Impact of smartphone usage on academic performance of undergraduate medical college.

Muhammad Junaid Iqbal¹, Minahil Shafique², Aqsa Afzal³, Fizza Noor⁴, Muhammad Waseem⁵, Unsa Marrium⁶

ABSTRACT... Objective: To assess the effect of smartphone usage on the academic performance of the students of Sahiwal Medical College. Study Design: Cross-sectional study. Setting: Department of Physiology, Sahiwal Medical College, Sahiwal. Period: 24th May to 25th July 2022. Material & Methods: and a validated questionnaire was shared among the 114 undergraduate students of 1st and 2nd year MBBS of Sahiwal Medical College. Results: Our study involved 114 participants of age between 18-20 years. The majority of the participants were females (78.4%) and the duration of smartphone usage of most students was between two to six hours per day (66.7%). No statistical significance was found between the usage of smartphones and the academic performance of students. Conclusion: There is no association between smartphone usage and the academic performance of undergraduate medical students.

Key words: Academic Performance, Smartphone Usage, Undergraduate Medical Students.

INTRODUCTION

With the advancement in science and technology, the usage of smartphones has become very common these days. Smartphone is a portable device that is replacing computers and laptops day by day. Among all the digital devices, people use 55% of mobiles 42% of desktops, and 3% of tabs in daily use and we can evaluate that smartphone is the most commonly used device.¹ About 6.4 billion people² own mobile phones worldwide and this percentage even more increased during the COVID pandemic duration.³ Today a great percentage of students use smartphones for their studies, which is why we intended to research this topic.

Smartphones provide us access to various video lectures on different websites and YouTube. It also helps us to contact our teachers or mentors at any time without meeting them physically and helps us communicate with our class fellows.⁴ As medical students, we can better learn anatomy and other concepts like molecular structures in 3D on mobile phones, which are difficult to understand in 2 dimensions from textbooks. Despite all the advantages of smartphones listed above, they also have some drawbacks like notifications received during lectures divert the attention of students.⁵ Similarly, during COVID students used smartphones addictively rather than using them for their studies. They spent most of their time using social media apps that badly affected their grades.⁶

Our purpose for this research was to find out how smartphones impact the academic performance of students if it has both advantages and disadvantages and how they affect their grades.⁷ Similarly, to assess whether smartphones may either have appreciable or simply no significant impact on academic performance. Therefore, we created a questionnaire that included those types of questions that covered both aspects of smartphones and then compared those with students’ grades so that we could find a relationship between smartphones and students’

Correspondence Address:
Fizza Noor
Sahiwal Medical College, Sahiwal.
fizza58@gmail.com

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learning behavior.

**MATERIAL & METHODS**
This cross-sectional study was conducted at Sahiwal Medical College, Sahiwal from 24 May to 24 July 2022 after taking ethical review board approval (76/IRB/SLMC/SWL). The questionnaire about “The Impact of Smartphones on Academic Performance” was distributed among 1st and 2nd-year undergraduate students of MBBS while the students of 3rd, 4th, and final years were excluded from the study. The total sample size was calculated by the following formula.

\[
N = \frac{z^2 \times p \times (1 - p) \times DEFF}{d^2}
\]

Sample size = 114

The collected data was processed through the SPSS version 26, and then tables and diagrams were formed.

**RESULTS**
The demographic data of the sample is presented in percentages (Table-I). Most responses were obtained from female students as we can observe from the table below. The exact number of participants was 114 students out of which 24 were males and 87 females. The duration of their mobile phone usage of most students was between two to six hours on average per day.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Groups</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>24</td>
<td>21.6%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>87</td>
<td>78.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mobile Phone Use</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hours per day</td>
<td>24</td>
<td>21.6%</td>
</tr>
<tr>
<td>2-6 hours per day</td>
<td>74</td>
<td>66.7%</td>
</tr>
<tr>
<td>&gt;6 hours per day</td>
<td>13</td>
<td>11.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Median ± IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I use my smartphone to [take the test]</td>
<td>3 ± 2</td>
</tr>
<tr>
<td>2. I use my smartphone to [submit assignment]</td>
<td>3 ± 2</td>
</tr>
<tr>
<td>3. I use my smartphone to [work on assignments]</td>
<td>4 ± 1</td>
</tr>
<tr>
<td>4. I use my smartphone to [work on my presentations]</td>
<td>4 ± 1</td>
</tr>
<tr>
<td>5. I use my smartphone to [access E-Library]</td>
<td>4 ± 1.5</td>
</tr>
<tr>
<td>6. I use my smartphone to [register for courses]</td>
<td>3 ± 2</td>
</tr>
<tr>
<td>7. I use my smartphone to [navigate websites]</td>
<td>4 ± 1.5</td>
</tr>
<tr>
<td>8. I use my smartphone to [read course-related materials]</td>
<td>4 ± 1</td>
</tr>
<tr>
<td>9. I use my smartphone to [improve my academic performance]</td>
<td>4 ± 1</td>
</tr>
<tr>
<td>10. I use my smartphone to [record lectures]</td>
<td>4 ± 1</td>
</tr>
<tr>
<td>11. I use my smartphone to [watch course-related videos]</td>
<td>4 ± 1</td>
</tr>
<tr>
<td>12. I use my smartphone to [share course-related information with friends]</td>
<td>4 ± 1.5</td>
</tr>
<tr>
<td>13. I use my smartphone to [ask instructors course-related questions]</td>
<td>3 ± 1</td>
</tr>
<tr>
<td>14. I use my smartphone to [study more efficiently]</td>
<td>4 ± 2</td>
</tr>
<tr>
<td>15. I use my smartphone to [coursework productivity]</td>
<td>4 ± 2</td>
</tr>
<tr>
<td>16. I use my smartphone to [complete my course work]</td>
<td>4 ± 1.5</td>
</tr>
<tr>
<td>17. Students use a dictionary/calculator or mobile phone in classes</td>
<td>4 ± 0.50</td>
</tr>
<tr>
<td>18. Does the use of smartphones during your study time distract you?</td>
<td>4 ± 1</td>
</tr>
<tr>
<td>19. Does using a smartphone in class assist your learning?</td>
<td>3 ± 2</td>
</tr>
<tr>
<td>20. Does using a smartphone in class interfere with your learning?</td>
<td>4 ± 1</td>
</tr>
<tr>
<td>21. Do the calls/messages received just before class impact your ability to concentrate?</td>
<td>4 ± 1</td>
</tr>
<tr>
<td>22. Overall, I find a smartphone useful in my studies</td>
<td>4 ± 0.001</td>
</tr>
<tr>
<td>23. CGPA</td>
<td>3.12 ± 0.35</td>
</tr>
</tbody>
</table>

