

## **Knowledge, attitude and practices among undergraduate medical students regarding surgical correction of refractive errors; a cross-sectional study**

### **Abstract;**

**Aim;** This study was aimed to assess the knowledge, attitude and practices regarding refractive error correction surgeries among undergraduate medical students.

**Study design;** In this study cross-sectional study design was used.

**Duration and place of study;** The study was conducted amongst the undergraduate MBBS students studying at Dow Medical College, Karachi. The duration of study was seven months (August, 2019 till February, 2020).

**Methods;** A sample size of 189 was calculated for the study with confidence level 95% and confidence limit 5%. Data was collected through a validated self-administered questionnaire which was divided in five subsections used to gain information regarding participant's demographics, knowledge, attitude and practices regarding refractive error surgeries. Data was analyzed using SPSS V.20.

**Results;** In our study 189 students with a mean age of  $21 \pm 1.8$  years were included. Among the participants 112 (59.3%) had refractive errors. Glasses were used by majority 76 (67.9%) of participants for visual correction. Use refractive error correction methods at all times was reported by 72 (66.7%) participants. Majority of respondents 142 (75.5%) have heard about surgery being used for correction of refractive errors. A large number of students 117 (66%) refused for surgery and fear of the outcomes was one of the reason for this refusal

**Conclusion;** We found that majority of the participants were aware about refractive error correction surgeries yet most of them showed unwillingness for these procedures. This negative attitude must be changed to positive in order to enhance the practice for these procedures.

**Key words;** Laser Assisted in Situ Keratomileusis, Photorefractive Keratometry, Refractive error.

## **INTRODUCTION:**

The term refractive error is coined as a type of visual disturbance in which the light rays from an object cannot be precisely focused onto the Retina [1]. Refractive errors top the list of most prevalent visual impairments. Refractive errors are the second most common cause of treatable blindness [2]. The prevalence of refractive error is very high in even high income country such as USA, where around 80% of the adult population is suffering from some kind of refractive errors [3]. Even in the presence of eye care facilities the rate of blindness due to refractive errors in Pakistan are very high. Refractive errors are the reason for blindness in 17.4% of cases with blindness in Balochistan, 13.8% cases in Punjab and 6.9% cases in Sindh [4]. The prevalence of different kinds of refractive errors in Pakistan was found to be 37%, 36.5% and 27.1% for astigmatism, myopia and hypermetropia respectively [5].

Refractive error surgeries are the procedures used to provide patients with refractive errors near perfect vision. A variety of surgical methods are available for surgical correction of refractive errors but the most common ones are PRK (Photorefractive Keratometry) and LASIK (Laser Assisted in Situ Keratomileusis). A Japanese ophthalmologist Sato in 1939 used anterior and posterior keratomies to treat astigmatism and keratoconus for the first time [6]. In a previous study 92% of the participants were aware about spectacles as a modality to correct low vision, 54% reported contact lenses can be used for refractive error correction and only 14% knew about surgery as a mode of vision correction [7].

Outcomes, innovations, post operational (Post op) complications of refractive error surgeries have been evaluated by several researchers in previous studies but these studies failed to evaluate people attitudes and perceptions regarding refractive error surgeries in depth [8-10]. Involvement of refractive error services in various continents were highly influenced by inadequate knowledge and inaccurate beliefs towards refractive error procedures [11].

This study was aimed to assess the knowledge, attitude and practices regarding refractive error correction surgeries among undergraduate medical students. The results will help to indicate the need for conduction of campaigns to create awareness and change the negative perceptions towards refractive error surgeries in medical students themselves, and also in general population through them.

