



*Original Research Article*

# Frequency of amblyopia according to its types in 5-15 years age group attending eye OPD at Al-nafees hospital, Islamabad

Muhammad Tariq, \*Jahan Zeb, Samia Iqbal, Aqsa Younas and Muhammad Akbar Rashid

Abstract

The University of Lahore Teaching Hospital.

Corresponding Authors E-mail:  
jahanzbtk@gmail.com

Frequency of amblyopia according to its types in 5-15 years age group attending eye OPD at al-nafees hospital, Islamabad. It was hospital based, descriptive, cross sectional study. Oral consent was taken from every patient to take part in this study. A total 407 participants, 198 (48.6%) male and 209 (51.4%) female were included in this study. Participants in 5-8 years age group were 140 (34.4%), 9-11 years were 138 (33.9%) while 12-15 years were 129 (31.7%). 17 (4.2%) participants were diagnosed with amblyopia, 5 (29.41%) having anisometropic amblyopia, 3 (17.65%) having strabismic amblyopia, 4 (23.53%) having meridional amblyopia, 3 (17.65%) having ametropic amblyopia and 2 (11.76%) patients had stimulus deprivation amblyopia. High frequency of amblyopia was present in 5-15 years old participants. As vision is basic human right to give this right to everyone we therefore need to pay more attention towards children who are amblyopic or were becoming amblyopic even they were not known about that condition.

**Keywords:** Amblyopia, Age, Lazy eye.

## INTRODUCTION

Amblyopia, also known as lazy eyes, is a visual developmental disorder in which the eye cannot reach normal vision even with prescription or contact lenses. Amblyopia begins in infancy and early childhood. In most cases, only one eye is affected. However, in some cases, vision may drop in both eyes. It is estimated that about 2% to 3% of people in the United States suffer from some degree of amblyopia. (Wong, 2012)

Neutral density filter can significantly reduce the vision of organic diseases, but generally does not appear in a purely amblyopia. Crowding phenomenon is very important to detect the vision of amblyopia patients. The amblyopic eyes of these patients can see that a single letter is better than a whole line of letters. (Webber, 2018)

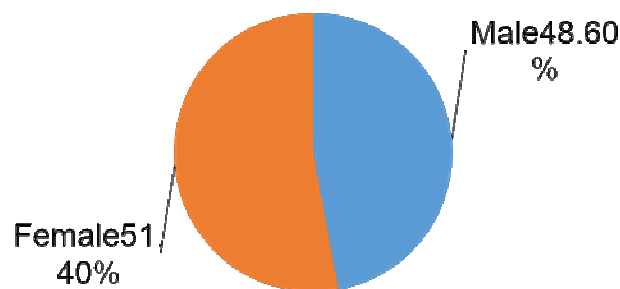
Unilateral patients with amblyopia are often asymptomatic. Occasionally, patients complain of one blurred eye, or young children may report eye irritation. Torticollis rarely occurs. Poor depth perception or clumsiness may be noticed. (Fawcett and Birch, 2000)

An active family history of strabismus, amblyopia, or moderate opacity increases the risk of amblyopia in children. Children who have conditions that increase the risk of strabismus, anisometropia, or moderate opacity (such as Down's syndrome) also increase the risk of amblyopia. As children reach the age of 8-10, there is a reduced risk of amblyopia from what is known to cause amblyopia. As a corollary, the depth of amblyopia is generally not as severe as the older the baby is at the onset. (Fielder and Moseley, 1996)

**Meridional amblyopia (Amblyopia is due to large astigmatism) (Birch, 2013)**

Occlusion amblyopia (which means that when one eye is "deprived" of vision due to occlusion of cataracts, the ophthalmic medium becomes opaque, which prevents visual information from reaching the retina, and then the

### Gender wise distribution of total participants



**Figure 1.** Gender wise distribution of total participants.

brain. (Sireteanu, 1987)

The first line of treatment in amblyopia is spectacle correction. Anisometropic and strabismic amblyopia are first treated with spectacle correction, but may require additional, more complex treatment such as patching therapy or penalization therapy if vision does not improve with spectacle correction alone. (Hamm et al., 2014)

