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ORIGINAL ARTICLE

Post-cessation corneal topographic changes in refractive and non-refractive soft contact lens users

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ABSTRACT

Background: The use of soft contact lenses (SCLs) can alter corneal thickness, curvature, and surface regularity. Understanding these effects is important for optimizing lens use and preventing long-term corneal complications.

Objective: To compare corneal topographic changes between refractive and non-refractive cosmetic soft contact lens users and to assess recovery after a two-week cessation period.

Methods: A quasi-experimental study was conducted after approval by the Ethical Review Board of the College of Ophthalmology & Allied Vision Sciences (COAVS), King Edward Medical University, Lahore, Pakistan, from 1st May, 2024 to 30th July, 2025 A total of 56 participants (28 refractive and 28 non-refractive SCL users), aged 18–35 years, who had used SCLs for at least 6 months (10 hours/week), were included in the study. Corneal topography was performed immediately after lens removal and two weeks after cessation of SCL use. Quantitative variables were summarized as mean ± SD. Paired and independent t-tests were performed using SPSS 25; $p \leq 0.05$ was considered significant.

Results: Following a two-week cessation of soft contact lens wear, both refractive and non-refractive lens users demonstrated statistically significant increases in corneal thickness. In refractive users, the thinnest corneal thickness and central corneal thickness increased by 14.18 µm and 14.34 µm, respectively (both $p<0.001$). However, comparison of mean changes between refractive and non-refractive users revealed no statistically significant differences for any corneal parameter (all $p>0.05$).

Conclusion: Reversible changes in corneal topography are observed in refractive and non-refractive soft contact lens users. A two-week cessation period appears sufficient to allow corneal recovery.

Key Words: Contact Lenses, Corneal Topography, Refractive Errors

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INTRODUCTION

Soft contact lenses are widely used for vision correction and cosmetic enhancement. Recent estimates suggest that around 140 million individuals globally use contact lenses, highlighting their significant role in modern eye care.[1] These lenses offer notable advantages over spectacles, including a wider field of view, better prismatic correction, and improved cosmetic appeal.[2] Additionally, advanced materials such as silicone hydrogel lenses have enhanced oxygen permeability, reducing complications like corneal hypoxia associated with prolonged lens wear.[3]

Despite their benefits, SCLs can induce physiological changes in the cornea, including alterations in corneal curvature, central corneal thickness (CCT), and regularity, which can affect visual quality and ocular health.[4] The reversibility of these changes after lens

discontinuation is an area of significant clinical importance.

Refractive SCLs are worn to correct vision, whereas non-refractive cosmetic lenses are used without underlying refractive error. Differences in wear patterns, optical demands, and lens handling may lead to distinct corneal responses. Comparing these groups allows evaluation of whether the lens's purpose and usage patterns influence the magnitude or reversibility of corneal changes.[4]

Corneal topography enables quantitative assessment of corneal morphology and optical quality. Central corneal thickness (CCT) represents the thickness at the corneal apex, while thinnest location thickness (TLT) refers to the minimum corneal thickness across the measured area. Anterior and posterior keratometry values describe the mean corneal curvature of the respective surfaces. Cylindrical power reflects corneal astigmatism, whereas root mean square per area (RMS/A) quantifies corneal surface irregularity and optical aberrations. These parameters collectively provide a comprehensive evaluation of corneal structural and optical changes associated with contact lens wear. Scheimpflug-based devices such as the Sirius Corneal Topographer enable precise measurements, aiding early detection of changes and guiding clinical decisions.[5]

The corneal epithelium undergoes complete cellular turnover approximately every 7 days, and lens-induced epithelial alterations and mild corneal edema are expected to resolve within one to two epithelial cycles following discontinuation of soft contact lens wear.1 A study has reported normalization of central corneal thickness and curvature within 1–2 weeks after cessation of soft contact lens use, particularly in the absence of rigid lens–related molding effects. 1 A two-week interval therefore provides sufficient time for epithelial regeneration and early stromal recovery while minimizing prolonged discontinuation that may reduce participants' compliance. This timeframe allows assessment of reversible, clinically relevant corneal changes attributable to soft contact lens wear rather than permanent structural alterations.[6] Understanding this recovery process is vital for informing patients about potential long-term effects and refining clinical practices. While advancements in contact lens materials and designs have mitigated some adverse effects, inconsistencies remain in the literature regarding their impact.

