Original Article

Smartphones for Smarter Vision

Umbreen Khalid

Shaikh Khalifa Bin Zayed Al-Nahyan Medical and Dental College, Lahore

*Corresponding Author

Umbreen Khalid
umbreen.khalid@gmail.com

Received: 4th February, 2025

Revised: 2nd April, 2025

Accepted: 30th May, 2025

DOI:
https://doi.org/10.69545/495eew26

This is an open access article distributed under the Creative Commons Attribution 4.0 International License CC-BY. Users are allowed to read, download, copy, distribute, print, search, or link to the full texts of the articles, or use them for any other lawful purpose, without asking prior permission from the publisher or the author as long as they cite the source

Abstract

Background: The rapid evolution of smartphones has revolutionized healthcare delivery and medical education. Ophthalmology, being a visually intensive specialty, has particularly benefited from mobile technology through apps, imaging tools, and instant access to resources. Smartphones are now playing a vital role in diagnostics, documentation, and communication, helping practitioners enhance patient care and academic collaboration.

Objective: This study aims to evaluate the use of smartphones for academic and clinical purposes among ophthalmologists.

Methodology: A cross-sectional survey was conducted from June to December 2023 in the Department of Ophthalmology at Sheikh Zayed Hospital. The study involved 100 ophthalmologists, including consultants, postgraduate residents, and registrars from various hospitals. A structured questionnaire was distributed via emails, messaging apps, and phone interviews. Data were analyzed using SPSS version 25.

Results: Of the 100 respondents, 50% were consultants, 44% were postgraduate residents, and 6% were registrars. Android phones were used by 55% of participants, while 45% used iPhones. The flashlight feature was frequently used by 18%, occasionally used by 40%, and never used by 42%. Camera usage for documenting ocular findings was frequent among 26%, occasional in 49%, and never in 25% of participants. About 28% did not have any books downloaded on their phones, while 52% had multiple books. Google was the most used online resource (76%), followed by Eyewiki (9%) and PubMed (5%). Notably, 78% of respondents used messaging platforms for group discussions.

Conclusion: Smartphones are becoming indispensable tools in ophthalmology. They offer cost-effective solutions by replacing several traditional tools and improving efficiency in clinical practice. Ophthalmologists should further explore these technologies for both educational and clinical advancements

Keywords: Smartphones, Android, iPhone, Applications, Ophthalmology, Pdf Books, Websites

Introduction:

Smartphones, which blend computing capabilities with mobile connectivity, are revolutionizing various professional fields—including healthcare. With advanced operating systems, touchscreens, and access to countless medical applications, smartphones are now essential tools for clinicians. Studies show that 99% of healthcare professionals own mobile phones, and a significant majority use smartphones, with iPhones and Androids being the most popular platforms[2].

In ophthalmology, the utility of smartphones is expanding. They can be used for tasks such as capturing images, accessing medical literature, communicating in real-time, and conducting eye tests through specialized apps[3] [6]. With over 340 ophthalmology-specific apps available, smartphones are gradually becoming an extension of the ophthalmologist's toolkit[6].

Methods:

A descriptive cross-sectional study was conducted between June and December 2023 at Sheikh Zayed Hospital. Ophthalmologists from multiple cities, including consultants, residents, and registrars, were invited to participate. A total of 100 participants responded. Data were collected using a structured questionnaire shared through digital platforms and some via direct phone interviews. Responses were analyzed using SPSS version 25.

Results:

The study included 100 ophthalmologists from various levels of practice, with half being consultants. Smartphone ownership was high (90%), with Android being slightly more popular (55%) than iPhones (45%). Flashlight use for clinical purposes was infrequent, with only 18% using it regularly. The use of smartphone cameras for capturing ocular images was moderate—26% used it often, and 49% used it sometimes. Regarding academic resources, 52% had more than one ophthalmology book on their devices. Most respondents (76%) relied on Google to access diverse medical websites, while only a minority used Eyewiki or PubMed. Finally, 78% engaged in group academic discussions through messenger apps, highlighting the importance of mobile communication in contemporary medical education. A total of 100 ophthalmologists participated in the study. Their designations and smartphone usage patterns were recorded and analyzed.

