

Impact of the COVID-19 Pandemic on Contact Lens Usage Patterns in Pakistan

Malika Zameer^a

^a M.Phil Optometry, Optometrist, Nain sukh eye hospital, Saddar, Rawalpindi

Correspondence: mpo-fa19-019@tuf.edu.pk

ABSTRACT

Background and Objectives: The COVID-19 pandemic has affected the daily life routine with a reduction in social activities due to lockdown. It has affected the use of contact lenses. The study aimed at evaluating the pattern of contact lens wear and possible explanations for contact lens discontinuation during pandemic in our population.

METHODOLOGY: After taking written informed consent a self-designed printed/online questionnaire was given to study participants. Data was entered and analyzed by SPSS version V.25 software. Frequencies and percentages are given for categorical variables. The continuous data is summarized in the form of mean \pm standard deviation or median (IQR) depending upon the distribution. The distribution of data was assessed by Shapiro-Wilk's statistics. To establish relationship between categorical variables Pearson's Chi-square test was applied.

RESULTS: Our study concludes that the individuals had increased the hygiene and replacement schedules for lenses. Almost half of the study subject discontinued contact lens wear during COVID-19 pandemic. The most frequent cause of discontinuation of contact lens wear was social isolation.

CONCLUSION: There is recommendation for contact lens wearers to maintain their contact lens case replacement and cleaning habit. If the wearer is feeling sick because of coronavirus, then they should temporary discontinued their lenses and after recovery resume wearing their lenses but the new ones.

KEYWORDS: Contact lens, COVID-19 impact, Discontinuation, Pattern of CL wear, Contact lens hygiene. CL care, behavior toward CL wear and care.

INTRODUCTION

Contact lenses are the corrective lenses directly placed on the surface of the cornea¹. Contact lenses are used to treat refractive error, keratoconus, anisometropia, unilateral aphakia, and also used for therapeutic purposes. Quality of life gets improved by using contact lenses because it's not only corrected refractive errors, it also provides a better appearance.

1.1. Types: -

There are different types of contact lenses

- Soft bandage contact lenses

For therapeutic use

- Hard contact lens
- Soft contact lens
- RGP contact lens
- Hybrid contact lens
- Scleral contact lens

- Multifocal contact lens
- Painted contact lenses

In aniridia, coloboma for cosmetic purpose

Types based on wearing time

- ☑ Daily wear
- ☑ Extended wear
- ☑ Disposable

The prevalence of myopia is increasing day by day. It has been reported that 28 % of the global population was affected by 2010 and nearly 50 % of the global population will be affected by 2050. High myopia is associated with many sight threatening problems and causes permanent visual defects. Although some multifocal and extended depth of focus soft lenses were found effective in slowing down the progression of

How to cite this: Zameer, M. Impact of the COVID-19 Pandemic on Contact Lens Usage Patterns in Pakistan. International Journal of Healthcare Professions. 2025; 2(3): 20-25

myopia.³ Eye care practitioners or optometrists agree on the importance of myopia management by contact lenses for rapid development or higher myopia in children's. Majority of eye care practitioner in Australia and New Zealand have strong interest in the management of myopia by CL, they think it is the right option and it should be given to everyone. Similarly, it is the common practice in these countries to introduce myopia managing CL in children under 15 year of age. The proportion of ECP's using CL for management of myopia in children more than 10 years of age is much higher (78%) as compared to the ECP's (50%) treating children in less than 8 years of age. Approximately 6 out of 10 eye care practitioners recommend increasing outdoor activities and reduce screen time for pediatric myopes.^{4,5}

COVID-19 Pandemic

The period of COVID-19 Pandemic is considered as March-August 2020.

Contact lens discontinuation

A subject will be considered as having discontinued using the contact lenses if he/she stopped using contact lenses for a week or few days in a week (Pucker & Tichenor, 2020).

The discontinuation will be as

- Temporary

Discontinued the contact lenses temporarily but again continued wearing contact lens during March-August 2020

- Permanent

Never used contact lenses during March-August 2020.

Rationale

Limited data is available describing the pattern of contact lens use changes in COVID-19 pandemic period. Also, the available data show variable results regarding reasons for discontinuation or continuation of CL use during COVID-19. The present study is designed to bridge this gap by investigating the pattern of contact lens wear as well as exploring the reasons for the discontinuation of use if any during the pandemic.

