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Smartphone Addiction and Its Psychological Consequences among University Students in Pakistan

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ABSTRACT

***Background**: Negative psychological outcomes, particularly among college students, have been linked with excessive smartphone use. Over-dependence on smartphones can result in emotional upheaval which can lead to unsatisfactory academic achievement not to mention overall wellbeing.*

***Aim**: The objective of this study is to assess the impact of smartphone addiction on depression, anxiety, and stress level among students of varying faculties and institutions in the country.*

***Method**: A cross-sectional descriptive study was conducted on 400 students from four major universities in Pakistan. The smartphone dependency was assessed using SAS (Smartphone Addiction Scale) while the psychologic distress was measured with DASS-21 (Depression Anxiety Stress Scales). The survey conducted was cross sectional and the analysis was conducted by correlation analysis and ANOVA to find out relationships or differences between groups.*

***Results**: The results showed that smartphone addiction is significantly positively correlated to depression ($r = .68$, $p < .001$), anxiety ($r = .63$, $p < .001$), and stress ($r = .60$, $p < .001$). The higher the smartphone addiction levels, the increased psychological distress one faces. In all three areas, the students from Karachi were found to have greater smartphone addiction and more psychological distress than students from other cities. Students of computer science and engineering reported high levels of smartphone addiction and advanced psychological distress compared to inline Medical or Law students.*

***Conclusion**: The overuse of smartphones is a major contributing factor to emotional problems suffered by university students. To reduce irritation and aid in achieving digital wellness, specific initiatives, 'detox' programs, and information awareness campaigns should be prioritized.*

Introduction

The misuse of smartphones has become one of the major problems concerning people in every part of the world, especially in Pakistan's university students (Mehmood et al., 2021). The convenience with which smartphones are used has changed society for better and worse, and poses the threat of addiction. Smartphones have many functions to offer from communication, learning, and socializing (Amjad et al., 2020; Hussain et al., 2023). However, over-reliance on such devices can prove harmful to one's psychological and social wellbeing. Such addictions usually result in compulsive behaviors, making it difficult for people to distance themselves from their smartphones even when it negative impacts on their academics and life (Kamal et al., 2022; Rahman et al., 2024).

Students of the university level are most likely to develop addiction to smartphones because of the academic scrutiny together with the multifaceted uses of smartphones for learning, socializing, and even playing games (Hassan et al., 2024). The age of university students is an important phase in one's life that is characterized by significant changes in self-identity and the need for social interaction that leads them to over utilize smartphones for all sorts of entertainment (Safdar Bajwa et al., 2023; Bibi et al., 2024). Such devices are always ready to provide the user with immediate gratification through social networking, videos, or games, which leads to stress and ultimately addiction (Shahbal et al., 2016; Kanwal et al., 2024).

The consequences of smartphone addiction are broad and multi-faceted, particularly on one’s health, as it can be extremely damaging. To start, mental health deterioration is one of the leading outcomes, with higher rates of anxiety, depression, and stress being reported (Aleem et al., 2021). Also, the constant access to social media sites allows students to compare themselves with others which further increases poor self-image, inadequate feelings, loneliness, and low self-esteem (Chaudhry et al., 2023). In addition, too much time spent on smartphones can disrupt sleep cycles. This results in sleep loss which sequencing problems negatively affects one’s cognitive abilities, feelings, as well as overall health (Khan et al., 2021).

In Pakistan, there has been an increase in smartphone usage by university students, but simultaneously, there is not enough information provided for them regarding the psychological impacts of addiction (Mujahid et al., 2024). This indiscriminate phenomenon, especially the high wearing which the smartphone is used for has brought notable socioeconomic progress along with erecting a void in the students’ lives (Anwar, 2024). A considerable number of students spend too much time on their mobile phones neglecting their academic work, physical exercise, social gatherings, and even their classroom interactions (Akhtar et al., 2023). This disproportionate allocation of resources increases the level of psychological distress that students face and creates barriers toward their academic achievement and personal growth (Shahid et al., 2024).

Prolonged use of smartphones can affect academic achievement and cognition. Addicted students tend to have lapses in attention, memory, as well as inefficient time management skills which lead to poor academic performance (Ahmed, 2023). Smartphone addiction also increases procrastination because students ignore studying or doing assignments in favor of mobile phone use. Using phones during class or study periods further strengthens the cycle of addiction and low academic performance (Iftikhar et al., 2022; Batool et al., 2025).

