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Interdisciplinary Evaluation of Refractive Errors Among Students in A Deemed University

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Abstract:

Introduction: Refractive error occurs when the eye cannot clearly focus the images on the retina which results in blurred vision. The purpose of this study was to determine the prevalence of various errors of refraction among students, which provides the necessary information that helps to detect the refractive errors at an preliminary stage thereby preventing complications.

Materials and methods: The cross-sectional study on interdisciplinary evaluation of refractive errors was conducted on 250 students studying in Saveetha University. A self structured questionnaire has been prepared and uploaded in google forms and was circulated among the sample study population during February to April 2021. At the end of the survey, all the data were collected to assess the individual refractive power of students and tabulated in excel sheets. This data was analyzed and their percentage and proportion was calculated.

Results: Totally 250 students responded to the questionnaire, out of which 158 (63.2%) students had refractive errors, 77(30.8%) students had difficulty in reading, 55(22.00%) students believed glasses had limiting effects on daily life, 166(66.40%) students are aware of contact lenses, 125(50%) students have controlled power due to regular usage of spectacles, 135(54%) students have difficulty in viewing power point presentation in classes, 144(57.6%) students have headache due to straining of eye, 173(69.2%) students did regular eye check up.

Conclusion: There is a high incidence of refractive errors among the students. This helps in early detection of refractive errors, which is much important to prevent asthenopia and other complications.

Keywords: Refractive errors, students, prevalence

1. INTRODUCTION

Refractive errors are caused by a mismatch between the eye's axial length and optical power which prevents the light from getting focused on the retina, causing blurred vision.(1)Refractive error (RE) is one of the most prevalent visual diseases affecting people of all ages,(2) which causes poor vision and has serious social and economic consequences if left untreated.(3)Myopia, hypermetropia and astigmatism, are the most frequent refractive errors.(4) The myopic eye can't see far objects,(5,6) whereas the hypermetropic eye can't see near objects.(7) Furthermore, the astigmatic eye sees hazy at all distances, (8) The use of optical correction techniques and technologies such as spectacles and contact lenses,(9) as well as refractive surgical treatments, can easily detect, assess, and correct refractive errors.(10)Almost every human eye,

regardless of whether it is optically corrected with spectacles or contact lenses, has some level of refractive error.[11] Uncorrected refractive errors cause visual impairment, asthenopia, headache etc, [12] which have a long-term detrimental impact on the quality of life,[13] social activities, education, work chances, and health which may ultimately lead to poor visual acuity.[14] Refractive errors. as illnesses are commonly accompanied with a lack of awareness, early diagnosis, and treatment.[15]As a result, it is critical to correct refractive errors by early detection and diagnosis in order to avert visual consequences.[16] Refractive errors is one of the five priority eye disorders in the global drive to prevent blindness by 2020.([17]

2. Materials And Methods

This cross sectional study was conducted by Department of Ophthalmology on students studying in Saveetha University, Saveetha nagar, Thandalam, Chennai Bengaluru, NH 48, Chennai, Tamil Nadu-602105 from February to April 2021. A total of 250 students participated in this study.

Study Design: Cross-sectional study.

Study Location: Department of Ophthalmology, Saveetha University, Saveetha nagar, Thandalam, Chennai Bengaluru, NH 48, Chennai, Tamil Nadu-602105.

Study Duration: February 2021 to April 2021.

Sample size: 250 students.

Subjects and Selection method: The study population selected was students studying in Saveetha University. The students were divided into two groups. They were medical students and allied health students. This was conducted from February 2021 to April 2021.

Inclusion Criteria:

All the medical and allied health students who were willing to participate in this study were included in the study.

Exclusion Criteria:

All the unwilling students were excluded from the study.

Procedure Methodology:

The objective of this study is to assess the prevalence of various errors of refraction among students in a deemed university. After obtaining informed consent, the objective of the study was explained to the selected participants. The data was obtained using pre designed standardised and structured questionnaire interdisciplinary evaluation of refractive errors among students studying in deemed university through online google form questionnaire. At the end of the survey, all the data were collected to assess the prevalence of various errors of refraction among students in a deemed university and were tabulated in excel sheets.

