ORIGINAL ARTICLE

COMPARISON OF CONTACT LENS HYGIENE COMPLIANCE AND SELF-MANAGEMENT BEHAVIOURS BETWEEN MEDICAL AND NON-MEDICAL STUDENTS

Sumera Nisar, Areeb Rehman*, Shehanah Salem Alqhtani*, Hiba Abdualrahman Alrowibah*, Fatimah F. Mohammed*, Hala Maed Alqahtani*, Anfal Mohammed Aldulhum*

Department of Ophthalmology, *Students, College of Medicine, Princess Nourah Bint Abdulrahman University Riyadh, Saudi Arabia

Background: Contact lenses are commonly worn by young population for many purposes such as vision correction, cosmetic causes and as a fashion trend. It can cause serious eye infections and corneal ulcers, sometimes resulting into loss of vision. The aim of study was to compare the contact lens hygiene compliance and self-management behaviour between medical and non-medical students of Saudi Arabia. **Methods:** Five hundred (500) young contact lens wearers with an age range of 18–28 years were selected conveniently from student population of Princess Nourah Bint Abdulrahman University, Riyadh. After taking informed consent from the participants, their level of contact lens hygiene compliance and self-management was assessed by using a peer-reviewed questionnaire. **Results:** The mean age of the participants was 21±2 years. Out of 500 students, 38% were medical and 62% were non-medical students. Fifty-six percent (56%) students were wearing contact lens for cosmetic reasons while 44% students were using it for the correction of their myopic refractive error. The self-management behaviour was statistically significant among non-medical students (p=0.026). There was no significant difference between the two groups regarding the compliance of the contact lens hygiene but the knowledge and awareness about the risks and complications was statistically high in the medical students (p=0.028). **Conclusion:** Self-management with contact lens use was very common among non-medical students of Saudi Arabia. They were good in lens hygiene compliance, but their knowledge about risks and complications of contact lens use and accessories care was significantly low.

Keywords: Contact-lens, hygiene, self-management behaviour

Pak J Physiol 2018;14(2):11–4

INTRODUCTION

The contact lens is a very thin and curved lens designed to fit over the cornea and usually worn to correct defects in vision.[1] The contact lens is used every day by over 125 million people worldwide.[2] It is worn for many purposes such as vision correction, cosmetic causes and as a fashion trend especially among younger population.[3] According to a research done among health care workers in Pakistan, females use contact lenses more than males (70%).[4]

Contact lenses can be used to correct any type of refractive error, mainly myopia, and in many cases, they provide clearer vision than eyeglasses. They rest directly on the cornea and are held in place by the eye's natural tears which are always present. Not everyone is a good candidate for contact lenses due to the type of vision problem, shape of eyes, other eye conditions (e.g., dry eyes, allergies), or certain medical disorders. There are different types of contact lenses, the main types are hard (rigid gas permeable), soft lens, extended wear, and daily disposable. Soft contact lenses are made of soft, flexible plastics that allow oxygen to pass through to the cornea. Soft contact lenses may be easier to adjust and are more comfortable than rigid gas permeable lenses. Rigid gas permeable contact lenses (RGPs) are more durable and resistant to deposit build-up, and generally give a clearer, crisper vision. These are less expensive, easier to handle and less likely to tear. However, they are not as comfortable initially as soft contacts and it may take a few weeks to get used to wearing. Extended wear contact lenses are available for overnight or continuous wear ranging from one to six nights. Extended wear contact lenses are usually soft contact lenses. Daily disposable lenses are for one use only and a brand-new pair of lenses is used each day.[5,6]

