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## Original Research Article

## Knowledge and attitude on contact lens use among urban population of South Delhi- A questionnaire based study

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## ABSTRACT

**Background:** Contact lens are used by people nowadays seen in the previous studies. To know about the knowledge on their practice and attitude towards using contact lens is necessary to state the safety measures and to understand the benefits of using contact lens by population.

**Objective:** To investigate the correlation between knowledge on practice and attitude towards contact lens among the population of South Delhi. To identify the factors responsible for the increasing demand of contact lens among urban population of South Delhi.

**Materials and Methods:** A semi structured questionnaire was used to know about the knowledge on practice and attitude towards contact lens use among participants.

**Results:** In this survey 104 participants have participated. In between 18 to 30 years of age the contact lens wearers generally had poor knowledge on practice with regards to appropriate parameters of using contact lens and their complications. Wearers exhibiting a positive attitude with satisfactory hand hygiene and lens cleaning practices, important aspects such as lens case hygiene, storage and lens removal practices were found to be good. Compliance with after-care visits was poor.

**Conclusion:** Knowledge on Practice and Attitude towards contact lens among urban population of South Delhi in India is mainly for good vision as well as cosmetic reasons. Accordingly, there is a need for health education program for awareness on how to use contact lenses and what are the benefits for using contact lens among the non-users of contact lens in the given population. These programs should aim at promoting Contact Lens hygiene practices, Benefits of using contact lenses and eliminating the likelihood of Contact Lens related complications.

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### 1. Introduction

A knowledge, attitudes and practice (KAP) survey are defined as “a representative study of a specific population to collect information on what is known, believed and done in relation to a particular topic.”<sup>1</sup> Knowledge refers to facts and awareness that may have been gained through

experience and/or education, while attitude is described as the feelings or belief that one has towards a certain subject.<sup>2,3</sup> There are several optical advantages of contact lenses over spectacles including less distortion of images, a wider field of view and a more natural visual experience.<sup>4</sup> In medical devices, if we talk about Contact lenses it can be worn to correct our vision. Nowadays we prefer to wear those things which should look good and can work

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as per our needs. There are many reasons for wearing Contact lenses. One main reasons which often motivates people who would like to avoid wearing glasses or like to change their appearance are cosmetics and aesthetics. Other reasons to wear contacts are functional or optical. Contact lens provides better peripheral vision whereas in spectacles you face problems related to moisture such as rain, snow, condensation, or sweat. Based on Primary Functions, material, or wear schedule Contact lenses can be separated. If you use soft contact lenses, it's mass-produced whereas, in rigid lenses, it can be customized to exact specifications for specific individual patients. The materials used to produce contact lenses have changed over time. Earlier contact lenses were harder and didn't allow much oxygen into the eye. Technology has advanced, and so has product availability.<sup>5</sup>

Contact lenses are classified in many different ways:-

1. By their Primary function
2. By their material wearing schedule
3. By their Replacement schedule

Corrective contact lenses can be designed to correct refractive errors. It might be done by focussing light straight into the eye, allowing for clear vision. For Myopia and Hypermetropia, spherical contact lenses bend light uniformly in all directions.

Two ways to correct astigmatism by contact lenses are:-

1. For the first way, you can use toric soft lenses, which work similarly to cylindrical corrective eyeglasses; however, toric lenses have a different focusing power horizontally.
2. The second method is to use a rigid gas permeable lens; the majority of astigmatism is caused by the shape of the cornea; stiff lenses can improve eyesight because the optical system's front surface is perfectly spherical.

Both ways have benefits and disadvantages. It also corrects refractive errors. While many contact lens brands are gently coloured to make handling simpler, cosmetic lenses to modify eye color are significantly less prevalent. We employ different glasses for different goals or situations in our lives. In general, everyday wear lenses are removed before sleeping.<sup>6</sup> There are also extended wear contact lenses. A high oxygen permeability extended contact lens can be used overnight.<sup>5</sup> The eyes are usually open while awake, allowing oxygen from the air to dissolve into tears and travel past the lens to the cornea. While sleeping, oxygen is delivered to the brain via the blood veins in the back of the eyelid. Extended wear contact lenses transport 5-6 times more oxygen than normal soft lenses, which keeps the cornea healthy even when the eyelids are closed. If you use daily wear lenses overnight, you increase your chance of developing corneal infections, corneal ulcers, and corneal neovascularization.<sup>7,8</sup> Once established, this last problem

