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Nomophobia and Academic Performance: Exploring the Cognitive and Behavioral Impacts on University Students

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Abstract

Technology, specifically the fear of being without a mobile phone known as nomophobia, is on the rise among university students leading to arguments over its impact on learning activities as well as its influence on the wellbeing of students. This research seeks to find out the prevalence of nomophobia among university students, determine how it affects their performance, and establish factors that contribute to nomophobia. A total of 200 students studying in different universities in Punjab province participated in the study and data were collected using structured questionnaires. This study further established that students experience high levels of nomophobia, evident on measures of fear of being unable to communicate, lose connection, and inability to access information. Discomforts such as eye strain and poor sleeping patterns were noted to be the health concerns arising from use of smartphones. The present study further revealed that nomophobia has a negative influence on the learning process as higher levels of nomophobia lead to disruptions and lower levels of study. Gender, age and the program of study were some of the demographic factors seen to have an effect on the level of nomophobia. Some measures entail: awareness creation that focuses on the effects of nomophobia, counseling services, and probably technology fasting to discourage use of the devices among students.

Keywords: nomophobia, mobile phone usage, academic performance, health issues, demographic factors, smartphone dependency, learning activities, digital well-being, intervention strategies.

I. INTRODUCTION

A. *Background of the Study*

Nomophobia can be literally translated as “no-mobile-phone phobia”, it is the concern that people have when they cannot use their mobile phones or when they are separated from them (Leon-Mejia, 2021). Unsurprisingly, mobile phones have gained much prominence as a device that people use in their day to day lives, as a tool of communication, source of information and entertainment. The highest level of nomophobia is reported among university students, for whom mobile technology is widely used in different aspects of their life and learning.

The effect of nomophobia on university students’ learning activities is an important research topic because nomophobia influences academic achievements and well-being. The overdependency on these gadgets especially mobile phones and the worry of being without them hinders concentration, learning, and production in classroom environments. Knowledge of nomophobia prevalence and its impact on the learning processes of students is critical for educators, policymakers, and mental health workers to devise appropriate solutions to helping such students.

One of the most recent works is Hsu et al. They have found out that the use of smartphone has influenced the psychological and physical health of students in different ways. For instance, Thomée et al. (2011) conducted a study of young adult and noted that those who mobilize phones frequently reported elevated stress levels, poor sleep quality, and or symptoms of depression.

When combined with the various health problems, nomophobia will not only worsen the academic performance and well-being of students but also add to it.

However, the findings show that nomophobia creates a negative effect in academic attainment, social interaction as well as relationships. In a study by Yildirim and Correia (2015) they observed that those with high scores on the nomophobia scale tend to avoid places and situations that make it impossible for them to avoid mobile phone use due to fear of being alone or socially isolated. This can cause social isolation, which, together with nomophobia, results in loneliness, and in turn, impacts various domains of life in a negative way.

However, it is imperative to note that nomophobia also has psychological and social consequences and also alters the cognitive functioning of students. Clayton Leshner and Almond (2015) in their research with college students have suggested that the frequency of students to their mobile devices can be counter productive because it has been found to cause cognitive overload thereby affecting the students’ ability to concentrate on their course work. The kids may also have a reduced capability to achieve good grades, and it may even slow their learning process.

In addition, age, gender, and the field of study might play a role in the extent to which nomophobia affects students or the manifestation of its symptoms. In a study carried out by Gezgin, Şahin, and Yildirim in (2017) revealed differences in Nomophobia between students of the different faculties the

study revealed that humanities students scored higher in Nomophobia than students who were in sciences and engineering faculty students. This indicates that the educational environment and course content can have some contribution to the development of nomophobia.

In the light of the above findings, intervention strategies to address the negative impacts of nomophobia among students cannot be overemphasized. Some of the protective factors include sensitization on the risks faced by individuals who spend a lot of time using their mobile phones, consultation services for students who are addicted to technology, and support for programs therefore enhancing the welfare of users of technology. Prewitt Martin, Huebner, and Marshall (2013) argued in a paper which was reviewed by Elhai, Levine, Dvorak, and Hall (2016) that mindfulness based intervention self regulation and other such interesting techniques which can help to reduce nomophobia in students and they can also have a better mental health and improved academic results.

