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Pattern of refractive errors in Buraydah. How serious is the problem?

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ABSTRACT

Objective: The incidence of refractive errors is on the rise globally. This study was done to assess the pattern and prevalence of various errors of refraction including myopia, hypermetropia, and astigmatism in Qassim region of Saudi Arabia.

Methods: This is a cross-sectional study conducted in Buraydah city during January 2015. The participants consisted of 188 subjects of both sexes ranging from 2 to 75 years in a shopping mall picked randomly regardless of age and gender. The study subjects were picked up from a temporary eye clinic established for 2 days in a busy shopping mall in Qassim. The refraction was performed on those patients who were willing for the examination and gave consent to be inducted in the study. Those who had any sort of refractive disorders were assessed and classified by the kind of refractive error.

Results: The incidence of refractive errors was found to be reasonably high among general population regardless of gender; however, increasing age was found to be associated with increasing incidence. We found myopia as the most common error of refraction found in 91 (48.40%) study subjects, while astigmatism and hypermetropia were other errors detected.

Conclusions: Refractive errors are one of the main reasons of treatable visual impairment in youth. There is a need of standard vision testing in young population to diagnose any such problem at an early stage.

Keywords: Astigmatism, errors of refraction, hypermetropia, incidence, myopia

Introduction

The world's leading and most effortlessly cured remedy for poor vision among young adults is refractive errors.[1] Poor vision is a noteworthy boundary to accomplishing a sound and instructively supporting college/university condition for students in numerous locales of the world. Visual impairment because of uncorrected refractive errors is very common among young adults and is the second driving reason for treatable visual impairment.[2] An estimated 10% of school attending children in developing countries would need vision correction as stated by many WHO supported reports.[3-6] Pascolini and Mariotti[5] pointed out that visual impairment is a major health problem and 80% of the causes of this ailment are effectively preventable. A major population from underprivileged areas or those who are uneducated are a common victim of these problems as they are not aware of their disability. In addition to the visual impairment, errors of refraction are also found to be responsible for blindness, as mentioned by many reports.[7] Visual impairment consequent on errors of refraction, if not properly corrected, has serious consequences in terms of economic loss due to decreased productivity.[8,9] Poor vision is found to have a negative impact on the overall performance of the student's due to inability to read and understand material written on the blackboards or displayed on the powerpoint slides.[10] Similarly, it becomes a handicap for the general population and causes serious impact on their efficiency and productivity. People may lose their jobs and can become a burden on the society with increasing visual problems. It is a well-known fact now that uncorrected visual impairment due to common errors of refraction can decrease the level of attainment of education and expertise in the students as well as in general population and is a major concern in the present era. Defective vision due to uncorrected errors of refraction can be a major cause of failure in classroom settings and future growth and career development of the budding students. This can surely have deleterious effects on the overall economy of the society depending on the type of the refractive error as well as the nature of the problem. An early diagnosis and correction of the visual impairment can definitely improve the overall outlook of these ailing people whose abilities are hindered because of such benign treatable disorders. This study

is done to study the pattern of errors of refraction rampant in residents of Qassim region so as to know the incidence and to formulate a plan to correct such disorders to improve the overall performance of the community.

Methods

This is a descriptive cross-sectional study conducted in Qassim region during 2015. The study population comprised 188 subjects of both sexes ranging from 2 to 75 years. For this purpose, a temporary eye clinic was established in a busy shopping mall in Qassim where people from different regions were examined and inducted. The study subjects were picked up randomly, were explained in detail about the objective of the study, and were only inducted into the study after they gave a valid consent. A detailed history of each subject was taken focusing on presenting complains, familial problems, and any treatment taken earlier. This was followed by an ocular examination using Snellen chart which was kept 6 m away to determine the presenting, uncorrected and best corrected visual acuity of the individual study subject.

Exclusion criteria

The patients who had a history of previous visual intervention or had any disease which was found to be responsible for the decreased visual acuity were excluded from the study.

Statistical analysis

The descriptive data are displayed as mean, mode, and standard deviation. The Chi-squared test is used to determine differences in errors of refraction among different genders and age of the study subjects. The level of $P < 0.05$ was considered as statistically significant.

Results

The demographic details of the study subjects are summarized in Table 1. The most frequent error of refraction was found to be myopia which was found in 91 (48.40%) study subjects, followed by hypermetropia in 66 (35.10%) and astigmatism in remaining 31 (16.48%) subjects. The high incidence of myopia was mostly among younger age groups, and nearsightedness was considered as spherical equivalent (SE) of −1.0 diopters or more, hyperopia was characterized as SE of + 1.0 or more, and astigmatism was characterized as a cylinder of ≥1.0.

These different kinds of errors are a common cause of correctable blindness and are some global phenomena. It usually starts at a comparatively younger age compared to the one caused by cataract which affects elderly. In our study, corrected myopia was found in an about a quarter of the subjects while others were diagnosed incidentally, as summarized in Table 2. In the present report, nearsightedness demonstrated an expanding pattern with increasing age while hypermetropia and astigmatism demonstrated a diminishing pattern with propelling age which was measurably noteworthy ($P < 0.05$) as summarized in Table 3.

Discussion

Refractive errors can be recognized through regular examination of patients who present to ophthalmologic clinics or through vision screening of the masses free to move around at will. The former approach may work elegantly in developed countries with health-conscious people, but the latter is vital in developing countries because of lack of handy facilities. Vision screening is for the most part typically done on schoolchildren, which is a beneficial strategy for recognizing possibly treatable visual problems for early recognition of treatable visual errors. Nearsightedness is as of now the most widely recognized eye condition around the world, yet the prevalence is fundamentally expanding.[11-14] Expanding nearsightedness conveys clinical and monetary ramifications. The expanded prerequisite for discovery and treatment of nearsightedness, involving glasses, contact focal points, or all the more as of late laser refractive surgery, has huge ramifications for clinical optometric and ophthalmic administration arrangement and the medicinal services framework. This study shows a clear male predominance in all sorts of refractive errors as also reported by many other such activities.[14,15] On the contrary, there are several studies claiming an increasing incidence of refractory errors among women compared to males.[16-18] There is a significant association of different errors of refraction with increasing age of the patients. The incidence of myopia shows a parallel increase in incidence with increasing age while the hypermetropia and astigmatism have a contrary result ($P < 0.001$). This is in line with many other such studies.[19,20]

Table 1: Demographic details (n=188)

Subjects	Data
Age (in years), mean±SD (range)	28.9±16.7, (2–75) (%)
Gender	
Males	113 (60)
Females	75 (40)
Comorbidities	
Hypertension	03 (1.59)
Diabetes mellitus	05 (2.65)
IHD	01 (0.53)

IHD: Ischemic heart disease, SD: Standard deviation

Table 2: Corrected errors of refraction

Error	Frequency (%)	Corrected (%)
Myopias	91 (48.40)	18 (19.78)
Hypermetropia	66 (35.10)	39 (59.09)
Astigmatism	31 (16.48)	20 (64.5)

Table 3: Age and errors of refraction

Age (years)	Myopia (%)	Type of error of refraction	Astigmatism (%)	*P*
		Hypermetropia (%)		
2–20	09 (8.19)	32 (21.12)	19 (5.89)	0.001
21–40	29 (26.39)	22 (14.52)	09 (4.34)	
40–75	53 (48.23)	12 (13.18)	03 (0.93)	

Conclusion

Myopia is an ever-increasing problem globally. This alarming increase in the overall incidence is seemingly a future problem that will impose a major financial burden to the community as well as a major threat to vision of the masses if attention is not drawn toward this serious but correctable problem.

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