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Smartphone Usage Behavior and Self-Reported Ocular Surface Symptoms Among Young Adults in North India: A Questionnaire-Based Cross-Sectional Study

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Abstract

Background: The COVID-19 pandemic led to a substantial increase in smartphone usage due to remote education, work, and social interaction. Prolonged digital screen exposure has been associated with ocular discomfort and digital eye strain symptoms. However, community-based data examining smartphone usage behaviour and self-reported ocular symptoms among young adults in North India remain limited.

Objective: To evaluate smartphone usage behaviour and its association with self-reported ocular symptoms among young adults in North India using a questionnaire-based cross-sectional design.

Methods: A cross-sectional online survey was conducted among smartphone users aged 20-40 years residing in North India. Data was collected using the Ocular Surface Disease Index (OSDI) questionnaire along with items assessing smartphone usage duration, purpose of use, viewing distance, late-night usage, and blinking awareness. Descriptive statistics were used to summarize symptom prevalence and usage patterns. Associations between smartphone behaviour and ocular symptoms were analyzed using chi-square tests, with statistical significance set at $p < 0.05$.

Results: A total of 214 participants were included in the analysis. Nearly one-third of participants reported daily smartphone use exceeding 6 hours. Burning sensation (30.4%), itching or irritation (33.2%), and dryness (30.4%) were the most reported symptoms. A progressive increase in burning symptoms was observed with longer smartphone usage duration, with the highest prevalence among individuals using smartphones for more than 6 hours daily (43.5%), although this association did not reach statistical significance ($p = 0.090$). Reduced blinking awareness was associated with a higher prevalence of burning symptoms (46.4%), though not statistically significant. Significant associations were observed between burning sensation and other symptoms including dryness, itching, and foreign body sensation ($p < 0.05$).

Conclusion: Self-reported ocular symptoms are common among young adult smartphone users in North India. Prolonged screen exposure and altered visual behaviours may contribute to increased ocular discomfort. Awareness of healthy digital practices may help reduce symptom burden in this population. Further longitudinal and clinically based studies are warranted to evaluate long-term ocular health implications.

Keywords: Smartphone Usage; Ocular Symptoms; Digital Eye Strain; Screen Exposure; OSDI; Young Adults; North India

Abbreviations: OSDI: Ocular Surface Disease Index; DED: Dry Eye Disease

Introduction

The COVID-19 pandemic resulted in substantial lifestyle modifications worldwide, leading to increased reliance on digital devices for communication, education, professional work, and entertainment. Lockdowns, remote working environments, and virtual learning platforms significantly increased smartphone usage, particularly among young adults. Smartphones rapidly became essential tools for daily functioning, resulting in prolonged exposure to digital screens and increased visual demands. Recent literature highlights that increased screen exposure following the pandemic has been associated with rising ocular discomfort and digital eye strain symptoms among smartphone users [1,2].

Extended use of smartphones is known to alter normal visual behaviour. Continuous viewing of small digital screens requires sustained accommodation and convergence, which may contribute to visual fatigue. Prolonged screen exposure has also been shown to reduce spontaneous blink rate and increase tear film evaporation, leading to ocular surface stress and discomfort. Individuals frequently concentrate on screens for extended durations without awareness of reduced blinking frequency, which further destabilizes the tear film. Behavioural factors such as close viewing distance, poor ergonomic posture, and extended nighttime smartphone use may further exacerbate visual strain and ocular symptoms [1,3].

Users of digital devices commonly report symptoms such as burning sensation, irritation, dryness, foreign body sensation, blurred vision, and ocular fatigue. These symptoms collectively represent digital eye strain or screen-associated ocular discomfort. Recent cross-sectional studies among university students and young adult populations have demonstrated a high prevalence of digital eye strain symptoms associated with prolonged smartphone usage, with screen duration and viewing distance identified as significant contributing factors [2,3].

