A STUDY ON MYOPIA AMONG THE STUDENTS OF A DENTAL COLLEGE IN KERALA

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ABSTRACT

Background: Myopia is one of the leading causes of vision loss around the world .Various studies from different parts of the world show a dramatic increase in refractive error, especially myopia among school and college students. Higher levels of education like medical education have been repeatedly associated with greater myopia prevalence.

Objective: To study the prevalence and the underlying factors of myopia in BDS students of a Dental College in Kerala.

Research methodology: Eighty nine BDS students (2012 - 2012 batches) were examined. Students were selected from each class by systematic random sampling technique, their visual acuity was checked using Snellen's Chart and Diopters were obtained. Details of factors were obtained using a questionnaire.

Results: Prevalence of myopia was observed as 40.4%. First and second year students had a greater percentage of myopia with 46.4 % & 56.7% respectively. There was a strong relationship with years after diagnosing myopia which indicates that majority of them developed it in less than 5 years (p=0.000). Siblings of most of myopics also had myopia (p=0.002). Sleeping habits showed a significant relationship with myopia (0.037). Duration of TV watching, duration of computer use, Reading hours, type of light used and playing or texting with cell phone were not significant.

Conclusion: Prevalence of myopia was high among dental students (40.4%).

Key Words: Myopia, Refractive error, Visual acuity

INTRODUCTION

According to the WHO report, uncorrected refractive error is the second commonest cause of global visual impairment first being the cataract [1]. Refractive error may be defined as a state in which the optical system of the non accommodating eye fails to bring parallel rays of light to focus on the retina. Myopia is a refractive error in which eye fails to see distant objects properly. Several studies describe an increasing prevalence of myopia in recent years. The prevalence of myopia in USA is estimated to be 25% and in India to be 19% [2,3]. Myopia has been associated with socioeconomic status, level and length of education, parental myopia, exposure to near work and early lifestyle risk factors[4-8.] The lifestyle factors which may play a role in myopia development include reading for pleasure[9] , variations in lighting,[10] watching television and playing video games,[11] use of the computers,[12] time spent indoors, and less time spent in sports.[13]

There has been a dramatic increase in myopia prevalence rates over the past few decades in different parts of Asia [14]. There are some studies showing that the academically active professionals are the major sufferers of myopia [15]and the severity of myopia has been reported to be associated with the level of educational attainment[16,17] .

The prevalence rate of myopia in Singapore medical students has been reported to be more than 82% [18.] Similar studies have been reported from Norway and Denmark where the prevalence among medical students came out to be 50.3% and 50% respectively[19,20].

Increasing near work like reading, use of microscope etc have frequently been blamed for the development of myopia [21]. Medical and dental curriculum demands prolonged hours of reading and related visual tasks for many years. Many studies are reported from different parts of the world about the development of myopia among medical students, but we couldnot find studies

among dental students. This study was designed to determine the occurrence of myopia in dental students of a College in Kerala.

MATERIALS AND METHODS

The study was conducted on 89 dental students of Azeezia College of Dental Sciences and Research. The study was conducted in three batches, admitted in the years from 2010 to 2012. After getting informed consent from each student, they were examined for their height, weight and visual acuity. Height in centimeter and weight in kilogram of each student is measured using anthropometric scale and weight machine. The body mass index was calculated using the formula as follows. Body Mass Index = Height (m2) /Weight (Kg). Snellen's chart was used to test the visual acuity for distant vision. Power in diopters were obtained based on the information furnished by the students or from their current spectacle prescription. Newly diagnosed students were sent to ophthalmology department and their power was checked. Different habits of the students and family histories of refractive errors in their parents were obtained by a questionnare. Statistical analysis was carried out by Chi square test. P value of <0.05 was considered statistically significant.

RESULTS

Eighty nine dental students were examined. The prevalence of myopia came out to be 40.4 % (36 out of 89) in dental students (fig. 1)

The age of the ametropic students ranged from 18 to 25 years (mean age 21.6 ± 1.452). Second year students had greater percentage of myopia with 56.7% of the students being myopic.

Educational qualification of mother and occurrence of myopia showed a significant relationship (p 0.04) . Educational qualification of the father was significant for 2010 batch students (p 0.046). There was no significant relationship between occupation of parents with myopia (p 0.08). 17 students developed myopia 2 – 5 years back whereas 7 students developed it 6 – 10 years back and only 8 students developed it one year back(fig 4). There was a strong relation with years after diagnosing myopia (p=0.000) which indicates that majority of them developed myopia in less than 6 years. Out of 36 myopic students, 10 had positive family history (history of parental myopia). Among these 10 myopic students with positive family history, both parents myopic for 3 students and single parent myopic for 7 students. Statistically it didnot show any significant relationship (p 0.581). Siblings of most of the myopics also had myopia which shows a statistically significant relation (p 0.002)(fig 5).

