

Assessment of Knowledge & Compliance behaviour among Contact Lens users who visited Tertiary Eye care Hospital: Research Article

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Abstract

Background: The demand for contact lenses is driven by factors such as increasing cases of refractive errors and the rising popularity of cosmetic lenses. The purpose of this study to evaluate patient knowledge and behaviour regarding contact lens wear

Methods: This is a cross-sectional study with 34 participants from Era Hospital Lucknow. Data was collected using pre-approved questionnaire and ophthalmic examination. Data was analysed using Microsoft Excel 2019 and IBM SPSS Statistics 20.0. Descriptive statistics (frequency, mean $\pm$ SD) summarized all variables. One-way ANOVA (F-test) assessed variability within groups, and the P-value < 0.05 was considered statistically significant.

Result: On the basis of hygiene 94.1% reported cleaning their hands before inserting their lenses. whereas 85.3% of respondents replaced CLs as recommended ($p < 0.001$). Just 58.8% ($n = 20$) reported seeing a doctor frequently ($p = 0.467$). 11.8% ($n = 4$) users reported wearing lenses for more than eight hours per day, ($p < 0.001$).

On the basis of compliance by lens type 100% of RGP users and 93.3% of soft users reported cleaning their hands ($p = 1.000$).

Conclusion: Despite all the recommendations & compliance behaviour there's a still need of patient education to change attitude related compliance of routine checkup. When contrasting RGP/Hard & Soft/Hydrogel lens, there were no high variation despite the fact that RGP wearers seemed to be a little more obedient.

Keywords: Contact lens, Knowledge, Hydrogel Lens, RGP Lens.

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BACKGROUND

Contact lenses are widely used across the globe, with millions relying on them for vision correction, cosmetic enhancement, and therapeutic purposes. The global contact lens market was valued at \$18.6 billion in 2023 and is projected to grow at a CAGR of 8.9% from 2024 to 2030. (1)

The market is expected to reach \$19.83 billion worldwide in 2025, with steady growth anticipated in the coming years.^{2,3}

The demand for contact lenses is driven by factors such as increasing cases of refractive errors, advancements in lens technology, and the rising popularity of cosmetic lenses. Additionally, daily disposable lenses are gaining traction due to their convenience and hygiene benefits.(3)

Yvonne Wu et. Al. conducted study in 2010 on title "Contact lens user profile, attitudes and level of compliance to lens care". In this study author concluded that Common non-compliant behaviour among lens users including not washing their hands properly, and not taking proper care of their lenses.

Online lens purchases were linked to a lack of knowledge about follow-up visits. That needs more patient education regarding usage of CLs.(13)

Ajay Kumar Vijay et.al. conducted study on topic "Contact lens storage case hygiene practice and storage case contamination". The author concluded that, in comparison to the *P. aeruginosa* isolate, the *S. aureus* isolate produced less dense biofilms that were more resilient to hygienic practices. These substantial biofilms could not be removed by rinsing (with MPS or hot water) and then letting the area air dry for six hours. The best method for both strains was to rinse with the MPS, then wipe the tissue and let it air dry.(15,16)

Based on the concept of the material used in their manufacture, the following three categories of contact lenses can be differentiated: hard lenses, rigid gas-permeable lenses, and soft lenses. In a number of nations, 40.5% of adults between the ages of 15 and 25 reported using contact lenses, with women making up the majority of those afflicted. (1)

Types of lenses

- **Soft Disposable Lenses:** Represent about 93% of all contact lens use in the United States, with

daily disposables accounting for a rapidly growing segment, now nearly half of new soft lens fittings.

- **Rigid Gas Permeable (RGP) Lenses:** Comprise roughly 7% of users. Within RGPs, specialized designs like scleral lenses (for keratoconus or severe dry eye) and orthokeratology (overnight corneal reshaping) are growing in niche popularity but still represent a small fraction of overall fits.(4,5)

The shift toward disposable soft lenses aligns with convenience and safety benefits. RGPs remain an important option for patients with irregular corneas or high astigmatism and are sometimes more durable, but they require specialized fitting and consistent wear time for adaptation.(5)

- **Daily disposable lenses**

One of the most significant shifts in recent years is the surge in daily disposable contact lenses. Formerly considered premium-priced, single-use lenses now make up close to half of new soft lens fits. Practitioners note that daily disposables reduce the risk of contamination associated with cleaning and storing lenses, which translates into fewer lens-related eye infections.(7)

Addressing unhygienic procedures, nighttime usage, and contact lens solution-induced problems will continue to be an issue in eye care practice as long as patients wear contact lenses consistently to correct their refractive defect.(1,2)

Despite the higher annual expense, many wearers find the convenience and enhanced safety worth the cost. Some also report better end-of-day comfort, as each pair of lenses is used only once.(8)

METHODOLOGY

This is questionnaire based cross sectional, prospective clinical based pilot study.