Some studies report significant changes in corneal parameters with prolonged SCL wear, while others find minimal effects, emphasizing the need for further investigation. Additionally, the comparison between refractive and non-refractive SCL users remains underexplored, particularly regarding their effects on corneal topography parameters and recovery pattern. Non-refractive cosmetic soft contact lenses are often perceived as low-risk, leading to less frequent ophthalmic follow-up among users. However, it remains unclear whether cosmetic lens wear induces corneal topographic changes and recovery patterns similar to those seen in refractive lens users. Comparing these groups may help determine whether corneal responses are primarily related to lens wear itself rather than the indication for lens use, thereby informing appropriate clinical monitoring and patient education for all soft contact lens wearers.

The present study was conducted to compare corneal topographic changes between users of refractive and non-refractive cosmetic soft contact lenses and to assess recovery after a two-week cessation period using advanced topographic analysis.

METHODS

The quasi-experimental study was conducted at the College of Ophthalmology & Allied Vision Sciences (COAVS), King Edward Medical University, Lahore, Pakistan, from 1st May, 2024 to 30th July, 2025. Sample size was calculated as 5% significance level, 90% power, a population standard deviation of 0.97, a population variance of 0.94, a test value for the population means of 43.64, and an anticipated population means of 43.04.[7] A total of 56 participants (28 refractive and 28 non-refractive soft contact lens (SCL) users), aged 18–35 years, who had used SCLs for at least 6 months (10 hours/week), were included in the study using a simple, convenient sampling technique.

Participants, females aged 18–35 years who had used soft contact lenses for a minimum of six months and 10 hours per week in both eyes, were included. Individuals with a history of corneal disease, previous corneal surgery, ocular trauma, active ocular infection or inflammation, use of rigid gas-permeable, toric, hyperopic, or therapeutic contact lenses, and systemic conditions such as diabetes mellitus or autoimmune diseases known to affect corneal health were excluded from the study. Participants with inconsistent or irregular wearing histories were excluded.

Additionally, participants using refractive lenses in one eye and non-refractive lenses in the other eye were excluded to avoid inter-eye variability.

After approval of the study protocol, written informed consent was obtained from all participants who met the eligibility criteria, following an explanation of the study's purpose, procedures, and voluntary nature. A detailed clinical history was obtained from each participant, including duration of contact lens use, average daily wearing time, type of contact lens used, and purpose of lens wear.

Baseline corneal topography and pachymetry measurements were performed immediately after removal of contact lenses, representing the corneal status during habitual lens wear. Corneal measurements were obtained using the Sirius Scheimpflug–Placido topography system following a standardized measurement protocol. Both eyes were examined individually during each measurement session.

The corneal parameters recorded included central corneal thickness, thinnest corneal thickness, anterior and posterior average keratometry, anterior and posterior cylindrical power, anterior and posterior radius of curvature along the flat and steep meridians, and root mean square per area (RMS/A), which reflects corneal surface irregularity. These parameters were selected to assess corneal thickness, curvature, and surface regularity in both refractive and non-refractive soft contact lens users.

Following the baseline assessment, participants were instructed to discontinue wearing contact lenses for 2 weeks. After completion of the two-week cessation period, a second corneal topography assessment was performed using the same instrument and standardized protocol to evaluate corneal changes following discontinuation of contact lenses. All measurements were performed by the same examiner to minimize inter-observer variability.