Although a few people have attempted to study this phenomenon, smartphone addiction is still a nascent area of research in Pakistan (Shahid et al., 2024). It is worth noting that some literature has started to uncover this issue, but research from the Pakistani perspective is virtually non-existent.

Because of social and cultural context of Pakistan, along with widespread access to smartphones, the issue becomes more complex (Akhtar et al., 2023). It is crucial to understand smartphone overuse in Pakistan with its psychological effects profoundly and to design appropriate aid to help students from universities improve their smartphone addiction (Bibi et al., 2024).

Problem Statement

The issue of smartphone addiction has become a concern among university students in Pakistan because a lot of students are showing excessive usage tendency which is detrimental to their academic performance, mental health, and overall wellness (Ayaz et al., 2024). There is greater usage of smartphones among students for socializing, entertainment, and academic purposes which increases usage frequency and duration. Such addiction has led to increased anxiety, depression, and stress which hinders students' ability to concentrate in their studies and have healthy social interactions. However, there is scant literature on the phenomenon of smartphone dependency and its particular psychological impact on students in Pakistan.

Significant of the Study

The current research is crucial in terms of technology use as it investigates the psychological impact of smartphone addiction on university students in Pakistan, which is lacking in the current literature. Its analysis of the linkage between the issue of excessive smartphone use and mental problems like anxiety, depression, and stress enhances the understanding of the phenomena in the context of students' well being. In addition, this research could also assist educational institutions, policymakers, and mental health professionals, in formulating measures that can effectively help in dealing with the concerns that stem from smartphone addiction. It also contributes to the literature on digital addiction in emerging regions, including Pakistan, and adds understanding of social and cultural determinants of smartphone utilization in the country.

Aim of the Study

This study assesses the amount of use of smartphones by Pakistan university students and its potential psychological effects. To be more specific, this study attempts to find out the correlation between overuse of smartphones to anxiety, depression, stress, and other mental health problems. In addition, the study also seeks to ascertain the aspects of people's lives that lead to smartphone addiction and how that addiction affects the students' academic work, social interactions, and general health status. With this objectives in mind, the study seeks to make suggestions on how smartphone addiction can be controlled and managed while improving better usage among students within the Universities of Pakistan.

Methodology

Research Design

The current study is based on a quantitative, cross-sectional research design targeting smartphone dependency and the psychological effects it has on university students in Pakistan. This design is useful for estimating the magnitude and consequences of smartphone addiction during one period as well as identifying relationships between overdependence on smartphones and mental health issues. This study is conducted by using structured questionnaires that collect self-reported data, which ensures objective and quantitative measurement and analysis.

Setting

As for the location, the study is done across four major government universities of Pakistan to have a mixture of students belonging to different regions, cultures and economic status. The selected universities are Quaid-i-Azam University (QAU), University of the Punjab (PU), University of Karachi (UoK) and University of Peshawar (UoP). These universities were chosen for their above average enrollment and multi-discipline nature in order to comprehensively study smartphone dependency and its psychological effects on university students. Including universities from different cities increases the chances the results will be representative of all Pakistanis regardless of where they live and their level of education.

Population and Sample

Four universities in Pakistan were selected as a sample for the study, consisting of a total of 400 students through purposive non-probability sampling. The sample size was calculated with a G*Power size calculator to obtain the required power. Each university contributed 100 students from each of the ten offered faculties: (1) Computer Science & Information Systems, (2) Engineering & Technology, (3) Business & Management Studies, (4) Medicine, (5) Economics & Econometrics, (6) Law, (7) Mechanical, Aeronautical & Manufacturing Engineering, (8) Architecture, (9) Art & Design, and (10) Accounting & Finance. Such a diverse representation make sure the impacts of smartphone addiction and its psychological repercussions on students is well captured.

Selection Criteria

In order to be eligible for participation in the study, the participants had to be university students between the ages of 18 to 30, studying in any of the selected government universities, and owned a smartphone for at least a year. Those wishing to partake needed to provide informed consent and participate in academic work actively. Exclusion criteria were students suffering from psychiatric illness or cognitive disability that affected their ability to respond, students that did not possess a smartphone could not participate, and students not willing to take part in the study.

Data Collection Tool

The demographic part has the participant's details like age, sex, academic field, school year, and amount of time spent on a smartphone.

Smartphone Addiction Questionnaire

The Smartphone Addiction Scale, SAS, by Kwon et al. (2013) measures smartphone addiction. The scale's goal is to measure a student’s problematic usage of smartphone. The scale comprises items (N = 33) and utilizes the Likert-type scale as a response option. The higher the score, the more severe the addiction. The scale has six subscales: daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse, and tolerance. The internal consistency of the scale, as measured by Cronbach’s alpha, was reported 0.91 and thus is reliable.