cannot be reversed and will eventually impair vision acuity by reducing corneal transparency. We frequently encounter an extended wear problem, namely large papillary conjunctivitis, which is occasionally connected with an ill-fitting contact lens. Numerous people suffer from dry eyes, which are especially prone to irritation and brief spells of blurred vision.<sup>9</sup> These effects can be mitigated with the use of appropriate lenses. Avoid wearing contact lenses for an extended period of time (more than five years), since this will reduce the total corneal thickness and increase corneal curvature and surface irregularity.<sup>10,11</sup> Unhygienic practices such as the use of tap water to rinse contact lenses, suggest low levels of knowledge about the risk of Acanthamoeba infections associated with this C/L-related practice.<sup>12,13</sup> Hence the objective of this study is to investigate the correlation between knowledge on practice and attitude towards contact lens among the population of South Delhi and to identify the factors responsible for the increasing demand of contact lens among urban population of South Delhi.

## 2. Materials and Methods

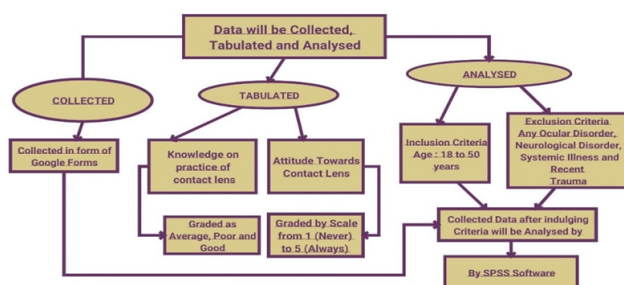
The study employed a quantitative, descriptive cross-sectional design using a semi-structured questionnaire that was designed for the study. The study population consisted of contact lens wearers (soft and rigid contact lens wearers) and non-wearers, aged between 18-50 years (Table 2 & Figure 1), 105 participants were evaluated from South Delhi population in India. The questionnaire was taken online. Contact lens wearers or non-wearers with any systemic illness and trauma were excluded. Thereafter, 19 questionnaires were questioned to participant through survey by online mode via Facebook, Instagram, WhatsApp, mail etc. Questionnaires were available in English (Table 1). The self-administered questionnaire sought participant's demographic characteristics, education level, and included the questions related to knowledge on practice of the respondents regarding hygiene, Contact Lens (C/L) solutions, wearing schedule and C/L wear complications. The attitudes of the respondents were assessed using a linear scale that ranged from good, average, and poor. Statements were in the sub-categories of hygiene, compliance, aftercare, C/L and solution handling and C/L wear complications. The respondents' ratings of the various statements were used to assess their level of enthusiasm and overall feeling and attitude.(Table 3) All participants are guaranteed anonymity and confidentiality of the information obtained. The approval took before the study. Informed consent was taken online by all the participants included in the study. Subjects were informed about the duration and procedures of the study. The research was approved by the Institutional ethical committee of Jamia Hamdard New Delhi. The questionnaire is the major instrument for the collection of data (Table 1) in the study colleges,

private sectors, etc. All the data was obtained through the study; statistical analysis was done using Microsoft Excel. The result articulated through the survey was denoting in percentile format. Statistical analysis was performed by WinPepi software. Data analysis was done using Google form, excel sheets, and graphs. (Chart 1)

The inclusion criteria of this study were age 18-50 years, both genders, contact lens users and non-users, individuals having normal general health. And exclusion criteria were any ocular disorder, neurological disorder, any recent trauma, or recent systemic illness.

**Table 1:** Annexure-1 (Questionnaire)

- 1) For how long you are using Contact lens?
- 2) What modalities of contact lens you use?
- 3) Which brand of contact lens are you using?
- 4) Your purpose of wearing contact lens?
- 5) How often you visit ophthalmologist
- 6) Are you satisfied while using Contact lens ?
- 7) What are the reasons for not using contact lens ?
- 8) What type of contact lenses are you currently wearing?
- 9) Are you following the cleaning procedures while using contact lens?
- 10) Have you ever felt that you are having any discomfort by use of contact lens ?.
- 11) Have you ever thought contact lens provides better field of vision ?
- 12) How frequently you clean the case of contact lens?
- 13) Have you ever slept overnight with your Contact lens?
- 14) Do you use eyedrops for lubrication in the case of dryness while using contact lens?
- 15) Did you face any kind of difficulty while using contact lens ?
- 16) Mention the source of concern about contact lens use?
- 17) Severity level of the above Complications
- 18) Mention the reasons influencing the decision to start using contact lens ?
- 19) During a typical day in the past 2 weeks, how often eyes feel dry?



