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## IMPORTANCE OF COMPLIANCE IN CONTACT LENS WEAR - A STUDY TO ASSESS THE KNOWLEDGE AND PRACTICES AMONG CONTACT LENS USERS FOR A HEALTHY VISION

Ch. Vijay Kumar<sup>1</sup>, Yousef D.<sup>2</sup><sup>1</sup>College of Health Sciences, University of Buraimi, Al-Buraimi, Oman<sup>2</sup>College of Applied Medical Sciences, Qassim University, Saudi Arabia

E-mail of Corresponding Author: drvkumar.ch@gmail.com

### ABSTRACT

**Purpose:** To assess the knowledge related to contact lens wear and their care among the female students. **Methods:** A structured questionnaire covering aspects on wearers' attitude, knowledge related to lens care, hygiene of hands and lens cases was introduced in which about 50 female contact lens wearers participated in this study. By doing multi-variate testing, the factors like demography, hygiene, behaviors and attitude to aftercare visits were analyzed among lens wearers and significant findings are reported. **Conclusion:** Poor hand hygiene, inadequate lens care and not remembering when to come back for aftercare visits are the common non-compliant behaviors in lens wearers where proper health education plays a major role in improving compliance.

**Keywords:** Contact lens wear, Compliance, knowledge, demographics, health education

### INTRODUCTION

Contact lens have become more and more important as an optical correction resource especially among females in Saudi Arabia as they provide a convenient way of correcting refractive error and offer more advantages over spectacles in many regards. Since they are used for refractive correction, cosmetic reasons and therapeutically in eye diseases where an uneven cornea blurs vision such as keratoconus or corneal scarring<sup>1, 2</sup> they are getting more and more popular among the younger population (school, college and university students and young working adults) as they improve the aesthetics. The probable reasons for popularity of contact lens usage are the huge amounts of choices available not only in terms of lens type and materials alone but also the increased availability at large number of locations in the country at a much lower cost compared to the past<sup>3</sup>.

Non compliance is a major issue in contact lens wearers and it is seen in various aspects of

contact lens wear and care<sup>4</sup>. Side effects ranging from transient redness to severe keratitis<sup>5</sup> have been observed due to improper use. Studies have identified several risk factors associated with lens wear complications in an attempt to encourage successful lens wear and to minimize disease burden. Amongst the identifies risk factors, some are non-modifiable such as gender or age<sup>6</sup> and others are modifiable for instance poor hand cleaning and lens case hygiene<sup>7</sup> and therefore can be targeted in minimizing vision loss and maximizing successful lens wear. Recently, it was found that the purchase of contact lenses over the internet and higher socio- economic status to be associated with microbial keratitis<sup>8</sup>. Ocular health education especially knowledge in the correct and careful practice regarding contact lens wear can prevent complications resulting from the wearer's inappropriate behavior. One of the ways of investigating this is from the person's perception regarding his own knowledge of contact lens wear<sup>9</sup>. Therefore the study of knowledge can contribute to the planning of

educational and health campaigns aiming to reduce the complications of contact lens wear in our society.

Webster's Medical Dictionary defines 'compliance' as 'the process of complying with a regimen of treatment'. In the context of contact lens wear, this can be interpreted as a wearer correctly adhering to the instructions provided by the contact lens practitioner with respect to optimum lens wear and care. Noncompliance issues related to contact lenses have been around for as long as contact lenses have been available (Bowden et al, 1989). There are three primary areas of concern: contact lens wear schedule, lens care, and contact lens replacement schedule.

Whilst many eye care practitioners are familiar with the notion that many contact lens wearers are non-compliant, there is very little up-to-date objective data available to support this belief. In this report we present independent research which describes the lens wear and care habits of female contact lens wearers in Saudi Arabia.

The current study was conducted among the female college students with a primary objective to assess the knowledge and compliance of contact lens care and their practice related to contact lens use, cleaning and maintenance.