Psychological Consequences Questionnaire

For the psychological consequences, The Smartphone Addiction Anxiety, Depression, and stress level analysis is conducted using DASS-21 by Lovibond and Lovibond 1995. The scale aims to assess three vital parameters of mental health as depression, anxiety, and stress. The scale is composed of 21 items, divided into three sub scales of seven items each. The answer has a four-

point Likert scale with participants rating the severity of the symptoms and higher scores indicating greater severity of the symptoms. The scale proved to have good internal consistency and Cronbach's alpha for depression was 0.88, for anxiety 0.82, and for stress 0.90.

Data Analysis

The collected data will be summarized using a social science software package called SPSS Version 28. The summary will include the description and interpretation of the statistics. The descriptive statistics will be mean, standard deviation, actual range and potential range skewness, and the kurtosis of the data. Inferential statistics will consist of Cronbach alpha reliability analysis of scale, Pearson Product-Moment correlation for the relationship of smartphone addiction and psychological consequences, linear regression analysis for the relationship of prediction, independent sample t-test for differences of means, and Anova for differences between groups from the different fields of study.

Data Collection Procedure

Ethical clearance from the institutional review board (IRB) will be requested and obtained prior to any form of data collection. Request will also be forwarded to the relevant university administrational bodies to conduct the said study. Participants will be obtained from different departments or faculties and the informed consent will be collected prior to the administration of the questionnaire. The survey will be printed and sent through email to make sure all respondent will be able to participate.

Ethical Consideration

To safeguard the rights and privacy of the participants, it is the responsibility of the researcher to ensure ethical guidelines are followed at every stage of the study. Participants will be provided informed consent which will allow them to understand the aim and steps of the study and the option to withdraw at any point without repercussions. While data is being collected, participants' identities will not be revealed and results will be used solely for academic work. Participants who may experience distress from issues related to smartphone addiction or other health-related problems will have access to psychological assistance.

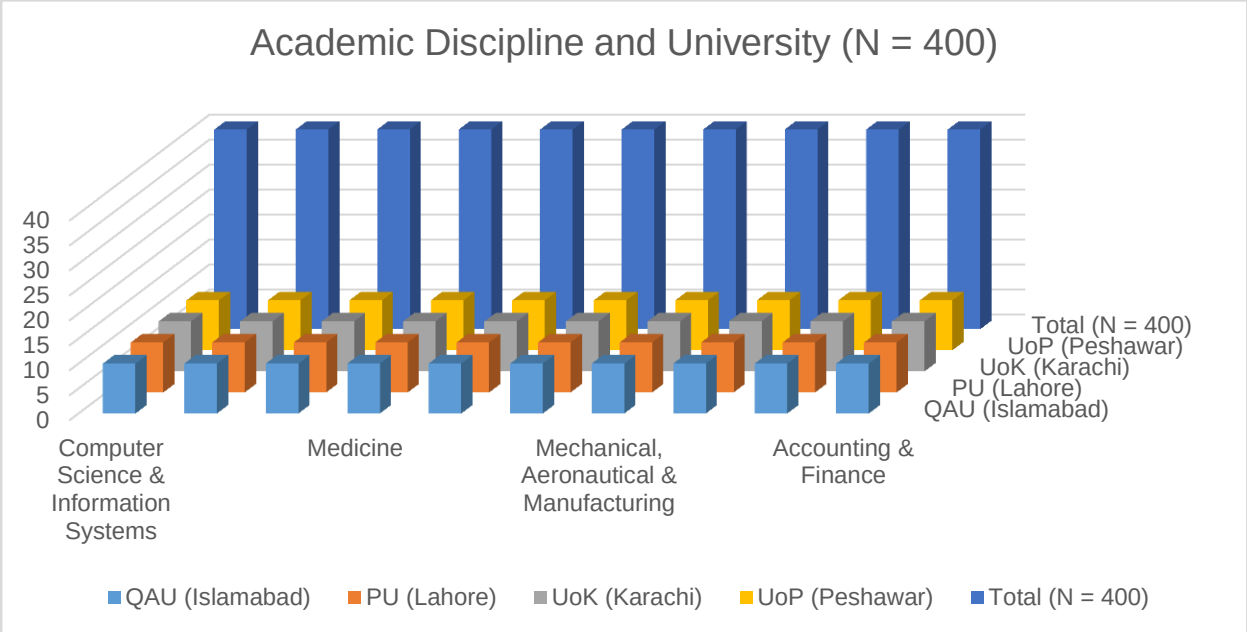
Results

Table 1: ***Demographic Characteristics of Participants (N = 400)***

Variable	Categories	Frequency (n)	Percentage (%)
Gender	Male	200	50.0
	Female	200	50.0
Age (years)	18-21	165	41.3
	22-25	190	47.5
	26-30	45	11.2
Year of Study	1st Year	85	21.3
	2nd Year	85	21.3

