Acta Scientific Clinical Case Reports

Volume 2 Issue 8 August 2021

Research Article

Prevalence of Refractive Errors among Different Age Groups in Patients Presented to Ophthalmology OPD, of Al-Nafees Medical College Hospital

Daniyal Ahmed*, Chaudhary Waleed Tariq, Muhammad Ammar, Ammar Ahmed Butt and Imran Afzal

5th Year MBBS Student, Al-Nafees Medical College & Hospital, Islamabad, Pakistan

***Corresponding Author:** Daniyal Ahmed, 5th Year Medical Student, Al-Nafees Medical College and Hospital, Islamabad, Pakistan.

Received: May 27, 2021

Published: July 06, 2021

Abstract

Objective: To find the prevalence of refractive errors among different age groups and in both genders.

Study Design: A descriptive cross sectional study.

Study Setting and Duration: Ophthalmology OPD patients of Al- Nafees Hospital over the period of 8weeks from 1st May 2016 to 30th June 2016.

Methodology: A convenient sampling technique was used for 150 (N) participants. A designed questionnaire with close ended questions for the study was used. The patients that were coming to ophthalmology OPD that gave written consent were included in our study. The parameters like age and gender was filled and the data regarding refractive errors was collected while they were examined by thedoctor in ophthalmology OPD. All the data was collected, filled in questionnaires and entered in SPSS version 23 by medical students. The collected data was then analyzed for frequency in terms of percentages by using SPSS version 23.

Results: A total of 150 participants were selected for our study out of which 140 participants responded, so our response rate was 93.3%, among whom 66% were males and 34% were females. With respect to refractive errors 22% were emmetropic, 43% were myopic, 5% were High Myopic (Short-Sighted patientswere 48%), 12% Hyperopic, 12% Presbyopic (Far-Sighted patients were 24%), 9% were having Anisometropia and 11% were having Astigmatism.

Conclusion: As the age increases the chances to have refractive errors increases, myopia is more common than hyperopia at younger age but at old age Presbyopia is more common. Similarly, the chancesto have astigmatism and anisometropia increases with the increasing age. Myopia and astigmatism was themost prevalent refractive error found especially in early adulthood. Refractive errors vary in population among genders.

Keywords: Ophthalmology; Age; Refractive Errors; Gender; Prevalence

Introduction

One of the significant and very common public health concern that can lead to visual impairment and evenblindness are refractive errors, which affect majority of the population, throughout the world [1-3].

According to WHO, developing countries have 90% of visual impairment cases in which 80% are preventable [4]. Previous studies suggest that 80% of Chinese children of certain regions are myopic [5]. Although most of the refractive errors have no patho-

logical cause and can easily be corrected either with glasses or contact lenses or with surgery, due to which refractive errors have not been discussed more in the past [6]. Previous studies states that approximately 1.6 billion of worldwide population is affected by myopia and it is expected that prevalence of myopia till 2020 will increase up to 2.5 billion [7]. About 153 million of world population over 5 years of have visual impairment due to uncorrected refractive errors in which 8 million are blind [7]. The increasing prevalence of refractive errors has been noted in many regionsof world North America, United states, Asian Countries like Singapore, Taiwan, China and Pakistan [1,7].

It is very important to correct the refractive errors timely or they may lead to severe complications in various ocular diseases like cataract, Glaucoma [3] in which myopia is associated with open angle glaucoma while hyperopia is associated with angle closure glaucoma [6] and retinal diseases [rhegmatogenous retinal detachment, chorioretinopathy (Staphyloma and chorioretinal atrophy) [2,6], ischemic optic neuropathy [6]] [3,8] and sometimes even blindness.

Previous surveys that have been conducted in different regions of world demonstrated that prevalence of refractive errors especially myopia tends to decrease with age, whereas hyperopia tends to increase with age [9-11]. Many previous studies do not provide evidence regarding refractive errors among both the genders [11-13], but few previous studies showed that women found to have more refractive errors than meneither hyperopia or myopia [14].

As we lack the comparison among genders and different age groups regarding refractive errors and less evidence is available regarding the query. So, this study has been done to find the prevalence of refractiveerrors among different age groups and in both genders.