Objectives

- To determine the pattern of contact lens use during COVID -19 pandemic.
- To determine the frequency of patients discontinuing the contact lens wear during the COVID -19 pandemic.
- To determine the causes of stopping contact lens use during COVID -19 pandemic.

METHODOLOGY

1. Study design

This is descriptive study.

2. Place of study

At Nain Sukh Eye Hospital Saddar, Rawalpindi.

3. Study duration

2 months (1/5/2021 – 30/6/2021)

4. Sampling technique

A Convenient sampling technique has been used.

5. Sample size

The following formula (Daniel, 1999) was used for sample size calculation

$$n = Z^2 P (1 - P) / d^2$$

Where n = sample size,

• Z = Z statistic for a level of confidence, value is 1.96

• P = Expected prevalence or proportion, value is 31.5% (Irfan, et al., 2019).

• d = Precision, value is 0.10

According to this formula, the sample size should be 86.

6. Inclusion criteria

• All contact lens users who are presenting in the eye OPD will be included in this study.

7. Exclusion criteria

• Patients who discontinued their lenses because of any systemic disease or due to ocular pathology i.e. eye trauma or eye infection etc.

8. Data collection procedure

After taking written informed consent a self-designed printed questionnaire was given to walk-in participants and the online version of the self-designed questionnaire was sent to the participants whose data was taken from the register of Nain Sukh eye hospital who visited or attended eye OPD during March to August 2020.

The questionnaire has 4 sections in the Performa used to collect the data i.e. Section 1 representing demographic data of participants (such as name, age, gender, and occupation), and CL history (the type of lenses, wearing time, the purpose of CL wear, and from where they purchased their lenses). Section 2 representing the change in the personal behavior or attitude toward CL wear during COVID-19 if they didn't discontinue their lenses. Section 3 representing the question in which contact lens users tell about how they change the pattern of CL wear and care. Section 4 representing the questions in which contact lens users tell us about possible reasons of contact lens discontinuation.

9. Data analysis

Data was entered and analyzed by SPSS software 25. Frequencies and percentages was given for categorical variables. The continuous data was summarized in the form of mean \pm standard deviation or median (IQR) depending upon the distribution. The distribution of data will be assessed by Shapiro-Wilk's statistics. The Pearson's chi-square test was be applied compare the categorical variables.

RESULTS

Our sample comprised of hundred and twenty individuals who were using contact lenses. The incomplete questionnaires were excluded from the results. A total of 99 completed forms were finally used for data analysis. Around two thirds of study subjects were females ($n=71$, 71.72%) and one third were males ($n=28$, 28.28%).

The mean age of all study subjects was 25.98 ± 5.78 years. The mean age of females was 26.65 ± 6.39 years and that of males was 24.29 ± 3.33 years.

The results revealed that most of the individuals relied on optical shops for buying contact lenses irrespective of the COVID-19 pandemic. However, there was a significant rise from (6.1%) to (22.2%) in the utilization of online purchasing facilities during the COVID-19 pandemic (p -value = 0.005). In pre COVID era 42 (42.4%) individuals were wearing their lenses for 4-7 hours. The contact lens wearing time did not adequately change due to the COVID-19 pandemic situation (Table 1).

Table 1. Association of various variables describing the pattern of CL use with COVID-19 pandemic

Variables		Frequency		p-value
		During COVID-19 pandemic	Pre-COVID Era	
Contact lens case Replacement duration	1 month	24 (24.2%)	22 (22.2%)	0.973
	3 monthly	18 (18.2%)	18 (18.2%)	
	6 monthly	14 (14.1%)	13 (13.1%)	
	Others	43 (43.4%)	46 (46.5%)	
Contact lens purchase source	optical shop	60 (60.6%)	72 (72.7%)	0.005*
	clinical practitioner	17 (17.2%)	21 (21.2%)	
	Online	22 (22.2%)	6 (6.1%)	
Contact lens wear time	3 hours or less	23 (23.2%)	19 (19.2%)	0.279
	4 to 7 hours	31 (31.3%)	42 (42.4%)	
	7-10 hours	22 (22.2%)	14 (14.1%)	
	more than 10	23 (23.2%)	24 (24.2%)	