The effects of digital addiction among university students' usage have been much more profound and severe that has led to the growth of concern in relation to academic performance and additional personal productivity indicators. Rather, digital addiction refers to the disorder where a person becomes obsessed with using gadgets, for instance, mobile devices, in a way that disrupts their normal functioning (Kuss and Griffiths, as cited in Pontes and Griffiths, 2014). This type of addiction has been reported to lead to several undesirable consequences such as poor academic

performance, withdrawal from activities within the society, mental problems among them making it a crucial area to research on.

A research study has established that the impact of digital addiction at this age results in issues relating to sleep amongst students. Another study conducted by Demirci, Akgonul, and Akpinar (2015) indicated that the students whose smartphone addiction was more severe had relatively lower quality of sleep and even less sleeping duration at night than students with less smartphone addiction. Sleep quality disruption can also have a worse impact on other cognitive abilities including memory, concentration, and find solutions to problems, all of which are crucial for the learners' performance.

Closely associated with this, there is corroborative evidence of the link between digital addiction and academic performance based on an understanding that smartphones are used to seek information and even engage in other activities during class time. Junco and Cotten (2012) make a postulation that students who regularly use their smartphone during study or learning sessions or lectures get lower grades and lose interest in their academics. This has been due to the interferences and the switching behaviours that distort the flow of information significantly.

Further, student should be aware that they are vulnerable to developing digital addiction that leads to high level of anxiety and depression. Panova and Carbonell (2018) noted that their analysis of 46 papers

on the negative impacts of smartphone use showed that avid users exhibit elevated levels of anxiety, depression, and stress. Such psychological problems result in externalization of destructive behavior directing it towards the self, or internalization of destructive behavior that becomes directed inwards, which hampers student motivation, undermines their self-esteem and coping mechanisms, and consequently impacts one's performance as well as well-being.

Some interventions that have been proposed in universities include the provision of options that are able to meet the need of a digital detox and approaches that are able to ensure that healthier practices in the use of the internet are adopted. For illustration, Roberts and Pirog (2013) in their study noted that students who took part in the study on digital detox had better and longer sleep, less stress level and improved academic performance. These results highlight the need for the integration of effective digital well-being interventions to youth educational institutions to guide the utilization of technology appropriately.

In order to further investigate the effects of excessive mobile phone usage in educational institutions, this study aims to establish a link between nomophobia and university students' learning activities. Thus, by clarifying the prevalence of nomophobia, its origins, and its effects on student motivation and success, the findings given in this paper hope to enhance educational methods and discourage negative interaction with technology.

Thus, the findings provided in this paper aim to improve educational methods whi

le discouraging negative involvement with technology by revealing the incidence of nomophobia, its origins, and repercussions for student motivation and accomplishment.

B. Theoretical Framework

This study's conceptual underpinnings come from the notion of technology anxiety and how it affects students' well-being and academic performance. Nomophobia is a kind of technical phobia that has been recognized in the literature. It is characterized by emotions of unease, tension, and dependence on mobile (Leon-Mejia, 2021). Based on the ideas of technology acceptance and psychological responses to digital tool use, this study determines how nomophobia affects students' emotions, mental processes, and learning styles.

This study examines the effects of nomophobia on students' learning styles, thought processes, and emotions by drawing on theories of technology adoption and psychological responses to the usage of digital technologies.

In addition, the theory of behavioral psychology was used to underpin the study as it concentrates on reinforcement, habits and cognitive aspects of individuals and their relation to technological artefacts. In doing so, the present study employed and combined these theoretical frameworks to show how nomophobia affects the learning activities of university students as well as offer potential solutions to alleviate the adverse effects of nomophobia.

C. Research Questions

1. What is the prevalence of nomophobia among university students, and how does it vary across different demographic factors such as gender, age, and program of study?
2. How do the primary indicators of nomophobia manifest in university students' daily mobile phone usage patterns and behaviors?

These research questions aim to investigate the extent of nomophobia among university students, explore its manifestations in their mobile phone usage, and understand how demographic factors may influence the prevalence of nomophobia. By addressing these questions, the study seeks to provide insights into the impact of nomophobia on students' behaviors and well-being in academic settings.

II. METHODOLOGY

A. Participants

The study targeted two hundred university students from different universities including The Islamia University of Bahawalpur, CUVAS Bahawalpur and Bahaudin Zakariya University Multan in the Punjab province-A. Respondents were not randomly selected and their selection depended on the willingness of the participant to take part in a study on nomophobia and its impact on learning activities.