| Table-II |
It is probably because in physical classes usually the tests are taken in hard copy but during the COVID-19 duration, classes were shifted to an online system so students used smartphones to attempt online tests. Perhaps the majority is neutral because the usage of smartphones to take tests depends upon the situation whether the classes are physical or online. Our result contradicts another study which shows that there is no usage of smartphones for taking tests in most cases.\(^9\)

When the respondents were asked about using smartphones for working on assignments and presentations, they strongly agreed but regarding the submission of assignments, there was disagreement. The reason could be that students use smartphones to collect information for presentations or assignments using different websites but they are directed to submit the assignments by hand. However, the lack of awareness about using smartphones for academic material was frequently cited as a barrier.\(^10\)

Strong agreement among the students regarding the use of smartphones to access the E-library may be due to its round-the-clock and in some instances free-of-cost availability with no physical restrictions (i.e., no need to go to the library physically). Moreover, digital libraries are an easy and quick means of accessing books and vast information. Similarly, informal learning using social media apps on smartphones can be integrated with formal learning which leads to useful discussions and enhances the academic performance of students.\(^11\)

Regarding navigating websites and registering for courses, it is convenient for students to use mobile phones since it allows them to access these resources from anywhere at any time. Additionally, smartphones are becoming increasingly versatile, meaning that many of the tasks that used to require a computer can now be done on a smartphone. That’s why, students agreed about using phones. Similarly, during COVID-19 virtual learning increased which introduced students to a variety of other educational resources and increased their comprehension ability.\(^12\)

Similarly, for reading course-related material and watching related videos, students also agreed on using mobile phones because it’s easy for them to find data they can understand concisely rather than reading long paragraphs in books. Also, video lectures and 3D animations help them visualize the things they have studied to build strong concepts. Also, cell phones have many tools (i.e. through Whatsapp, YouTube, and e-mails, etc.) for sharing study-related material and providing an easy and anytime approach to instructors. A study also found a favorable correlation between the use of social networking sites, cellphone communication, and in-person social engagement.\(^13\)

Despite all the advantages of cell phones listed above, there is a huge agreement on their disadvantages as well. Mobile phone is a major source of distraction due to calls, messages, and social media notifications received while studying decrease our concentration on studies and reduce our thinking ability.\(^14\) The use of the smartphone in the classroom for study-unrelated purposes had a negative effect on learning and taking notes.\(^15\)

Overall, students find mobile phones useful in improving academic performance in concordance with some studies\(^16\) while there are some other studies that contradict this statement.\(^17\)

This study provides an association between smartphone usage and academic performance among 1st and 2nd year students of Sahiwal Medical College, Sahiwal. Although it may have important implications for understanding the link between the increasing use of smartphones and the academic record of these students, more research is required to carry out this kind of study in students of 3\(^{rd}\), 4\(^{th}\), and final-year students as well as in students of other colleges for understanding better usage of smartphone and not only a smartphone but other digital devices can be included in studies for better results.
CONCLUSION
Based on our results there is no association between smartphone usage and academic performance in undergraduate medical college.

CONFLICT OF INTEREST
The authors declare no conflict of interest.

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REFERENCES
2. “Fig. 1. Mobile phone users in the world from 2013 to 2019 source: The…” ResearchGate,
### AUTHORSHIP AND CONTRIBUTION DECLARATION

<table>
<thead>
<tr>
<th>No.</th>
<th>Author(s) Full Name</th>
<th>Contribution to the paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Muhammad Junaid Iqbal</td>
<td>Conception and design of work, results comping.</td>
</tr>
<tr>
<td>2</td>
<td>Minahil Shafique</td>
<td>Help in biostatistics and data analysis.</td>
</tr>
<tr>
<td>3</td>
<td>Aqsa Afzal</td>
<td>Supervision and revising it critically for important intellectual content.</td>
</tr>
<tr>
<td>4</td>
<td>Fizza Noor</td>
<td>Final approval of the version to be published.</td>
</tr>
<tr>
<td>5</td>
<td>Muhammad Waseem</td>
<td>Analysis and interpretation.</td>
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<tr>
<td>6</td>
<td>Unsa Marrium</td>
<td>Write-up of the article.</td>
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*Author(s) Signature*