There are very few risks associated with patching treatment. There is a small risk that children wearing an eye patch can develop double vision. This is only if your child has a squint and is more common in older children (over seven years old). If your child develops double vision, you must stop the patching immediately and contact the Orthoptic Department. The double vision usually stops without needing any further treatment. (Wong et al., 2005)

### METHODOLOGY

It was a hospital based cross sectional, descriptive study (Al-Nafees Medical college Hospital, Islamabad Pakistan). We had chosen the convenient sampling of all the patients attending eye OPD (6 days a week) during the study period (3 months (1 October, 2017 to 25 December 2017)). Examined all patients aging 5-15 years attending eye OPD in ANMCH. We had excluded all patients having age below 5 or above 15 years, Mentally retarded patients and Patients who did not want to participate in this study. For data analysis SPSS version 20 was used for analysis. Instrument used during study was Performa, Ophthalmoscope, Retinoscope, Trial box, Snellen chart, and neutral density filter. (Levi, 2012)

Data collection was done using Performa that was approved by the Research cell of P.I.R.S. after piloting, including the demographic data, presenting VA, type of amblyopia, Type of R.E and management of the patient. (Davis et al., 2006)

Visual acuity was assessed using Snellen's chart at 6 meter. Objective and subjective Refraction was done and diagnosis of amblyopia was confirmed by using neutral density filter, pinhole and with crowding phenomena. While Refractive error was classified accordingly as myopia, hyperopia and astigmatism. (Sloper, 2016)

### RESULTS

A total 407 participants were included in this study, in which 198 (48.6%) were male and 209 (51.4%) were female (Figure 1). Participants having age groups of 5-8 years old were 140 (34.4%) and 9-11 years were 138 (33.9%) while having 12-15 years were 129 (31.7%) (Figure 2). Out of 407 participants 17 (4.2%) were diagnosed with amblyopia (Figure 3) in diagnosed amblyopia 5 (29.41%) were having anisometropic amblyopia, 3 (17.65%) were having strabismic amblyopia, 4 (23.53%) were having meridional amblyopia, 3 (17.65%) were having ametropic amblyopia and 2 (11.76%) patients were having stimulus deprivation amblyopia (Figure 4). (Hubel and Wiesel, 1964)

In total 407 of participants 222 (54.5%) were emmetropes (having no refractive error), 45 (11.1%) myopes, 81 (19.9%) hyperopes and 59 (14.5%) astigmatic 17 were diagnosed as amblyopics (Figure 5). Out of these 17 amblyopic patients 7 (41.1%) were astigmatic, 5 (29.4%) hyperopes and 5 (29.4%) myopes.

### DISCUSSION

The frequency of amblyopia in subjects attending eye OPD of Al Nafees medical college and hospital Islamabad was 4.2 %. In another study done in Karachi by Saba Alkhairy et al., frequency of amblyopia was 6.7%

### Age wise distribution Of amblyopia

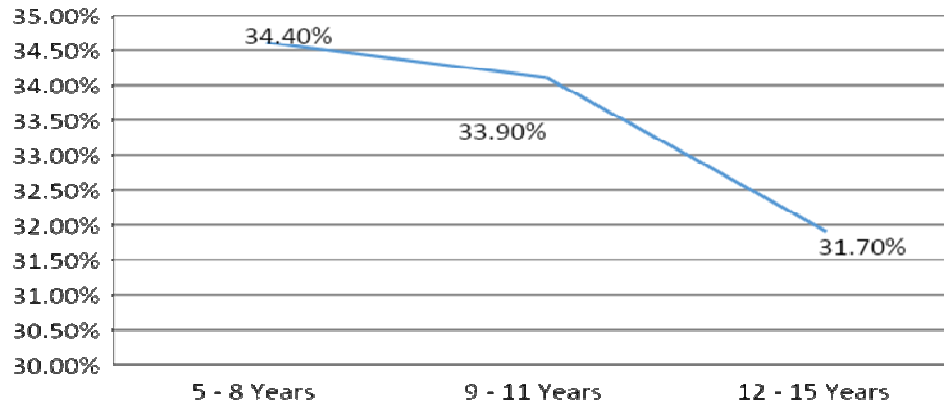


Figure 2. Distribution of Amblyopia according to age.