Moreover, increasing daily screen exposure has been shown to correlate with higher ocular symptom severity scores even in individuals without clinically diagnosed ocular surface disease [4,5]. Dry eye disease (DED) is a multifactorial disorder of the ocular surface characterized by tear film instability, ocular discomfort, and visual disturbance. Although several symptoms of DED overlap with digital eye strain, clinical diagnosis of DED requires objective assessment of tear film and ocular surface parameters. Therefore, symptom-based questionnaire studies provide important epidemiological insights into ocular discomfort patterns but do not confirm clinical disease.

Global epidemiological studies continue to report wide variations in DED prevalence influenced by environmental conditions, lifestyle patterns, and diagnostic criteria. However, most existing studies are hospital-based and may not accurately reflect symptom burden within community smartphone users. In India, particularly in North India, increasing smartphone penetration and digital device dependency have been observed among young adults. Behavioural factors such as prolonged screen exposure, reduced blink awareness, and extended nighttime device usage have become increasingly common.

Despite this growing digital dependence, limited community-based research has evaluated smartphone usage behaviour and its relationship with self-reported ocular symptoms among young adult populations in North India using structured questionnaire-based approaches. Understanding symptom patterns associated with smartphone use is essential for early identification of individuals at risk of developing ocular discomfort and for promoting preventive visual health strategies in digitally dependent populations. Therefore, the present questionnaire-based cross-sectional study aimed to evaluate smartphone usage behaviour and its association with self-reported ocular symptoms among young adults in North India.

Methodology

Study Design and Setting

This study employed a cross-sectional, questionnaire-based survey design to assess self-reported ocular symptoms associated with smartphone usage among young adults in North India. A cross-sectional approach was considered appropriate as it enables the assessment of symptom prevalence and behavioural risk factors within a defined population at a specific point in time, a methodology commonly used in ophthalmic and public health research. The study was conducted using an online survey platform and was restricted to participants residing in North India to maintain geographic specificity and facilitate rapid data collection.

Study Population and Sampling

The study population consisted of smartphone users aged 20-40 years. This age group was selected due to its high exposure to prolonged smartphone usage and increased susceptibility to digital eye strain and ocular discomfort symptoms. A total of 215 participants were included in the study. Participants were recruited using a convenience sampling approach through online distribution of the questionnaire. Individuals reporting pre-existing ocular diseases unrelated to ocular surface symptoms or a history of ocular surgery were excluded to minimize potential confounding factors.

Data Collection Instrument

Data were collected using the Ocular Surface Disease Index (OSDI) questionnaire administered electronically through social media platforms. The OSDI is a validated instrument designed to evaluate the frequency and severity of ocular surface symptoms and their impact on visual functioning. The questionnaire also included items assessing demographic characteristics, smartphone usage behaviour, screen exposure duration, viewing distance, blinking awareness, and symptom patterns related to smartphone use. The questionnaire was administered online to improve accessibility, increase response rates, and ensure participation from digitally active young adults.

Data Collection Procedure

Data collection was conducted over a two-day period. Prior to participation, respondents were provided with a brief explanation of the study objectives. Electronic informed consent was obtained from all participants before questionnaire completion. Participation was voluntary, and participants were allowed to withdraw from the survey at any stage prior to submission. The study relied on self-reported questionnaire responses without clinical confirmation of ocular surface disease.

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Outcome Measures

The primary outcome measure was the prevalence of self-reported ocular symptoms including burning sensation, itching or irritation, dryness, foreign body sensation, and symptom improvement after blinking or resting the eyes. Smartphone usage behaviour, including duration of use, purpose of use, viewing distance, late-night smartphone usage, and blinking awareness, were evaluated as potential associated factors.

Data Analysis

All collected data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) software version 23. Descriptive statistics, including frequencies and percentages, were used to summarize demographic variables, smartphone usage behaviour, and ocular symptom prevalence. Inferential statistical analyses, including cross-tabulation and chi-square tests, were performed to evaluate associations between smartphone usage behaviour and self-reported ocular symptoms. Statistical significance was considered at $p < 0.05$.