Table 1: Participant Designation

Designation	Frequency	Percentage
Consultants	50	50%
Postgraduate Residents	44	44%
Registrars	6	6%
Total	**100**	**100%**

Most of the respondents were consultants (50%), followed by postgraduate residents (44%) and registrars (6%).

Table 2: Type of Phone Used

Phone Type	Frequency	Percentage
Smartphones	90	90%
Conventional	10	10%
Total	**100**	**100%**

Out of 100 participants, 90% used smartphones, while the remaining 10% used conventional mobile phones. All postgraduate residents and registrars were smartphone users.

Table 3: Smartphone Operating System

OS Type	Consultants	Residents	Registrars	Total	Percentage
Android	23	27	5	55	55%
iPhone	22	17	6	45	45%
Total	**45**	**44**	**11**	**100**	**100%**

Android was used by 55% of the respondents, while iPhones were used by 45%. Android was more common among residents, whereas iPhone use was relatively balanced across designations.

Table 4: Flashlight Use

Frequency of Use	Frequency	Percentage
Most Often	18	18%
Sometimes	40	40%
Never	42	42%
Total	**100**	**100%**

Only 18% of participants frequently used their phone flashlight during examinations, while 40% used it occasionally. A significant 42% reported never using it.

Table 5: Camera Use for Clinical Documentation

Frequency of Use	Frequency	Percentage
Most Often	26	26%
Sometimes	49	49%
Never	25	25%
Total	**100**	**100%**

Camera usage to document ocular findings was common—26% used it frequently and 49% occasionally. A quarter (25%) of respondents never used their phone camera for clinical purposes.

Table 6: Books Stored on Smartphone

Book Type	Frequency	Percentage
No Books	28	28%
Kanski	15	15%
AAO Course	5	5%
More Than One Book	52	52%
Total	**100**	**100%**

Over half (52%) had multiple ophthalmology books saved on their phones. About 15% had *Kanski*, and 5% had AAO course material. However, 28% had no books downloaded.

Table 7: Website Usage

Website Used	Frequency	Percentage
None	10	10%
Eyewiki (AAO)	9	9%

Website Used	Frequency	Percentage
PubMed	5	5%
Misc. via Google Search	76	76%
Total	**100**	**100%**

Google Search was the most common online resource (76%). Surprisingly, 10% didn't use any medical website. Eyewiki was used by 9%, and PubMed by 5%.

Table 8: Messenger App Use for Group Discussion

Usage	Frequency	Percentage
Yes	78	78%
No	22	22%
Total	**100**	**100%**

Messenger apps were used by 78% of participants to discuss cases and share academic material. The remaining 22% did not participate in group discussions via messengers.

Discussion:

The emergence of smartphones has significantly impacted clinical ophthalmology. In our study, 90% of respondents used smartphones, which aligns with previous findings in the US where smartphone usage among physicians was reported at 81%[11]. Similar findings were observed by the American Society of Cataract and Refractive Surgeons, where 83% of ophthalmologists reported smartphone usage[12].

Android phones were slightly more popular than iPhones in our cohort. This trend supports Jebraeily et al.'s findings, where 53% of medical students preferred Android over iOS[13]. Although iPhones are often favored for their user interface and extensive app support[13], both platforms are widely utilized.

Smartphone flashlight functionality was used by some in place of pen torches, especially in emergency scenarios. However, this use was not universal, indicating its limitations in replacing conventional tools.

The use of phone cameras for anterior segment documentation is also notable, especially among younger doctors. With the ability to store and share images securely, smartphones are facilitating teleconsultations and improving patient education.

Pdf book storage was another major benefit cited by participants. Over 50% had more than one ophthalmology text on their phones, showing a shift toward digital learning.