All patients consent form was signed and verbal explanation of the protocol was done before giving

questionnaire form. Data were analysed using Microsoft Excel 2019 (Microsoft Corporation, Redmond, WA, USA) and IBM SPSS Statistics 20.0 (IBM Corp., Armonk, NY, USA). Independent t-tests compared mean differences in parameters. Descriptive statistics (frequency, mean $\pm$ SD) summarized all variables. One-way ANOVA (F-test) assessed variability within groups, and the P-value < 0.05 was considered statistically significant.

RESULT

34 contact lens (CL) users who were myopic/hyperopic patients and the inclusion criteria of this study. Table 1 summarizes the distribution of the sample, which was used as the foundation for further analysis. Despite the sample's small size, it yielded enough information to investigate wear behaviours, sanitary compliance, lens type preferences, and demographic tendencies.

Demographic Distribution

According to gender analysis, the sample's composition was 64.7% female (n = 22) and 35.3% male (n = 12) (Table.1). The percentage of female users was higher, but the difference was not statistically significant (p = 0.086). Therefore, it cannot be said that the gender distribution in this study is substantially biased.

In terms of age, 76.5% of participants (n = 26) were in the 18–25 age range, whereas 23.5% (n = 8) were in the 25–35 age range. The statistical significance of this distribution (p = 0.002) confirmed that the study's contact lens wearers were significantly overrepresented among younger individuals (18–25 years old).

When combined, these findings imply that the average CL user in this group was a female between the ages of 18 and 25, which is in line with more general data showing that young women make up the majority of CL adopters.

Table.1 Demographic and Clinical Characteristics of Contact Lens Users (n = 34)

Variable	Category	n	Percentage %	P Value
Gender	Female	22	64.7	
	Male	12	35.3	
Age	18–25	26	76.5	
	25–35	8	23.5	
Lens type	Soft/hydrogel	30	88.2	p < 0.001*
	RGP/Hard	4	11.8	
Replacement schedule	Daily	12	35.3	0.401*
	Annually	10	29.4	
	Weekly	6	17.6	
	Monthly	6	17.6	

(Note: p-value: probability value, *: Significant)

[Data in table-1 showing that young women make up the majority of CL users, while the choice of users is highest for Soft/Hydrogel with replacement schedule. ^(12,18)]

Table.2 Hygiene & follow-up percentage

Variable	Yes (n)	Percentage%	P Value
Wash hands before insertion	32	94.1	< 0.001
Change solution daily	21	61.8	0.171
Replace CLs as advised	29	85.3	< 0.001
Visit doctor frequently	20	58.8	0.467

(Note: p-value: probability value, *: Significant)

[Data in table - 2 shows hand cleanliness and replacement compliance were very good, there were gaps in routine follow-up and solution replacement, which still need patient education. ^(6,10)]

Table 3: Wear behaviour percentage

Variable	Category	n	%	P Value
Daily wear hours	> 8 hours	4	11.8	<0.001
Sleep with CLs	Occasionally	1	2.9	<0.001

(Note: p-value: probability value, *: Significant)

[Data in table-3 showing that nighttime wear was very uncommon in this population, as only 2.9% (n = 1) acknowledged to occasionally sleeping with CLs. ⁽⁹⁾]

Lens Type Distribution

88.2% (n = 30) reported using soft/hydrogel lenses, which were significantly more common than the 11.8% (n = 4) who reported using rigid gas permeable (RGP) or hard lenses. It was determined that this preference was extremely significant ($p < 0.001$), indicating that soft lenses predominate in this demographic. (Table 1).

Replacement Schedule

Daily (35.3%, n = 12), annual (29.4%, n = 10), weekly (17.6%, n = 6), and monthly (17.6%, n = 6) replacement schedules were distributed. Graph 2 shows that the differences between these groups were not statistically significant ($p = 0.401$). This suggests that, despite the prevalence of daily disposables and yearly replacement schedules, there was no discernible preference for a particular replacement mechanism. (Table 1).