#### MATERIAL AND METHODS:

This was a cross-sectional study which was conducted amongst the undergraduate MBBS students studying at Dow Medical College, Karachi. The duration of study was seven months (August, 2019 till February, 2020). All MBBS students from first to final year were included in the study. Those not willing to participate, visiting students and students from other departments were excluded. A sample size of 189 was calculated for the study with confidence level 95% and confidence limit 5%. Non-probability convenience sampling technique was used. A self-administered questionnaire was used in the respective study which was formulated after careful evaluation of the previous literature. The questionnaire was validated by a pilot study on 20 students and a Crohn-bach alpha value of 0.83 was obtained. The questionnaire comprised of 5 sections. First section consisted of the demographic details while the second section had questions regarding the refractive errors if they had any. Third section inquired information pertaining to their knowledge about refractive error surgery. Section four was used to assess the attitude of participants towards the respective method of correction of refractive errors. Section five aimed to evaluate the practices regarding refractive error surgeries amongst medical students. The data was analyzed using SPSS version 22. The qualitative data was presented in frequencies and quantitative data was presented in mean and standard deviation.

## **RESULT:**

In our study we recruited 189 respondents who met our inclusion criteria. Most of the respondents 150 (79.4%) were females in our study and the rest were males. The participants were between the ages of 19 to 24 years with a mean age of  $21 \pm 1.8$  years. Among the participants 112 (59.3%) had refractive errors. Overwhelming number of respondents 98 (87.5%) had myopia, hyperopia was present in 9(8%) participants and 5(4.5%) had astigmatism. Majority of the students 59 (52.7%) who had refractive errors were identified with these errors during the age of 5-16 years. Glasses were used by majority 76 (67.9%) of participants for visual correction. Some of the participants 29 (25.9%) reported to use glasses and contact lenses both for refractive error correction. Few respondents 7 (6.3%) reported that they had refractive error but they don't use any corrective method. Many 72(66.7%) of the participants use refractive error correction methods at all times while others used them only for study/work 32 (29.6%), 10(9.3%) participants were using these methods while driving, 9(8.3%) use them while watching TV and 8(7.4%) were using correction methods while using computer.

A large number of students 142 (75.5%) have heard about surgical procedures to correct refractive errors. Around half of the students 90 (47.6%) were not aware about different surgical procedures used for refractive error correction while only few members 45 (23.8%) were found to be aware of different surgical procedures available for refractive error correction. The most common reasons for refractive error surgery reported by the participants are presented in **table 1**.

**Table 1:** Indications for refractive error surgery reported by participants.

<b>Indications</b>	<b>N (%)</b>
Myopia	134(72.8)
Hyperopia	121(65.8)
Astigmatism	124(67.4)

Presbyopia	59(32.1)
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The chief complications of surgery shared by participants were infections (86), under correction (82), blindness (78), over correction (72), dry eye syndrome (66) and keratitis (540). The major sources of information regarding refractive error surgery reported by students were university 82(43.6%), Ophthalmologist 56(29.3%), family 40(21.3%) and friends 38(20.2%).

A large number of students 117 (66%) refused for surgery and fear of the outcomes was one of the reason for this refusal. Other reasons for reluctance towards surgery are presented in **table 2**.

**Table 2;** Reasons for reluctance towards surgery

Reason	N (%)
Afraid of results	30 (25.6)
Advised against it by doctors	23 (19.4)
Lack of knowledge	18 (15.6)
Do not trust the procedure	18 (15.6)
Financial constraints	15 (12.5)
Lack of opportunity	10 (8.8)
Do not trust the doctors	3 (2.5)

Among all the respondents with refractive errors only 3 (1.6%) had undergone surgery for their refractive error correction. Among those who underwent surgery, 2 (66.7%) had done it for Myopia and 1 (33.3%) for hyperopia in their young adult life and all of them were satisfied from the procedure and results.