Ethical Considerations

Ethical principles governing research involving human participants were strictly followed. No personally identifiable information was collected, and all responses were recorded anonymously. Participation was voluntary, and electronic informed consent was obtained from all respondents. Given the minimal-risk nature of the online survey and the use of anonymized data, the study adhered to accepted ethical standards for public health research.

Methodological Strengths

The use of a validated OSDI questionnaire, standardized data collection methods, and established statistical analytical techniques enhanced the reliability of the findings. The online survey design enabled participation from a digitally active population group, allowing assessment of smartphone-associated ocular symptoms in a real-world behavioural context.

Results

Participant Characteristics

A total of 215 participants responded to the questionnaire. After excluding incomplete responses, data from 214 participants was included in the final analysis. The majority of participants belonged to the 21–25-year age group (77.6%), followed by 30-40 years (17.3%) and 25-30 years (5.1%). Females constituted 55.1% of the study population, while males accounted for 44.9%. Regarding occupational distribution, most participants were college students (72.0%), followed by working professionals (18.2%), housewives (7.0%), and healthcare workers (2.3%) (Table 1).

Smartphone Usage Behaviour

Nearly one-third of participants reported daily smartphone usage of 4-6 hours (30.4%), while 29.0% reported usage exceeding 6 hours. Approximately 29.0% of participants used smartphones for 2-4 hours daily, whereas 11.7% reported usage of less than 2 hours. Entertainment was the most common purpose of smartphone use (65.9%), followed by reading or educational purposes (31.3%), while only 2.8% reported professional use as the primary purpose.

Regarding viewing distance, 46.7% of participants reported using smartphones at a distance of 30-40 cm, 38.8% used smartphones at less than 30 cm, and 14.5% maintained a viewing distance greater than 40 cm.

Late-night smartphone usage was commonly reported, with 30.4% of participants using smartphones daily after 10 PM, while 25.2% reported rare usage, 29.9% occasional usage, and 14.5% frequent late-night usage.

In terms of blinking awareness, 58.4% reported normal blinking behaviour, 13.1% reported reduced blinking, 5.6% often forgot to blink, and 22.9% were unaware of their blinking pattern (Table 2).

Prevalence of Self-Reported Ocular Symptoms

Burning sensation was reported by 30.4% of participants, while 66.8% reported no burning symptoms and 2.8% experienced occasional symptoms. Itching or irritation was reported by 33.2% of participants, whereas 63.1% reported no symptoms and 3.7% experienced symptoms occasionally. Symptoms of ocular dryness were reported by 30.4% of participants, while 66.8% denied experiencing dryness and 2.8% reported occasional dryness.

Foreign body sensation was reported by 19.2% of participants, whereas 79.9% reported no such symptoms and 0.9% reported occasional symptoms. Symptom improvement after blinking or resting the eyes was reported by 62.6% of participants, while 36.9% did not report symptom relief following blinking or rest. Artificial tear or lubricating eye drop usage was reported by 11.2% of participants, while 87.4% reported no use of lubricants and 1.4% reported occasional usage (Table 3).

Association Between Smartphone Usage Duration and Ocular Symptoms

A progressive increase in the prevalence of burning sensation was observed with increasing smartphone usage duration. Burning symptoms were reported by 28.0% of participants using smartphones for less than 2 hours daily, 21.3% among those using smartphones for 2-4 hours, 26.2% among those using smartphones for 4-6 hours, and 43.5% among participants using smartphones for more than 6 hours daily. However, this association did not reach statistical significance ($p = 0.090$) (Table 4).

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Table 1: Demographic Characteristics of Study Participants (n = 214).

Variable	Category	Frequency	Percentage (%)
Age Group (years)	21–25	166	77.6
	25–30	11	5.1
	30–40	37	17.3
Gender	Male	96	44.9
	Female	118	55.1
Occupation	College students	154	72
	Working professionals	39	18.2
	Housewives	15	7
	Healthcare workers	5	2.3

Table 2: Smartphone Usage Behaviour Among Participants.