Hygiene and Follow-up Compliance

Compliance practices as follows-

- 94.1% (n = 32) reported cleaning their hands before inserting their lenses, which was a highly significant rate ($p < 0.001$).
- 61.8% of the sample (n = 21) changed their answer every day; nevertheless, this difference was not statistically significant ($p = 0.171$).
- 85.3% (n = 29) of respondents replaced CLs solution as recommended, a highly significant result ($p < 0.001$).
- Just 58.8% (n = 20) reported seeing a doctor frequently, and this difference was not statistically significant ($p = 0.467$).

Therefore, even though hand cleanliness and replacement compliance were very good, there were gaps in routine follow-up and solution replacement, which still need patient education.

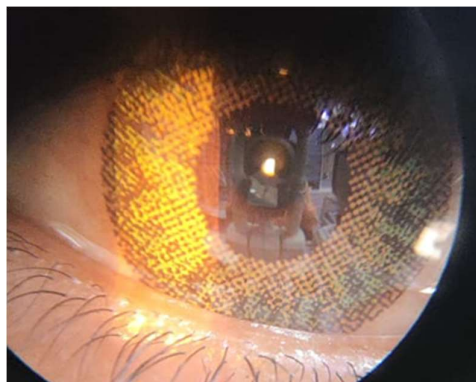


Fig.1 Patient with cosmetic lens with -2.00DS Myopia correction Power, presented with itching/burning sensation due to not following the compliance.

Wear Behaviour

Just 11.8% (n = 4) of users reported wearing lenses for more than eight hours per day. The fact that this difference was so significant ($p < 0.001$) indicates that most people followed safe wear guidelines. Similarly, nighttime wear was very uncommon in this population, as only 2.9% (n = 1) acknowledged to occasionally sleeping with CLs, which is likewise a statistically significant finding ($p < 0.001$). These results show that there is little participation in high-risk behaviours and that the wear pattern is generally safe.



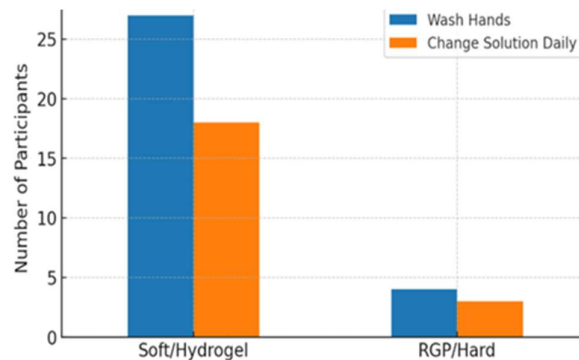
Fig.2 H/O Ocular trauma x 8 years, Patient used Soft coloured CLs on irregular surface of cornea without medical advice, CLs got stuck on superior fornix causing lacrimation & pain.

Compliance by Lens Type

When contrasting RGP/Hard and soft/hydrogel users-

- 100% of RGP users and 93.3% of soft users reported cleaning their hands. There was no significant change ($p = 1.000$).
- Seventy-five percent of RGP users and sixty percent of soft users reported daily solution changes; this difference was not statistically significant ($p = 0.61$).

Statistical research revealed that there were no appreciable variations in compliance by lens type, despite the fact that RGP wearers seemed to be a little more obedient when it came to changing their solutions.



Graph.1 The graph representing Compliance by lens type (Hydrogel/RGP CLs).

DISCUSSION

In this study we concluded that on the basis of attitude and hygiene perspective around 94.1% users clean their hands which is highly significant and 85.3% replaced CLs solution as recommended by the doctors/optometrist around 58.8% reported routine checkup frequently as per recommendation after prescription of refractive correction and that

was not statistically significant, therefore it still needs patient education to change attitude related compliance of routine checkup, solution replacement and clinic visit as per recommendation by their doctors/optometrist.

On the basis of wear behaviour 88.2% reported wearing lenses less than < 8 hours/day, on the other

hand around 11.8% reported wearing lenses more than >8 hours/day, it indicate that most people followed safe wear guidelines to avoid corneal damage, also nighttime wear were very uncommon as only 2.9% (n=1) acknowledged to occasionally sleeping with CLs.

So it concluded that the wear pattern is generally safe.

CONCLUSION

When contrasting RGP/Hard & Soft/Hydrogel lens, Statistical research revealed that there was no high variation in compliance by lens type, despite the fact

that RGP wearers seemed to be a little more obedient when it comes to changing their contact lens solutions. Poor lens hygiene and inadequate lens washing before storage may result from improper advice given to contact lens wearers during examinations or from a lack of knowledge about after-care visits.

Limitation of the study: The study was conducted on very small sample, Therefore for best analysis It's recommended to increase sample size for future studies.

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