**Chart 1:** Plan for collecting data and analysis

### 3. Result

Questionnaires were sent among the urban population of south Delhi. 104 participants participated in the study.

The study was carried among the age of 18 to 50 years (Figure 1). Among the 104 participants, 33 were males and 71 were females (Figure 3). The education Qualification of the participants who participated is given in (Figure 2). Participants' subjective responses were taken in the questionnaire for the study. In this study, it was found that 38.4% of participants never used contact lens, 31.7% participants are using contact lens since less than 1 year, 22.1% participants are using contact lens since 1 to 5 year and 5.76% participants are using contact lens since 6 to 10 years were as only 0.96% participant used contact lens in the past 10 years. (Figure 4). 37.5% of participants never used contact lens, 27.8% participants are using daily wear contact lens, 14.4% participants have used previously but not currently using contact lens, 12.5% participants are using Extended wear contact lens, 4.8% are using Continuous wear contact lens, whereas 2.84% participant doesn't know which type of contact lens they are using. (Figure 5). 2.88% of participants are using CIBA Vision contact lens, 12.5% of participants are using Johnson and Johnson contact lens, 20.1% participants are using Bausch and Lomb contact lens, 21.1% are using other types of contact lens. (Figure 6). 25.96% of participants used contact lens for good vision, 23.047% participants used contact lens for cosmetic reasons, 10.5% used contact lens for distance and near good vision whereas 39.4% never used contact lens. 92.30% of participants are using soft contact lens were as only 7.69% of participants are using rigid contact lens. (Figure 7). 55.7% of participants have used the cleaning procedures while using contact lens, while 43% of participants never knew about the procedure or have not used cleaning procedures while using contact lens. (Figure 8). 31.7% of participants felt having discomfort by using a contact lens, whereas 29.8% of participants did not feel any discomfort by using a contact lens. (Figure 9). 60.5% of participants thought contact lens provides a better field of vision, whereas 6.73% of participants never thought contact lens provides a better field of vision. (Figure 10). 58.65% of participants never slept overnight with your Contact lens. Whereas 2.88% of participants slept overnight with your Contact lens. (Figure 11). 21.15% of Participants got to know about contact lens from an ophthalmologist or optometrist, 17.30% of participants got to know about contact lens from personal observation whereas 1.4% of participants got to know about contact lens from family and friends.

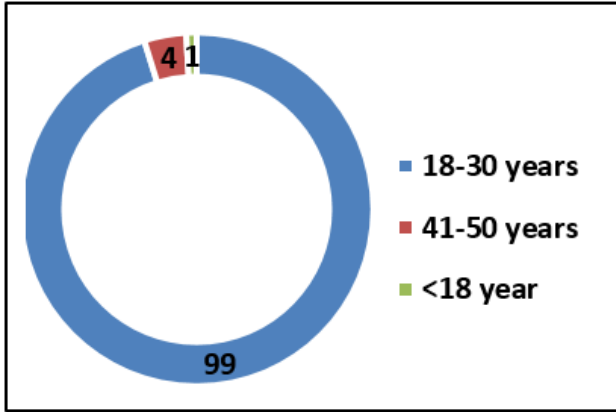


Fig. 1: Majority of the age

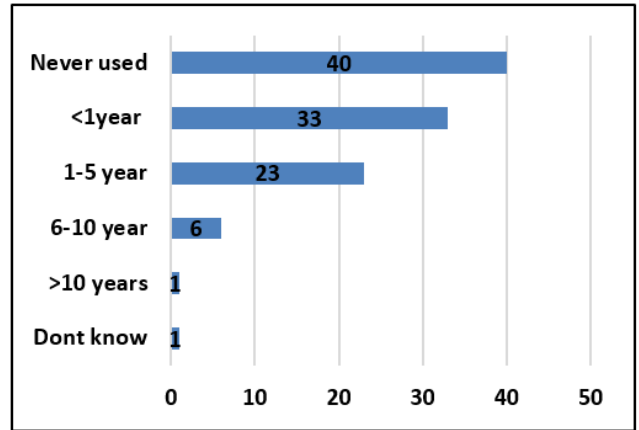


Fig. 4: Questionnaire response 1- For how long you are using contact lens?