Statistical analysis:

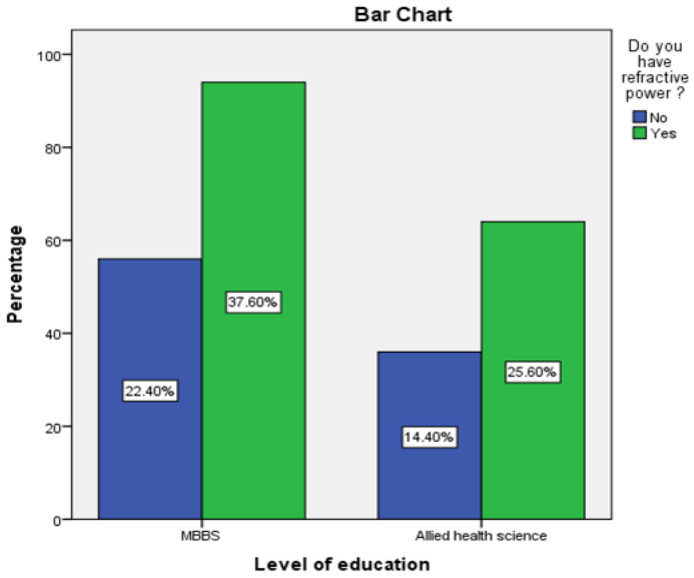
The collected data was analyzed and their percentage and proportion was calculated using chi square analysis through the software Statistical Package of Social Science also knowa as IBM SPSS version 2.3

3. Results

63.2% of them are male and 36.8% of them are female. 40% of the respondents were allied health science students and 60% were MBBS students. Majority of the MBBS students attempted this survey. 36.8% of the participants responded no and 63.2% of the participants responded yes. Majority of them do have refractive power.66.4% of the participants responded yes and 33.6% of the participants responded no. Majority of them are aware of contact lens usage instead of spectacles.50% of the participants responded

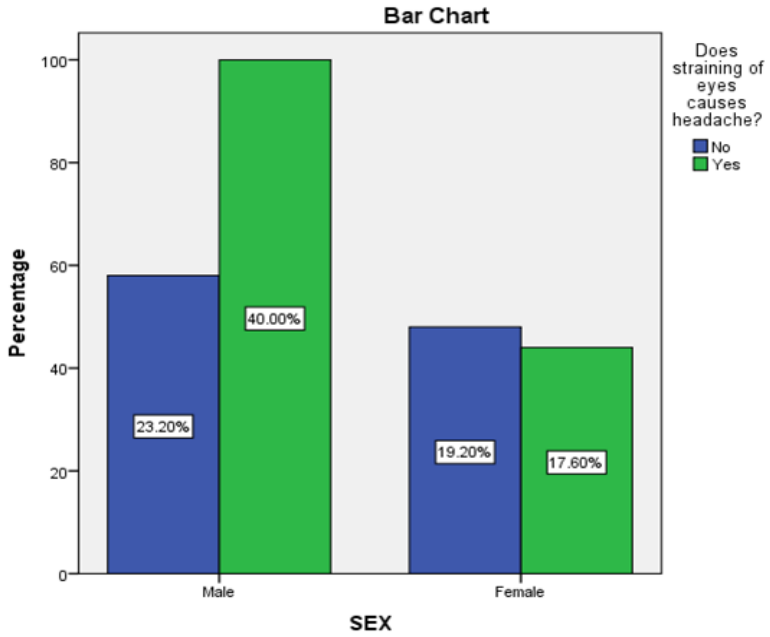
yes and 50% of the participants responded no.54% of the participants responded yes and 46% of the participants responded no. Majority of them find it difficult to see the ppt classes.57.6% of the participants responded yes and 42.4% of the participants responded no. Majority of them do have headaches due to straining their eyes.69.2% of the participants responded yes and 30.8% of the participants responded no. Majority of them check their eyes at regular intervals to keep their power under control.

Figure 1: Do you have refractive power ?



