29 (19.9%) followed by children aged between 11 to 16 years with 19 (13.0%).

Table 3: Distribution of eye disorders according to age groups (n=146)

Eye diseases	Age groups (years)			Total	
	≤ 5 No (%)	6 - 10 No (%)	11 - 16 No (%)	No	(%)
Ocular trauma	15(10.3)	29 (19.9)	19(13.0)	63	(43.2)
Squint	5 (3.4)	6 (4.1)	10 (6.8)	21	(14.4)
Glaucoma	15 (10.2)	2 (1.4)	0 (0.0)	17	(11.6)
Refractive error	3(2.1)	5(3.4)	6(4.1)	14	(9.60)
Cataract	5 (3.4)	3 (2.1)	2 (1.4)	10	(6.80)
Lid diseases	3 (2.1)	2 (1.4)	0 (0.0)	5	(3.4)
Allergic conjunctivitis	3 (2.1)	0 (0.0)	0 (0.0)	3	(2.1)
Retinoblastoma	2 (1.4)	0 (0.0)	0 (0.0)	2	(1.4)
Retinitis pigmentosa	0 (0.0)	1 (0.7)	1 (0.7)	2	(1.4)
Others*	4 (2.7)	1 (0.7)	1 (0.7)	9	(6.1)
		4 (2.7)			
Total	55 (37.7)	52 (35.6)	39 (26.7)	146	(100)

Squint was found more 10 (6.8%) in patients aged between 10 to 16 years old. Congenital glaucoma were predominant 15 (10.2%) among children aged ≤ 5years. We noticed that the highest frequency of refractive errors were found in children aged between 6 to 10 years and children of the age group 11 – 16 years. In addition, we noticed that the highest occurrence of congenital cataract, lid diseases, allergic conjunctivitis, retinoblastoma and retinitis pigmentosa was in children aged ≤ 5years, as shown in Table 3. The difference between values of diseases among age groups was statistically highly significant (P = 0.000).

3.0 Discussion

Childhood blindness refers to a group of diseases and conditions which occur during childhood or early adolescence, and, if left untreated, may result in blindness or severe visual impairment (Khandekar, 2008). Globally, 36.0 million people are blind which translated to a crude prevalence of blindness of 0.48% in 2015 (Bourne et al., 2017). It is further estimated that 1.4 million children in the world are blind (Bourne et al., 2017). Therefore, visual impairment among children continues to be a growing global public health concern with low-income and middle-income countries being disproportionately affected. Most low-income and middle-income countries lack effective screening programs and interventions for children presenting with eye conditions and there is need to expand services to marginalized groups (Mzyece et al., 2022). Our study comprised 146 children with ocular diseases. They were (61.6%) males and (38.4%) females and male : female ratio was 1.6 : 1. The age of study children ranged between 1 month to 16 years and the mean age of all study children was 7.1 ± 4.1 years. The mean age of males was 7.2 ± 4.1 years while for females was 6.9 ± 4.2 years. There was no statistical significant difference between mean ages and sex (p > 0.05). This finding is consistent with Bukhari et al.'s work from Pakistan that addresses the pattern of common

eye diseases in children at the eye department of a teaching hospital (Bukhari et al., 2022). Ocular trauma was the most common morbidity found in this study, which accounted for 43.2% of all study children seen in the pediatric outpatient clinic during the year 2021. The proportion of males was higher 31.4% than the proportion of females 11.6%, and around 19.9% of the patients were in the age group 6 – 10 years followed by 13% for the children of the age group 11 – 16 years. Similar to this study, previous report described that ocular trauma was the most common ocular disorder in children (Onakpoya & Adeoye., 2009). In our current study a bilateral ocular trauma was observed only in 5 (3.5%) patients. While a unilateral ocular trauma was found in 58 (39.7%) patients. This is in accordance with most other studies, where ocular trauma plays a minor role in bilateral blindness compared to its major role in unilateral blindness (Al-Bdour & Azab., 1998, Kaur & Agrawal., 2005). Kaur et al (Kaur & Agrawal., 2005) reported that ocular trauma are the most common cause of acquired uniocular blindness in children. Pediatric ocular trauma differ from those of adults in many ways. Ocular trauma in children is mainly accidental and has an age-specific pattern. In a published study conducted by Bucan et al (Bucan et al., 2017) from Croatia, reported that the most ocular trauma among

