

A STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICE OF CONTACT LENSES IN YOUNG ADULTS ATTENDING OPD IN A TERTIARY CARE HOSPITAL

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Abstract

Background: Contact lenses are a safe and reliable alternative to spectacles in refractive errors, besides being useful for therapeutic and cosmetic purposes. However, their incorrect use could lead to serious complications. Knowledge of the users' perceptions and their pattern of usage of contact lenses can go a long way in addressing the gaps in their awareness and making sure that they are able to use them safely without suffering from any untoward consequences. Settings and design a cross sectional observational study of one year duration conducted in a medical college in central India. **Materials and Methods:** 600 young adults attending eye OPD at a tertiary care hospital were asked to fill a questionnaire pertaining to the level of knowledge, purpose of use, attitude towards lens care and awareness about the possible complications was obtained. Statistical analysis: done on JASP software. Categorical data was analyzed by chi square test and a $p < 0.05$ was considered significant. **Result:** 121 participants used contact lenses (CL), 479 were non users. 76.03% used them for refractive purposes, only 23.96% wore them for cosmetic reasons. 12.38% of them occasionally slept with lenses on while 11.57% did not wash their hands before using CL. 52.07% experienced side effects such as blurring and redness. The main reason stated for not using lenses was fear of side effects. **Conclusion:** This study offered the opportunity to check the compliance of CL users to recommended safety guidelines and clear their misconceptions and apprehensions.

INTRODUCTION

Contact lenses are small, transparent, plastic discs worn over the cornea to correct vision. Popular ocular prosthetic devices used by more than 150 million people the world over,^[1] the original idea is said to have come from the Renaissance artist Leonardo the Vinci, when he observed that a person with weak eyesight could see more clearly if he immersed his face in a bowl of water.^[2] Adolf Gaston Eugen Fick made the first successful scleral contact lens in 1936, while the first PMMA lenses came in the 1930s and the newer soft and rigid gas permeable ones much later in the 1970s.

Contact lenses are used for refractive, therapeutic and cosmetic purposes. Their cosmetic appeal and affordability makes them popular alternative to glasses.^[3]

However, the numerous benefits of contact lenses come at a cost. If not used cautiously and with meticulous care, they can lead to serious complications, even jeopardizing vision. Most studies show that it is a lack of awareness and poor compliance to safety standards (such as limiting the duration of wear, not sleeping or swimming with lenses on, cleaning of the contact lenses and their cases regularly) on the part of the user which leads to these complications.^[4] There is a definite role of health education to bring awareness among the population about the safe and unsafe practices related to contact lenses.^[5]

This study was conducted with the aim of assessing the level of awareness about contact lenses and their usage among the young adults. This age group was particularly chosen as the young adult population is generally the largest end user group of contact lenses. Contact lenses are better suited to their lifestyle as they are cosmetically more appealing, ideal for sports

and outdoor activities and also useful to treat conditions like keratoconus which affect youngsters. Also any complications arising from incorrect usage could lead to visual impairment for life, which makes it necessary to educate them about the precautions and usage guidelines at the right age. Some complications such as dry eyes and irritation are easily treatable, but others such as infectious keratitis are dreaded complications which are more likely to occur in warm and humid climates such as ours, and could lead to blindness.^[6] Therefore this study was undertaken to determine the pattern of usage, the level of awareness of contact lens care and potential hazards, and the compliance of the users with the safety guidelines.

MATERIALS AND METHODS

An observational, cross-sectional study of one year duration, from Feb 2021- March 2022 was undertaken at the Department of Ophthalmology, of a tertiary care hospital. Young adults between 18-30

years of age, attending eye OPD for any reason, and who gave consent for being part of the study were included. Those who did not give consent to participate in the study were excluded. Convenient sampling technique was used and a sample size of 600 was determined. After obtaining approval from the Institutional Ethics Committee and after clearly explaining the nature and purpose of the study, a free and informed consent was obtained from the participants. They were made to answer a semi-structured questionnaire in English. Information regarding the level of knowledge, purpose of use, attitude towards lens care and awareness about the possible complications was obtained. Data was collected on Microsoft Excel and statistical analysis was done on JASP software.

Consent

Written consent was obtained from the relatives of patients after explaining them the nature and purpose of the study. They were assured that confidentiality would be strictly maintained. The option to withdraw from the study was always open.