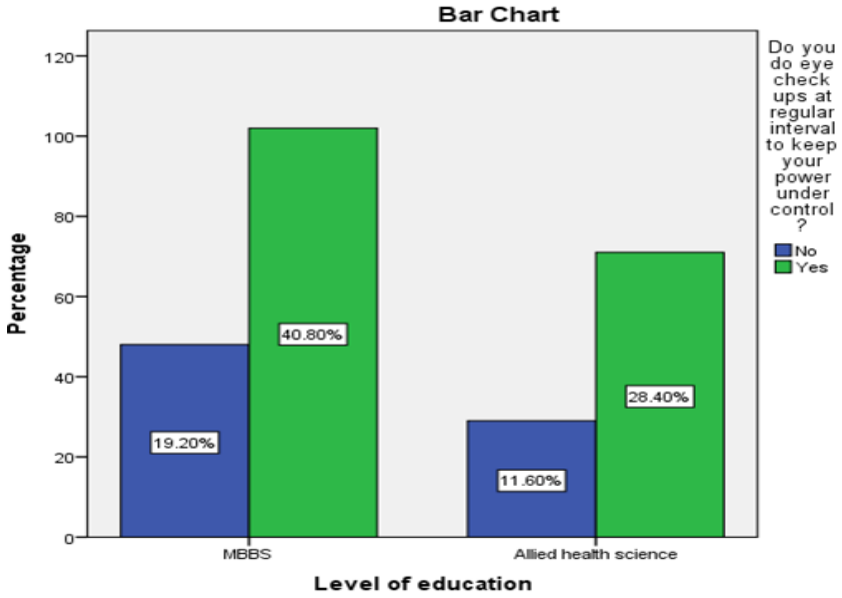
The bar graph represents the association between level of education and whether participants have refractive error. X-axis represents the level of education and Y-axis represents the percentage of responses. Blue and green represent no and yes respectively. Majority of MBBS students have more refractive power than allied health students. Chi square test was done and association was found to be statistically significant (Chi square value is 0.046).

Figure 2: Does straining eyes cause headache



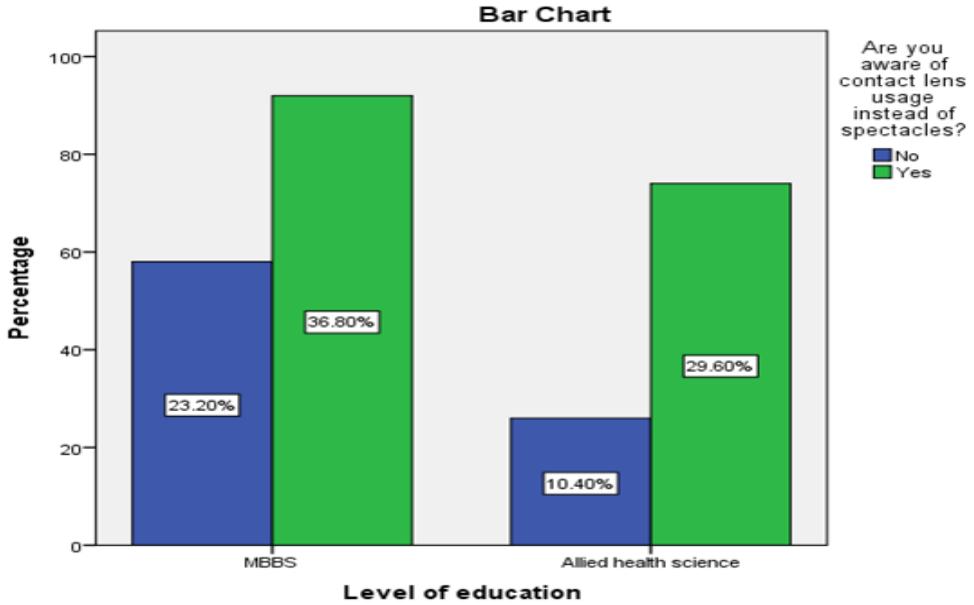
The bar graph represents the association between level of education and whether participants have headaches due to straining of eyes. X-axis represents the level of education and Y-axis represents the percentage of responses. Blue and green represent no and yes respectively. Majority of MBBS students have headaches due to straining of eyes than allied health students. Chi square test was done and association was found to be statistically not significant (Chi square value is 0.134).

Figure 3: Do you have eye check ups done at regular intervals to keep your power under control ?



