



## Original Article

# Knowledge, attitude and practice regarding contact lens use among people of different literacy levels

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**Purpose:** The purpose of this study was to evaluate the knowledge, attitude and practice of contact lens users regarding different aspects of contact lens hygiene among people having different literacy levels (illiterate, matric, graduate and postgraduate).

**Method:** A Comparative cross sectional study was conducted among contact lens users. The study consists of detailed interview of contact lens users of both genders with different literacy levels using soft contact lenses. They were asked to fill a questionnaire to assess and analyze their compliance behavior regarding contact lens care.

**Results:** There were 96% females and 4% males in the sample of 96. 92% of participants regularly washed hands before handling contact lens. 47% participants never rinsed contact lenses. Participants from high literacy levels frequently cleaned contact lens cases but 60% users from lower literacy levels never rinsed them. 60% replaced contact lens solution as per recommended schedule. Almost 90% participants never swam and slept with contact lens in eye, never used tap water to rinse it and never exchanged contact lenses with any one. 70% participants never had an eye infection.

**Conclusion:** A considerable number of participants show noncompliant behavior due to lack of proper guidelines and recommendations by eye care professionals or unfollowing of exact contact lens wear and care steps by participants. This non-compliant behavior is mostly shown by lower literacy levels. So better education, awareness programs and proper guidance may change wearers' behavior and attitude towards contact lens use.

**Keywords:** Contact lenses, literacy levels, knowledge, attitude.

## Introduction

Leonardo da Vinci demonstrated the concept of contact lenses in late 1400s. Contact lenses were first invented in 19th century in 1827 by an English astronomer J. F. Herschel. He was the one who first conceptualized the practical design of contact lens and suggested that a glass shell will protect cornea from ulceration and diseased lid but in 1887 W. Fick, made first contact lens by his countless efforts and these lenses proved to be a visual aid to keratoconus patients. In 1939, a first corneo-scleral contact lens was made of poly methyl methacrylate (PMMA). In 1982, first bifocal contact lenses were introduced. In 1987 soft disposable lenses were introduced and in 1996 daily disposable soft contact lenses were launched.<sup>1</sup>

Contact lenses are not only used in rehabilitation of human vision but also to improve aesthetic (cosmetic enhancement and other therapeutic reasons) of a person and getting more popular among younger population (school, college and university students). The advantages of contact lens over the spectacles increase its demand worldwide. More than 125 million contact lens wearers present around the world in which 33 million of contact lens users found in United States and mostly of them are females and young adults.<sup>2</sup> As the popularity and demand of contact lenses increase, contact lens related problems also increase day by day. This may be due to poor compliance, inadequate handling, a lack of knowledge about proper care of contact lens, environment and age of the wearers.<sup>3</sup>

Literacy plays important role in changing attitudes and beliefs and can also boost up the knowledge of the persons. Knowledge improves and changes the behavior of people towards use of contact lens. So, education and practice can enhance the information of community about maintenance of contact lens and reduce the contact lens related complications and problems in contact lens users. Knowledge and education about new strategies and techniques improves its compliance in contact lens users. It can also contribute to limit the infectious events and corneal infiltrates in contact lens users. Patient compliance can be defined as "gluing of contact lens wearer to the precautions and steps of care regimen prescribed by a practitioner or an eye care professional or lens manufacturer". At present when contact lens use as a lens of choice, there are many contact lens users who discontinue contact lenses only because of lens related issues and problems. To overcome this drawback, strict adherence to contact lens cleaning guidelines and proper care can increase its safe use worldwide.<sup>4</sup>

Knowledge alone is not necessary to change behaviors of contact lens users towards its use. Awareness to new strategies and practice is also of prime importance.

Practice on approved protocol of contact lens use is

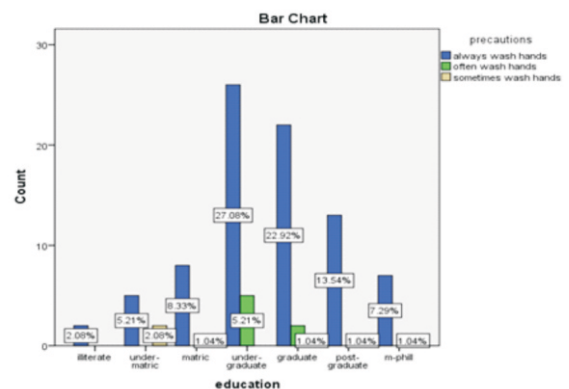
compulsory to avoid from complications.<sup>5</sup> In Pakistan this protocol of safe contact lens use is not published. However guidelines to use contact lenses has been published for general population in Australia<sup>6</sup> and United States of America.<sup>7</sup> By practicing on these series of steps of proper lens care and guidelines one can make sure safe and healthy use of contact lenses.