	3rd Year	115	28.8
	4th Year	115	28.8
Duration of Smartphone Use	<3 years	86	21.5
	3-5 years	130	32.5
	>5 years	184	46.0

In total, 400 participants completed the questionnaire, half of who were males and half females. Most respondents (47.5%) were aged 22-25 and the distribution was moderately even throughout the years of study. Patterns in smartphone usage differed, with 46% of participants reporting having smartphones for over five years which indicates high digital literacy.



Students from different faculties were proportionately represented in QAU, PU, UoK, and UoP. All of these institutions had students from ten accounted disciplines which ensures that the students were from assorted faculties.

Table 2: ***Correlations between Smartphone Addiction and Psychological Consequences***

Variable	**Mean (M)**	**Standard Deviation (SD)**	**SAS**	**Depression**	**Anxiety**	**Stress**
Smartphone Addiction Scale (SAS)	98.5	14.6	1	**.68***	**.63***	**.59***
Depression (DASS-21)	17.2	6.3	-	-	**.81***	**.76***
Anxiety (DASS-21)	14.8	5.9	-	-	-	**.79***
Stress (DASS-21)	19.4	7.2	-	-	-	-

The data suggests that there exists a significant positive relationship between psychological distress and smartphone addiction. This association begins with depression which has a correlation of 68% (r = .68, p < .001) which is followed by anxiety and stress standing at 63% (r = .63, p < .001) and 59% (r = .59, p < .001) respectively. Furthermore, depression, anxiety, and stress have already shown high inter-correlations with a range of 76% to 81% (r = .76 to .81, p < .001).

Table 3: ***ANOVA – Comparison across Universities***

Scale	QAU (Islamabad) (100)	PU (Lahore) (100)	UoK (Karachi) (100)	UoP (Peshawar) (100)	Total (N = 400)	F (df = 3,396)	p-value
Smartphone Addiction (SAS)	95.2 (13.8)	97.8 (14.2)	102.4 (15.1)	96.0 (14.0)	98.5 (14.6)	**4.67**	**.003**
Depression (DASS-21)	16.5 (6.1)	17.3 (6.5)	18.5 (6.8)	16.8 (6.3)	17.2 (6.3)	**3.85**	**.009**
Anxiety (DASS-21)	14.1 (5.4)	15.0 (5.6)	16.2 (5.9)	14.7 (5.5)	14.8 (5.9)	**3.49**	**.015**
Stress (DASS-21)	18.2 (6.9)	19.1 (7.1)	20.5 (7.5)	18.6 (7.0)	19.4 (7.2)	**4.12**	**.005**

The participants from UoK (Karachi) had the highest means in all smartphone addiction, depression, anxiety, and stress scores when compared to other institutions (p < .01). Moderate scores were recorded by PU (Lahore) and QAU (Islamabad), while low distress scores were recorded in UoP (Peshawar).

Table 4: ***ANOVA – Comparison across Academic Disciplines***

Scale	Computer Science (40)	Engineering (40)	Business (40)	Medicine (40)	Economics (40)	Law (40)	Mech. Eng. (40)	Arch. (40)	Arts (40)	Accounting (40)	Total (N = 400)	F (df = 9,390)	p-value
Smartphone Addiction (SAS)	105.2 (15.4)	102.7 (14.9)	98.6 (14.5)	92.4 (12.8)	97.9 (13.8)	99.2 (14.2)	103.1 (15.2)	100.8 (14.6)	99.5 (14.3)	97.3 (14.0)	98.5 (14.6)	**5.32**	**<.001**
Depression (DASS-21)	19.8 (6.5)	18.4 (6.3)	17.1 (6.2)	14.6 (5.8)	17.0 (6.0)	17.4 (6.1)	18.6 (6.7)	18.0 (6.5)	17.5 (6.2)	16.9 (6.1)	17.2 (6.3)	**4.85**	**<.001**
Anxiety (DASS-21)	16.5 (5.7)	15.8 (5.6)	14.5 (5.4)	12.2 (5.2)	14.3 (5.3)	14.9 (5.5)	16.1 (5.8)	15.5 (5.7)	15.0 (5.6)	14.2 (5.4)	14.8 (5.9)	**4.62**	**<.001**
Stress (DASS-21)	21.1 (7.3)	20.2 (7.1)	19.0 (7.0)	16.8 (6.2)	18.5 (6.8)	19.3 (7.2)	20.8 (7.4)	20.0 (7.2)	19.6 (7.1)	18.4 (6.9)	19.4 (7.2)	**5.14**	**<.001**