Moreover, messaging platforms were widely used for academic discussions. This aligns with studies emphasizing smartphones' potential in facilitating collaborative learning[6][9].

Conclusion:

Smartphones have revolutionized the practice of ophthalmology. They provide accessible, cost-effective tools that enhance both learning and clinical decision-making. As technology continues to evolve, ophthalmologists should strive to make the best use of smartphones for

improved patient outcomes and professional development.

Authors' Contribution:

U.K. conceptualized and designed the study, oversaw data interpretation, and contributed to the drafting and critical revision of the manuscript. She approved the final version for publication and takes full responsibility for the integrity of the work.

Conflict of Interest:

Authors declare no conflict of interest.

Funding and Ethics:

This research was self-funded by the author.

The study was conducted in accordance with

ethical guidelines.

References

1. Mittal S, Venkat S. A survey of techniques for improving efficiency of mobile web browsing. Concurrency Computat Pract Exper. 2016;00:142. Published online at Wiley Interscience. doi:10.1002/cpe
2. Chhablani J, Kaja S, Shah VA. Smartphones in ophthalmology. Indian J Ophthalmol. 2012 Mar-Apr;60(2):127–31. doi:10.4103/0301-4738.94054
3. Bastawrous A, Cheeseman RC, Kumar A. iPhones for eye surgeons. Eye (Lond). 2012;26:343–54. doi:10.1038/eye.2012.6
4. Tang H, Ng JH. Googling for a diagnosis—use of Google as a diagnostic aid: internet based study. BMJ. 2006 Dec 2;333(7579):1143. Published online 2006 Nov 10. doi:10.1136/bmj.39003.640567.AE
5. Shah A, Tawari A. How smartphones fit in ophthalmology's tool bag. Rev Ophthalmol. 2010 Sep 2. Available from: https://www.reviewofophthalmology.com
6. Zormicanin E, Zormicanin J, Hadziselimovic B. The use of smartphones in ophthalmology. Acta Inform Med. 2014 Jun;22(3):206–9.
7. Tahiri JNO, El Sanharawi M, Dupont-Monod S, Baudouin C. Smartphones in ophthalmology. J Fr Ophtalmol. 2013 Jun;36(6):499–525. doi:10.1016/j.jfo.2013.02.002
8. Shah J, Haq U, Bashir A, Shah SA. Awareness of academic use of smartphones and medical apps among medical students in a private medical college. J Pak Med Assoc. 2016;66(12):1846.
9. Manhattan Research [Internet]. New York. Available from: https://www.manhattanresearch.com/newsroom/Press_Releases/physician-smartphones-2012.aspx
10. Davis EA, Hofheins JA, Katz JA, Kraft ME, Trattler WB. Professional life and the smartphone. Cataract Refract Surg Today. 2010 Sep;21–2. Available from: https://crstoday.com/wp-content/themes/crst/assets/downloads/0910_topics.pdf
11. Jebraeily M, Fazlollahi ZZ, Rahimi B. The most common smartphone applications used by medical students and barriers of

using them. Acta Inform Med. 2017;25(4):232–5.

12. Lord RK, Shah VA, San Filippo AN, Krishna R. Reading habits and use of smartphones in ophthalmology. Ophthalmology. 2010;117(6):1274–6.e3. doi:10.1016/j.ophtha.2010.01.061

13. Schwab IR, McMenamin PG. Echidna: how do we fit it? Tachyglossus aculeatus. Br J Ophthalmol. 2005;89(1):129–30.

14. Haddock LJ, Kim DY, Mukai S. Simple, inexpensive technique for high-quality smartphone fundus photography in human and animal eyes. J Ophthalmol. 2013;2013:Article ID 518479. doi:10.1155/2013/518479

15. Katz-Sidlow RJ, Ludwig A, Miller S, Sidlow R. Smartphone use during inpatient attending rounds: prevalence, patterns and potential for distraction. J Hosp Med. 2012;7(8):595–9