children occurred 4.5 times more often in male children than in female children. Male children are usually more susceptible to ocular damage due to the nature of their activities and presumed less supervision by their families, similar to results from other studies (Al-Bdour & Azab., 1998, Al-Mahdi et al., 2011, Coody et al., 1997, Aghadoost et al., 2012). In our study, the highest incidence of eye injuries occurred among children age 10 to 16 years, which is also similar to studies from other settings (Bucan et al., 2017, Al-Mahdi et al., 2011, MacEwen & Desai., 1999, Shoja, 2006, Strahlman et al., 1990). Kimani et al (Kimani et al., 2013) reported in their study from Kenya, that ocular trauma is an important cause of eye disorder in children worldwide, which has a significant socioeconomic impact. Ocular trauma in children accounts for up to one-third of all ocular trauma admissions, with significant economic allusions for health care providers. More importantly, development of strategies against ocular morbidity to reduce the incidence and severity of pediatric ocular trauma requires an understanding of the epidemiology of these injuries and their characteristics (Gupta et al., 2009). Prevention of ocular trauma in children remains a priority in order to reduce ocular morbidity (Alhaski & Almaaita., 2007). In the current study, we found squint was the second commonest ocular disease and accounted for (14.4%) children. Out of them, female children were more affected (8.9%) than male children (5.5%). The higher incidence of squint noted among older children 11-16 years with (6.8%). Bukhari et al (Bukhari et al., 2022) reported that squint was found as the commonest pediatric problem in their study (14.8%), mostly (10.87%) in the age group 1-10 years. Other studies reported almost same or near frequency, 12.4% by Farrukh et al (Farrukh et al., 2015) and 13.5% by Sethi et al (Sethi & Khan., 2011). Congenital glaucoma was seen in (11.6%) of children in this study and found more in male children (6.8%) and was predominant (10.2%) among children aged ≤ 5 years. This finding is higher than studies in Ethiopia (6.1%) (Kidane & Teshome., 2022), in Iraq (1.7%) (Salman, 2010), and in Pakistan (0.99%) (Sethi S & Sethi MJ., 2008). In our study, refractive errors were found in (9.6%) children distributed equally between males and females with (4.8%) gender category. We noticed that the highest frequency of refractive errors were reported in children aged between 6 to 10 years and children of the age group 11 – 16 years. These results, were to some extent similar with the studies carried out in, Ethiopia 11.4%, Nigeria 14.3% and Iraq 14.6% (Salman, 2010, Onakpoya & Adeoye., 2009, Mehari, 2014). In the present study congenital cataract was found in (6.9%) children and of these (4.8%) were males and (2.1%) were female children. In addition, we noted that the highest occurrence of congenital cataract, was in children aged ≤ 5 years. This finding was similar to findings reported from Pakistan study 8.9% (Sethi S & Sethi MJ., 2008) and south-western Nigeria study 6.6% (Onakpoya & Adeoye., 2009). In the current study, allergic conjunctivitis found in (2.1%) children and this finding differs from majority of studies where allergic conjunctivitis is more common in children. This difference could possibly be due to treatment of conjunctivitis at Public Health Centers and Rural Health

Centers. We found in our current study retinoblastoma in two (1.4%) children. This was similar to findings carried out in Iraq 0.4% (Salman, 2010), in Pakistan 1% (Sethi S & Sethi MJ., 2008), and in South-western Nigeria 1% (Onakpoya & Adeoye., 2009).

3.0 Conclusion

The most common eye diseases in children attending Makkah eye hospital in Aden were ocular injuries, squint, congenital glaucoma, refractive errors and congenital cataract. These disorders require attention of all health professionals for proper management or early referral otherwise leading to visual impairment and blindness. Health education is necessary for the prevention of childhood eye injuries, as well as early presentation of children to eye care centers for the treatment of eye disorders.

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