

Prevalence of Myopia amongst Doctors joining the Armed Forces

Sonya Puri¹, Nidhi Kalra²

1 Professor Base Hospital & ACMS, Delhi Cantt 2 Assistant Professor, Base Hospital & ACMS, Delhi Cantt
Corresponding Author: Nidhi Kalra

Abstract

Introduction: Myopia is a common refractive error. **Aim:** To find the prevalence of myopia among doctors joining the Armed Forces. **Materials and Methods:** A cross-sectional study was done on 628 doctors who were joining the Armed Forces. A comprehensive ocular examination including visual acuity (unaided and best corrected) and cycloplegic refraction and a dilated fundus examination was done. History of hours spend outdoors/computer was recorded. 1256 eyes were examined. **Results:** 76 % were males and the mean age of the patient was 23 years. 57% patients had myopia; 32 % patients had less than 2 D of myopia, 17 % patients had 2-4 D of myopia, 4 % patients had 4-6 D of myopia & 4 % patients had >6 D of myopia. 80 % of myopes had family history of myopia. 35 % of myopes spend more than 3 hours on the computer compared to 21 % in the emmetropic group. Myopia was associated with less time spend outdoors during childhood. **Conclusion:** The high incidence of myopia among doctors correlates with the excessive amount of near work done by them.

Keywords: Myopia, Refractive error, Diopter

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I. Introduction

Myopia is derived from a Greek word “myops” which means to shut the eye (myein “to shut” + ops “eye.”) The individual being near sighted makes a narrow slit of his eyes to see better in the distance. Myopia is a refractive error in which with the accommodation at rest, incident parallel rays focus anterior to the retina most commonly due to increased axial length.

Myopia is one the five immediate priorities set by WHO in ‘Vision 2020’ as it is an important cause of diminished vision.^[1] Myopia is believed to have a multifactorial aetiology.^[2] Increased prevalence of myopia in certain regions could be due to excessive educational pressure.^[3]

Myopia may be a simple myopia or school myopia which starts at the age of 7-8 years when the child starts going to school, it stabilizes by adolescence and it rarely exceeds 5 or 6 D. High myopia is when it is more than 6 D or an axial length more than 26.5mm.^[4] Pathological or degenerative myopia is when high myopia (>6D) is associated with posterior segment changes due to axial elongation of the globe.^[5]

With science improving in leaps and bounds it has given mankind a better quality of life. This puts an additional pressure on the doctor to get abreast and ahead so they have to put in longer hours studying more so on the electronic media as several books/ quizzes are available online. This study was undertaken to analyze the prevalence of myopia amongst doctors.

II. Materials & Methods

A cross sectional study was done at an Armed Forces Hospital. Doctors who wanted to join the Armed Forces were examined. A comprehensive eye examination was done including visual acuity (unaided and best corrected) and cycloplegic refraction. A dilated fundus examination was done with Indirect Ophthalmoscope using 20 D lens. Family history of myopia was noted. A history of duration of hours spend outdoors playing during early childhood / reading/ on the computer / mobile screen was taken. A total of 1256 eyes of 628 patients were evaluated.

Exclusion Criteria

1. Patients who had undergone LASIK
2. Keratoconus

III. Results

A total of 628 patients (1256 eyes) were evaluated. 76 % (428) were males and 24 % (150) were female. (Graph

1) The mean age of the patient was 23 years.

57% (356) patients had myopia. Graph 3 shows the distribution of myopia. 32 % (202) patients had less than 2 D of myopia, 17 % (103) patients had 2-4 D of myopia, 4 % (27) patients had 4-6 D of myopia & 4 % (24) patients had >6 D of myopia. 218 patients (35 % of the entire group studied & 61 % of the myopes) had

myopic astigmatism. Amongst the myopes 80 % (285) had family history of one or both parents ($p = 0.000$) which is statistically significant.