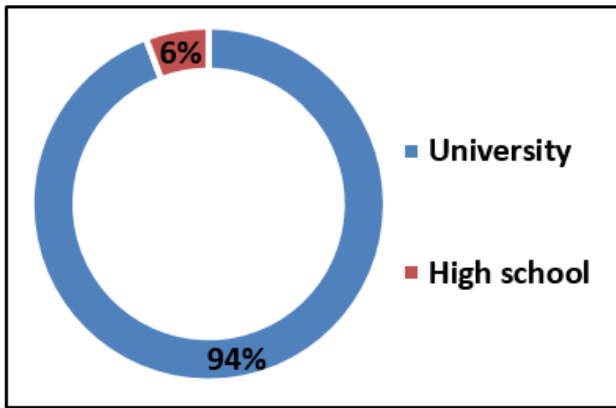


Fig. 2: Education level

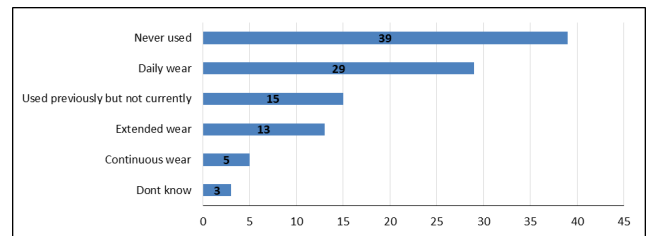


Fig. 5: Questionnaire response 2- What modalities of contact lens you use?

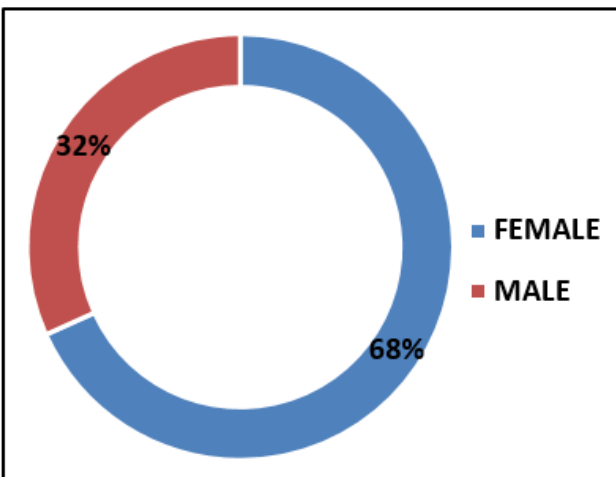


Fig. 3: Male & female ratio

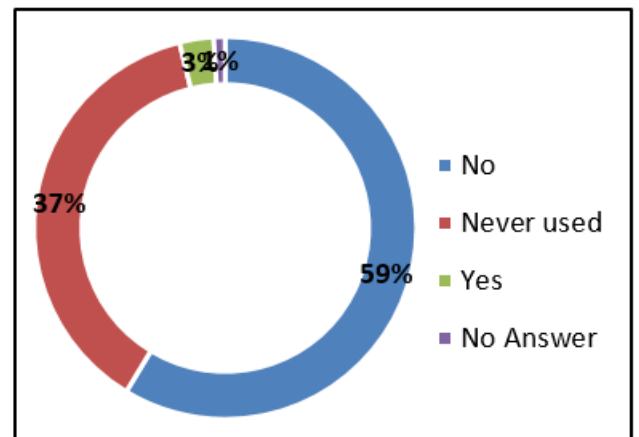


Fig. 6: Questionnaire response 7- Have you ever slept overnight with your contact lens?

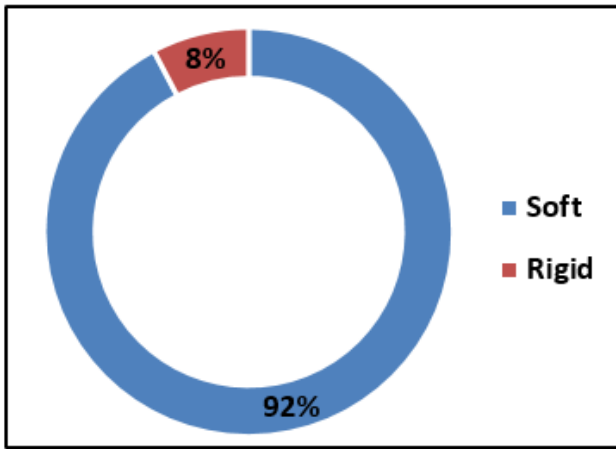


Fig. 7: Questionnaire response 4- What type of contact lenses are you currently wearing?