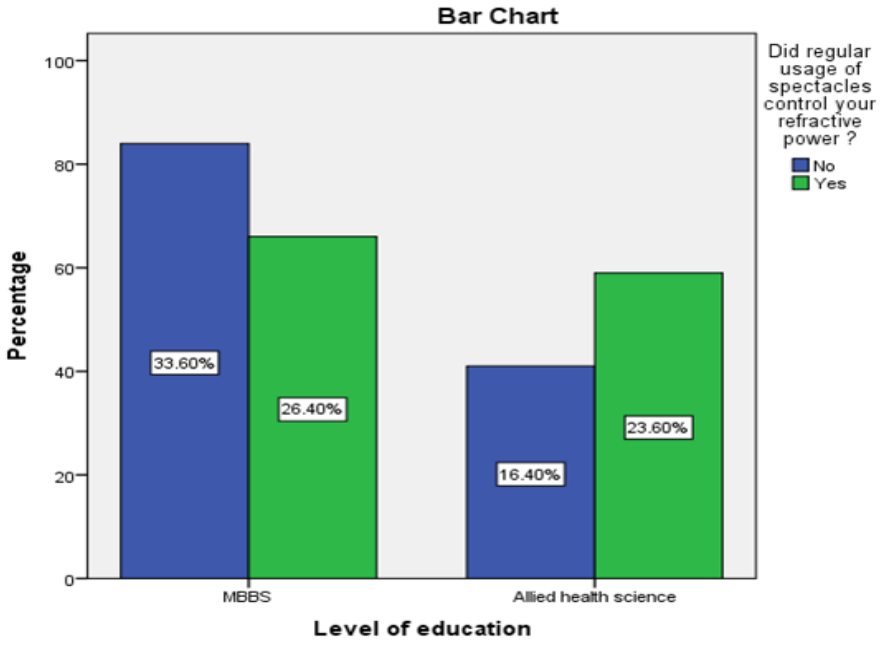
The bar graph represents the association between level of education and whether participants check their eyes at regular intervals to keep their power under control. X-axis represents the level of education and Y-axis represents the percentage of responses. Blue and green represent no and yes respectively. Majority of MBBS students check their eyes at regular intervals to keep their power under control than allied health students. Chi square test was done and association was found to be statistically not significant (Chi square value is 0.253).

Figure 4: Are you aware of contact lens usage instead of spectacles?



The bar graph represents the association between level of education and whether participants are aware of contact lens usage instead of spectacles. X-axis represents the level of education and Y-axis represents the percentage of responses. Blue and green represent no and yes respectively. Majority of MBBS students are more aware of contact lens usage instead of spectacles than allied health students. Chi square test was done and association was found to be statistically not significant (Chi square value is 4.315).

Figure 5: Did regular usage of spectacles control your refractive power ?



The bar graph represents the association between level of education and whether participants of regular usage of spectacles control their refractive power. X-axis represents the level of education and Y-axis represents the percentage of responses. Blue and green represent no and yes respectively. Majority of MBBS students of regular usage of spectacles do not control their refractive power than allied health students. Chi square test was done and association was found to be statistically not significant (Chi square value is 5.40).

Figure 6: Do you have difficulty in reading because of your poor vision?

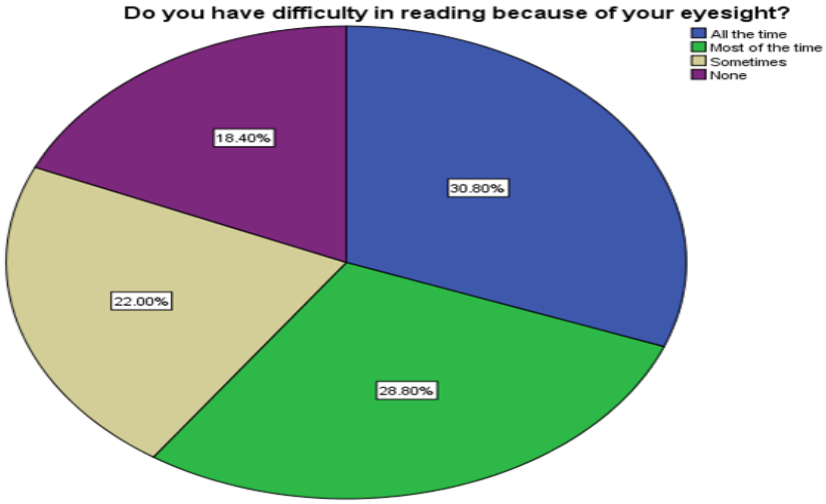


Figure 4 represents the question “Do you have difficulty in reading because of your poor vision?”. Blue, green, sandal and purple represent the all the time, most of the time, sometimes and none respectively. 30.8% of the participants responded ‘all the time’, 28.8% of the participants responded ‘most of the time’, 22.00% of the participants responded ‘sometimes’ and 18.4% of the participants responded ‘none’. Majority of them have difficulty in reading all the time because of their poor eyesight.