Ethical Approval

The study was conducted from 1st May, 2024, to 30th July, 2025, after taking ethical approval (IRB Approval No: COAVS/39/24) from the College of Ophthalmology & Allied Vision Sciences (COAVS), King Edward Medical University, Lahore, Pakistan, dated 24 April, 2024.

Statistical Analysis

Data were entered and analyzed using SPSS version-25. Normality of data was confirmed by applying shapiro-wilk test. Qualitative variables included contact lens group (refractive versus non-refractive soft contact lens users), eye laterality (right versus left), and gender. Quantitative variables included age, duration of contact lens use, average daily wearing time, and corneal topographic parameters such as central corneal thickness, thinnest location thickness, anterior and posterior average keratometry, anterior and posterior cylindrical power, radius of curvature along flat and steep meridians, and root mean square per area (RMS/A), and were summarized as mean ± standard deviation. Changes in corneal parameters were compared at baseline and two weeks after cessation with a paired-samples t-test, and between groups (refractive vs. non-refractive SCL users) with an independent-samples t-test. p-value ≤ 0.05 was considered statistically significant.

RESULTS

This study included both eyes from 56 subjects (28 in each group). All participants were female. Refractive lens users had a mean age of 21.32 ± 1.61 years and a mean lens-wearing duration of 3.09 ± 1.59 years. Non-refractive lens users had a mean age of 21.19 ± 2.09 years and a lens usage duration of 2.70 ± 1.27 years. No significant differences were observed in age ($p=0.79$) and lens-wearing duration ($p=0.32$) between groups. Following a two-week cessation of soft contact lens wear, both refractive and non-refractive lens users demonstrated statistically significant ($p<0.05$) increases in corneal thickness. In refractive lens users, the thinnest corneal thickness and central corneal thickness increased by 14.18 µm and 14.34 µm, respectively ($p<0.001$), as shown in Table: 1. Significant ($p<0.05$) changes were also observed in anterior average keratometry, anterior cylinder, anterior RMS/A, and posterior corneal radii (Table 1). Similarly, non-refractive lens users showed a significant ($p<0.001$) increase in thinnest and central corneal thickness by 15.93 µm and 16.45 µm, respectively (Table 2), along with significant changes in anterior average keratometry, anterior cylinder, and posterior corneal radii ($p<0.05$).

However, comparison of mean changes between refractive and non-refractive lens users revealed no statistically significant differences in any corneal parameter ($p>0.05$), indicating a comparable pattern of corneal recovery following lens cessation in both groups (Table 3).

Table 1: Corneal parameters of refractive SCL users before and after two weeks of cessation

Parameters	Baseline (mean ± SD)	Post-Cessation (mean ± SD)	Mean Difference	p value
Thinnest Location Thickness (µm)	526.02 ± 32.85	540.20 ± 33.46	-14.18	<0.001*
Central Corneal Thickness (µm)	529.63 ± 32.23	543.96 ± 33.25	-14.34	<0.001*
Anterior Average Keratometry (Diopter)	43.42 ± 1.29	43.35 ± 1.25	0.07	0.029*
Anterior Cylinder (Diopter)	-1.02 ± 0.71	-1.13 ± 0.68	0.10	0.042*
Posterior Average Keratometry (Diopter)	-6.26 ± 0.34	-6.25 ± 0.29	-0.01	0.454
Posterior Cylinder (Diopter)	0.43 ± 0.57	0.36 ± 0.49	0.06	0.243
Anterior Radius of curvature-Flat meridian (Diopter)	43.35 ± 1.37	43.27 ± 1.33	0.08	0.087
Anterior Radius of curvature-Steep meridian (Diopter)	44.40 ± 1.46	44.41 ± 1.43	-0.00	0.979
Anterior surface irregularities / RMS/A (µm/mm²)	0.036 ± 0.015	0.046 ± 0.017	-0.010	<0.001*
Posterior Radius of curvature-Flat meridian (Diopter)	-6.10 ± 0.26	-6.14 ± 0.27	0.04	0.001*
Posterior Radius of curvature-Steep meridian (Diopter)	-6.37 ± 0.29	-6.41 ± 0.30	0.04	0.001*
Posterior surface irregularities / RMS/A (µm/mm²)	0.149 ± 0.070	0.154 ± 0.040	-0.004	0.549