Table 2. Frequency distribution of responses given by study subjects who temporarily or permanently discontinued CL usage due to reasons given below during COVID-19 Pandemic

Variables	Discontinuity	Strongly disagree		Disagree		Neutral		Agree		Strongly Agree	
		n	%	n	%	n	%	n	%	n	%
Limited access to purchase the CLs and their solution during lockdown	Temporary (n=23)	1	4.3	0	0	4	17.4	7	30.4	11	47.8
	Permanent (n=26)	0	0	4	15.4	14	53.8	1	3.8	7	26.9
	Total (n=49)	1	2.1	4	8.2	18	36.7	8	16.3	18	36.7
Reduced Social Activity	Temporary (n=23)	1	4.3	0	0	3	13	11	47.8	8	34.8
	Permanent (n=26)	4	15.4	0	0	1	3.8	6	23.1	15	57.7
	Total (n=49)	5	10.2	0	0	4	8.2	17	34.7	23	46.9
Financial restraint	Temporary (n=23)	1	4.3	0	0	5	21.7	1	4.3	16	69.6
	Permanent (n=26)	4	15.4	4	15.4	8	30.8	6	23.1	4	15.4
	Total (n=49)	5	10.2	4	8.2	13	26.5	7	14.3	20	40.8
Fear of acquiring infection	Temporary (n=23)	1	4.3	6	26.1	5	21.7	4	17.4	7	30.4
	Permanent (n=26)	0	0	10	38.5	1	3.8	4	15.4	11	42.3
	Total (n=49)	1	2.1	16	32.6	6	12.2	8	16.3	18	36.7
	Temporary (n=23)	0	0	0	0	4	17.4	6	26.1	13	56.5

***p-value ≤ 0.05 is considered statistically significant**

There were total of 49 (49.5%) individuals who discontinued contact lens usage during COVID-19 Pandemic. It was noted that out of these 49 study subject, 53.1% ($n=26$) individuals discontinued CL usage permanently from March to August 2020, whereas 46.9% ($n=23$) individuals temporarily discontinued the CL usage during the same time period. Out of all the study participants, 50.5% ($n=50$) individuals continued to follow the same contact lens wearing routine as before the COVID-19 pandemic.

When assessing the reasons focusing on either permanent or temporary discontinuation of contact lens usage i.e., 82.6% individuals discontinued their lenses temporarily because they thought spectacles provide protective covering or effect against coronavirus and another reason was the reduced social activities or lockdown. 78.2% individuals responded that limited access was the contributing factor for temporary discontinuation and decrease in the usage of contact lenses. 80.8% individuals discontinued their lenses permanently due to reduced social activities or lockdown and 57.7% individuals were agreed that they discontinued CLs due to fear of infection and spectacle provide protection during COVID-19 Pandemic.

DISCUSSION

Contact lenses have many uses and primarily they are used for vision. Mostly people use contact lenses to look better. COVID-19 has changed a lot of daily practices in almost every aspect of life. Contact lens wear is no exception.

The aim of our study to see the change in pattern of CL wear during pandemic and to find the possible reason of CL discontinuation if they discontinued their lenses during COVID-19 Pandemic.

Another study shows similar results, out of total contact lens users (n= 385, 77%) were females and 75% users use contact lenses to correct refractive error. In current study (n=68, 68.7%) were using CLs for correcting eyesight and out of 99 individual 72 (72.72%) were females and 28 (28.28%) were males (Khan, et al., 2013). There is a little difference because of sample size.6-10