Time spend on the computer in both groups is shown in Graph 4. Amongst the myopes 8 % (27) spend less than an hour, 19 % (69) spend 1-2 hours, 38 % (137) spend between 2-3 hours and 35% (123) spend more than 3 hours on the computer screen. In the emmetropic group 4 % (11) spend less than an hour, 36 % (97) spend 1-2 hours, 39 % (107) spend between 2-3 hours 21 % (57) more than 3 on the computer screen.

Time spend outdoors playing in early childhood in both groups is shown in Graph 5. Amongst the myopes 37 % (132) spend less than an hour, 50 % (178) spend 1-2 hours and 13 % (46) spend more than 2 hours playing outdoors. In the emmetropic group 13 % (36) spend less than an hour, 34 % (91) spend 1-2 hours and 53 % (145) spend more than 2 hours playing outdoors.

IV. Discussion

In our study 57% patients had myopia. Saxena et al reported a prevalence of 13.1 % among school children in India.^[6] Dandona et al reported a prevalence of 19.45 % in children above 15 years in a study in Andhra Pradesh.^[7] Studies in other Asian countries show a higher prevalence rate. He M et al in a study in Southern China found a prevalence rate of 73.1 % amongst children above 15 years of age.^[8] In a study in Taiwan the incidence in children above 18 years was over 84%.^[9]

4 % (24) patients in our study had >6 D of myopia. Curtin estimated that 2-3 % of the population has pathological myopia.^[10]

Lot of studies show that increased time spend reading during early teens to mid 20's leads to development of myopia.^[11,12] Studies of medical students in Norway & Denmark found 50.3 % and 50 % to be myopic respectively.^[13,14] This is comparable to our study. A study in a medical college in Saudi Arabia of 419 students, 44.4 % were found to be myopic.^[15] In a study of 207 medical students in Turkey 32.9 % were found to be myopic.^[16] Variations in different studies could be due to different ethnicities.

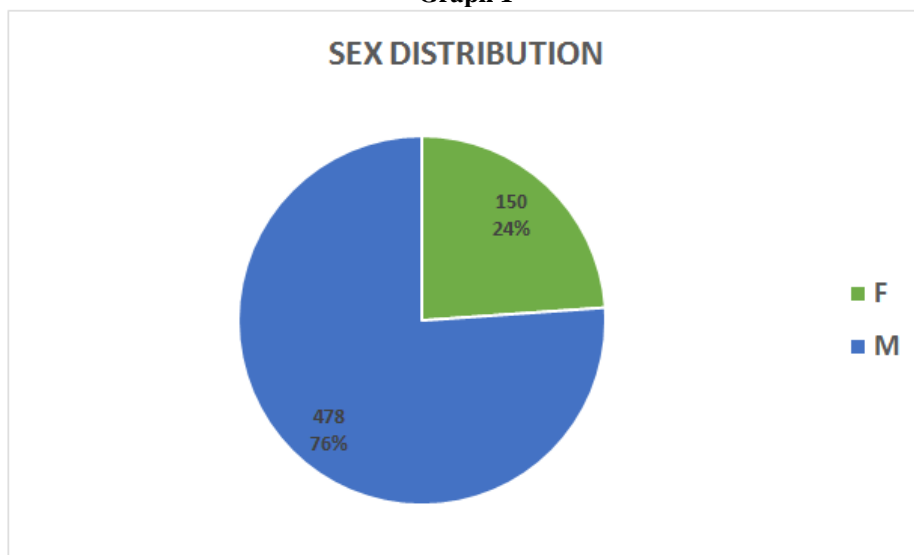
In our study 35 % of myopes spend more than 3 hours on the computer compared to 21 % in the emmetropic group. Muttu et al^[17] in an American study and IP et al^[18] in an Australian study show no significance between use of computers and development of myopia. A Spanish study by Fernandez-Montero et al shows the correlation between usage of computers and myopia.^[19]