## **Discussion:**

Refractive errors are very common, with around 1-2 billion people affected by them worldwide. They are one of the treatable causes of blindness. The prevalence of refractive error in our study participants was found to be 59.3%. A study conducted in India [13] reported almost similar results with 54% prevalence of refractive error among their medical graduates but study conducted in Brazil [6] reported much higher percentage 70.8% of medical students being affected by refractive errors. One reason for this higher percentage could be better awareness and vigilant screening of individuals for refractive errors. In our country no screening programs are run to diagnose people with refractive error and people only consult Ophthalmologist when they face any problem with their vision. Therefore, rigorous screening should be done to identify undiagnosed people with refractive errors at early age and prevent future complications which people with high refractive errors face. Majority (64.9%) of our study participants used refractive glasses for correction of their errors. This frequency of glasses use for refractive error correction is higher than previous studies conducted by Gameiro Filho AR et al [6] and Alghamdi AH et al [14] who reported the frequency of glasses use for refractive error correction to be 51.8% and 49% respectively.

Worldwide, awareness regarding recent methods of visual correction is increasing rapidly. Medical personal are considered to be the outmost sources of information and awareness regarding the latest advances in medical science, their pros and cons as well. Our study was aimed to assess the knowledge, attitude and practice of medical students about the surgical correction of refractive errors and demonstrated that majority 75.5% of medical students had heard about surgical correction of refractive error. Our result is in contrast to a Nigerian [8] survey in which 52.8% of the general population was familiar with these procedures. This indicates that medical student's knowledge in this regard is better than general population which is understandable. A large percentage of 47.6% students claimed to have knowledge about the procedure of refractive surgery. This result is similar with the results of a study conducted in University of Londrina, Brazil [6] stating that 49.2% of respondents in their study were familiar

with surgical procedure. The similar study reported that ophthalmologist were the major source of knowledge for 23.5% of their students. This is in correspondence with the current survey which revealed ophthalmologists to be the source of knowledge for 29.8% participants. The major cause behind this could be the more contact of medical students with medical personals as compared to general population.

In our study 66% members showed unwillingness for refractive error correction surgeries. This is comparable to a research conducted in India by Puri SK et al [15] who reported that 65.9% of their study population did not show willingness for refractive error correction surgery. The utmost reasons for this negative attitude were the fright from the results of refractive error surgery and the discouraging advices of doctors reported by 33.9% and 25.6% of the participants respectively. A previous study conducted by Gameiro Filho AR et al [6] supported our findings by showing non-compliance for refractive error surgery in 30.2% of the participants due to negative advices from doctors.

When we analyzed the practices regarding refractive error surgery, only 3(1.6%) of our respondents had undergone surgery for refractive error correction. Our results showed discouraging results when compared to studies conducted in Brazil [6], Iran [12] and Saudia Arabia [16] where 3(2.2%), 8(4%) and 8(4.8%) had undergone surgery for refractive error correction.

### **Conclusion:**

Advancement in medical sciences is making our life easier and more comfortable day by day. Refractive error correction by use of surgery is also one of those medical advancements which is making life of many convenient by reducing the dependency for glasses and also providing a cosmetically better choice. The attitude and knowledge of medical professionals have a great impact on the perception of general population. We found that majority of the participants were aware about refractive error correction surgeries yet most of them showed unwillingness for these procedures. This negative attitude must be changed to positive in order to enhance the practice for these procedures.

### **Ethical Approval:**

All ethical considerations were observed during the study and the study was also approved by the Institutional Review Board of Dow Medical College.

### **Consent**

A written informed consent was taken from every participant stating the purpose of the study, making sure their anonymity, informing them the right to withdraw from the study whenever they wish to.

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### **Author's contributions;**

**Kanza Batool;** Literature search, research design, manuscript formatting, data analysis and final review.

**Rabisa Batool;** Literature search, research design, manuscript formatting, data analysis and final review.

**Kanwal Jamal;** Literature search, manuscript formatting, data collection, data analysis and final review.

**Muhammad Waqaruddin Sheroze;** Literature search, manuscript formatting, data collection, data analysis and final review.

**Muhammad Adil Ramzan;** Manuscript formatting, data collection, data analysis and final review.

**Syeda Afia Ali;** Manuscript formatting, data collection, data analysis and final review.

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