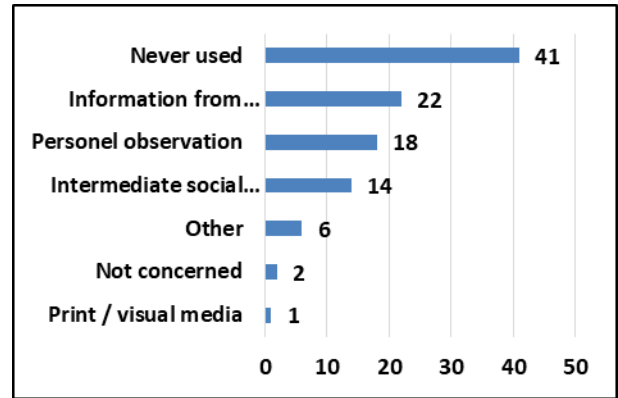


Fig. 10: 8-Mention the source of concern about contact lens use?

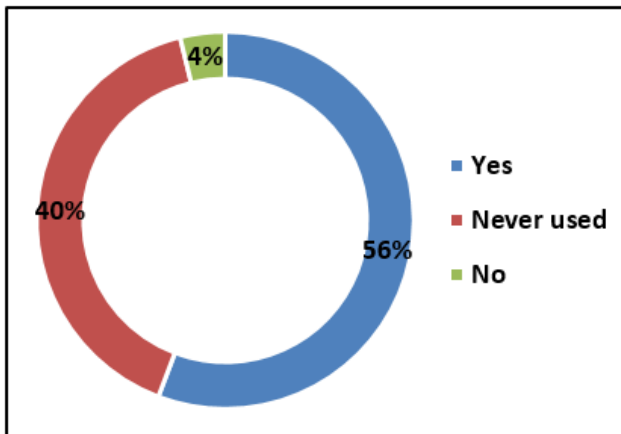


Fig. 8: Questionnaire response 5- Are you following the cleaning procedures while using contact lenses?

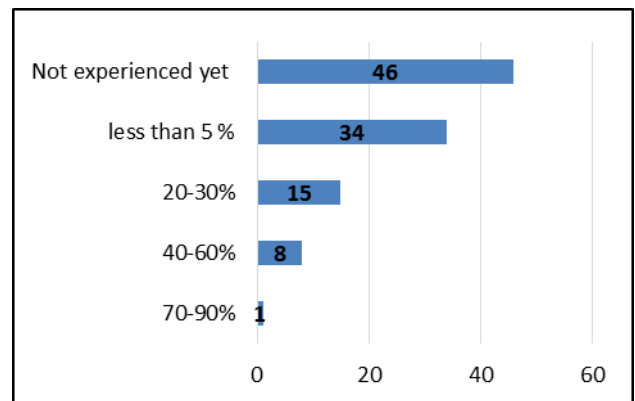


Fig. 11: Questionnaire response 9- Severity level of the above complications?

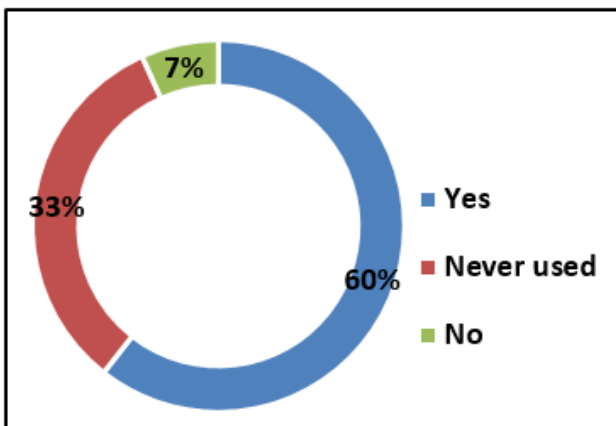


Fig. 9: Questionnaire response 6- Have you ever thought contact lens provides better field of vision?

