

## Knowledge, attitude and practice of medical students using contact lenses

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### Abstract

**Introduction:** Contact lens usage is associated with various complications, many of which are preventable if the user is aware of them and strictly follows their ophthalmologists instructions with regard to hygiene and regular replacement of the lenses. The purpose of this cross sectional study was to assess the knowledge, attitude and practice of medical students using contact lens.

As the participants were medical students, we expected a high level of knowledge regarding contact lens usage.

**Materials and Methods:** A cross sectional study was conducted among the medical students using contact lens. A sample size of 50 was chosen.

This was a questionnaire based study and a pre tested questionnaire was given to the participants to assess their knowledge, attitude and practice of contact lens use.

Questions about the use of contact lenses, how to maintain them and awareness of the complications they may encounter due to improper use of contact lenses were asked in the questionnaire. Data was collected and tabulated in MS Excel, and further analyzed using SPSS software version 22.00.

**Results:** Consultation of ophthalmologist on finding deposits on the lens was significant ( $P < 0.05$ ), 33.33% (1<sup>st</sup> year), 70.58% (2<sup>nd</sup> year), 58.82% (3<sup>rd</sup> year), 16.66% (4<sup>th</sup> year), 25% (CRRI) continued to use the contact lens.

Use of contact lens following conjunctivitis was significant ( $P < 0.05$ ), 83.33% (1<sup>st</sup> year), 82.35% (2<sup>nd</sup> year), 100% (3<sup>rd</sup> year), 33.33% (4<sup>th</sup> year), 100% (CRRI) continued to use their contact lens.

Knowledge of over-wear syndrome was significant ( $P < 0.05$ ), 50% (1<sup>st</sup> year), 29.41% (2<sup>nd</sup> year), 17.64% (3<sup>rd</sup> year), 66.66% (4<sup>th</sup> year), 75% (CRRI) had knowledge of over-wear syndrome.

**Conclusion:** The main aim of the study was to assess awareness among the users about the lens care practices, regular cleaning and replacement of lens cases. Many students were found to be unaware of these complications.

In conclusion, though health care professionals have knowledge about contact lens, they did not show correct practice of using contact lens with compliance being the major factor. Education, improving communication, behavioral modifications are important to improve the compliance.

**Keywords:** Contact lens, Medical students

### Introduction

Contact lenses are thin optical corrective lenses worn on the eye, resting on the surface of the cornea.<sup>(1)</sup> Contact lenses are devices that can be worn to correct vision, for cosmetic or therapeutic reasons.<sup>(2)</sup> They provide better peripheral vision and eliminate prismatic effects of spectacles.<sup>(3)</sup> The probable reason for popularity of contact lens usage is the huge of choice available, not only in terms of lens type and materials alone, but also the increased availability at a large number of locations at a much lower cost compared to the past.<sup>(4)</sup>

Dry eye, giant papillary conjunctivitis, corneal abrasions, corneal edema, corneal ulcers and neovascularization are common complications that contact lens wearers encounter.<sup>(5)</sup> The wearers attitude and knowledge relating to contact lens care including cleaning, disinfection, storing of solutions for a longer period, hygiene of hands and lens cases, a period of wear exceeding the recommended one, and the lack of regular eye assessment, have been proposed as the main causes of complications. Ky et al (1998) reported that 80% of contact lens complications are directly related to improper maintenance and that the perception of the

wearers own behavior is essential to minimize or prevent complications.<sup>(6)</sup>

Contact lenses are usually safe as long as they are used correctly. Ocular health education especially knowledge of the correct and careful practice regarding contact lens wear can prevent complications resulting from the wearers inappropriate behavior. One of the ways of investigating this is from the persons perception regarding his own knowledge of contact lens wear.<sup>(7)</sup>

This study was undertaken to determine whether medical students- who are the future medical practitioners, have adequate knowledge about the proper handling techniques of contact lens and to ascertain whether they are aware of the possible complications.

### Objective

To assess the pattern of usage of contact lenses among medical students by giving them a pre tested questionnaire.

### Materials and Methods

This cross sectional study was conducted in the Department of Ophthalmology of a tertiary care

teaching hospital in coastal South India over a period of 2 months. It was conducted using a pre - tested structured questionnaire among 50 medical students who were contact lens wearers. Any medical student who had worn contact lens for any period of time and for whatever reason was enrolled in this study. The contact lens wearers were interviewed using a pre tested questionnaire after obtaining their written informed consent for participation in this study.

