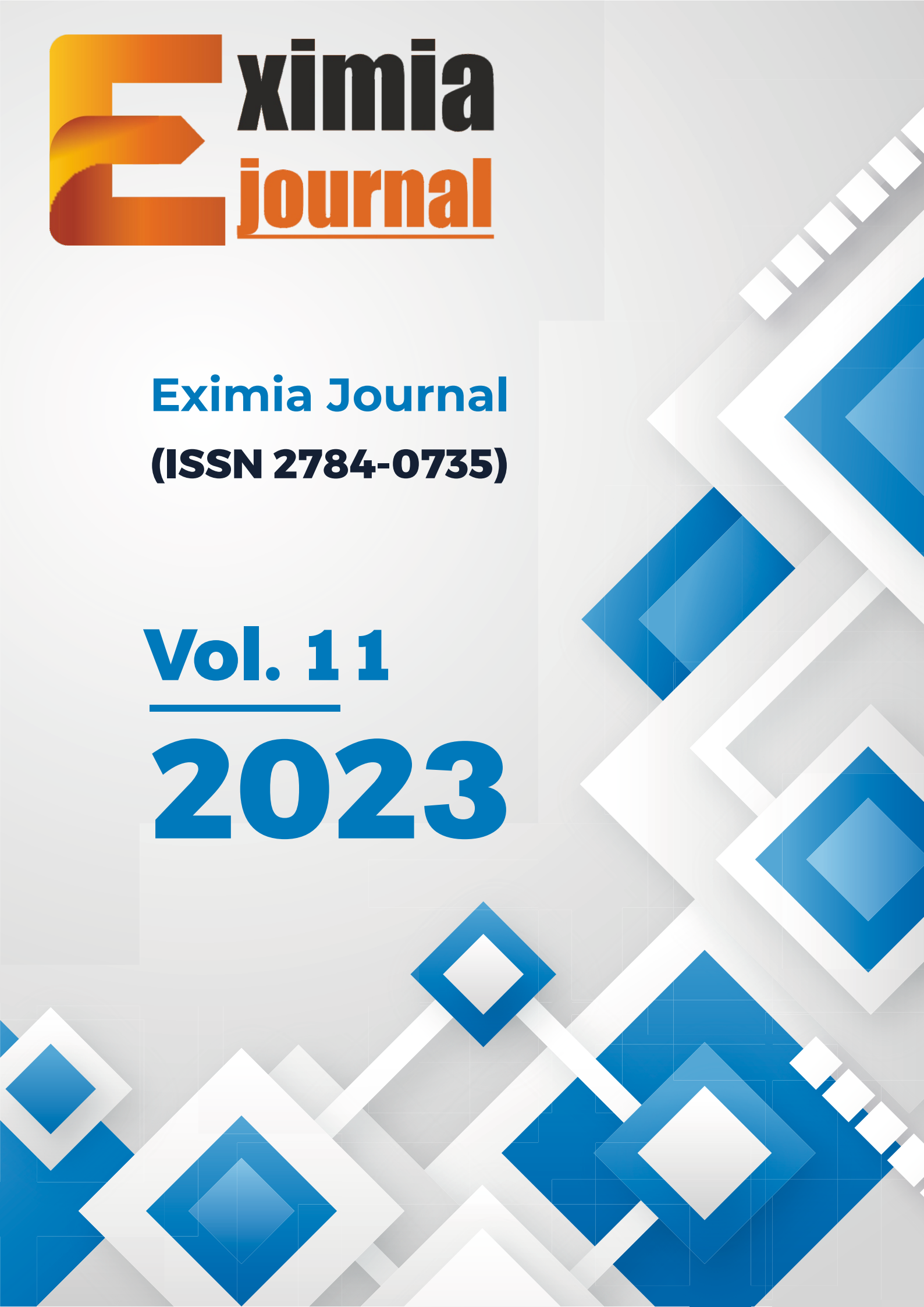




Eximia Journal
(ISSN 2784-0735)