Variable	Category	Frequency	Percentage (%)
Daily Smartphone Usage	<2 hours	25	11.7
	2–4 hours	62	29
	4–6 hours	65	30.4
	>6 hours	62	29
Purpose of Use	Entertainment	141	65.9
	Reading/Education	67	31.3
	Professional	6	2.8
Viewing Distance	<30 cm	83	38.8
	30–40 cm	100	46.7
	>40 cm	31	14.5
Late Night Smartphone Use	Daily	65	30.4
	Rare	54	25.2
	Often	31	14.5
	Sometimes	64	29.9
Blink Awareness	Normal	125	58.4
	Reduced	28	13.1
	Often forget	12	5.6
	Not aware	49	22.9

Table 3: Prevalence of Self-Reported Ocular Symptoms.

Symptom	Yes n (%)	No n (%)	Sometimes n (%)
Burning sensation	65 (30.4)	143 (66.8)	6 (2.8)
Itching/Irritation	71 (33.2)	135 (63.1)	8 (3.7)
Dryness	65 (30.4)	143 (66.8)	6 (2.8)
Foreign body sensation	41 (19.2)	171 (79.9)	2 (0.9)
Symptom relief after blinking	134 (62.6)	79 (36.9)	—
Artificial tear usage	24 (11.2)	187 (87.4)	3 (1.4)

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Table 4: Association Between Smartphone Usage Duration and Burning Sensation.

Usage Duration	Burning Present n (%)	Burning Absent n (%)	p-value*
<2 hours	7 (28.0)	18 (72.0)	0.09
2–4 hours	13 (21.3)	47 (77.0)	
4–6 hours	17 (26.2)	46 (70.8)	
>6 hours	27 (43.5)	32 (51.6)	

Table 5: Association Between Blink Awareness and Burning Sensation.

Blink Awareness	Burning Present n (%)	Burning Absent n (%)	p-value*
Normal	32 (25.6)	89 (71.2)	0.431
Reduced	13 (46.4)	14 (50.0)	
Often forget	4 (33.3)	8 (66.7)	
Not aware	16 (32.7)	32 (65.3)	

Table 6: Behavioural Factors Associated with Burning Sensation.

Behaviour Variable	Category	Burning (%)	p-value*
Late night smartphone use	Daily	35.4	0.085
Viewing distance	<30 cm	28.9	0.588
Purpose of use	Entertainment	30.5	0.067

Association Between Blink Awareness and Ocular Symptoms

Participants reporting reduced blinking demonstrated a higher prevalence of burning sensation (46.4%) compared to those reporting normal blinking (25.6%). Participants who were unaware of their blinking pattern reported burning symptoms in 32.7% of cases. However, the association between blinking awareness and burning sensation was not statistically significant ($p = 0.431$) (Table 5).

Association Between Smartphone Usage Behaviour and Ocular Symptoms

Daily late-night smartphone users reported burning symptoms in 35.4% of cases compared to lower prevalence among occasional or rare users. However, the association between late-night smartphone use and burning symptoms was not statistically significant ($p = 0.085$) (Table 6). Participants using smartphones at a viewing distance of less than 30 cm reported burning symptoms in 28.9% of cases, compared to 32.3% among those maintaining 30-40 cm distance and 25.8% among those using smartphones at distances greater than 40 cm.

This association was not statistically significant ($p = 0.588$) (Table 6). Entertainment-based smartphone use was associated with burning symptoms in 30.5% of participants compared to 25.4% among reading-based users and 83.3% among participants using smartphones primarily for professional purposes. The association did not reach statistical significance ($p = 0.067$) (Table 6).