## Materials and Methods

A comparative cross sectional study was conducted on ninety-six contact lens users at the age range between 15-50 years without distinction of gender. Only soft contact lens users who consented to give information willingly were included in this study. Data were collected by a self-designed proforma. All the data were entered and analyzed using Statistical Software SPSS Version 22.00

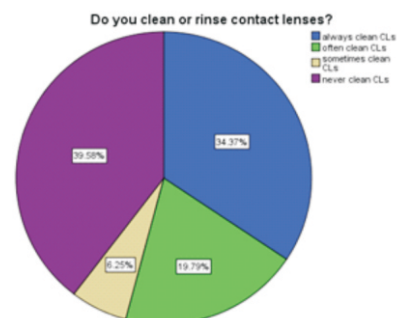
## Results

Figure No.1



All contacts users show very compliant behavior of always hand washing from all levels of literacy as shown in above bar chart. But 5.21% from under graduate, 2.08% from graduate and post graduate often wash hands.

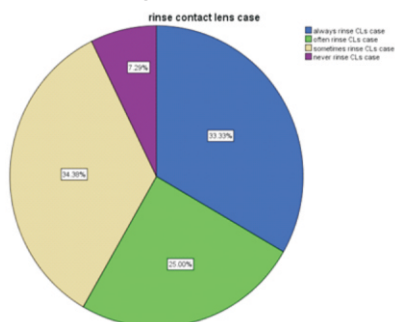
Figure No.2



39.58% wearers never rinse contact lenses while 34.38% users always rinse contact lenses. 19.79% often rinse

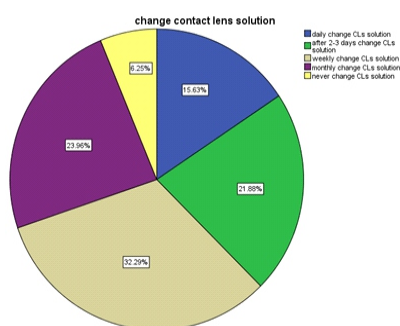
and 6.25% sometime rinse their contact lenses. But shockingly most of the participants were noncompliant to contact lens care regimen.

**Figure No.3**



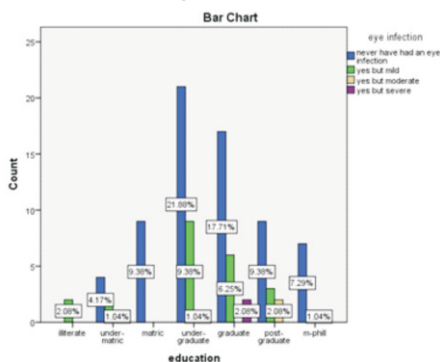
33.33% wearers always clean contact lens case, 25.00% often rinse contact lens case & 34.38% users sometimes clean contact lens case. Only 7.29% wearers who never clean contact lens case.

**Figure No.4**



It is obvious from above chart that only 15.63% users change contact lens solution on daily bases, 21.88% change solution after 2-3 days, 32.29% users change solution after a week, 23.96% wearers change contact lens solution monthly and 6.25% were those who never change contact lens solution.

**Figure No.5**



Lower literacy levels mostly show mild eye infection or

never had an eye infection while some participants from graduates and postgraduates show moderate and severe eye infections.

**Discussion**

The results of this study indicate that contact lens usage is more common in females than in males. As recoded by this study almost 96.88% females and only 3.13% males using contact lenses. This is may be due to fashion practice by females. According to a recent study on health workers in Pakistan, typically contact lens practice is more common in women than in men.<sup>5,8</sup>

Most of the participants in this study as 93% users always or frequently wash their hands before inserting contact lenses. This is excellent behavior shown by contact lens users as previous studies indicate that the contact lens users show variable compliance to hand hygiene and cleaning. A study indicated that as low as 42% users were compliant to hand washing<sup>9</sup> but another study indicated that 98% participants always wash hands before handling contact lenses.<sup>8</sup> It is also interesting to observe that most of participants who always wash hands got eye infections and problems.

This is may be due to improper hand cleaning, unhygienic water and unfollowing of recommended hand cleaning guidelines. Due to polluted water, contact lens related complications may increase.<sup>10</sup>

In this study only 53% participants regularly clean or rinse contact lenses. This shocking result of contact lens cleaning is seen by all literacy levels. This is may be due to unavailability of recommended strategies by professionals or due to patients' fault not to strictly follow the care regimens. These results can be compared to a study done in Nepal that indicated that more than 90% participants were compliant to cleaning protocol and recommended guidelines.<sup>11</sup> However, proper rubbing and rinsing of contact lenses is reportedly done by just 20% of Americans.<sup>7</sup> It is pertinent to note that proper rinsing and rubbing of contact lenses is very important to remove loosely bounded proteins and deposits.<sup>12</sup>