Table 2: Sociodemographic variables

| Sociodemographic Variables n=104 |                |           |
|----------------------------------|----------------|-----------|
| Age                              | a) 18-30 years | 99(95.1%) |
|                                  | b) 41-50 years | 4(3.8%)   |
|                                  | c) <18 year    | 1(0.96%)  |
| Sex                              | a) Male        | 33(31.7%) |
|                                  | b) Female      | 71(68.2%) |
| Education level?                 | a) University  | 98(94.2%) |
|                                  | b) High school | 6(5.76%)  |

**Table 3:** Questionnaire response rate

| <b>Questionnaire Response Rate n=104</b>   |  |            |
|--|--|------------|
| 1- For how long you are using Contact lens?  | a) Never used                            | 40(38.4%)  |
|  | b) <1 year                               | 33(31.7%)  |
|  | c) 1-5 year                              | 23(22.1%)  |
|  | d) 6-10 year                             | 6(5.76%)   |
|  | e) >10 years                             | 1(0.96%)   |
| 2- What modalities of contact lens you use?  | a) Never used                            | 39(37.5%)  |
|  | b) Daily wear                            | 29(27.8%)  |
|  | c) Used previously but not currently     | 15(14.4%)  |
|  | a) Extended wear                         | 13(12.5%)  |
|  | b) Continuous wear                       | 5(4.8%)    |
| 3- Which brand of contact lens are you using?                                      | c) Don't know                            | 3(2.84%)   |
|  | a) None of the above                     | 45(43.2%)  |
|  | b) Others                                | 22(21.15%) |
|  | c) Bausch and Lomb                       | 21(20.1%)  |
|  | d) Johnson and Johnson                   | 13(12.5%)  |
| 4- Your purpose of wearing contact lens?   | e) CIBA Vision                           | 3(2.88%)   |
|  | a) Never used                            | 41(39.4%)  |
|  | b) For good vision                       | 27(25.96%) |
|  | c) Cosmetic reasons                      | 24(23.07%) |
|  | d) For distance and near good vision     | 11(10.5%)  |
| 5- How often you visit ophthalmologist.  | e) Don't know                            | 1(0.96%)   |
|  | a) When you catch with some problem      | 65(62.5%)  |
|  | b) Regularly                             | 18(17.3%)  |
|  | c) Never visited                         | 18(17.3%)  |
|  | d) Other                                 | 3(2.880%)  |
| 6- Are you satisfied while using Contact lens ?                                    | a) Yes                                   | 51(49.03%) |
|  | b) Never used                            | 41(39.42%) |
|  | c) No                                    | 12(11.53%) |
|  | a) Other                                 | 47(45.19%) |
|  | b) Contact lens are expensive            | 22(21.15%) |
| 7- What are the reasons for not using contact lens ?                               | c) Using contact lens is difficult       | 20(19.23%) |
|  | d) Using contact lens is harmful to eyes | 15(14.42%) |
|  | a) Soft                                  | 96(92.30%) |
|  | b) Rigid                                 | 8(7.69%)   |
|  | a) Yes                                   | 58(55.76%) |
| 8- What type of contact lenses are you currently wearing?                          | b) Never used                            | 42(40.38%) |
|  | c) No                                    | 4(3.84%)   |
|  | a) Never used                            | 40(38.46%) |
|  | b) Yes                                   | 33(31.73%) |
|  | c) No                                    | 31(29.80%) |
| 9- Are you following the cleaning procedures while using contact lens?             | a) Yes                                   | 63(60.57%) |
|  | b) Never used                            | 34(32.69%) |
|  | c) No                                    | 7(6.73%)   |
|  | a) None of the above                     | 33(31.73%) |
|  | b) Within a week                         | 31(29.80%) |
| 10- Have you ever felt that you are having any discomfort by use of contact lens ? | c) Everyday                              | 30(28.84%) |
|  | d) Within a month                        | 8(7.69%)   |
|  | e) Prefer not to clean                   | 2(1.92%)   |
|  | a) No                                    | 61(58.65%) |
|  | b) Never used                            | 39(37.5%)  |
| 11- Have you ever thought contact lens provides better field of vision ?           | c) Yes                                   | 3(2.88%)   |