In our study as evident from Graph 5, myopia is more common in those who spend less time outdoors in early childhood and less in those who spend more time and vice versa in the emmetropic group. Bright light outdoors causes release of dopamine from the retina, this prevents eye ball elongation.^[20]

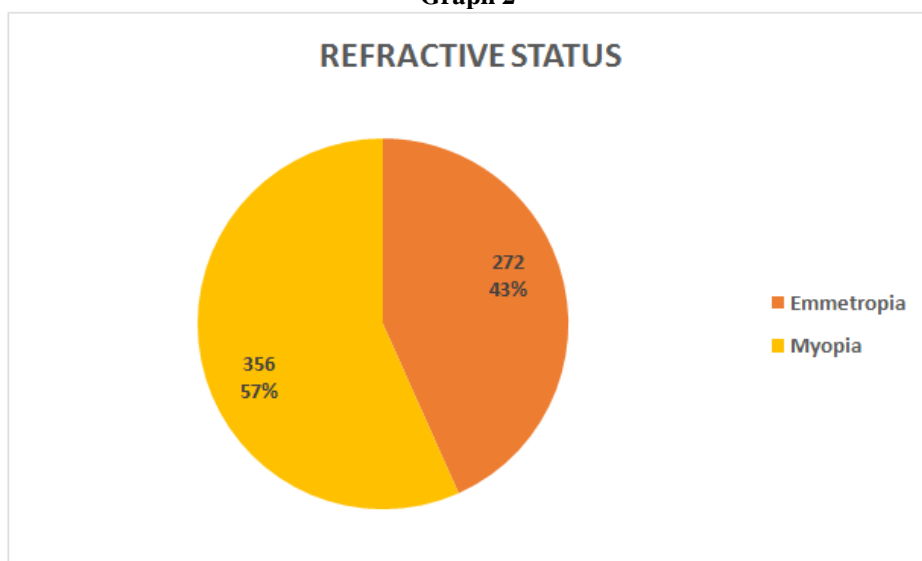
V. Conclusion

Myopia is a common refractive error the prevalence of which is associated with more near work. Doctors having the burden of studying large amount of text and on-screen material (e-books, presentations, virtual learning) have a higher chance of developing myopia. Awareness regarding proper lighting and reading distance should be spread. A reading distance of 30 cms with a good light coming from the left. For computers a distance about 40 cms with lighting from behind and antireflective screen or glasses is recommended. Outdoor activity in early childhood is associated with a lower incidence of myopia.