## MATERIALS AND METHODS

A cross sectional descriptive study was conducted using a structured questionnaire among the females aged 17-30 years. The study got clearance from the University Research & Ethics Committee and was implemented among the female students. Any female who has ever worn contact lens for any period of time and for whatever reason was enrolled in this study. A total of 50 contact lens wearers were identified and a structured questionnaire was introduced to collect the information from March to May 2010 after getting the informed consent for the participation in this study. The questionnaire was in Arabic language and had 35 questions. The tool was validated by three Optometry experts working in the Department of Optometry before using in this present study. For analysis purpose

the questionnaire was also back translated in English to ensure the same meaning is conveyed. The questionnaire was based on the knowledge and practices of contact lens wear, care and its possible complications. All the questions were prepared in Arabic language and the answers were also given in Arabic language by the participants who participated in the study. To get a better understanding of some questions and to capture appropriate information, a pilot study (pre- test) was conducted on 10 students a week prior of starting research work and after review few modifications were done in the questionnaire for the final research work.

The questionnaire was designed in a very comprehensive manner which consisted of 35 questions related to general demographic data, socio economic status, contact lens hygiene and hand cleaning, compliance to eye care provider's instructions and behavioral aspects. The tool was objective type which was not time consuming as the participant has to tick her answer on the appropriate box (answers being 'Yes', 'NO' & 'Sometimes'). The data that was collected in the questionnaires was coded and it was analyzed using Epi\_info software version 3.5.1 2008, (CDC Atlanta).

## RESULTS

The answers collected from the questionnaires distributed among 50 female students who participated in the study were analyzed and presented as follows.

**Demographic characteristics:** Out of total 50 female students who participated in the study the majority (62%) are under age group of 21-25 years followed by other ages. Most of the students are single (84%) and only 16% are married among them.

**Contact lens hygiene & hand cleaning:** In this study out of 50 contact lens users, it was observed that majority 94% (47) are using soft lens and 6% (3) were hybrid lens users. Majority of the participants 62% (31) were using for cosmetic purposes while the remaining 38% (19) were using for refractive purpose. It was also observed that majority 52% (26) of them got the

contact lens from cosmetic center followed by optical shop with 38% and only 10% got the lens prescribed from hospital.

**Compliance to Optometrist:** It was also found that majority of the contact lens users 88% (44) were cleaning the lens case regularly. Out of 50 contact lens wearers, majority 82% (42) of them clean their hands before using contact lens but only 58% of them clean the hands before putting the contact lens in lens case and remaining either don't clean at all (18%) or clean sometimes (24%) as shown in Figure 1.

Other significant finding of the study is that majority 66% (33) immerse the lens in cleaning solution completely which is correct practice while 34% of them place the lens half immersed in the cleaning solution which is an incorrect practice and there is a need to raise awareness regarding the correct practice. It was also found that only 38% (19) of them visit the eye practitioner regularly as shown in Figure 2.

There was also usage of expired contact lens by 10% (5) participants and 16% (8) of them use the expired contact lens sometimes. Among the lens wearers, it was found that 10% (5) of them had eye infections because of contact lens. The distribution of subjects as per their practice of cleaning contact lens is shown in Table 1.

## DISCUSSION

There is no data available on the prevalence and pattern of contact lens use in the published literature from our country especially among females and there are no documented studies in this area done in Qassim province, even though large numbers of young adults are wearing contact lenses. However Lee *et al* (2000)<sup>10</sup> from Singapore has been reported that the prevalence of contact lens use was 8% in their population aged between 15-50 years. The study of prevalence of contact lens usage among medical students done by I Tajunisah *et al* (2007)<sup>11</sup> was much lower than a similar study reported by Vidotti *et al* (2006)<sup>12</sup> from Brazil (27.4%).

Most healthcare providers say that one third of patients will follow instructions exactly, one third will follow some instructions and one third will

not follow instructions at all. A similar study done by MJ Collins and LG Carney found that only 26% of the patients were compliant<sup>13</sup>. Factors which reduce the level of patient compliance include complexity, frequency, duration and cost of therapeutic regime.

According to Claydon *et al*, the major areas of non-compliance in contact lens wear have been highlighted as the lack of hand and lens-case hygiene, the over wearing of contact lenses, the poor attendance of patients at aftercare appointments and the inadequate use of care and maintenance systems<sup>14</sup>. Education is one of the factors thought to influence compliance. The results indicate that the additional education had no significant effect on the compliance levels of the patients to whom it was applied. The population of contact lens wearers was generally very compliant and the contact lenses and care regimen were clinically successful. The results were found to be similar in many areas. Practitioners are encouraged to review the compliant behavior of their contact lens patients at every aftercare appointment and pay particular attention to the areas of frequent non-compliance highlighted.