Vol. 11

2023



Prevalence of Amblyopia among School age children in Eye University Hospital, Kabul – Afghanistan

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Abstract. Introduction: Amblyopia is the reduction of monocular and rarely binocular vision, in the best case, it is the correction of the refractive error, which is caused by the visual deprivation of the affected eye or the abnormality of the binocular interaction, which does not have any other pathology in the way of vision. Amblyopia occurs in the most fundamental period of the development of visual system. It is estimated that the age of occurrence is between 0-8 years old and its prevalence is between 0.2-6.2 % globally. Objective: Amblyopia is one of the worrying problems among children in Afghanistan, and epidemiological studies are considered necessary for its management. On this occasion, an attempt has been made to explain the prevalence of amblyopia in school age children, according to their age, gender and correspondence. Method and Data collection: This is a retrospective cross-sectional (descriptive) study and all the information of 2151 patients were obtained from the files of patients in the age group of 7-18 years' old who were visited by the eye University hospital from 21 March to 22 Sep 2022. Then those patients who have been diagnosed with amblyopia; have been studied. Results: Out of 2151 participants aged 7-18 years with various eye complaints, 152 of them (7%) have amblyopia. 7.9% (89 Participants) are boys and 6.09 % (63 Participants) are girls. Unilateral amblyopia is found in 74.34% of cases (113 Participants) and bilateral amblyopia in 25.65% of cases (39 Participants). Conclusion: 7% of school age children, average age of 13.39 years is suffering from amblyopia. Percentage of amblyopia is higher in boys than in girls and; most patients have unilateral amblyopia.

Keywords. Amblyopia, bilateral, Strabismic, Unilateral

Introduction: Amblyopia is a decrease in vision in one eye and rarely in two eyes. In the best case, it is the correction of refractive error, which is caused by the visual deprivation of the affected eye or the abnormality of the interaction between the eyes, when there is another pathology in the eye or the path of vision. does not have (salmon, 2020).

Amblyopia is one of the most common causes of vision loss in childhood. The prevalence of this disease globally is between 0.2-6.2%. Amblyopia is caused by the imbalance between the image in the fovea of both eyes. In fact, it is a violation of the lesion of the central vision development process. Up to the age of 6, the eye's maximum capacity or visual acuity of the eyes has the ability to be vulnerable. Any factor that affects the balance between the two

fovea images in the eye can cause vision loss in one or both eyes. Violation of vision in a fovea or its inability to transmit images to the nose further causes amblyopia (Alastair & Philip I., 2018). Amblyopia occurs in the most basic and sensitive period of development and evolution of the visual system. The estimated age of its occurrence is between 0-8 years old, but it is more common at 0-3 years old (Ramanjit & Radhik, 2019).

Considering the above points, amblyopia is one of the most common causes of vision loss or reduced vision, which has been explained in numerous international studies. A cross sectional study in India shows that among the 2370 students, 1.39% have amblyopia, 66.66% are girls and 33.33% are boys. The most common cause of amblyopia in this research is an uncorrected refractive error. Unilateral amblyopia is 88% and bilateral amblyopia is 12% (Deepak, Kavita, Arvind, & Raj, 2019). In the Kingdom of Saudi Arabia, among 5176 children between 6-13 years old, 49.73% boys and 50.29% girls, 202 of them (3.9%) have amblyopia. 98% of Participants with amblyopia are girls (1.88%), and 104 participants are boys (2%). Correspondingly, 3.24% of them have unilateral and 0.6% of them have bilateral amblyopia. The most common cause of amblyopia in these children was a refractive error (94.56 %) (Aldebasi, 2015). In Bharatpur Hospital in Nepal, prevalence of amblyopia in children under 16 years, among 8017 children, is 1.40 %, (113 Participants). 1.47% boys and 1.11% girls (Gopal, Raghunandan, & Ram, 2015).