*SCL= Soft contact lens. RMS/A=Anterior Root Mean Square/Area (µm/mm. A paired t-test was used to compare corneal parameters before and after cessation in refractive lens users. * p-values <0.05 was considered statistically significant*

Table 2: Corneal parameters of non-refractive SCL users before and after two weeks of cessation

Parameters	Baseline (mean ± SD)	Post-Cessation (mean ± SD)	Mean Difference	p value
Thinnest Location Thickness (µm)	516.29 ± 32.35	532.21 ± 32.16	-15.93	<0.001*
Central Corneal Thickness (µm)	519.57 ± 33.17	536.02 ± 32.26	-16.45	<0.001*
Anterior Average Keratometry (Diopter)	43.21 ± 1.34	43.08 ± 1.38	0.14	0.004*
Anterior Cylinder (Diopter)	-0.76 ± 0.69	-0.88 ± 0.65	0.13	0.006*
Posterior Average Keratometry (Diopter)	-6.02 ±1.71	-6.18 ± 0.24	0.16	0.438
Posterior Cylinder (Diopter)	0.33 ± 0.45	0.26 ± 0.13	0.07	0.247
Anterior Radius of curvature-Flat meridian (Diopter)	43.16 ± 1.41	43.06 ± 1.55	0.10	0.122
Anterior Radius of curvature-Steep meridian (Diopter)	44.02 ± 1.43	43.99 ± 1.52	0.03	0.602
Anterior surface irregularities / RMS/A (µm/mm²)	0.080 ± 0.262	0.046 ± 0.018	0.035	0.327
Posterior Radius of curvature-Flat meridian (Diopter)	-6.06 ± 0.25	-6.10 ± 0.26	0.04	0.001*
Posterior Radius of curvature-Steep meridian (Diopter)	-6.30 ± 0.26	-6.34 ± 0.26	0.04	0.009*
Posterior surface irregularities / RMS/A (µm/mm²)	0.143 ± 0.062	0.150 ± 0.047	-0.008	0.252

*SCL= Soft contact lens. RMS/A=Anterior Root Mean Square/Area (µm/mm²). Paired t-test was used to evaluate changes in corneal parameters in non-refractive lens users. * p-values <0.05 was considered statistically significant*

Table 3: Mean change in corneal parameters in refractive versus non-refractive SCL users

Parameter	Refractive (mean ± SD)	Non-Refractive (mean ± SD)	Mean Difference	p-value
Thinnest Location Thickness (µm)	-14.18 ± 12.52	-15.93 ± 12.84	1.75	0.467
Central Corneal Thickness (µm)	-14.34 ± 12.04	-16.45 ± 13.68	2.11	0.389
Anterior Average Keratometry (Diopter)	0.07 ± 0.24	0.14 ± 0.34	-0.06	0.248
Anterior Cylinder (Diopter)	0.10 ± 0.37	0.13 ± 0.34	-0.02	0.715
Posterior Average Keratometry (Diopter)	-0.01 ± 0.12	0.16 ± 1.71	-0.17	0.452
Posterior Cylinder (Diopter)	0.06 ± 0.41	0.07 ± 0.43	-0.003	0.970
Anterior Radius of curvature-Flat meridian (Diopter)	0.08 ± 0.35	0.10 ± 0.49	-0.02	0.786
Anterior Radius of curvature-Steep meridian (Diopter)	-0.002 ± 0.46	0.034 ± 0.49	-0.03	0.691
Anterior surface irregularities / RMS/A (µm/mm²)	-0.01 ± 0.02	0.03 ± 0.26	-0.045	0.205
Posterior Radius of curvature-Flat meridian (Diopter)	0.04 ± 0.08	0.04 ± 0.08	-0.002	0.889
Posterior Radius of curvature-Steep meridian (Diopter)	0.04 ± 0.08	0.04 ± 0.11	0.00018	0.992
Posterior surface irregularities / RMS/A (µm/mm²)	-0.004 ± 0.05	-0.008 ± 0.05	0.003	0.736

SCL= Soft contact lens. RMS/A=Anterior Root Mean Square/Area (µm/mm²) An independent-samples t-test was used to compare the mean changes in corneal parameters between users of refractive and non-refractive lenses.