Methodology

This is a descriptive cross sectional study, done in Ophthalmology OPD of Al-Nafees Hospitalover the period of 8 weeks from 1st May 2016 to 30th June 2016.

Sample Size of 150 (N) patients was taken by convenient sampling technique. Patient coming to ophthalmology OPD who gave written consent were included, while all other patients that either did notcame to ophthalmology OPD of ANMCH or did not gave written consent were excluded. Our response rate was 93.3%.

A questionnaire was designed in which a consent form for enrollment of participant (Patients presented to ophthalmology OPD at Al-Nafees Hospital), a section of personal profile and a section in which refractive errors (i.e. Myopia, high myopia, hyperopia, presbyopia, astigmatism, anisometropia) wasnoted. This designed questionnaire with closed ended questions was filled by medical students from the selected participants those who gave the written consent and fulfilled the inclusion criteria. The section of refractive errors was filled by medical students during the examination of participants for refractive errors by an ophthalmologist at Al-Nafees Hospital and upon doctor's findings. The identity of each participant was kept anonymous throughout the study.

After data collection the parameters i.e. gender, age and refractive errors, were entered and the data was analyzed in statistical package of social science (SPSS) version 23 and was used to calculate thefrequencies in terms of percentages and to find any association if present.

Results

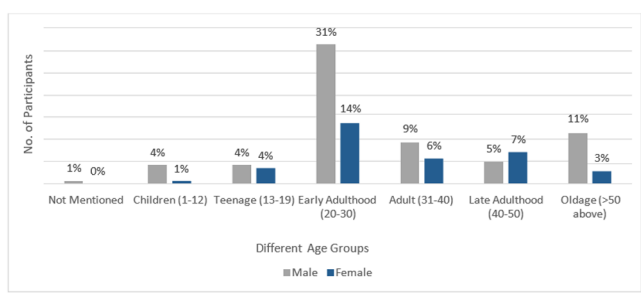

Figure 1: Number of participants with respect to gender and age in percentages (N = 150).

A total of 150 participants were selected for our study out of which 140 participants responded, so our response rate was 93.3%. Patients that presented to the Outpatient department with refractive errors weremore in early adulthood 42% (n = 63) and were males 31% (n = 44) while females in this age were 14% (n = 19).

Patients that presented to the Outpatient department with refractive errors were divided accordingto different age groups i.e. Children from age 1 year to 12 years, Teenage from age 13 years

Age	Emmetropia	Myopia	High Myopia	Hyperopia	Presbyopia	Anisometropia	Astigmatism
Not Mentioned	1% (n = 1)	0	0	0	0	0	0
1 year - 12 years	2% (n = 3)	1% (n = 2)	1% (n = 1)	1% (n = 1)	0	0	0
13 years - 19 years	1% (n = 1)	6% (n = 8)	1% (n = 1)	1% (n = 1)	0	0	1% (n = 2)
20 years - 30 years	11% (n = 15)	24% (n = 34)	2% (n = 3)	6% (n = 8)	1% (n = 1)	3% (n = 4)	9% (n = 12)
31 years - 40 years	4% (n = 6)	6% (n = 8)	0	3% (n = 4)	1% (n = 1)	1% (n = 2)	1% (n = 1)
41 years - 50 years	3% (n = 4)	4% (n = 5)	1% (n = 1)	1% (n = 1)	6% (n = 8)	1% (n = 2)	1% (n = 1)
> 50 years above	2% (n = 3)	5% (n = 7)	1% (n = 1)	2% (n = 3)	6% (n = 8)	4% (n = 6)	1% (n = 1)
Total	24% (n = 33)	46% (n = 64)	5% (n = 7)	13% (n = 18)	13% (n = 18)	10% (n = 14)	12% (n = 17)

Table 1: Ratio of refractive errors with respect to age (N = 150).

to 19 years, Early Adulthood from age 20 years to 30 years, Adults from age 31 years to 40 years, Late Adulthood from age 41 years to 50 years and Old age above 50 years.

These results shows that patients have more far-sightedness 51% (n = 71) especially in early adulthood 26% (n = 37) and patients that were suffering from short-sightedness were 26% (n = 36). Noassociation was noted of any refractive error with any age group in our study.