### Frequency of amblyopia

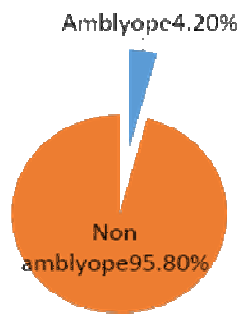


Figure 3. Frequency of Amblyopia.

### Distribution of amblyopia according to types

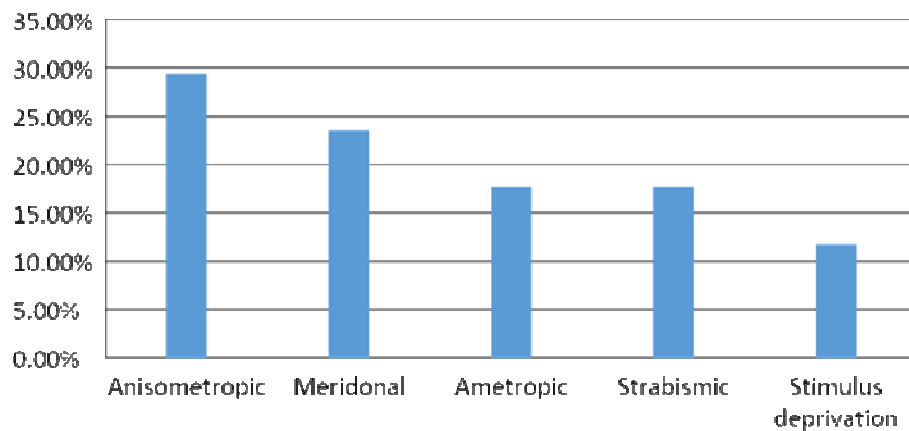


Figure 4. Frequency of Amblyopia according to types.

## Frequency of refractive error

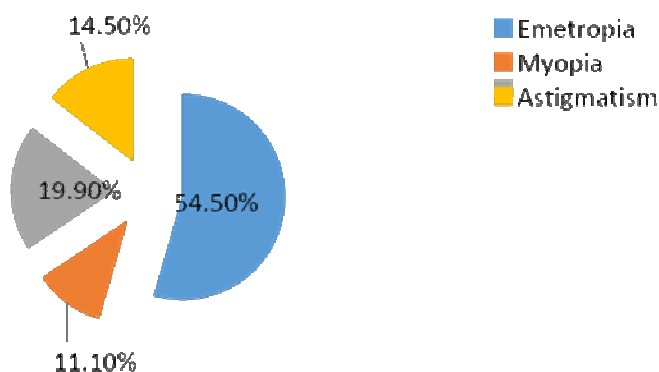


Figure 5. Frequency of refractive error.

(Hubel and Wiesel, 1970) which is quite different from ours. The reason is that both studies were conducted in different areas of Pakistan. One was conducted in Islamabad and other was conducted in Karachi. (Hubel and Wiesel, 1970)

We had found 52.9% female and 47.1% male while another study done by Muhammad A. Awan et al. showed (50%) male and (50%) female and this study was conducted in Government Middle School Children Lahore. The sample size of that study was confined to 200 participants and this was school based study while recent study was hospital based and sample size was larger than the former study. (Le Vay et al., 1980)

The study was done according to age wise also and researcher concluded that frequency of amblyopia was (35.3%) in 5-8 years age group, (47.1%) in 9-11 year age group and (17.6%) was in 12-15 year age group and this study is different from the previous study of Paul Mitchel and Robert Cumming et ell because they were conducted the study of amblyopia types in different age groups. (Wiesel and Hubel, 1963)

Frequency of types of amblyopia was confined to 5 (29.41%) were having anisometropic amblyopia, 3 (17.65%) were having strabismic amblyopia, 4 (23.53%) were having meridonal amblyopia, 3 (17.65%) were having ammetropic amblyopia and 2 (11.76%) patients were having stimulus deprivation amblyopia, this study was slightly similar to the study describe that all minor difference is due to that their study was done in china while recent was done In Islamabad Pakistan and their sample size was larger than recent study. (Wiesel and Hubel, 1963)

The types of frequency of refractive error was also determine during the study in which out of 17 diagnosed amblyopic patients 7 (41.1%) were astigmatic, 5 (29.4%) were hyperopes and 5(29.4%) were myopes, another study done in china by is quite dissimilar from

that study because both study was done in different situation, recent study was hospital based and the study of was done in Rural area and was community base study. (Wiesel and Hubel, 1963)