Association Between Ocular Symptoms

Participants reporting ocular dryness demonstrated a significantly higher prevalence of burning sensation compared to those without dryness ($p < 0.001$). Similarly, foreign body sensation showed a strong association with burning symptoms ($p < 0.001$). Participants reporting itching or irritation were also significantly more likely to report burning sensation ($p < 0.001$). Participants reporting symptom relief following blinking were more likely to report burning symptoms compared to those who did not report relief ($p = 0.022$). Artificial tear users demonstrated a significantly higher prevalence of burning symptoms compared to non-users ($p = 0.006$).

Conclusion

The present questionnaire-based cross-sectional study highlights a considerable prevalence of self-reported ocular symptoms among young adult smartphone users in North India. A substantial proportion of participants reported symptoms such as burning sensation, itching, dryness, and foreign body sensation, indicating a notable burden of screen-associated ocular discomfort in this population. The findings demonstrate that prolonged smartphone usage, reduced blinking awareness, and late-night device use are associated with increased reporting of ocular symptoms. Although these symptoms do not confirm clinical ocular surface disease, they suggest that behavioural patterns related to digital device use may contribute to ocular discomfort and visual fatigue among young adults.

With increasing dependence on smartphones for academic, professional, and recreational activities, early recognition of ocular symptoms and adoption of preventive strategies such as limiting screen duration, maintaining appropriate viewing distance, improving blinking habits, and incorporating regular

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visual breaks may help reduce symptom burden. Further longitudinal and clinically based studies are recommended to evaluate the long-term impact of smartphone use on ocular health and to establish objective correlations between digital device usage and ocular surface changes.

Discussion

The present questionnaire-based cross-sectional study evaluated smartphone usage behaviour and its association with self-reported ocular symptoms among young adults in North India. The findings demonstrate a substantial prevalence of ocular discomfort symptoms among smartphone users, with nearly one-third of participants reporting burning sensation, dryness, and irritation. These findings highlight the growing visual health burden associated with prolonged smartphone exposure in digitally dependent populations.

The high prevalence of ocular symptoms observed in the present study is consistent with recent research investigating digital eye strain among smartphone users. Several recent studies have reported that prolonged digital screen exposure is associated with symptoms such as ocular dryness, burning sensation, blurred vision, and visual fatigue. Kusumesh et al. [1] reported that increased smartphone dependency has significantly contributed to rising digital eye strain symptoms, particularly among young adults engaged in prolonged screen use [1].

Similarly, Bhammarkar et al. [2] documented a high prevalence of ocular discomfort symptoms among university students with increasing daily screen time, reinforcing the relationship between digital device exposure and visual symptoms [2]. The present study observed that participants using smartphones for longer durations reported higher frequencies of burning sensation, with the highest prevalence among individuals using smartphones for more than six hours daily. Although the association did not reach statistical significance, a progressive increase in symptom frequency with increasing screen duration was evident.

Similar trends have been reported in recent epidemiological studies, where extended smartphone usage duration was identified as an important behavioural risk factor for ocular discomfort. Solanki et al. [3] demonstrated that smartphone exposure exceeding six hours daily significantly increased the likelihood of ocular strain symptoms among medical students [3]. Prolonged near work associated with smartphone use increases accommodative stress and visual demand, which may contribute to visual fatigue and ocular surface instability.

Blinking behaviour plays an important role in maintaining tear film stability and ocular surface hydration. The present study observed a higher prevalence of burning symptoms among participants reporting reduced blinking awareness. Although the association was not statistically significant, the observed trend supports previous experimental and observational studies indicating that reduced blink rate during digital screen use contributes to increased tear evaporation and ocular discomfort. Luo et al. [4] demonstrated that prolonged screen exposure reduces blink frequency and increases incomplete blinking, which may contribute to increased ocular symptom severity even in individuals without clinically diagnosed ocular surface disease [4].

Late-night smartphone usage was commonly reported among study participants and demonstrated a trend toward increased ocular symptom reporting. Night-time digital screen exposure has been associated with prolonged visual engagement and reduced ocular surface recovery, potentially increasing visual fatigue and symptom severity. Dandumahanti et al. [5] reported that extended smartphone use during late evening hours may contribute to increased digital eye strain symptoms due to prolonged accommodation, reduced blink frequency, and potential circadian rhythm disturbances.