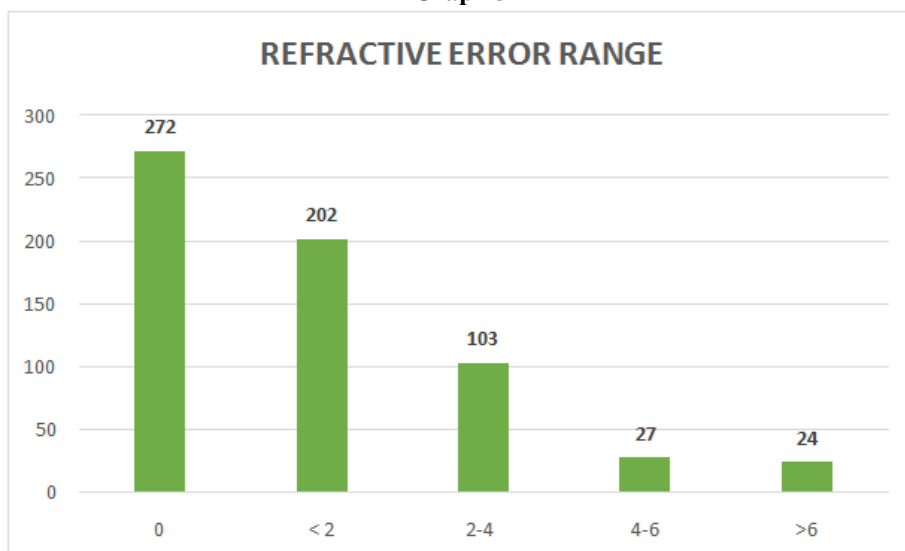
Graph 1



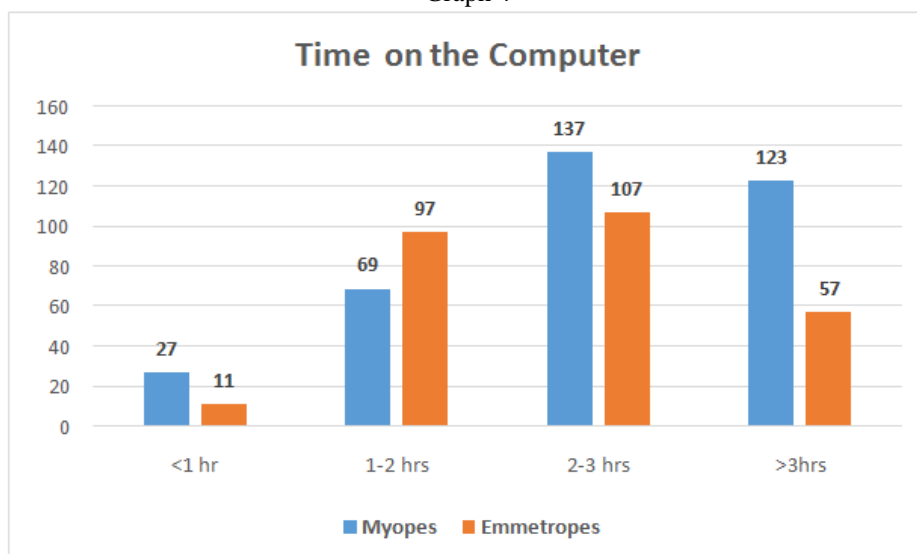
Graph 2



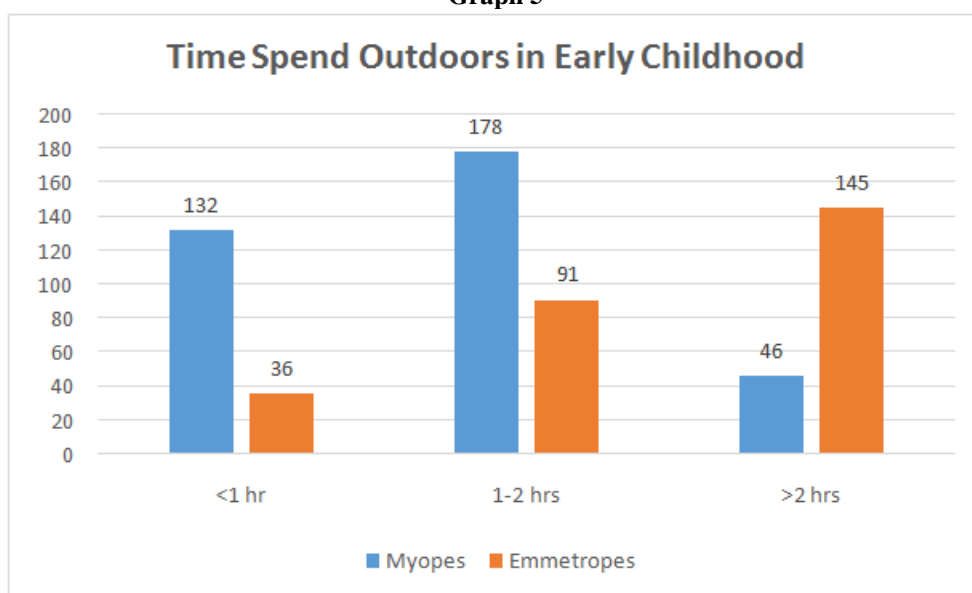
Graph 3



Graph 4



Graph 5



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