In present study, almost 59% participants regularly clean or rinse their contact lens cases and frequently replace as recommended by eye professionals and practicing optometrists. It is also observed that those participants who regularly rinse contact lens cases suffer from eye infections due to improper



rinsing and cleaning of cases. Contact lens case cleaning is also important because it may prove a reservoir of contamination.<sup>13</sup> Another study also indicated that cleaning of contact lens cases was the most non-compliant behavior of contact lens users.<sup>11</sup> Some optometrists advised to clean contact lens cases with multipurpose solutions while some with tap water and then aeration.<sup>14</sup>

Results of this study indicates that only 37.51% participants change contact lens solution as per schedule recommended by eye practitioners or lens manufacturers. A study indicated that 75% users always replace contact lens solution in morning but some patients reported that they forget to change contact lens solution while some users don't know when to change contact lens solution and they don't know any guidelines about contact lens wear and care.<sup>15</sup>

Many studies revealed that mostly contact lens users assume themselves that they are fully compliant to recommended strategies but they do not know guidelines about proper care regimen of contact lenses.<sup>9</sup> As many as 49% people believe that knowledge and education can improve the practice and behavior of contact lens users. 64.7% participants thought that one to one type knowledge in an office or a classroom in form of vouchers or lectures may helpful and 24.1% believe that people can be better engaged with planned and recommended guidelines and strategies through internet or social media.<sup>16</sup>

## Conclusion

Almost 60% participants were compliant to their prescribed and recommended contact lens handling and care regimens. The exact cause of noncompliant behavior of patients is not known. This noncompliant behavior is shown by lower literacy levels. This is may be due to lack of proper guidelines and recommendations by eye care professionals or unfollowing of exact contact lens wear and care steps by participants. Better education, proper guidance and awareness programs about new strategies and techniques can change users' attitude and behavior towards contact lens use.

## References

1. Fowler WN. Historical review of contact lenses from their inception. *Australas J Optom.* 1941;24(7):329-31.
2. Key JE. Development of contact lenses and their worldwide use. *Eye Contact Lens.* 2007;33(6 Pt 2):343-5; discussion 362-3.
3. Wagner H, Richdale K, Mitchell GL, Lam DY, Jansen ME, Kinoshita BT, et al. Age, behavior, environment, and health factors in the soft contact lens risk survey. *Optom Vis Sci.* 2014;91(3):252-61.
4. Morgan PB, Efron N, Toshida H, Nichols JJ. An international analysis of contact lens compliance. *Cont Lens Anterior Eye.* 2011;34(5):223-8.
5. 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(7):334-337.
6. Sweeney D, Holden B, Evans K, Ng V, Cho P. Best practice contact lens care: A review of the Asia Pacific Contact Lens Care Summit. *Clin Exp Optom.* 2009;92:78-89.
7. Boyd K. Proper Care of Contact Lenses [internet]. [Place unknown]: American academy of ophthalmology; Mar. 01, 2016. Available from: <http://www.aao.org/eye-health/glasses-contacts/contact-lens-care>.
8. Bhandari M, Hung PR. Habits of contact lens wearers toward lens care in Malaysia. *Med J Malaysia.* 2012;67(3):274-7.
9. Gyawali R, Mohamed NF, Bist J, Kandel H, Marasini S, Khadka J. Compliance and hygiene behavior among soft contact lens wearers in the Maldives. *Clin Exp Optom.* 2014;97(1):43-7.
10. dos Santos Gomes T, Magnet A, Izquierdo F, Vaccaro L, Redondo F, Bueno S, Sánchez ML, Angulo S, Fenoy S, Hurtado C, del Aguila C. *Acanthamoeba* spp. in Contact Lenses from Healthy Individuals from Madrid, Spain. *PLoS one.* 2016;11(4):e0154246.
11. Sapkota K. Level of compliance in contact lens wearing medical doctors in Nepal. *Cont Lens Anterior Eye.* 2015;38(6):456-60.
12. Cho P, Cheng SY, Chan WY, Yip WK. Soft contact lens cleaning: rub or no-rub? *Ophthalmic Physiol Opt.* 2009;29(1):49-57.
13. Yung MS, Boost M, Cho P, Yap M. Microbial contamination of contact lenses and lens care accessories of soft contact lens wearers (university students) in Hong Kong. *Ophthalmic Physiol Opt.* 2007;27(1):11-21.
14. Bui TH, Cavanagh HD, Robertson DM. Patient Compliance during Contact Lens Wear: Perceptions, Awareness, and Behavior. *Eye Contact Lens.* 2010;36(6):334-9.
15. Hickson-Curran S, Chalmers RL, Riley C. Patient attitudes and behavior regarding hygiene and replacement of soft contact lenses and storage cases. *Cont Lens Anterior Eye.* 2011;34(5):207-15.
16. Donshik PC, Ehlers WH, Anderson LD, Suchecki JK. Strategies to better engage, educate, and empower patient compliance and safe lens wear: compliance: what we know, what we do not know, and what we need to know. *Eye Contact Lens.* 2007;33(6, Part 2 of 2):430-3.