A study done by Hickson Curran SB *et al*<sup>15</sup> among 787 contact lens wearers revealed that only 30 percent cleaned their lens case daily; and among these wearers, 53 percent cleaned their case with tap water. Also, 48 percent replaced their case annually or less often and 7 percent never cleaned or replaced their lens case. (Most eye care professionals recommend that lens cases should be cleaned daily with fresh contact lens solution and allowed to air dry, and lens cases should be discarded and replaced at least every 90 days.) In our study we found that majority of the contact lens users 88% (44) were cleaning the lens case regularly. In a similar study conducted by Mayers *et al*<sup>16</sup>, revealed 71 percent of contact lens wearers put their lenses directly into the lens case without rinsing and rubbing the lenses to clean them; 11 percent rinsed only, and only 7 percent performed the generally recommended "rinse-and-rub" cleaning technique. The study also found that 36 percent of contact lens wearers

wait up to 12 months to replace their lens case, 20 percent report never cleaning their case, and 48 percent rinse their case with tap water. In our study we also found that some of the contact lens users were using tap water to clean the contact lenses.

The results of these studies discussed above shows similarities with our current study which reveals that many contact lens wearers are putting themselves at risk for eye infections and other contact lens-related complications because of poor compliance with accepted contact lens care practices. The major areas highlighted by Nathan Efron<sup>17</sup> of non-compliance in contact lens wear have been highlighted as the lack of hand and lens-case hygiene, the over wearing of contact lenses, the poor attendance of patients at aftercare appointments and the inadequate use of care and maintenance systems

It was also observed in our study that majority 52% (26) of our subjects got the contact lens from cosmetic center followed by optical shop with 38% and only 8% got the lens prescribed from hospital. When eye care practitioners dispense the contact lenses, they educate patients on the proper wearing schedule, should not sleep in lenses that are not approved for overnight wear. This gives patients the opportunity to ask to be fit in a higher-Dk lens if overnight wear is an option. Eye care practitioners educate patients on the replacement schedule of their lenses when you give them their annual prescription. Give patients helpful tips on how to stay compliant. While some contact lens patients are noncompliant on purpose, most patients would be more compliant with their replacement schedule if they had reminders or a way of remembering when to replace their lenses. There is a place on an eye care practitioners written contact lens prescription for the recommended wearing time, replacement schedule, and contact lens solution.

Recommendations:

Education, improving communication, behavioral modifications are the main factors that helps improving the compliance level in any population. Although improving the compliance of contact lens wearers appears difficult, as

primary eye care providers, we should strongly promote lens care compliance to minimize the risk of contamination of contact lenses and lens care accessories. It is relatively easy to blame patients for poor compliance but poor compliance can be avoided or atleast reduced by proper training at the initial fitting of contact lenses and reinforcement at the follow up visits. A contact lens (CL) can act as a vector for microorganisms to adhere to and transfer to the ocular surface. In the presence of reduced tissue resistance, these resident microorganisms or transient pathogens can invade and colonize the cornea or conjunctiva to produce inflammation or infection.

## CONCLUSION

There is no way to anticipate and prevent all of the inadvisable actions that patients may take with contact lens wear and care, even with the best instructive efforts. Continually educating patients that contact lenses are medical devices and reviewing proper lens wearing and replacement schedules is the best way to avoid noncompliance. Contact lenses are seen as a commodity by many patients, not as medical devices. This attitude can lead to contact lens noncompliance and unwanted complications. Proper education from the beginning can help prevent patients from falling into bad habits. Because studies show that contact lens noncompliance is prevalent in patients who have worn contact lenses for several years, each patient encounter is an opportunity to review and reinforce proper wearing and replacement time and contact lens care.

