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Knowledge towards refractive error correction modalities among undergraduate medical, dental and paramedical students in a tertiary care centre

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Abstract

Aims and Objectives: To determine the awareness towards refractive error correction modalities among the medical dental and paramedical students.

Materials AND Methods: A random sampling was applied to choose 453 participants of various medical, dental and paramedical courses, data was collected through a structured questionnaire to assess the knowledge of various correction modalities.

Results: About 55.6% of the participants have refractive errors. 63.3% had a clear idea between ophthalmologist and optometrist however, 36.6% of the students were not aware especially the paramedics. 77.6% had knowledge about contact lens usage instead of spectacles, 64.8% knew about its side effects. About 73.9% were aware of the refractive surgeries but 62.4% refused to undergo the surgery and 49.1% were not aware about the side effects.

Conclusion: Majority of the medical and dental students showed considerable knowledge regarding various correction modalities compared to the paramedics however, as future health care professional an extensive knowledge regarding the various refractive error correction modalities is necessary.

Keywords: Refractive error correction modalities, medical, dental, and paramedical students, awareness

Introduction

The key objective of the World Health Organisation was to eliminate avoidable blindness and has prioritized refractive error correction through the Vision 2020 initiative (The Right to Sight)^[1]. Visual impairment stands as a significant global health care challenge, impacting a substantial portion of the world's population^[2]. The world health organization (WHO) reported that uncorrected refractive errors are the leading cause of visual impairment and the second commonest cause of blindness globally^[3].

Refractive errors including myopia, hyperopia, and astigmatism are common refractive errors that affect individuals of all ages. Uncorrected refractive errors can lead to conditions such as strabismus and amblyopia^[2,3]. Vision serves as a crucial indicator of an individual's standard and quality of life. To enhance lifestyle and overall quality of living, addressing vision-related issues becomes imperative. Therefore, possessing a sound understanding of refractive error is essential^[2,3].

Refractive error correction involves various options which is categorized into optical and surgical methods. Spectacles and contact lenses remain as the preferred correction methods across all age groups^[4]. Spectacles, being more accessible and safer, are a common choice. On the other hand, contact lenses offer a full range of vision but come with an elevated risk of infection without proper maintenance. In the present era, progress in refractive eye surgery has lessened the dependence on glasses and contact lenses, offering enhanced alternatives for improving vision^[4].

Refractive errors are common among students pursuing higher education due to long and exhausting hours of studies which causes symptoms of asthenopia and strain to the eye that can affect the quality of life and well being^[2,4].

As future healthcare professionals, it is imperative for undergraduate medical, dental, and paramedical students to possess a comprehensive understanding of various refractive error correction modalities and the consequences of uncorrected refractive errors. Through this research, our objective is to assess the knowledge of the students concerning refractive errors and its correction modalities.

Methods

This study was a cross-sectional and observational type of study. The study population included the undergraduate medical, dental and paramedical students in a tertiary care hospital in Tumkur, Karnataka.

A structured questionnaire is designed to congregate information regarding the knowledge and attitude towards various correction modalities for refraction. The questionnaire contains five sections of 16 questions, which included closed ended questions. The first section includes questions regarding the demographic data. The second part of the section was to assess the ability to differentiate an optometrist and an ophthalmologist and who performed refraction. The following sections included questions regarding practice and awareness towards spectacles, contact lenses and refractive eye surgery.

Data collection and statistical analysis

Data were collected for one month in January 2024. Statistical analyses were performed using Statistical Package for the Social Sciences (SPSS 16.0). Descriptive tabulations and chi-square tests were applied to generate descriptive information from qualitative data assuming normalcy. Responses were made anonymous, and participants were made aware of this fact before participation in the study. Written consent was obtained from each participant. The study followed the approval from the Institutional Review Committee.

Results

Demographic data of the participants

Out of the 453 participants, 144(28.6%) were males and 309 (68.2%) were females. 65% of the subjects were from 17-19 years of age group, 20% in the age group of 20 -22 years and 15% were of 23-25 years. The study participants included 246 (54.3%) medical students, 117 (25.8%) dental students and 90 (19.9%) of paramedical students.

Table 1: Eye examination and awareness about Ophthalmologist versus Optometrist

Undergone an eye examination.		Medical students	Dental students	Paramedical students	Total
	Yes	200 (54%)	100 (27%)	70(18.9%)	370 (81.6%)
No	46 (55.4%)	17 (20.4%)	20 (25%)	83 (18.3%)	
Eye examination conducted by	Ophthalmologist	200 (55.5%)	90 (25%)	70 (19.4%)	360 (79.4%)
	Optometrist	46 (49.4%)	27 (29%)	20(21.5%)	93 (20.5%)
Awareness about optometrist/ ophthalmologist	Yes	206 (71.7%)	61(52.1%)	20 (6.9%)	287 (63.3%)
	No	40 (24%)	56 (33%)	70 (42.1%)	166 (36.6%)

Table 2: Knowledge regarding spectacles

Participants using spectacles.		Medical students	Dental students	Paramedical students	Total
	Yes	140 (55.5%)	80 (31.7%)	32 (12.6%)	252 (55.6%)
No	106 (52.7%)	37 (18.4%)	58 (28.8%)	201 (44.7%)	
Spectacle compliance	Yes	110 (44.5%)	70 (28.3%)	67 (27.1%)	247 (54.5%)
	No	136 (66%)	47 (22.8%)	23 (11.1%)	206 (47.1%)
Awareness about contact lens usage instead of spectacles	Yes	205 (59%)	90 (25.9%)	52 (14.9%)	347 (77.6%)
	No	41 (38.6%)	27 (25.4%)	38 (35.8%)	106 (23.3%)