The level of addiction to smartphones and psychological distress was highest among students in Computer Science and Engineering while the students from Medical school had the least level. This indicates that all technical fields are likely to be more stressful and digitally dependent as compared to other fields of study.

Discussion

Elaborate and focus on the use of sources from other researchers. Discuss how the individual coping strategies are linked with stress problems. Also, use screenshots to explain this problem on a visual level. Mention any patterns that emerged from the information collected. Additionally, write about the correlation between increased use of smartphones and increased mental depression. Ensure that you quote the findings from the researched material in the right manner using quotes.

The ANOVA results also show significant differences among the universities. Students from UoK (Karachi) seem to have the highest smartphone addiction (M = 102.4, SD = 15.1), depression (M = 18.5, SD = 6.8), anxiety (M = 16.2, SD = 5.9), and stress (M = 20.5, SD = 7.5). This may be

regionally or institutionally specific like, the level of academic stress, the social setting, or the availability of digital means (Shakoor et al., 2021). On the other hand, students from UoP (Peshawar) displayed the lowest distress levels which may suggest different coping styles, cultural factors, or institutional support. This data serves as a reminder of the need for specific strategic measures across the universities to manage the consequences of increased smartphone usage on students' mental health (Akhtar et al., 2023).

Within comparisons of academic fields, it was found that students pursuing a Computer Science and Engineering degree reported the highest levels of smartphone addiction and psychological distress. These fields are particularly demanding which leads to increased anxiety and stress, especially with prolonged exposure to screens (Shahid et al., 2024). On the other hand, medical students scored lower in smartphone addiction which may be because of their structured study schedules and clinical exposure that limits screen time (Ejaz et al., 2023). These findings imply that academic discipline affects their patterns of smartphone use and its subsequent impacts on their psychology, thus requiring further research into the need for discipline specific measures (Bibi et al., 2024).

All in all, the findings bring to light issues stemming from smartphone addiction while also revealing their immeasurable effects on one’s mental health. This highlights the need of creating institutional digital detox programs and futuristic awareness campaigns. These findings demonstrate the strong co-relations between smartphone addiction and psychological distress, which alarm the need for immediate action and preventing strategies for university students. Future studies need to focus on the effects over long periods on possible mediating factors such as social isolation, Interventions with greater focus and the right strategies need to be executed (Mushtaque et al., 2022).

Future Direction

Further studies ought to look at the effects of smartphone addiction from a longitudinal perspective to uncover the causal relationships and potential mediators such as sleep loss, social interactions, and academic performance. As well as how personality Ttypes, coping mechanisms, and cultural factors contribute to the differential vulnerability to smartphone addiction. There is a need also for experimental and interventional studies on excessive smartphone usage focusing on digital detoxification, mindfulness exercises, and cognitive-behavioral techniques. Different age groups including younger adolescents and older working populations would benefit from this type of research and even further support the idea that smartphone addiction is a growing problem that negatively impacts society.

Limitations

Inspite of notable results found, this study is not without shortcomings. The nature of the study does not allow causality assumptions to be made on violence exposure and the psychological distress experienced, which can be attributed to the cross-sectional quasi experimental design. Expectancy effects, social desirability for success, and recall tendencies are some factors that can bias a self-reported evaluation and impact data. The study participants were predominately university students from a particular geographic area which reduces its external validity to other demographics, specifically age and culture. More work needs to be done on objective evidence such as real-life monitoring of screen time and clinical markers to improve the accuracy of results.

Conclusion

This study demonstrates the significant correlation between smartphone dependency and psychological distress among university students; a phenomenon that varies significantly within different disciplines and institutions. The findings reveal the importance of having preventative measures, such as awareness schemes and policies from the institutions that encourage moderation in smartphone usage. Considering the persistent neglect of mental health and academic performance towards student's well-being, focusing on smartphone addiction is essential. Through responsible smartphone usage interventions, universities can tremendously reduce the academic and mental burdens students experience from excessive smartphone use.

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