Patients that presented to the Outpatient department with refractive errors were more have far-sightedness51% (n = 71) especi-

Gender	Emmetropia	Myopia	High Myopia	Hyperopia	Anisometropia	Astigmatism	Presbyopia
Male	14% (n = 20)	36% (n = 50)	3% (n = 4)	7% (n = 10)	8% (n = 11)	7% (n = 10)	7% (n = 10)
Female	9% (n = 13)	10% (n = 14)	2% (n = 3)	6% (n = 8)	2% (n = 3)	5% (n = 7)	6% (n = 8)
Total	24% (n = 33)	46% (n = 64)	5% (n = 7)	13% (n = 18)	10% (n = 14)	12% (n = 17)	13% (n = 18)

Table 2: Ratio of refractive errors with respect to gender (N = 150).

ally in males 39% (n = 54) while patients that were suffering from short-sightedness were26% (n = 36) especially in males 14% (n = 20). Myopia shows Significant association with Gender (P = 0.007); As our results shows that, Males are more prone to develop myopia 39% (n = 54) than females 12% (n = 17).

Discussion

In a study done in Korea shows the prevalence of refractive errors with respect to age of selected participants, 20 - 29, 30 - 39, 40 - 49 years and above 50 years. In 20 - 29 years' age group 18.1%, 1.4%, 0.4% and 3.6% of selected participants were myopic, high myopic, hyperopic and were having astigmatism, respectively. In 30 - 39 years' age group 26.1%, 1.2%, 0.6% and 4.6% of selected participants were myopic,high myopic, hyperopic and were having astigmatism, respectively. In 40 - 49 years' age group 20.1%, 0.8%, 1.2% and 5% of selected participants were myopic, high myopic, hyperopic and were having astigmatism, respectively. Participants that were above 50 years were 17.5%, 0.6%, 26.4% and 21% of selected participants were myopic, high myopic, hyperopic and were having astigmatism, respectively [6] which are similar to our results according to the ratio.

In a study done in Singapore shows the prevalence of refractive errors with respect to age of selected participants, 40 - 50 years and above 50 years. In 40 - 49 years' age group 67%, 7.6%, 14.7% and 37.8% of selected participants were myopic, high myopic, hyperopic and were having astigmatism, respectively. Participants that were above 50 years were 47.9%, 4%, 44.5% and 60.1% of se-

lected participants were myopic, high myopic, hyperopic and were having astigmatism, respectively [7] which aresimilar to our results according to the ratio.

In a study done in Germany shows the prevalence of refractive errors with respect to age of selected participants, 35 - 44, 45-54 years and above 55 years. In 35 - 44 years' age group 10.6%, 2%, 6.5% and 2.4% of selected participants were myopic, hyperopic, were having astigmatism and were having anisometropia, respectively. In 45 - 54 years' age group 12.2%, 5.3%, 8.2% and 3.6% of selected participants were myopic, hyperopic, were having astigmatism and were having anisometropia, respectively. Participants that were above 55 years were 12.3%, 24.5%, 17.7% and 7.5% of selected participants were myopic, hyperopic, were having astigmatism and were having anisometropia, respectively [9] which are similar to our results according to the ratio.

In a study done in Korea shows the overall prevalence of refractive errors of selected participants.

82.1%, 4%, 28.6% and 34.1% of selected participants were myopic, high myopic, hyperopic and werehaving astigmatism, respectively [6] similar to our study results.

In a study done in Singapore shows the overall prevalence of refractive errors of selected participants. 53.2%, 5.2%, 36.2% and 53.9% of selected participants were myopic, high myopic, hyperopicand were having astigmatism, respectively [7] similar to our study results.

In a study done in Germany shows the overall prevalence of refractive errors of selected participants. 35.1%, 31.8%, 32.3% and 13.5% of selected participants were myopic, hyperopic, were having astigmatism and were having anisometropia, respectively [9] similar to our study results.

While the prevalence of refractive errors in a Korean study, with respect to gender of selected participants, i.e. males and females. In males 35.2%, 1.5%, 11.6% and 15% of selected participants were myopic, high myopic, hyperopic and were having astigmatism, respectively. In females 47%, 2.5%, 16.8%and 19.1% of selected participants were myopic, high myopic, hyperopic and were having astigmatism, respectively [6]. These results are not similar to our findings as these results shows more refractive errors in females than males.