RESULTS

Table 1: User Profile and Attitudes of CL Wearers

S No	Questions	Responses		
		Options	Number	Percentage
1	Who suggested contact lenses to you?	Doctor	75	61.98%
		Friends	46	38.01%
2	Why do you wear contact lenses (indication)?	Refractive	92	76.03%
		Cosmetic	29	23.96%
3	What type of lens do you wear?	Disposable	57	47.10%
		Soft contact lenses	64	52.89%
4	Were you given proper instructions before use?	Yes	98	80.99%
		No	23	19.00%
5	Do you frequently visit doctor to get your eyes checked?	Yes	88	72.72%
		No	33	27.27%
6	For how many hours do you wear CL?	Less than 8 hours	66	54.54%
		More than or equal to 8 hrs.	55	45.45%
7	Do you sleep with CLs on?	Occasionally	12	9.91%
		Never	106	87.60%
		Often	3	2.47%
8	Do you replace CL as advised by manufacturer?	Yes	84	69.42%
		No	37	30.57%
9	Do you wash hands before inserting CL?	Yes	107	88.42%
		No	14	11.57%
10	Do you clean the CLs before and after use?	Yes	111	91.73%
		No	10	8.26%
11	What do you use for cleaning CLs?	Tap water	13	10.74%
		Contact lens solution	106	87.60%
		Home-made saline	2	1.65%
12	Do you change CL solution daily in the case?	Yes	60	49.58%
		No	61	50.41%
13	Were you informed about the side effects?	Yes	74	61.15%
		No	47	38.84%
14	Have you experienced any side effects of CLs?	Dryness	9	7.43%
		Redness	15	12.39%
		Irritation	17	14.64%
		Blurring of vision	22	18.18%
		None	58	47.93%
15	What did you do then?	Consulted doctor	58	47.93%
		Discontinued lenses	36	29.75%
		Continued to wear	27	22.31%

* This table shows the demographic profile of the users of contact lenses (CL) and their attitude and practice pattern as indicated by their responses to the semi-structured questionnaire.

Table 2: Nonuser Profile and Attitudes

S No.	Questions	Responses		
		Options	Number	Percentage
1	Do your relatives/friends use CL?	Yes	282	58.87%
		No	197	41.12%
2	Do you have a refractive error?	Yes	198	41.33%
		No	281	58.66%
3	Were CLs suggested to you?	Yes	108	22.54%
		No	371	77.45%
4	Why do you avoid CL?	Risk of side effects	209	43.63%
		High Cost	92	19.20%
		Cumbersome to use	178	37.16%
5	Would you like to use CL in future	Yes	93	19.41%
		No	133	27.76%
		Maybe	253	52.81%
6	Whom would you contact if you decide to use CL?	Ophthalmologist	362	75.57%
		Optometrist	35	7.30%
		Optical shop	82	17.11%

†The above table shows the responses to the questionnaire, shared by the non-users of contact lenses. There were 479 non-users.

Table 3: Correlation Between Sideeffects and Usage Patterns

S No	Usage pattern	Complications	No complications	X ²	p	
1	Duration of use	<8hrs	20	47	29.68	0.0001
		≥ 8hrs	43	11		
2	Sleeping with CL on	Yes	15	1	12.83	0.00034
		No	48	57		
3	Replacement as advised	Yes	40	44	2.17	0.140
		No	23	14		
4	Hand washing before use	Yes	52	55	4.45	0.034
		No	11	3		
5	Clean CL before and after use	Yes	55	56	3.40	0.06
		No	8	2		
6	Solution use for cleaning	MPS	48	58	12.14	0.00049
		Others	14	1		
7	Change solution daily	Yes	25	35	5.15	0.023
		No	38	23		

‡ There was a highly significant correlation between sleeping with lenses on (p 0.0034), using CL for more than 8 hours (p 0.0001) and using solutions other than MPS (Multipurpose Solution) for cleaning lenses (p 0.00049) and the side effects reported by the users. Chi square test was used, with 95% confidence limits and p< 0.05 was considered significant.

Figures (all figures are original)

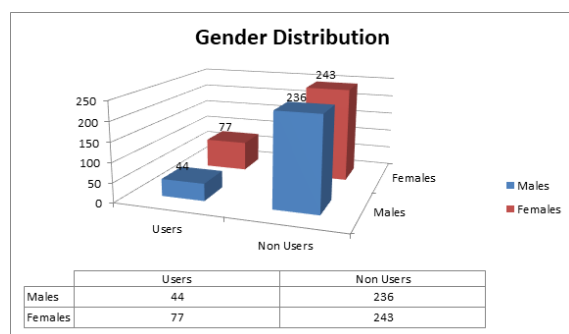


Figure 1: Gender of Users and Non-Users of Contact Lenses

[Figure 1] shows that among the 121 users, 77 (63.63%) were females and 44 (36.36%) were males, while among the 479 non-users, males and females were nearly equal.