*Continued on next page*

Table 3 continued

|  |   |            |
|--|---|------------|
|  | d) No Answer  | 1(0.96%)   |
| 14- Do you use eyedrops for lubrication in the case of dryness while using contact lens? | a) Yes  | 56(53.84%) |
|  | b) No   | 48(46.15%) |
| 15- Did you face any kind of difficulty while using contact lens ?                       | a) Never used   | 42(40.38%) |
|  | b) No   | 35(33.65%) |
|  | c) Yes  | 27(25.96%) |
|  | d) Never used   | 41(39.42%) |
|  | e) Information from Ophthalmologist/ Optician   | 22(21.15%) |
| 16- Mention the source of concern about contact lens use?                                | f) Personnel observation  | 18(17.30%) |
|  | g) Intermediate social circle (family , friends)  | 14(13.40%) |
|  | h) Other  | 6(5.76%)   |
|  | i) Not concerned  | 2(1.92%)   |
|  | j) Print / visual media   | 1(0.96%)   |
| 17- Severity level of the above complications?   | a) Not experienced yet  | 46(44.23%) |
|  | b) less than 5 %  | 34(32.69%) |
|  | c) 20-30%   | 15(14.42%) |
|  | d) 40-60%   | 8(7.69%)   |
|  | e) 70-90%   | 1(0.96%)   |
|  | a) Never used   | 34(32.69%) |
|  | b) Dislike / tired of wearing glasses   | 25(24.3%)  |
| 18- Mention the reasons influencing the decision to start using contact lens ?           | c) Limitation of movement (wearing glasses inconvenient while working / Professional reasons, Sports)   | 10(9.61%)  |
|  | d) Others   | 9(8.65%)   |
|  | e) Physical discomfort (weight on face, headache etc) or necessity (facial structure, eye structure etc | 8(7.69%)   |
|  | f) Aesthetic / Visual concerns  | 7(6.73%)   |
|  | g) None of the above  | 6(5.76%)   |
| 19- During a typical day in the past 2 weeks, how often eyes feel dry?                   | a) Never used   | 35(33.65%) |
|  | b) Rarely   | 28(26.92%) |
|  | c) Sometimes  | 22(21.15%) |
|  | d) Never  | 13(12.5%)  |
|  | e) Constantly   | 6(5.76%)   |

#### 4. Discussion

This study shows that most of participants says that the reason for not using the contact lenses is that the contact lenses are expensive and some of the participants says that they do not know how to use contact lens, and some says using contact lens is harmful. Chavan et al. study done in Maharashtra showed prevalence of contact in medical students was 17% only.<sup>10</sup> In this study, 23.0% of participants were wearing contact lenses for cosmetic purpose and 25.96% for refractive purpose. Most of the contact lens users were females, and the reasons were cosmetic. A study done by Curran et al. among 787 contact lens wearers revealed that only 30% cleaned their lens case daily and that too mainly with tap water only. In our study, we found that only 4% of participants were following the cleaning procedures while using contact lenses. The results of these studies discussed above shows similarities with our current study which shows that many contact lens wearers are increasing their risk to infection by not following the lens care methods. Most ophthalmologists/Optometrists recommends that lens cases should be cleaned daily with fresh contact lens solution and allowed to air dry. In our study, 3% of the students were sleeping with the lenses, which might predispose to corneal infection. Another study which was done by Douglas C Chang et al. also noted that in addition to poor hygiene, contaminated lens solution, and contamination of contact lens storage case, over wear syndrome also is the main cause of bacterial keratitis.<sup>11</sup> In this study most of the participants thought that contact lens can provides better field of vision as compared to spectacles and also the majority of the participants says i.e., 92% are using rigid gas permeable contact lenses while remaining 8% of participants are using soft contact lenses.

#### 5. Conclusion

As the population who uses the contact lens in their daily life need to take care for the modalities of contact lens for their use, cleaning procedures, and to be aware of the solution usage while using contact lens. The knowledge related contact lens in the estimated population is graded as poor as many of them are not using contact lens as well as their attitude towards contact lens is graded as “2” on scale as their knowledge and awareness about contact lens use is poor. Based on research, in south Delhi reason for using contact lenses is mainly for good vision as well as cosmetic reasons. With that, there is a need for a health education program for awareness on how to use contact lenses and what are the benefits of using contact lens among the non-users of contact lenses. This will be helpful for many people to promote Contact Lens hygiene practices, Benefits of using contact lenses, and eliminating the likelihood of contact lens related problems.

#### 6. Source of Funding

None.

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