While the prevalence of refractive errors in a Singaporean study, with respect to gender of selectedparticipants, i.e. males and females. In males 51%, 4.7%, 35.7% and 55% of selected participants were myopic, high myopic, hyperopic and were having astigmatism, respectively. In females 55.3%, 5.8%, 36.8% and 52.9% of selected participants were myopic, high myopic, hyperopic and were having astigmatism, respectively [7]. These results are not similar to our findings as these results shows more myopic females than males but similar in terms of hyperopia and astigmatism is more in males than females.

While the prevalence of refractive errors in a German study, with respect to gender of selected participants, i.e. males and females. In males 18.2%, 15.6%, 17.4% and 6.8% of selected participants weremyopic, hyperopic, were having astigmatism and were having anisometropia, respectively. In females 16.9%, 16.2%, 14.9% and 6.7% of selected participants were myopic, hyperopic, were having astigmatismand were having anisometropia, respectively [9]. These results are similar to our findings as these results shows more refractive errors in females than males.

Many studies had proven that refractive errors are strongly associated with the age. Although fewstudies states that refractive errors are more common in males than females but few also states that refractive errors are more common in females than males. So, it is still a controversy.

Conclusion

As the age increases the chances to have refractive errors increases, myopia is more common than hyperopia at younger age but at old age Presbyopia is more common. Similarly, the chances to have astigmatism and anisometropia increases with the increasing age. Myopia and astigmatism was the most prevalent refractive error found especially in early adulthood. Refractive errors vary in population among genders.

Bibliography

1. Pan CW., *et al*. "Worldwide prevalence and risk factors for myopia". *Ophthalmic and Physiological Optics* 32.1 (2012): 3-16.
2. Morgan IG., *et al*. "Myopia". *The Lancet* 379.9827 (2012): 1739-1748.
3. Pan CW., *et al*. "Racial variations in the prevalence of refractive errors in the United States: the multi-ethnic study of athero-

sclerosis". *American Journal of Ophthalmology* 155.6 (2013): 1129-1138.

4. World Health Organisation. Global data on visual impairment (2010).
5. Chin MP., *et al*. "Prevalence of visual impairment and refractive errors among different ethnic groups in schoolchildren in Turpan, China". *Ophthalmic and Physiological Optics* 35.3 (2015): 263-270.
6. Kim EC., *et al*. "Prevalence and risk factors for refractive errors: Korean National Health and Nutrition Examination Survey 2008-2011". *PLoS One* 8.11 (2013): e80361.
7. Pan CW., *et al*. "Prevalence of Refractive Errors in a Multiethnic Asian Population: The Singapore Epidemiology of Eye Disease Study Refractive Errors in Singapore". *Investigative Ophthalmology and Visual Science* 54.4 (2013): 2590-2598.
8. Neelam K., *et al*. "Choroidal neovascularization in pathological myopia". *Progress in Retinal and Eye Research* 31.5 (2015): 495-525.
9. Wolfram C., *et al*. "Prevalence of refractive errors in the European adult population: the Gutenberg Health Study (GHS)". *British Journal of Ophthalmology* 98.7 (2014): 857-861.
10. Hyman L. "Myopic and hyperopic refractive error in adults: an overview". *Ophthalmic Epidemiology* 14.4 (2007): 192-197.
11. Sawada A., *et al*. "Refractive errors in an elderly Japanese population: the Tajimi study". *Ophthalmology* 115.2 (2008): 363-370.
12. Antón A., *et al*. "Epidemiology of refractive errors in an adult European population: the Segovia study". *Ophthalmic Epidemiology* 16.4 (2009): 231-237.
13. Foster PJ., *et al*. "Refractive error, axial length and anterior chamber depth of the eye in British adults: the EPIC-Norfolk Eye Study". *British Journal of Ophthalmology* 94.7 (2010): 827-830.
14. Saw SM., *et al*. "Prevalence and risk factors for refractive errors in the Singapore Malay Eye Survey". *Ophthalmology* 115.10 (2008): 1713-1719.

Volume 2 Issue 8 August 2021