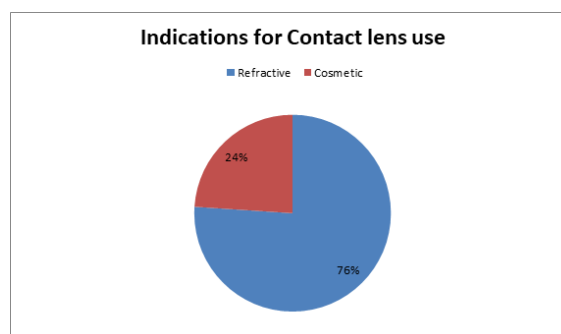


Figure 2: The main indications for wearing contact lenses

The pie chart shows the main indication for use of contact lenses is refractive error.

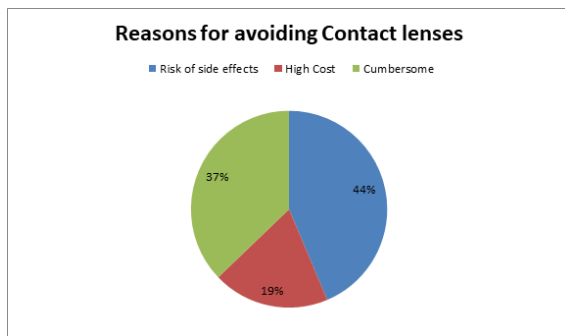


Figure 3: Main Reasons Cited For Avoiding Use Of Contact Lenses

This pie chart shows that the main reason for staying away from contact lenses was fear of side effects, followed by difficulty in handling.

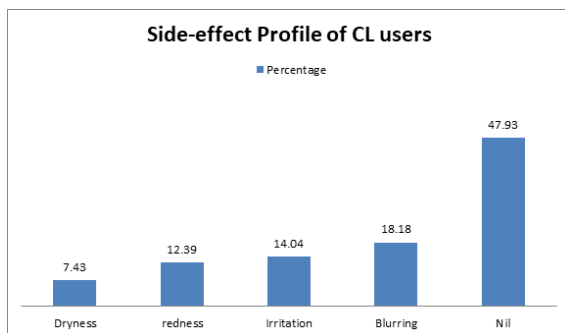


Figure 4: Main side effects experienced by the users

Bar graph showing side-effects observed by CL users. The main side effect observed by the users was blurring, followed by irritation. No side effects were observed by 47.93% of the users.

There were 600 young adults enrolled in the study, 280 were males and 320 were females. The mean age of the participants was 42. Out of 600, 121 were users of contact lenses, while 479 had never used contact lenses. [Figure 1] shows the gender distribution of the users and non-users.

[Table 1] summarizes the responses of the contact lens users to the semi-structured questionnaire. CL were worn by 92 (76.03%) participants for refractive purposes, only 29 (23.96%) wore them for cosmetic purposes as shown in [Figure 2]. The type of contact lenses worn were mainly continuous-wear type soft contact lenses (52.89%), while 47.10% wore daily or monthly disposable type. Doctors were most commonly responsible for introducing the patient to contact lenses (61.98%), followed by friends (38.01%). Most participants used CL for less than 8 hours (54.54%), while 45.45% used them for more than or equal to 8 hours.

The responses of the participants who did not wear contact lenses are represented in Table 2. Though 198 (41.33%) had refractive errors they preferred not to use contact lenses. The majority of them, 43.63% avoided lenses due to fear of side effects. [Figure 3] When asked if they would like to use CL in future, 19.41% replied in the affirmative, while 52.81% said maybe. Nearly three-fourth, 75% of them stated that

they would see an ophthalmologist if they wanted to use CL in future.

The main side effects reported by the users of CL are shown in [Figure 4]. No side effects were reported by 47.93% of the users, while the main side effects experienced were blurred vision (18.18%), irritation (14.04%), redness (12.39%) and dryness (7.43%). We performed chi square test to determine if there is a correlation between faulty hygiene and care practices and the frequency of side effects noted by the users. Table 3 shows that certain factors such as wearing continuously for more than 8 hours ($p < 0.0001$), sleeping with CL on ($p = 0.00034$) and cleaning CL with tap water or home-made saline ($p = 0.00049$) had a significant association with frequency of side effects, while replacement of contact lenses as advised and cleaning of contact lenses before and after use, though extremely important, did not show a statistically significant correlation.

Statistical Analysis

The collected data was summarized by using frequency, percentage, mean & S.D. To compare the qualitative outcome measures Chi-square test or Fisher's exact test was used. To compare the quantitative outcome measures Independent t test was used. p value of <0.05 was considered to be statistically significant. They were made to answer a semi-structured questionnaire in English. Information regarding the level of knowledge, purpose of use, attitude towards lens care and awareness about the possible complications was obtained. Data was collected on Microsoft Excel and statistical analysis was done on JASP software.