Although wearing contact lens is safe and does not require expertise but it can cause serious eye infections and corneal ulcers. In some cases of contact lens related corneal ulcers patient can even become blind from that eye. To avoid these damages to the cornea of the eye, lens hygiene compliance according to the instructions of the prescriber is very important. Behaviours related to contact lens hygiene and care have been linked to higher risk of contact lens complications.[5] Contact lens wearers who don't follow the contact lens care instructions estimated to be between 40–91%.[7] Wearing contacts requires compliance with specific instructions concerning how

many hours they can be worn and how they must be cleaned, handled, and stored. Contact lenses must be disinfected at regular intervals, requiring solutions and equipment. Non-compliance with practitioner recommended contact lens wear and care regimens remains a persistent clinical problem. Self-management and sharing of contact lens is another non-compliance behaviour in young population. As use of contact lens is more common in younger population who are mostly busy in studying and different jobs, mishandling and self-management of contact lens use is also very common. Medical students are the future health practitioners and educators which supposed to be the best health model. Many studies have been performed on the behaviours of the medical students towards their daily life styles because of their hectic routine and extreme commitment with the patients. According to a recent research published in 2015, the medical students has better knowledge and contact lens care behaviour than the non-medical student.[3] Another research published in 2009 among health workers in Pakistan showed only 24% were knowing the contact lens cleaning protocol.[8] The present study was planned to compare the contact lens hygiene compliance and self-management behaviour between medical and non-medical students of Saudi Arabia.

METHODS

This cross-sectional comparative study was conducted after getting approval from Institutional Review Board and Ethical Review Committee of the Princess Nourah Bint Abdulrahman University Riyadh. Subjects were students of College of Medicine, and Allied Colleges (dentistry, pharmacy, nursing, rehabilitation) of the university. Five hundred contact lese wearing female students between 18–25 years were included through convenience sampling. The sample size was calculated by applying the following formula with 95% confidence interval (CI) and 5% chance of error.

$$n = \frac{(Z_{\frac{\alpha}{2}} + Z_{1-\beta})^2 \times pq}{e^2}$$

The teachers and administrative staff of the university were excluded from the study. Non-contact lens wearing students were also excluded.

The students were surveyed for their contact lens use, hygiene compliance and self-management behaviour by using a self-administered peer-reviewed questionnaire as data collection tool. The face validity of the questionnaire was checked by 10 students and content validity by three experts. A pilot study was conducted to estimate the internal consistency (Cronbach's alpha), which was 0.78. The informed written consent was taken from all the participants before filling the questionnaire. The questionnaire was distributed among the students of the College of Medicine and other allied health colleges. The questionnaire consisted of two parts. First part was demographic, comprising name (optional), age of the student and the name of the college. The second part included 23 items; 3 were about the type of refractive error, and type and duration of the contact lens, 7 were about the contact lens hygiene, 7 were about the compliance of contact lens use, and 6 were about the self-management behaviour and complications. The total response achieved was 100%.

The data was collected in 2 months. SPSS-20 was used to analyze the data and group comparisons were performed with the Chi-square test. Maximum alpha error was kept at 0.05.

RESULTS

A total of 500 students participated in this study, out of these 311 (62%) were non-medical and 189 (38%) were medical students. The mean age of the participants was 21±2 years with minimum age of 18 years and maximum age of 28 years. Most of the students (280/500, 56%) were wearing contact lenses for cosmetic reasons (Figure-1). Myopia was the commonest refractive error (in 44%) for which students chose to wear contact lens.

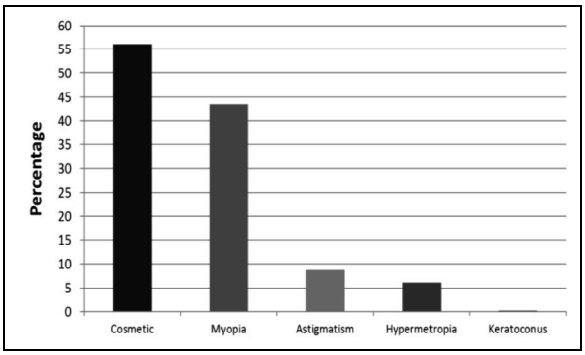

Figure-1: Various reasons of wearing contact lens

The commonest type of contact lens used was daily wear. The duration of wearing contact lens was more than 1 year (74%) among the students. The hygiene behaviour regarding cleanliness of the lens case and contact lens among the medical and non- medical students was not statistically significant (p=0.28) as shown in Table-1.