50 % (18 students) of the myopics were reading for 2-3 hours/day , 44 %(16) for 4-5 hours /day 5.6%(2) for >5 hours/day. 58.3 % of the students watched television for more than 1 hour to 5 hours per day. 27.8 % watched for less than 1 hour/day. Among the myopics , 7 students used to watch TV for more than 2 hours and 19 students for 1-2 hours and only 10 students for less than 1 hour. Statistically it didnot show any significant relationship (p 0.234). Similarly, our study didn't show a significant relationship between the duration of computer use and myopia (p=0.382). 16 students (44 %) of the students were using computer for <1 hour , 15 students (41.7%) between 1-2 hours, 2 students (5.6 %) for 3-5 hours and 3 students (8.3 %) were not using computer at all. There was significant relationship between sleeping habits of the students and occurrence of myopia (p 0.037). But our study did not show any significant statistical relationship between playing or texting with cell phone , reading hours per day and type of lights used during reading (p = 0.356, 0.084and 0.709 respectively).

As per the lens power what the students are using currently, the students were divided into three groups of mild myopia (power< -2 diopters), moderate myopia (power >-2 to-5 diopters) and high myopia (power > -5 diopters). Among the 36 myopic students, 21 had low myopia, 13 had moderate myopia and 2 had high myopia of both the eyes.

Out of 36 students suffering from myopia , 6 students were in 2010-11batch (19.4%), 17 students in 2011-12batch (56.7 %) and 13 students were in 2012-13 batch (46.4 %) (fig 2 and 3). The percentage of students with myopia is more in the 2011 and 2012 admission which indicates a definite increase in no. of students in the recent years .

DISCUSSION

Refractive errors are extremely common in the young Population with high academic activity. [15]

There are many studies from different parts of the world showing the increased occurrence of myopia among the medical students[18-20]. Increased near work as in reading and related visual tasks and long duration of medical curriculum are blamed for this increase in the occurrence of Myopia development in Medical students. Some authors, in a sample of medical students in Singapore, discovered that 82% were myopic [18].

As the dental curriculum is also vast and also demands the same things even though not as much as the medical , we attempted to study the prevalence in the dental students in a college in Kerala and also their associated life style factors. Our study revealed a prevalence rate of 40.4% which shows that there is an alarming increase

in myopia prevalence among the dental students . Batch wise analysis showed an increase in the 1st and 2nd year students, which indicates a definite increase in the prevalence in the recent years. Most of the students developed myopia in less than 6 years duration which indicates that they developed the condition in their late childhood may be because of the life style factors which play a role in the development of myopia. Sleeping habits of the students also showed a significant relationship with the development of myopia. Students who slept for less hours are tend to develop myopia may be because they are involved in reading or other visual tasks which cause eye strain even though we did not get a statistical significance with duration of reading (p=0.084) , duration of TV watching (p 0.234), computer use (p=0.382) etc.

Educational qualification of mother and occurrence of myopia showed a significant relationship (p 0.04) . This may be because educated mothers are more worried about the academic activities of their children and forcing them to spend more hours on reading.

Though the results of our study did not reveal any significant relationship between near work activity and myopia, it can be explained on the fact that basically these factors determine the age of onset of myopia. Most of the students studying in dental colleges have acquired myopia in their late childhood ages as mentioned above.

Some studies like those of Kinge et al shows a significant association between myopic changes and time spent on near work among university students whereas some other studies like those of Adams and Mc Brien shows no association between the amount of near work done and the myopia progression [24-25]

Therefore further investigations are required to better understand about the factors that may explain the myopic shifts not only among dental but also in medical and other university students.

CONCLUSION:

Prevalence of myopia was found to be high among all the 3 year batch students (40.4 %) . 1st and 2nd year BDS students had a greater percentage which shows that it is increasing in the this age group .However the amount of near work involved in reading did not show any significant relationship with myopia which may be because of the fact that majority of students developed myopia in late childhood years and stabilization of the refractive status has occurred.

As we are getting a high prevalence rate of myopia among dental students we are arriving at a conclusion that myopia is as high as among medical students as shown in different studies , hence further studies in a large sample

warranted in this regard .