The questionnaire was based on the knowledge, attitude and practice of contact lens wear, care and its possible complications. Questionnaire was in English. Data was collected and tabulated in MS excel, and percentages were calculated and analyzed using SPSS software version 22.00.

**Statistical Analysis:** Data was collected and tabulated, and percentages were calculated and analyzed using SPSS software version 22.00. Mean and proportion was used to analyze the demographic data. Chi square test was used to find the association between two categorical variables. A value of  $P < 0.05$  were considered significant.

## Results

The sample size for the study was determined to be 50.

The questionnaire was given to 50 medical students (1st year, 2nd year, 3rd year and final year of MBBS) and interns.

The questionnaire had sections regarding the participants knowledge, attitude and practice of contact lens wear. Assessment according to the year of study of the medical student was done. It was observed that there were total 50 contact lens users, out of those, more 34 (68%) were male while 16 (32%) were female. Indication for using contact lens was cosmetic 3(6%) purpose; for refractive error 47(94%). 15(30%) students wear daily (<8 hours), 35(70%) wear daily (>8 hours); 2% wear occasional overnight. Around 11(22%) have continued using lenses beyond the expiry date while 39(78%) have never used beyond the expiry date. About 17(34%) were aware of the over wear syndrome while 33(66%) were not. 31(62%) students were aware of acanthamoeba infection while 19(38%) were not. Maximum students 49(98%) use lens solution regularly, while 1(2%) used water to clean lenses. 15(30%) students wear contact lens while swimming. Only 28 (56%) students were aware that the lens solution can be used only for 3 months, once the seal of the solution bottle is broken.

The results regarding the knowledge of contact lens from the questionnaire are shown in the following table.

Question	First year (n=6)	Second year (n=17)	Third year (n=17)	Final year (n=6)	Interns (n=4)
Knowledge of over-wear syndrome	50%(3)	29.41(%5)	17.64% (3)	66.66% (4)	75% (3)
Knowledge of Acanthamoeba infection due to use of water as cleaning material	50%(3)	52.94% (9)	64.7% (11)	66.66% (4)	100% (4)
Swimming while wearing contact lens	33.33% (2)	76.47% (13)	64.70% (11)	33.33% (2)	50% (2)
consult an ophthalmologist if deposits were found on lens	33.33% (2)	70.58% (12)	58.82% (10)	16.66% (1)	25% (1)
wearing the contact lens if you are affected by conjunctivitis	83.33% (5)	82.35% (14)	100% (17)	33.33% (2)	100% (4)
Knowledge of ideal duration of solution used for cleaning contact lens	50% (3)	47.05% (8)	52.94% (9)	100% (6)	100% (4)

From the above table we were able to compare the knowledge of contact lens among medical students based on their year of study.

The table shows a steady increase in the knowledge of contact lens in medical students with their year of study. Comparison about the knowledge of contact lens among medical students based on their year of study showed that the first year students have the least knowledge while it gradually increases with each year of medical school.

The results regarding the practice of contact lens from the questionnaire are shown in the following table

Question	First year	Second year	Third year	Final year	Interns
Duration of use of lens in 24 hours	33.33% (2)	29.41% (5)	23.52% (4)	66.66% (4)	0% (0)

Washing of hands before handling the lens	83.33% (5)	100% (17)	70.58% (12)	100% (6)	75% (3)
use of contact lens beyond its expiry date	83.33% (5)	76.47% (13)	88.23% (15)	66.66% (4)	50% (2)
Frequency of cleaning lens case	100% (6)	70.58% (12)	52.94% (9)	83.33% (5)	50% (2)
Frequency of changing lens solution in the case	50% (3)	64.70% (11)	70.58% (12)	50% (3)	100% (4)

From the above table we are able to compare the practice of contact lens among medical students based on their year of study.

Comparison about the practice of contact lens among medical students based on their year of study showed that there is no improvement in the practice of contact lens usage based on the year of study though a steady increase in the knowledge of contact lens in medical students with their year of study is seen.