Table-1: Comparison of hygiene behaviour between medical and non-medical students

Good hygiene behaviour	Medical students	Non-medical students	p
Hand washing before handling the contact lens Rubbing of the contact lens with fingers while cleaning Rinsing of the contact lens with tap water Rinsing the lens case Solutions to wash contact lens	176 (93.10)	278 (89.30)	0.28

A total of 93.1% of medical students and 89.3% of non-medical students showed good hygiene behaviour. The study showed a statistically significant difference regarding self-management between the medical and the non- medical students (p=0.03) as shown Table-2. The medical students had better knowledge and behaviour of contact lens care than non-medical students. The self-management and self-prescribing behaviour about contact lens wear was more common in the non-medical students. Non-medical students were more in the self-prescription of the contact lens (53%) and most of the students from both groups were buying their contact lenses from the retail stores (84%).

Table-2: Comparison of the self-management behaviour of the students [n (%)]

Who prescribed your contact lens?	Medical students	Non-medical students	*p*
Ophthalmologist	45 (23.8)	52 (16.7)	0.03
Optician	46 (24.3)	67 (21.5)	
Friend	6 (3.2)	27 (8.7)	
Yourself	92 (48.7)	165 (53.1)	

Regarding the contact lens wear related complications, the difference between medical and non- medical students was statistically significant (p=0.03). The non-medical students were more into the self-management and 117 (69%) were not even fully aware of the contact lens wear related complications.

DISCUSSION

Contact lens use is very common all over the world due to multiple reasons such as cosmetic, correction of refractive errors, therapeutic etc. Although Contact lens (CL) use is very common among younger population, adults are also using it due to the same reasons. The prevalence of CL usage among young medical students observed in our study was much lower (38%) as compared to another study carried out in Saudi Arabia where the prevalence was 70.2%.[8] In our study the cosmetic reason (56%) was the most important reason of wearing CL as compared to the (63%) usage for the same reason in another study.[8]

It is very important to have a preliminary knowledge to get the CL from a reliable source and change them according to the schedule as set by the manufacturer. Reusing the CL for more than scheduled time predisposes to eye complications. In our study 97% students were using soft contact lenses and 74% for more than a year. Most of the non-medical students were involved in self-prescription of their own CL (51%); out of them 22% bought them from local opticians while 84% from the retail shops. The present study showed the careful behaviour of the medical students in buying and using the contact lens as compared to the non-medical students.[3] Another study carried out in US, also showed the significant non-compliance with CL care and replacement schedule.[8] Soft contact lenses are soaked in solution in which enzyme tablets are dissolved. This is done to remove protein deposits on the lens which can harbour pathogens within them and cause irritation and infection in the eyes. It is absolutely vital to change the storage solution as there is always the possibility of contamination of pathogens. Moreover, when it is stored, multiplication of these pathogens and their further adherence to the CL make them 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. Self-prepared mixtures are invariably contaminated.[9] In our study both groups (medical and non-medical students) were really well aware of maintaining hygiene of their contact lenses. The students in our study were following the regimen of cleaning and maintenance of their contact lenses daily. Most of the students 33% were wearing daily wear CL (replaced every 2–4 weeks) and 22% were well aware of lens case care and hygiene. 67% were wearing contact lenses for 6–8 hours a day. Both groups showed good hygiene behaviour and there was no statistically significant difference between them regarding CL hygiene. In contrary to this, a study carried out in Malaysia showed the poor compliance and the poor lens hygiene behaviour among the young university students. The poor lens hygiene and inappropriate lens cleaning habits and schedule was basically due to the lack of proper advice and aftercare visits to the prescriber.[10]