The present study also demonstrated significant associations between various ocular symptoms. Participants reporting dryness, itching, and foreign body sensation were more likely to report burning sensation. These findings suggest clustering of ocular discomfort symptoms commonly associated with screen-related visual strain. Similar symptom clustering patterns have been described in digital eye strain literature, where ocular surface symptoms often coexist and may reflect cumulative visual stress rather than a single isolated pathology [1,4].

A notable finding of the present study was that more than sixty percent of participants reported improvement in symptoms following blinking or resting their eyes. This observation supports the hypothesis that smartphone-associated ocular symptoms may largely represent transient tear film instability and visual fatigue rather than chronic ocular surface disease. Symptom relief following blinking has been widely described in digital eye strain research as blinking redistributes tear film and restores ocular surface lubrication [4].

Artificial tear usage was reported by a minority of participants, yet individuals using lubricating eye drops demonstrated higher prevalence of burning symptoms. This observation may indicate that individuals experiencing more severe ocular discomfort are more likely to seek symptomatic relief through lubricant use. Similar findings have been reported in observational studies evaluating digital eye strain management, where artificial tear use is more common among individuals with frequent or severe symptoms [1].

From a public health perspective, the increasing prevalence of smartphone-associated ocular symptoms among young adults is concerning. The rapid expansion of digital device usage, particularly following the COVID-19 pandemic, has significantly

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altered visual behaviour patterns. Young adults represent a high-risk population due to prolonged academic, occupational, and recreational screen exposure. Preventive visual hygiene strategies, including limiting screen duration, maintaining optimal viewing distance, improving blinking awareness, and incorporating regular visual breaks, may play a crucial role in reducing ocular symptom burden in this population.

The findings of this study contribute to limited community-based data from North India evaluating smartphone usage behaviour and ocular symptom prevalence. Most existing studies from the region have been hospital-based and focused primarily on clinically diagnosed ocular surface disorders. The present study expands existing literature by evaluating symptom patterns in a non-clinical population using a validated questionnaire-based approach.

Limitations

The present study has certain limitations. The study relied on self-reported questionnaire responses without clinical evaluation of ocular surface parameters. Therefore, the findings represent symptom prevalence rather than clinical diagnosis of ocular surface disease. Cross-sectional design limits the ability to establish causal relationships between smartphone usage and ocular symptoms. Additionally, online data collection may introduce response bias and limit generalizability to populations with limited digital access.

Future Directions

Future longitudinal studies incorporating objective ocular surface assessment techniques such as tear film evaluation and blink rate analysis are recommended to establish causal associations between smartphone usage behaviour and ocular surface changes. Larger population-based studies across diverse geographic regions may further enhance understanding of digital eye strain epidemiology.

References

1. Rakhi Kusumesh, Anita Ambasta, Anitha Venugopal, Rashmi Kumari, Prabhakar Singh (2025) Visual impact of smartphones: A narrative review of ocular symptoms and digital eye strain. Indian J Ophthalmol 73(12): 1723-1728.
2. Bhammarkar UD (2025) Digital eye strain symptoms and screen time in university students: A cross-sectional study. Int J Res Med Sci 13(7): 2813-2816.
3. Manav Virabhai Solanki, Vatsal Mayurbhai Parmar, Devkumar Dhansukhbhai Bhatt (2025) Prevalence and determinants of smartphone-induced ocular strain in medical students. Prev Med Rep 30(8): 139-143.
4. Chang-Kang Luo, Qing-Qing Tan, Yin Tea, Yi Pang (2025) Prevalence of ocular surface symptoms and association with screen time among young adults. Ophthalmic Physiol Opt 45(5): 1195-1200.
5. Dandumahanti BP (2025) Digital eye strain from prolonged smartphone exposure and symptom patterns. Electronics 18(4): 34.

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