Figure 7: Do you believe that glasses have limiting effects on your daily life ?

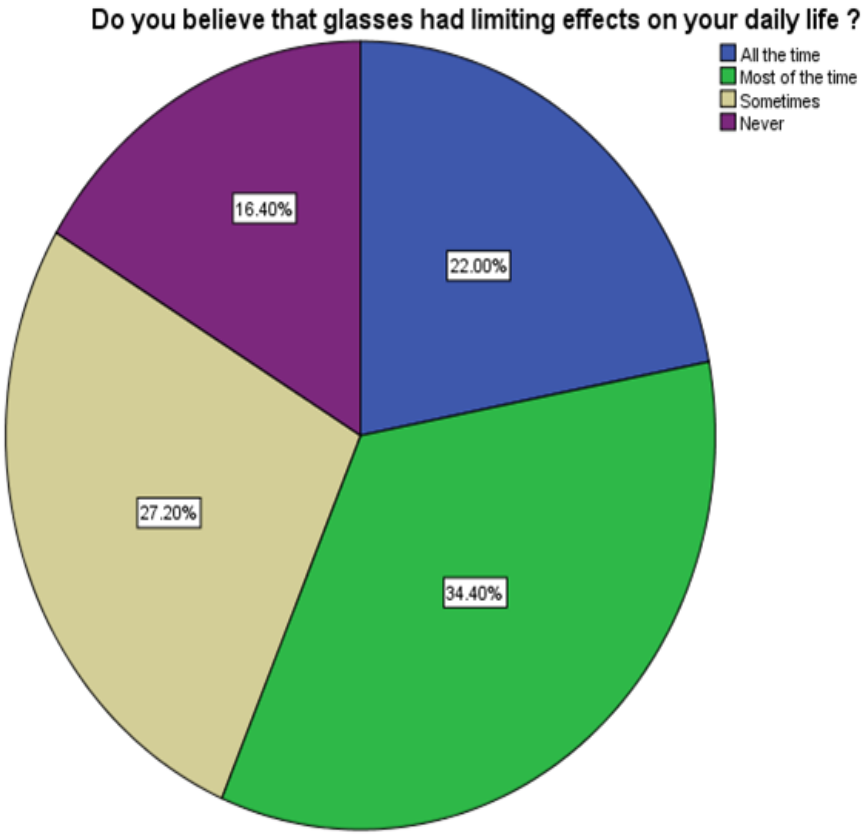


Figure 5 represents the question “Do you believe that glasses have limiting effects on your daily life ?”.Blue, green, sandal and purple represent all the time, most of the time, sometimes and none. 22% of the participants responded ‘all the time’, 34.4% of the participants responded ‘most of the time’, 27.2% of the participants responded ‘sometimes’ and 16.4% of the participants responded ‘none’. Majority of them believe that glasses have limiting effects, most of the time in their daily life.

4. Discussion:

The most prevalent type of visual impairment and the second-leading cause of vision loss worldwide are refractive errors. This study was conducted to know about the interdisciplinary evaluation of refractive errors among students in a deemed university. It was conducted in Saveetha university by distributing questionnaires to 250 MBBS and allied health science students.

This study showed higher refractive error among MBBS students than allied health students which was similar to the results given by the previous study of the prevalence of refractive errors in Iranian university students in Kazerun published in the year 2020 by the author Hassan Hashemi.[18]

This study showed the majority of MBBS students have headaches due to straining of eyes than allied health students which was similar to the results given by the previous study visual sequelae of computer

vision syndrome: A cross-sectional case-control study published in the year 2021 by the author Mohammed Iqbal.[19]

This study showed the majority of MBBS students of regular usage of spectacles do not control their refractive power than allied health students which was not similar to the results given by the previous study of effects of Vision Health Education and Free Eyeglasses on Knowledge of Vision and Usage of Spectacles Among Primary School Students: Evidence from Gansu and Shaanxi Provinces in China published in the year 2021 by the author Yunyun Zhang.[20]

5. Conclusion:

In this study there is a higher incidence of refractive errors among the MBBS students than allied health students. More than 60% of the MBBS students have refractive errors than allied health students. Screening students' visual acuity helps in detecting refractive errors at an early stage before they progress into major visual defects leading to poor concentration, eye strain etc, which is very important to prevent blindness and other ocular complications.

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