DISCUSSION

This study investigated corneal topography parameters among users of refractive and non-refractive soft contact lenses, with an emphasis on changes after two weeks of lens cessation. Significant reductions in CCT and TLT were observed in both groups, supporting the hypothesis of topographic alterations post-cessation. The anterior surface irregularities (RMS/A) improved significantly among refractive lens users, reflecting improved corneal surface smoothness, although changes in curvature and cylindrical power were minimal. The findings of this study are consistent with recent literature exploring the effects of contact lens wear on corneal parameters. For instance, a study by Kumar in Australia in 2022 reported that daily soft contact lens wear does not significantly affect corneal biomechanical parameters ($p > 0.05$), corroborating our findings of minimal curvature changes (All $p > 0.05$).[8] A study by Consejo documented corneal tissue changes following short-term soft contact lens wear, emphasizing the reversibility of corneal alterations after lens cessation. CCT was affected by 8 h of soft contact lens wear. A statistically significant thickening of CCT was recorded after hydrogel lens wear (paired t-test, $p = 0.03$), as in the current study. Significant reductions were observed in both groups ($p < 0.001$), with slightly more pronounced changes in non-refractive users.[9] Furthermore, a study by Stachura in Poland in 2021 found that extended wear of silicone hydrogel lenses resulted in changes to the anterior corneal surface ($p<0.001$), aligning with our findings of significant changes in corneal thickness ($p < 0.001$).[10] The recovery of corneal parameters after cessation of lens use has also been documented. For instance, a study by Fisher noted that corneal edema and thickness returned to baseline levels after removal of scleral lenses, emphasizing the cornea's ability to recover post-lens wear ($p < 0.05$).[11]

Similarly, Vincent reported that corneal edema did not increase significantly after a certain period of lens wear, suggesting that the cornea can adapt to prolonged lens wear without permanent changes. These studies collectively illustrate the dynamic nature of corneal responses to both lens wear and removal.[12] The absence of significant curvature or cylindrical power changes (all $p > 0.05$) in this study mirrors the work of Iqbal & Mahadevan, which showed minimal changes in corneal curvature and pachymetry between different lens types, reinforcing the notion that lens type may not drastically affect corneal topography ($p > 0.05$).[13]

A 2019 study in Turkey assessed the effects of daily-disposable soft contact lenses on corneal epithelial thickness and anterior and posterior corneal curvatures during an 8-hour wear period. Measurements taken before and after lens wear showed no significant changes in anterior or posterior corneal curvatures ($p > 0.05$) or epithelial thickness ($p > 0.05$). Additionally, there were no notable differences in epithelial thickness among the various lens brands examined ($p > 0.05$). In the current study, both refractive and non-refractive contact lens users exhibited significant thinning of the central and thinnest corneal areas after lens cessation, indicating corneal recovery ($p < 0.001$). Changes in curvature and cylindrical power were minimal ($p > 0.05$).[14]

In the Pakistani context, contact lens–related corneal changes have also been reported. A cross-sectional study found a significant proportion of contact lens users exhibited corneal alterations, including neovascularization and staining, suggesting lens wear impacts corneal integrity among local populations.[15]

In Egypt, a study compared the corneal topographic parameters, corneal thickness, endothelial cell count, and tear breakup time (TBUT) between myopic soft contact lens users and non-contact lens wearers. After a two-week discontinuation of lens wear, most changes in these parameters were reversible ($p < 0.001$). However, corneal thickness and TBUT required a longer recovery period to return to baseline, indicating a slower reversal of these effects. It also mirrors the current study, in which we observed significant thinning of corneal thickness.[7]