In a study conducted among school students in Mashhad, Iran, over 2831 children, the prevalence of amblyopia is 1.7% (49 Participants). Among these, 20 patients (40.8%) have amblyopia in the right eye, 9 patients (18.4 %) in the left eye, and 20 patients (40.8 %) in both eyes (Saeed, Shahrokh, Abbas, & Mohsen, 2021). In Ethiopia among 1226 students between age of 7-15 years, the prevalence of amblyopia is 5.14% (Sadik & Mihret, 2022). Likewise, in Kurnool Eye Hospital in India, the prevalence of amblyopia is 6.66 %, among 29,351 public school children in the age group of 5-15 years. 33.33 % boys and 66.66% of girls, 59.33 % is Unilateral and 41.66 % is Bilateral (K & G, 2015). The prevalence of amblyopia is 1.88% among 3547 participants (Hashemi, et al., 2014).

Objective: The prevalence of amblyopia is one of the worrisome problems among children and adolescents in Afghanistan and epidemiological studies are considered necessary for its management. On this occasion, in this study, an attempt has been made to explain the prevalence of amblyopia in the ages of 7-18 years, according to age, gender, and its correspondence (Unilateral and Bilateral).

Research question: What is the prevalence of amblyopia in the Eye University hospital, among school age children?

Method and Data collection source: Retrospective Cross-sectional (Descriptive) Study.

All the information from the files of patients aged 7-18 years old, who were visited the Eye University Hospital from 21 March to 22 Sep 2022, were examined, and those patients who were diagnosed as Amblyopia; are evaluated. Patients who have reduced vision due to irritants or patients whose amblyopia has not been proven, has excluded from the study. The data has analyzed with SPSS 24.

Variables of the Study: The study of amblyopia in the age group of 7-18 years, taking into account the gender and correspondence of amblyopia (unilateral and bilateral).

Facilities: Sufficient number of patients' files along with the necessary examinations.

Limitations: A number of files were incomplete, which is why they were excluded.

Ethical issues: With an official letter, the proposal of this study was approved by IRB of the Kabul University of Medical Science research center. Also this study is non-interventional; Therefore, there is no moral obstacle.

Results: From 21 March to 22 Sep 2022, a total of 2,151 participants between the ages of 7-18 visited the Eye University hospital, and of these, 1,117 were male (51.93 %) and 1,034 were female (48.07 %). Out of the total number, 152 participants (7 %) are diagnosed with amblyopia. Considering the gender; 89 out of 1117 males (7.96 %) and 63 out of 1034 females (6.09 %); are suffering from amblyopia (**Table 1 & 2**). The minimum age was 7 years, the maximum was 18 years, and the average age was 13.39 years (**Table 3**). From a total of 152 patients; 113 persons (74.3 %) had unilateral amblyopia and 39 persons (25.7 %) had bilateral amblyopia (**Table 4**). There is no significant relationship between the presence of unilateral or bilateral amblyopia, and the gender of the patient (P-value: 0.489) (**Table 5**).

Participants	Frequency	Percentage
Total number of participants registered in Eye University Hospital (7-18 years) from 21 MAR to 22 SEP 2022.	2151	100%
Male	1117	51.93%
Female	1034	48.07%
Participants without Amblyopia	1999	93%
Participants With Amblyopia	152	7%
Amblyopia in Male	89	7.96%
Amblyopia in Female	63	6.09%

Table 1: Frequency and Percentage of all patients
 As the table shows, out of 2151 patients, 7% of them have amblyopia.

Table 2: Participant's Sex

	Frequency	Percent	Valid Percent	Cumulative Percent
Female	63	41.4	41.4	41.4
Male	89	58.6	58.6	100.0
Total	152	100.0	100.0	

Based on this table; 58.6 % (89 participants) are male.