Table 3: Knowledge regarding contact lenses

History of contact lens wear		Medical students	Dental students	Paramedical students	Total
	Yes	190(54.7%)	85(24.4%)	72(20.4%)	347(77.6%)
No	56(52.8%)	32(30.1%)	18(16.9%)	106(23.3%)	
Awareness about contact lens side effects	Yes	189(65.3%)	60(20.7%)	40(13.8%)	289(64.8%)
	No	57(34.7%)	57(34.7%)	50(30.4%)	164(36.2%)
Awareness about colored contact lenses for cosmetic purposes	Yes	210(61.5%)	80(23.4%)	51(14.9%)	341(76.6%)
	No	36(32.1%)	37(33%)	39(34.8%)	112(24.7%)
Contact lenses with both refractive correction and cosmetic properties.	Yes	198(66%)	88(29.3%)	14 (5%)	300(66.2%)
	No	48(31.3%)	29 (20%)	76 (49.6%)	153(33.7%)

Table 4: Knowledge regarding refractive surgery

Awareness regarding refractive surgeries		Medical student	Dental students	Paramedical students	Total
	Yes	229 (69.6%)	60 (18.2%)	40 (12.1%)	329 (73.9%)
No	17 (13.7%)	57 (45.9%)	50 (40.3%)	124 (22%)	
Awareness of possible refractive surgery side effects	Yes	140 (56.9%)	47 (21.6%)	30 (13.8%)	217 (49.1%)
	No	106 (44.9%)	70 (29.6%)	60 (25.4%)	236 (52%)
Participants with refractive error, willing to undergo the	Yes	73 (42.9%)	52 (30.5%)	45 (26.4%)	170 (37.5%)

refractive surgery.	No	173 (61.1%)	65 (22.9%)	45 (15.9%)	283 (62.4%)
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Discussion

This is a population-based survey regarding the awareness among the medical, dental and paramedical students. The study participants were randomly selected without any significant criteria.

In this study, we have tried to know the overall knowledge about the common ophthalmic treatment modalities of refractive errors among the students. The students pursuing higher education are more prone to refractive error due to their exhausting study hours and increased screen time. If their own refractive error remains uncorrected, the ease and accuracy in work decreases therefore, a proper screening and routine eye examinations are necessary for these students. Apart from undergoing routine examination, they should also know about the consequences of refractive errors and various treatment modalities according to the need and comfort of the individual. Thus, it is important for these students to have a better awareness of refractive error to not only create awareness in the society but also increase their own efficiency at work.

In this study 81.6% of the students underwent regular eye examinations and 79.4% of the cases were examined by an ophthalmologist. This shows that the students understand the importance of eye care and vision.

About 63.3% of the students know the difference between an ophthalmologist and an optometrist whereas 36.6% were not aware, majority of them were paramedical students. This shows that knowledge varies with different educational statuses.

55.6% of the students wear spectacles and most of them were medical students. About 54.5% of them consider that spectacles limit their day-to-day activities, this turns out to be a major reason for noncompliance. Most of the students are unaware of the consequences of uncorrected refractive errors like progression of refractive errors, amblyopia, strabismus and posterior segment pathologies.

About 77.6% of the students have previously worn contact lenses and 64.8% of them know about the possible contact lens side effects whereas 36.2% of them were not aware about its side effects and most of them were paramedical students. 77.6% of them knew about contact lenses which can be used instead of spectacles and 66.2% of them were aware of contact lenses with both refractive and cosmetic properties. In general, more than half of the medical and dental students had a considerable knowledge regarding contact lenses and their side effects, and the majority of them prefer spectacles over contact lenses and consider it as an easily available alternative.

About 73.9% of the students were aware of the possible refractive surgeries where most of them were medical students who had considerable knowledge regarding the various side effects and consequences of refractive surgery. About 62.4% of them were not willing to undergo refractive surgery due to the fear of complications and the cost of the procedure.

Ramakrishna R *et al.*, studied 198 dental students and found that 104 students used spectacles for refractive errors and 82 students consider that spectacles limit their activity. About 42 students knew about contact lens side effects and maintenance. About 47.4% of the students were not aware of the refractive surgeries for improvement in vision and decreasing spectacle dependency.

Through this study, we aim to enlighten the undergraduate medical, dental and paramedical students with the knowledge of all the different modalities available for the treatment of refractive errors. It is crucial to provide proper education regarding uncorrected refractive errors and their correction modalities through Ophthalmologist, optometrist and general practitioners.

Conclusion

- The participants showed considerable awareness regarding various correction methods in refraction, but most of the students are non-compliant with spectacle use.
- Contact lenses are an easily available alternative to spectacles, and it is essential to educate the students regarding the dos and don'ts of contact lens wear.
- Refractive surgery is a commonly performed procedure, but many students lack extensive knowledge regarding the procedure and its outcome.
- Thus, it is important for the health care workers (ophthalmologist, optometrist and general practitioners) to provide proper knowledge and awareness regarding refractive errors and their correction modalities.

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