The lack of significant differences between refractive and non-refractive users highlights that cosmetic lens users, often overlooked, require equal clinical attention. The reversible nature of corneal alterations suggests that implementing periodic "recovery windows" may benefit habitual users by mitigating long-term effects. Furthermore, improvement in anterior irregularities post-cessation may have implications for reducing discomfort and enhancing visual quality in patients supporting recommendations by. Eye care practitioners should monitor lens wearers more closely, particularly those using lenses for cosmetic purposes.[18] Wearing soft contact lenses for longer durations without periodic cessation also has an impact on the corneal endothelium[16,17] and ocular adnexa, such as Meibomian glands physiology.

Furthermore, improvements in anterior irregularities post-cessation may help reduce discomfort and enhance visual quality in patients.[19] Eye care practitioners should monitor lens wearers more closely, particularly those using lenses for cosmetic purposes. Scheimpflug-based devices such as the Sirius Corneal Topographer enable precise measurements, aiding early detection of changes and guiding clinical decisions.[20] This study confirms that soft contact lens wear induces significant, yet reversible, corneal changes. Comparative analysis highlights the cornea's resilience, with implications for optimizing patient care strategies and monitoring protocols. Future research is essential to unravel long-term effects and refine clinical guidelines for refractive and cosmetic lens users alike.

CONCLUSION

Two weeks of soft contact lens cessation results in significant recovery of corneal thickness and measurable changes in corneal curvature parameters in both refractive and non-refractive lens users. Corneal thickness demonstrates the most consistent and clinically relevant reversal of lens-induced changes. However, the magnitude of recovery is comparable between users of refractive and non-refractive soft contact lenses

Limitations and future recommendations

This study's prospective design and use of corneal topography provide data on lens-induced changes. However, the small sample size and short cessation period limit generalizability. Variations in lens material and care routines were not analyzed, which may influence results. Future research should explore longer cessation periods and larger cohorts, incorporating diverse lens types and wear patterns. Investigating the biological mechanisms underlying recovery, such as epithelial healing processes, would enhance understanding