Consultation of ophthalmologist on finding deposits on the lens was significant ( $P < 0.05$ ), 33.33% (1<sup>st</sup> year), 70.58% (2<sup>nd</sup> year), 58.82% (3<sup>rd</sup> year), 16.66% (4<sup>th</sup> year), 25% (CRRI) continued to use the contact lens

Use of contact lens following conjunctivitis was significant ( $P < 0.05$ ), 83.33% (1<sup>st</sup> year), 82.35% (2<sup>nd</sup> year), 100% (3<sup>rd</sup> year), 33.33% (4<sup>th</sup> year), 100% (CRRI) continued to use the contact lens during an episode of conjunctivitis

Knowledge of over-wear syndrome was significant ( $P < 0.05$ ), 50% (1<sup>st</sup> year), 29.41% (2<sup>nd</sup> year), 17.64% (3<sup>rd</sup> year), 66.66% (4<sup>th</sup> year), 75% (CRRI) had knowledge of over-wear syndrome.

An equal demographic distribution and greater diversity of respondents could have added additional value to this study. Future studies can be carried out with different assessment protocol for compliance as in this study the assessment of compliance was based on subjective responses so the level of compliance may be over-estimated.

## Discussion

Only few studies are available about contact lens use in a medical college in South India. Janti et al did a similar study in Chennai where they had a sample size of 128, which was larger than the present study. Their study included medical students that is both contact lens and non-contact lens users and studied their knowledge of contact lens.<sup>(8)</sup>

In our study we compare the knowledge, attitude and practice of medical students who are all contact lens users and compare the results based on their year of study.

Vidotti et al conducted a study in Brazil, where 47% participants used the contact lens beyond its expiry date. In our study only 22% participants used the contact lens beyond the expiry date.<sup>(9)</sup>

Contact lens wearers are recommended to follow the replacement schedule. Cleaning, rinsing, and disinfecting regimens do not completely neutralize many of the pathogens that can contaminate soft contact lenses. Frequent replacement of soft contact lenses reportedly reduces the probability of infection, ocular discomfort, and other wear-related complications.<sup>(10,11)</sup> Most of our students were wearing contact lenses for more than 8 hours a day. The average use of contact lenses for more than 8 hours in a day was 70% in our study when compared to medical students in Brazil (64%).<sup>(11)</sup>

In this study only 1 (2%) student was sleeping with the contact lenses. People wearing contact lens while sleeping are more prone to eye complications due to reduced oxygen supply to the cornea due to the eyelids being shut, resulting in corneal anoxia.<sup>(12)</sup>

A significantly higher incidence of severe keratitis (96.4%) has been reported by Morgan et al (2005) from UK in people who sleep with contact lenses in the eyes when compared to those who use contact lenses during waking hours only.<sup>(13)</sup>

It is absolutely vital to change the storage solution as there is always the possibility of contamination with pathogens.<sup>(14)</sup> Moreover, when it is stored, multiplication of these pathogens and their further adherence to the contact lens makes the contact lens quite a good vector for infection to the eyes upon putting them on. It is also important that the storage solution itself is sourced from sterile solutions that are supplied by manufacturers. Only 38% of students claim to change their solution on alternate days.<sup>(14)</sup>

7 (14%) respondents reported that they did not wash their hands before handling lenses.

Although this is a small percentage, in lens care, hand hygiene is very important as it can reduce the risk of infection to the eyes, therefore it is better to have all contact lens wearers wash their hands before handling lenses. Stapleton et al. (2008) showed that one of the risk factors with lens care complications which can lead to ocular complication is poor hand cleaning.<sup>(15)</sup>

Routine checkup is recommended for every contact lens wearer as it can detect early abnormalities or changes and proper contact lens fitting assessment. It also must be done before the purchase or dispense of contact lenses to reduce the risk of disease burden. Only 21 (42%) participants had regular eye checkups done at

least once in 6 months Aftercare is required as it allows for early detection of ocular physiological changes and provides an opportunity to revisit lens wearers compliance. Therefore, practitioners should give proper advices not only on lens care but also on duration of after care for contact lens wearers.<sup>(16)</sup>

### Conclusion

The main aim of the study was to assess awareness among the users about the lens care practices, regular cleaning and replacements of lens cases - since when lens care practices amongst the participants are not optimum- it results in high level contamination leading to complications such as corneal ulcer, opacities and vascularization. Many students were unaware of these complications.

In conclusion, it was found that though health care professionals had a better knowledge about contact lens they did not show correct practice of using contact lens with compliance being the major factor. Education, improving communication, behavioral modifications are important to improve the compliance.

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