DISCUSSION

There were 600 young adults enrolled in the study. There were 121 users and 479 non users. This shows a prevalence of 20.16%. Past studies done in our country have reported similar prevalence.^[7,8] Other studies conducted world-wide reported different prevalence rates, which is due to different inclusion criteria and study population.^[9] Among the 121 users (wearers) 63.63% were females and 36.36% were males, similar to other studies which showed majority of users were female and the reason for this preference was cosmesis.^[7,10]

Our study found that 54.54% participants wore CL for less than 8 hours daily, while 45.45% wore them for 8 or more hours a day. A study by T Venkatesh Kumar et al,^[11] showed 70% usage of contact lenses above 8 hours per day, while a Brazilian study showed 64% usage above 8 hours.^[12] These studies had chosen different study populations. In our study it was found that 12.38% of users slept with CL occasionally. In another study also the same percentage was reported.^[11] Sleeping with CL on is extremely dangerous as it produces corneal hypoxia and increases the incidence of severe microbial keratitis.^[3,13,14]

Contact lenses should be replaced regularly, every 90 days or as recommended by the manufacturer.^[15] This reduces the chances of infection and foreign body sensation.^[16,17] We found that 69.42 % study participants replaced their lenses as required by manufacturer. It is essential to change the storage solution daily as there is possibility of multiplication of microorganisms and their adhesion to the CL surface.^[12] In our study nearly half the participants failed to change their CL solution daily (50.41%). In another study by T Venkatesh et al, 38% students claimed to change their CL solution on alternate days. This points to a faulty practice pattern and careless attitude towards safety guidelines. We found that 88.42% participants washed their hands before inserting CL and 91.73% cleaned the CL before and after use.

Other studies have also reported similar pattern.^[11] Stapelton et al showed that poor hand hygiene is an important risk factor leading to ocular complications.^[18] Curran et al, in a study done on 787 contact lens wearers found that only 30% of them cleaned the lenses after every use and that too with tap water. Our study also showed that 10.74% users were cleaning their lenses with tap water. This is probably due to fact that those who acquired contact lenses over-the counter (38.01%), without proper medical prescription, did not receive proper usage instructions from the source. Proper cleaning of contact lenses involves rubbing them with finger after washing hands, and then rinsing them out with MPS (multi-purpose solution) and changing the solution in the lens case. This loosens the accumulated protein deposits and other particles on the lens surface and reduces foreign body sensation and discomfort to the wearer.^[19] The importance of these care practices cannot be overemphasized and must be routinely communicated to the patient at the time of dispensing CL. Among our patients 72.72% claimed to visit the doctor regularly after starting to wear contact lenses. Regular eye examination by an ophthalmologist is essential to ascertain that the wearer's eyes are healthy and free of side effects and to check for compliance to contact lens care practices.^[20]

In our study 63 (52.07%) participants experienced certain side effects while using CL such as blurring (18.8%), irritation (14.04 %), redness (12.39%) and dryness (7.43%). As per a study by Unnikrishnan et al, the most common ocular complaints are general discomfort (47.7%) and (19.2%) redness.^[21] Most of the participants in this study who experienced side effects, consulted a doctor (47.93%), while 29.75% permanently discontinued CL and 23.31% continued to wear lenses after some self-medication. It is very important to educate the patients that removal of CL at the first sign of eye symptoms is very important and increases the chances of earlier recovery from complications.^[22]

We found a correlation between the duration of wear of more than 8 hours, sleeping with lenses on, not washing hands before inserting lenses and using water or home-made saline and the frequency of side

effects among the wearers. Smith et al have also reported that the rates of complications escalate with these faulty practice patterns.^[23] Similar findings were reported in studies from Pakistan and Brazil.^[24,25]

The number of non-users in our study were 479 (79.83%). This was despite the fact that 41.33% of them had refractive errors. The majority of them (77.45%) reported that contact lenses were never suggested to them. This shows that awareness about contact lenses and proper counseling for CL is still lacking. When asked about their reason for avoiding CL, the most common response was fear of side effects and inconvenience in using,^[26] while the cost factor did not appear to be an issue, probably due to availability of good quality lenses at affordable prices. It was encouraging to see that 71% of the participants expressed their desire to try contact lenses in future if advised by their doctor.

CONCLUSION

Contact lenses are a good and easily available alternative to glasses, and while millions of people all over the world enjoy the benefit of contact lenses, some may be at risk of serious complications due to non-compliant behavior. It is imperative to reach out to these vulnerable populations and educate them on the dos and don'ts of contact lens wear.

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