REFERENCES

1. Goudie C, Tatham A, Davies R, Sifton A, Wright M. The effect of the timing of the cessation of contact lens use on the results of biometry. Eye. 2018; 32(6): 1048-1054. doi: 10.1038/s41433-018-0019-1
2. Zhang J, Kim K, Kim HJ, Meyer D, Park W, Lee SA, et al. Smart soft contact lenses for continuous 24-hour monitoring of intraocular pressure in glaucoma care. Nature Comm. 2022; 13(1): 5518. doi: 10.1038/s41467-022-33254-4
3. Lim N and Vogt U. Characteristics and functional outcomes of 130 patients with keratoconus attending a specialist contact lens clinic. Eye. 2002; 16(1): 54-59. doi: 10.1038/sj.eye.6700061
4. Del Águila-Carrasco AJ, Domínguez-Vicent A, Pérez-Vives C, Ferrer-Blasco T, Montés-Micó R. Assessment of modifications in thickness, curvatures, and volume upon the cornea caused by disposable soft contact lens wear. Eur J Ophthalmol. 2015; 25(5): 385-390. doi: 10.5301/ejo.5000592
5. Abdi P, Atighehchian M and Farsiani AR. Comparison of corneal measurements using two different Scheimpflug analyzers in Sirius and Pentacam devices. Sci Rep. 2023; 13(1): 16956. doi: 10.1038/s41598-023-44133-3
6. Tan B, Tse V, Kim YH, Lin K, Zhou Y, Lin MC. Effects of scleral-lens oxygen transmissibility on corneal thickness: a pilot study. Cont Lens & Ant Eye. 2019; 42(4): 366-372. doi: 10.1016/j.clae.2019.04.002
7. Badawi AE. Morphological and structural corneal changes by soft contact lenses in mild-moderate myopia after two weeks of usage discontinuation. Mansoura Med J. 2015; 44(1): 41-52. doi: 10.21608/mjmu.2015.124263
8. Ahmad A, Mohd-Ali B and Ishak B. Changes in the morphology of corneal endothelial cells in young myopic adults after 6 months of wearing soft contact lenses: a Malaysian perspective. Clin Optom. 2018; 10: 109-113. doi: 10.2147/OPTO.S172272
9. Sahu J. Corneal Topography: Sirius. Delhi J Ophthalmol. 2021; 32(2): 119-124. doi: 10.7869/djo.731
10. Consejo A, Trillo-Moreno I and Remon L. Corneal tissue changes following short-term soft contact lens wear of different materials. Ophthalmic & Physiol Opt. 2023; 43(1): 35-45. doi: 10.1111/opo.13067
11. Fisher D, Collins MJ and Vincent SJ. Scleral lens thickness and corneal edema under closed eye conditions. Eye & Contact Lens. 2022; 48(5): 194-199. doi: 10.1097/icl.0000000000000852
12. Vincent SJ, Alonso-Caneiro D and Collins MJ. The time course and nature of corneal oedema during sealed miniscleral contact lens wear. Cont Lens & Ant Eye. 2019; 42(1): 49-54. doi: 10.1016/j.clae.2018.03.001
13. Iqbal A and Mahadevan R. Impact of scleral lens on corneal curvature and pachymetry in keratoconic eyes. Cornea. 2022; 41(5): 579-582. doi: 10.1097/ico.0000000000002868
14. Turhan SA, Yigit DD and Toker E. Corneal epithelial thickness and corneal curvature changes during the day: The effects of daily disposable contact lens wear. Cont Lens & Ant Eye. 2020; 43(4): 389-394. doi: 10.1016/j.clae.2019.11.017
15. Ammer R. Effect of contact lens wear on cornea. Pak J Ophthalmol. 2016; 32(4). doi: 10.36351/pjo.v32i4.91
16. Aljaberi HA, Rahmani S and Muhammad GA. Effect of soft contact lens wear on corneal endothelial cell characteristics. Cont Lens & Ant Eye. 2025;48(5): 102441. doi: 10.1016/j.clae.2025.102441
17. Ono T, Kaida T, Higashi S, Mori Y, Nejima R, Iwasaki T, et al. Corneal endothelial density and morphology in long-term soft contact lens users in Japan: a retrospective cross sectional study of 17,732 eyes. Cutan & Ocular Toxicol. 2024; 43(4): 335-340. doi: 10.1080/15569527.2024.2408685
18. Tian L, Li D, Zhang F, Song Y, Wan L, Zhou M, et al. Observation of soft contact lens-related meibomian gland abnormalities before corneal refractive surgery. Curr Eye Res. 2025; 50(11): 1105-1111. doi: 10.1080/02713683.2025.2537291
19. Lakshmi S and Garcia CV. Recalcitrant Paecilomyces keratitis. BMJ Case Rep. 2019; 12(4): e229226. doi: 10.1136/bcr-2019-229226
20. Litvin TV, Tse V, Chung L, Zhou Y, Tan B, Han Y, et al. Effect of scleral contact lens size and duration of wear on intraocular pressure. Eye Cont Lens. 2023; 49(9): e357-e363. doi: 10.1097/ICL.0000000000001012

AUTHORS' CONTRIBUTION:

MF: Conception of the study, data acquisition, analysis, manuscript drafting, final approval
MS: Conception of the study, data collection, analysis & interpretation, critical review
MAA: Data collection, data analysis, manuscript drafting and final review
AR: Conception of study, study design, drafting the manuscript, critical review

All authors approved the final version to be published and agree to be accountable for all aspects of the work, ensuring that any questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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The data are available from the corresponding author upon reasonable request.

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