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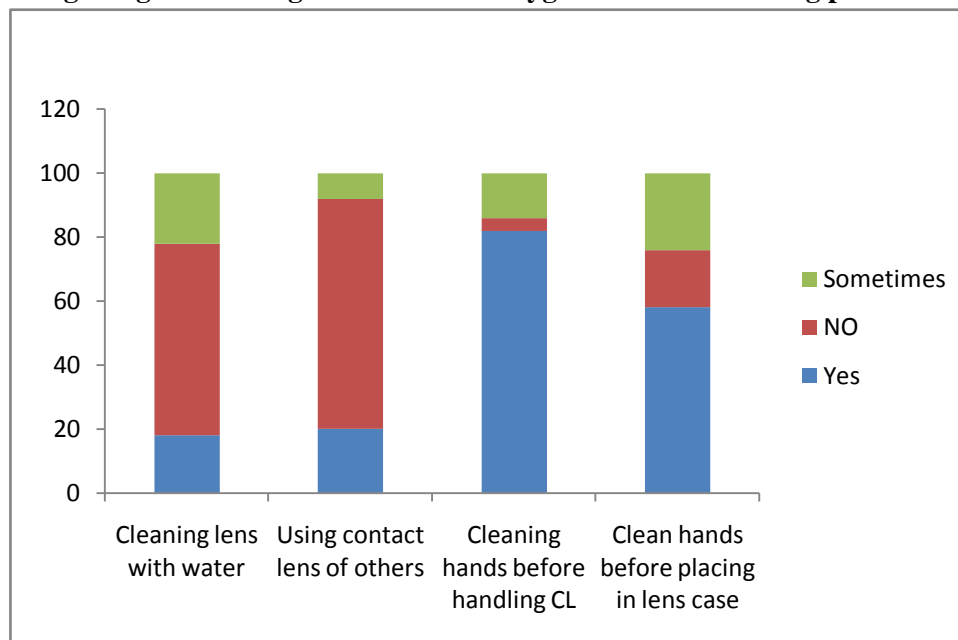
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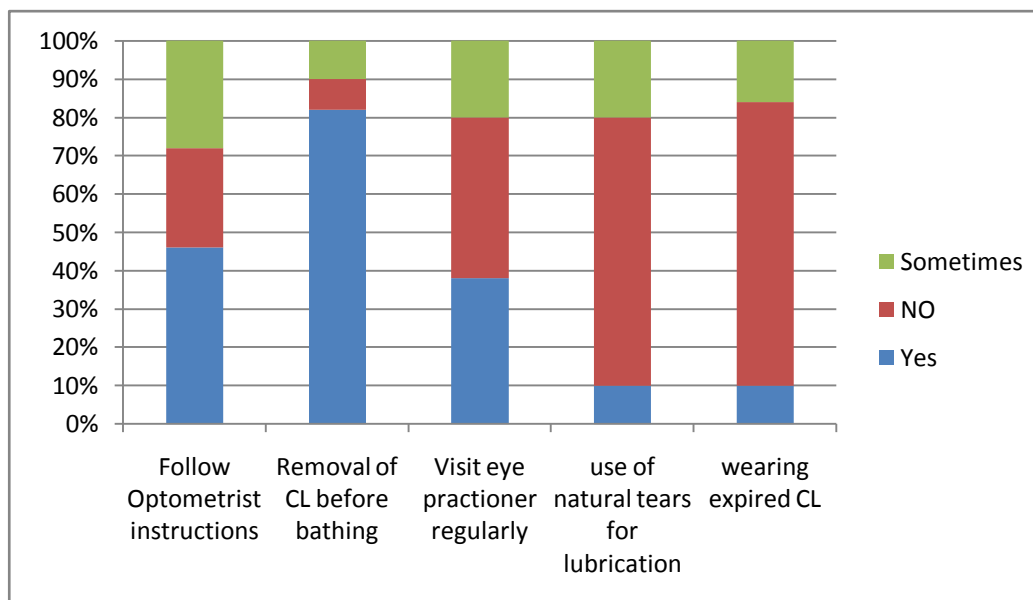
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**Fig1: Figure showing the contact lens hygiene & hand washing practices**



**Fig 2: Figure showing the responses to the Optometrist's advice on contact lens**



**Table 1: Distribution of subjects as per their practice of cleaning contact lens**

Practice by subjects	Number	%
No problem in changing solution	36	72
Use same brand	12	24

Use water temporarily	2	4
<b>Total</b>	<b>50</b>	<b>100</b>