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Table 1: relationship of myopia with different variables

Sl. No.	Relationship of Myopia with	P - value and its Interpretation			
		Overall	2010 batch	2011 Batch	2012 Batch
1	Educational Qualification of Father	0.548	0.046	0.317	0.520
2	Educational Qualification of Mother	0.04 Significant	0.697	0.560	0.017 Significant
3	Occupation of Father	0.08	0.504	0.331	0.38
4	Occupation of Mother	0.415	0.618	0.389	0.393
5	Years after diagnosing RE	0.000 Very High Significance	0.000 Very High Significance	0.000 Very High Significance	0.031 Significant
6	History of RE in parents	0.346	0.893	0.354	0.261
7	History of Parental Myopia	0.581	0.888	0.271	0.523
8	History of Myopia in Siblings	0.002 Significant	0.029 Significant	0.02 Significant	0.843
9	Activity preferred during leisure time	0.072	0.038 Significant	0.267	0.412
10	Duration of TV watching	0.234	0.54	0.129	0.445
11	Duration of Computer	0.382	0.657	0.474	0.112
12	Duration of Play game/text	0.356	0.797	0.631	0.208
13	Total duration of sleep	0.037 Significant	0.137	0.081	0.998
14	Reading hours	0.084	0.410	0.278	0.431
15	Types of lights used	0.709	0.763	0.488	0.885

Figure 1: Frequency of myopia among Dental students.

Figure 2: Batchwise frequency of Myopia among dental stuents.

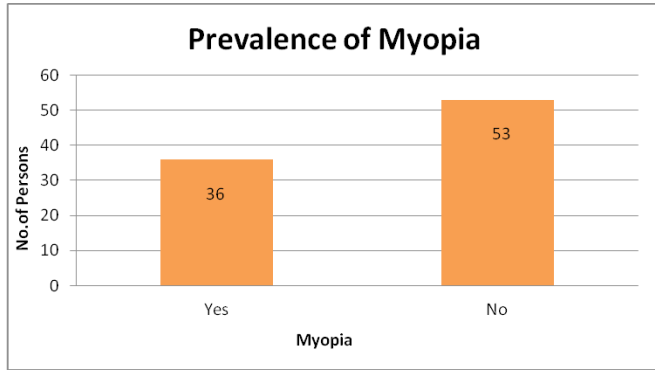**Figure 3:** Batchwise prevalence of myopia among dental students.
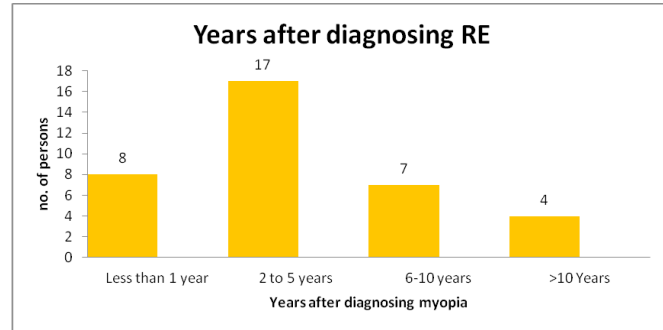
Figure 4: relationship of myopics with years after diagnosing myopia.
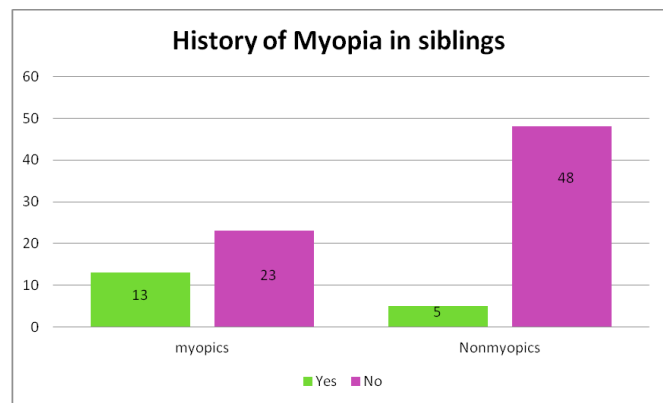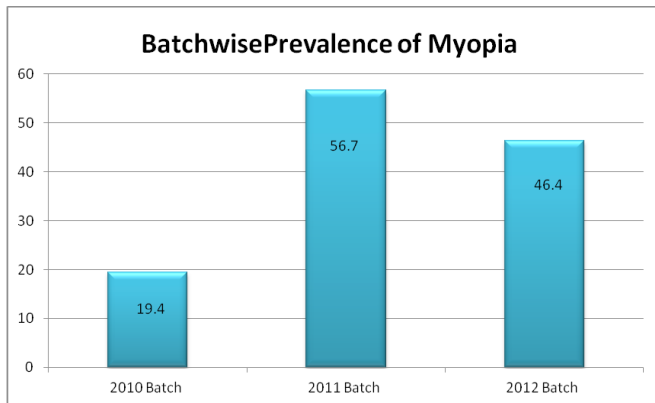

Figure 5: Histroy of myopia in siblings of myopics and non-myopics.