This study conclude that the (n=41, 41.4%) were agreed they reduced their CL wearing time, (n=29, 29.3%) were using their lenses normally as before pandemic and (n=29, 29.3%) individual were showing neutral attitude regarding the statement of reducing CL wearing time during COVID-19 that means few days they are wearing their lenses as usual and few days they changed their wearing time according to their need. Our study results showed an almost similar trend with Morgan, (2020) study where the contact lens wearing decreased a little, however, the ones using the lenses kept the normal routine. In the Morgan (2020) study, a four days survey was conducted on individuals using contact lenses. A response rate of 23 % was enrolled for assessment.11-15 Out of the total sample, eighty-nine percent percent of the cluster described that they were living in a tough 'lockdown' condition with the rest eleven percent reported to spend the life as per routine. Out of the individuals were self-isolated, twenty two

percent reported they were using their lenses like the routine before COVID-19, five (six percent) were using their lenses frequently than normal routine and the remaining sixty-four patients (seventy two percent) were wearing their lenses less than normal routine. Out of those who are living normally eleven individuals, six (fifty five percent) had a usual usage, forty-five percent reported that they were reducing their use of lenses. many replied that they were using their lenses less than usual since they did not have much need or activities that would require the use of lenses. Since the

most common activities or occasions of use were reported as when meeting friends or socializing (which wasn't possible due to COVID-19 restrictions). Individuals also reported that they were not much socializing, such as work, parties etc. due to which they did not feel like using lenses. Other reasons for decreased lens wear during lockdown included apprehension about infection (8 %), financial restraints (5 %), glasses being currently more convenient in all the protective measures (three percent), around three percent reported that they were using lenses less due to the inadequacy of availability of the lenses. Around three percent did not have any good reason to stop using lenses in pandemic. The same results were true for our study, where we concluded that the most common concern was a decrease in socializing causing reduced usage of lenses, and risk of infection causing a decrease inclination towards the use. Our results explained that the majority of individuals are lockdown who were using their contact lenses in the past causing a decreased trend in usage16

Our study results revealed that the second common reason for CL discontinuation as documented by 70.7% individuals was the idea of protective effects of the glasses against the ocular transmission of the disease. Literature supports the results

Recommendations are made that non-public protective equipment like eye protection (goggles or safety spectacles), together with face masks should be adopted to cut back the likelihood of infection through either airborne or transmission mechanisms. In the ophthalmology clinic, the employment of slit lamp shields is inspired to decrease the spread of COVID-19 among doctors because of examination.

Similar results were predicted by a study that wiped out Greece. it was reported that in the lockdown in Greece about 42.5% of the individuals believed that the chance of acquiring infection by using contact lenses was less (29%) and discontinuation was extremely effective (13.5%). Only a minority (18 %) of the participants do believe that the use of contact lenses during pandemics increases the chances of COVID-19 infection. This study presented the likelihood of reducing or ceasing the employment of CLs during the COVID-19 pandemic17

Contrary to our results, the study by Cordona (2021) highlighted the contact lens wear behaviors during COVID-19. A total of 247 individuals were included and their responses were analyzed. Around sixty-eight percent replaced their lenses every month, around seventy-five percent used proper cleanliness protocols

and solutions. Around eighty percent possessed the lens casing. These results were slightly different to our results however, our sample did not show a change in preference to a multipurpose solution as such. Due to the COVID-10 pandemic, around twenty-eight percent individuals stopped using lenses, around forty-nine percent reduced the use this was inconsistent with our study results. Patients showed decreased compliance towards

hygiene and maintenance of lenses. Around thirty-six percent individuals did not follow hand hygiene protocols, around thirty two percent avoided changing the lenses. Around twenty-three percent did not clean their cases to place lenses, and twenty-seven percent replied that they were not aware of the maintenance of lenses. They claimed that they were not adequately informed by the health care staff as to how to maintain lenses. There is little difference in these two studies because of study location and awareness in contact lens users.¹⁸⁻²⁰

CONCLUSION

Our study concludes that the individuals had increased the hygiene and replacement schedules for lenses. Almost half of the study subject discontinued contact lens wear during COVID-19 pandemic. The most frequent cause of discontinuation of contact lens wear was social isolation.

8. Recommendation:

The following points should be considered

- Educate the contact lens wearer they should maintain their hand hygiene practice whether there is COVID-19 or not.
- If the wearer is feeling sick then temporary discontinued their lenses and after recovery, resume wearing their lenses but use the fresh ones and dispose of the old contact lenses and their case
- A healthy individual can wear their lenses but should follow the proper cleaning and handling protocol.

ACKNOWLEDGEMENT: None

CONFLICT OF INTEREST: None

GRANT SUPPORT AND FINANCIAL DISCLOSURE: None.