Informing the CL user about the complications related to its use is one of the many roles of an ophthalmologist. This includes assessing the need for CL, explanation about types and mode of usage, practices required for good care and examination of the eye for suitability for CL wear.[11] Over-the-counter decorative CL demonstrated that the uninformed buyers who acquire lenses from unauthorized providers are significantly less likely to be instructed on appropriate lens use and care, consequently developing an acute vision threatening infection.[12] In our study 84% of non-medical students were in the practice of buying their CL from retail stores. That is why a majority of non-medical students (69%) were not even aware of CL related infections and complications (p=0.28). The results from this study indicate that the overwhelming majority of CL users demonstrate a reasonable level of knowledge with respect to compliance with hygiene, both for medical and non-medical students. Non-medical students were more in self-management and self-prescription than the other study population

of medical students and were less educated about the CL related infections.

CONCLUSION

Self-management with the contact lens use is very common among the non-medical students of Saudi Arabia. Although they are good at lens hygiene compliance but their knowledge about the risks and complications of contact lens usage and the lens care accessories was significantly low. Although it is difficult to improve the student's behaviour to the ideal level, we have to emphasize the use of lens care instructions and reinforce the same at follow-up visits. This will minimize lens contamination and possible ocular complication. Education alone is not a sufficient strategy to improve behaviour. Newer approaches aimed at improving compliance with lens care practices are seriously needed.

REFERENCES

1. Shen J, Clark CA, Soni PS, Thibos LN. Peripheral refraction with and without contact lens correction. Optom Vis Sci 2010;87(9):642–55.
2. Haddad MF, Bakkar M, Gammoh Y, Morgan P. Trends of contact lens prescribing in Jordan. Cont lens Anterior Eye 2016;39(5):585–8.
3. Leeamornsiri S, Titawattanakul Y. Comparative knowledge and behavior of contact lens care between medical and non-medical students. J Med Assoc Thai 2015;98:S16–23.
4. Khan MH, Mubeen SM, Chaudhry TA, Khan SA. Contact lens use and its compliance for care among healthcare workers in Pakistan. Indian J Ophthalmol 2013;61:334–7.
5. Boyd K, Pagan-Duran B. Contact lens types. Am Acad Ophthalmol 2016. Available from: https://www.aao.org/eye-health/glasses-contacts/contactlens-types
6. British Contact Lens Association. Types of contact lenses. Available from: https://bcla.org.uk/Public/Consumer/Types_of_contact_lenses.aspx
7. Bui T, Cavanagh H, Robertson D. Patient compliance during contact lens wear: Perceptions, awareness, and behavior. Eye Contact Lens 2010;36(6)334–9.
8. Hickson-Curran S, Chalmers RL, Riley C. Patient attitude and behavior regarding hygiene and replacement of soft contact lenses and storage case. Cont Lens Anterior Eye 2011;34(5):207–15.
9. Abahussin M, AlAnazi M, Ogbuehi KC, Osuagwu UL. Prevalence, use and sale of contact lenses in Saudi Arabia: Survey on university women and non-ophthalmic stores. Cont Lens Anterior Eye 2014;37(3):185–90.
10. Bhandari M, Hung PR. Habits of contact lens wearer towards lens care in Malaysia. Med J Malaysia 2012;67(3):274–7.
11. Tajunisah I, Ophth M, Reddy SC, Phuah SJ. Knowledge and practice of contact lens wear and care among medical students of University of Malaya. Med J Malaysia 2008;63(3):207–10.
12. Steinemann TL, Fletcher M, Bonny AE, Harvey RA, Hamlin D, Zloty P, *et al*. Over-the-counter decorative contact lens cosmetic or medical devices. A case series. Eye Contact Lens 2005;31(5):194–200.

Address for Correspondence:

Dr. Sumera Nisar, Associate Professor and Co-Chair Ophthalmology, College of Medicine, Princess Nourah Bint Abdulrahman University Riyadh, Saudi Arabia.
Email: sumeranisar16@gmail.com

Received: 3 Jan 2018 Reviewed: 27 Mar 2018 Accepted: 2 Apr 2018