Table 3: Participants' age

	Frequency	Percent	Valid Percent	Cumulative Percent
7 Year	4	2.6	2.6	2.6
8 Year	15	9.9	9.9	12.5
9 Year	7	4.6	4.6	17.1
10 Year	14	9.2	9.2	26.3
11 Year	7	4.6	4.6	30.9
12 Year	10	6.6	6.6	37.5
13 Year	13	8.6	8.6	46.1
14 Year	11	7.2	7.2	53.3
15 Year	19	12.5	12.5	65.8
16 Year	18	11.8	11.8	77.6
17 Year	21	13.8	13.8	91.4
18 Year	13	8.6	8.6	100.0
Total	152	100.0	100.0	
Minimum	7 Y			
Maximum	18 Y			
Mean	13.39			
STD Deviations	3.34			
Variance	11.14			

As the table shows, the average age of the participants is 13.39 years.

Table 4: Correspondence

	Frequency	Percent	Valid Percent	Cumulative Percent
Unilateral	113	74.3	74.3	74.3
Bilateral	39	25.7	25.7	100.0
Total	152	100.0	100.0	

According to this table, 74.3 % of participants have unilateral amblyopia.

Table 5: Participants' Sex and Correspondence Cross tabulation

			Unilateral	Bilateral	Total
Participants Sex	Female	Count	45	18	63
		% within Participants' Sex	71.4%	28.6%	100.0%
	Male	Count	68	21	89
		% within Participants' Sex	76.4%	23.6%	100.0%
Total	Count	113	39	152	
	% within Participant's Sex	74.3%	25.7%	100.0%	

P Value = 0.489

The table shows; There is no any relationship between the presence of unilateral or bilateral amblyopia and the gender of the patient.

Discussion: Out of 2151 participants, including the age group of 7-18 years old and the average age of 13.39 years, 7 % are diagnosed with amblyopia (7.9 % boys and 6.09 % girls). in terms of correspondence; in 74.34 % of cases, unilateral amblyopia and in 25.65 % of cases, bilateral amblyopia is found. The results of this study are consistent with the global prevalence of amblyopia (0.2-6.2%) (Alastair & Philip I., 2018). Also the prevalence of amblyopia in Ethiopia between the ages of 7-15 years, is 5.14% (Sadik & Mihret, 2022) and in Kurnool Eye Hospital in India among school age children, is 6.66% (K & G, 2015). These two results, consistent with our study, the reason for this consistency is the social and cultural similarity and the lack of correction of the refractive error in societies such as India, Ethiopia, and Afghanistan.

But by comparing this results with researches conducted in Saudi Arabia, 3.9% amblyopia (Aldebasi, 2015) and in Iran, 1.7 % and 1.88% amblyopia (Saeed, Shahrokh, Abbas, & Mohsen, 2021), (Hashemi, et al., 2014).it can be seen that the prevalence of amblyopia is higher in Afghanistan. One of the important reasons for this difference is the provision of health services and refractive error correction for children under 6 years of age in Saudi Arabia and Iran. In Afghanistan due to poor economic conditions, false beliefs about the use of glasses by children to correct refractive error, lack of access to health services, and lack of health awareness, especially regarding eye examinations for children from birth to six years of age when the visual system develops, amblyopia is randomly diagnosed during an eye examination. This is why the prevalence of amblyopia is higher in Afghanistan.

Strengths of the study: This is original research, conducted at Eye University Hospital, one of the prestigious Ophthalmology centers in Kabul, Afghanistan.

Weaknesses of the study: Choosing a short time duration to collect the data (from 21 March to 22 Sep 2022), is the most weakness of this study.

Conclusion: In this research, 2151 participants aged between 7-18 years (average 13.39 years) with various eye complaints are studied, and 7% of them is diagnosed with amblyopia. The percentage of patients with amblyopia in boys is more than in girls, and most of the patients has unilateral amblyopia. The results of this study are consistent and closely similar to the global prevalence of amblyopia.

Suggestions: Regarding the prevalence of amblyopia in this study (7%), it is necessary to carry out more extensive research with larger number of samples in several eye treatment centers in order to use its results and prevent permanent vision loss with proper planning.

Conflict of Interest: The author declares that there is no conflict of interest related to the subject matter or materials discussed in this article.

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