REFERENCES

1. Budd, K., 2019. Why contacts might be right for you. Available at: <https://www.aarp.org/health/conditions-treatments/info-2019/contact-lenses.html>. (Accessed: 14 July 2021).
2. Cardona, G., Alonso, S. and Bquets, A., 2021. Patient-practitioner communication and contact lens compliance during a prolonged COVID-19 lockdown. *Contact Lens and Anterior Eye*, p.101433.
3. Chandrinos, A. and Tzamouranis, D. D., 2021. Effect of the COVID-19 pandemic on contact lens wears in Greece. *Ophthalmology Research: An International Journal*, pp.22-29
4. Ijaz, H., Ijaz, R. and Rustam, N., 2017. Awareness of Contact Lens Care among Medical Students. *Pakistan Journal of Ophthalmology*, 33(2), pp. 103-108.
5. Irfan, R., Memon, R. S., Shaikh, M. Y., Khalid, I., Shakeel, N. and Tariq, E., 2019. Knowledge and attitude of youth towards contact lenses in Karachi, Pakistan. *Journal of Global Health Reports*, 3, p.e2019042.
6. Morgan, P. B., 2020. Contact lens wear during the COVID-19 pandemic. *Contact Lens & Anterior Eye*, 43(3), p.213.
7. Porisch, E., 2007. Football players' contrast sensitivity comparison when wearing amber sport-tinted or clear contact lenses. *Optometry-Journal of the American Optometric Association*, 78(5), pp.232-235.
8. Pucker, A. D. and Tichenor, A. A., 2020. A review of contact lens dropout. *Clinical Optometry*, 12, p.85.
9. Sankaridurg, P., 2017. Contact lenses slow the progression of myopia. *Clinical and Experimental Optometry*, 100(5), pp.432-437.
10. Sulley, A., Terrell, B., Bogers, A., Pursey, A., and Lipkin, D., 2021. Global contact lens wear and purchase behavior during COVID-19 times. *Contact Lens and Anterior Eye*, 44(1), p.13.
11. Sulley, A., Venezia, C., Gardner, J., Zucaro, A., and Lumb, E., 2021. Global survey on eye care practitioner perceptions and attitudes regarding myopia and its management. *Contact Lens and Anterior Eye*, 44(1), p.13.
12. Mansoor H, Khan SA, Afghani T, Assir MZ, Ali M, Khan WA. Utility of teleconsultation in accessing

- eye care in a developing country during COVID 19 pandemic. PLoS ONE. 2021;16(1):e0245343. PLOS+1SpringerLink+1
13. 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. Wikipedia+15Lippincott Journals+15PLOS+15
 14. Bhargava R, et al. Contact lens use during the SARS CoV 2 pandemic: risks and implications. PMCID. 2020. PMC
 15. Gammoh Y. Knowledge and awareness of COVID 19 among ophthalmologists: perceptions around contact lens risks. Open Ophthalmol J. 2021;15:236–? PMC+9The Open Ophthalmology Journal+9The Open Ophthalmology Journal+9
 16. Low R, Lee JM, Lai SS, et al. Eye care during the COVID 19 pandemic: patient perceptions in Asia. Ophthalmol Res Pract. 2022. SpringerLink
 17. Almousa AN, et al. Prevalence of digital eye strain during COVID 19: evidence including Pakistan. PMC. 2022
 18. Alamalki AM, et al. Population-perceived eye strain due to digital devices during COVID-19. PMC. 2022.
 19. Jones L, Walsh K, Willcox M, Morgan P, Nichols J. The COVID 19 pandemic: Important considerations for contact lens practitioners. Cont Lens Anterior Eye. 2020;43(3):196–203.
 20. Nagra M, Vianya-Estopa M, Wolffsohn JS. Could telehealth help eye care practitioners adapt contact lens services during the COVID-19 pandemic?. Cont Lens Anterior Eye. 2020;43(3):204–207.

Authors Contributions:

Malika Zameer: Substantial contribution to the conception, design of the work. Survey and design of the work. Data collection. SPSS computing tool. Drafting for approval of the final version to be published

Submitted for publication: 14-07-2025

Accepted after revision: 07-08-2025