## CONCLUSION

A total 407 participants, 198 (48.6%) male and 209 (51.4%) female were included in this study. Participants in 5-8 years age group were 140 (34.4%), 9-11 years were 138 (33.9%) while 12-15 years were 129 (31.7%). 17 (4.2%) participants were diagnosed with amblyopia, 5 (29.41%) having anisometropic amblyopia, 3 (17.65%) having strabismic amblyopia, 4 (23.53%) having meridonal amblyopia, 3 (17.65%) having ammetropic amblyopia and 2 (11.76%) patients had stimulus deprivation amblyopia. High frequency of amblyopia was present in 5–15 years old participants. As vision is basic human right to give this right to everyone we therefore need to pay more attention towards children who are amblyopic or were becoming amblyopic even they were not known about that condition.

## REFERENCES

- Birch EE (2013). Amblyopia and binocular vision. *Prog Retin Eye Res.*; 33(1):67-84.
- Cadet N, Huang PC, Superstein R, Koenekoop R, Hess RF (2018). The effects of the age of onset of strabismus on monocular and binocular visual function in genetically identical twins. *Can. J. Ophthalmol.*;53(6):609-613.
- Davis AR, Sloper JJ, Neveu MM, Hogg CR, Morgan MJ, Holder GE (2006). Differential changes of magnocellular and parvocellular visual function in early- and late-onset strabismic amblyopia. *Invest Ophthalmol Vis Sci.*;47(11):4836-4841.
- Davis AR, Sloper JJ, Neveu MM, Hogg CR, Morgan MJ, Holder GE (2008). Differential changes in color and motion-onset visual evoked potentials from both eyes in early- and late-onset strabismic amblyopia. *Invest Ophthalmol Vis Sci.*; 49(10):4418-4426.

- Fawcett SL, Birch EE (2000). Motion VEPs, stereopsis, and bifoveal fusion in children with strabismus. *Invest Ophthalmol Vis Sci.*; 41(2):411-416.
- Fielder AR, Moseley MJ (1996). Does stereopsis matter in humans? *Eye (Lond.)*; 10 ( Pt 2):233-238.
- Hamm LM, Black J, Dai S, Thompson B (2014). Global processing in amblyopia: A review. *Front Psychol.*; 5(JUN)583.
- Hubel DH, Wiesel TN (1964). Effects of monocular deprivation in kittens. *Naunyn Schmiedebergs Arch Exp Pathol Pharmacol.*; 248:492-497.
- Hubel DH, Wiesel TN (1970). The period of susceptibility to the physiological effects of unilateral eye closure in kittens. *J Physiol.*;206(2):419-436.
- Le Vay S, Wiesel TN, Hubel DH (1980). The development of ocular dominance columns in normal and visually deprived monkeys. *J. Comp. Neurol.*;191(1):1-51.
- Levi DM (2012). Prentice award lecture 2011: Removing the brakes on plasticity in the amblyopic brain. *Optom Vis Sci.*; 89(6):827-838.
- Sireteanu R (1987). Binocular luminance summation in humans with defective binocular vision. *Invest Ophthalmol Vis Sci.*; 28(2):349-355.
- Sloper J (2016). The other side of amblyopia. *J AAPOS.*;20(1):1.e-13.
- Webber AL (2018). The functional impact of amblyopia. *Clin Exp Optom.*; 101(4):443-450.
- Wiesel TN, Hubel DH (1963). Effects of visual deprivation on morphology and physiology of cells in the cats lateral geniculate body. *J. Neurophysiol.*;26:978-993.
- Wiesel TN, Hubel DH (1965). Comparison of the effects of unilateral and bilateral eye closure on cortical unit responses in kittens. *J. Neurophysiol.*;28(6):1029-1040.
- Wong AM (2012). New concepts concerning the neural mechanisms of amblyopia and their clinical implications. *Can J Ophthalmol.*;47(5):399-409.
- Wong EH, Levi DM, McGraw PV (2005). Spatial interactions reveal inhibitory cortical networks in human amblyopia. *Vision Res.*; 45(21):2810-2819.