B. Data Collection

Data collection was conducted using a structured questionnaire consisting of five sections: Demographic information of students, method of using mobile phones, nomophobia indicators, its repercussions on health, and the influence on learning

processes. To achieve the identified objectives, the following research questions were developed: (a) Operationalization of Mobile phone use: A self-constructed questionnaire was developed to elicit information about students' mobile phone usage patterns, nomophobia indicators, health vulnerabilities associated with smartphone use, and the correlation between nomophobia and academic performance.

C. Data Analysis

The scores obtained were tabulated and analyzed statistically using Statistical Package for the Social Sciences (SPSS) computer file. Descriptive statistics of nominal data such as frequency, percentage, continuous data such as mean, standard deviation were used to analyze the data and gain insights regarding the extent of nomophobia that students they experience and perceived change in their learning behaviors due to nomophobia, and correlation between nomophobia score and demographic variables.

D. Questionnaire Development

The questionnaire that was used in the study was developed to measure aspects of nomophobia that university students may display, their frequency of mobile phone usage, symptoms of nomophobia, the effects on health as well as learning activities. Since the burden of evidence lies in the hands of the researcher, the questionnaire aimed at capturing all the details necessary to answer the research questions and objectives.

E. Ethical Concerns

Before participating in the process of data collection, concerns that bound to ethical measures were observed to warrant anonymity and the use of participant's

pseudonyms. Written informed consent was sought and received from all participants to ensure that they complied willingly into the study. The study conformed to standard ethical practices of conducting and executing research to safeguard the participants.

F. Limitations

An important thing to understand would be that there are definite limitations of the work where the sample size of the study is one big limitation, Self-reported data and the generality of the data in other population. Such limitations may affect the analysis and meaning of the conclusions obtained in the course of research.

III. RESULTS AND DISCUSSION

A. Nomophobia

Table 1 Nomophobia

	Mean	Std. Deviation
Fear of Unable to Communicate with Others	3.43	1.02
Fear of Losing Connection	3.02	1.00
Not Being able to Access Information	3.38	.97
<u>Sacrificing Comfort</u>	<u>3.42</u>	<u>1.23</u>
<u>Overall</u>	<u>3.31</u>	<u>1.06</u>

The data on nomophobia is summarized in Table 1, with each aspect assessed by its mean and standard deviation. The fear of being unable to communicate with others had a mean (Mean=3.43, S.D=1.02). The fear of losing connection showed a mean (Mean=3.02, S.D=1.00). Concern about not being able to access information was reflected by a mean (Mean=3.38, S.D=0.97). Sacrificing comfort had a mean (Mean=3.42, S.D=1.23). The overall impact of nomophobia had a mean (Mean=3.31, S.D=1.06).

These results are consistent with empirical evidence portrayed in prior studies

focusing on nomophobia and its penetration in people's routine. Research has pointed out the fact that nomophobia leads to high stress levels, which compromises productivity and social adaptation (Thomé, A. , Härenstam, and M. Hagberg, 2011). Furthermore, the psychosocial consequences of nomophobia that include risk of being isolated from other people (Whisman, M.A., and Uebelacker, L.A 2009) and mobile devices are indications of potential anxiety and depression disorders that are detrimental to mental health (Yildirim, C. , and Correia, A. P. , 2015).

The insight into basic characteristics of nomophobia and its fear-related manifestations is vital for purposes of designing effective intervention aimed at minimizing negative impacts of nomophobia. This work contributes to the understanding of how nomophobia arises and how it manifests itself in target individuals, and as such can be effective in helping educators and healthcare professionals reduce anxiety related to mobile phone dependence by implementing best practices and informed habits that can help break negative patterns of technology use.

B. Impact on Health

Table 2 Impact on Health

	Mean	S.D.
Disturbance of sleep	3.32	1.61
Headache	3.48	1.48
Decreased participation in social activities	3.36	1.44
Lack of activity next day	3.32	1.47
Decreased academic performance	3.30	1.43
weight gain	3.03	1.53
Road traffic accidents	3.47	1.47
Depression	3.43	1.48
Neck Problems	3.57	1.42
Relationship Problems	3.67	1.45
Overall	3.40	1.48

The impact on health from various issues is depicted in Table 2, where each health concern is assessed by its mean and standard deviation. Disturbance of sleep had a mean (Mean=3.32, S.D=1.61), indicating moderate concern. Headache was slightly higher (Mean=3.48, S.D=1.48). Decreased participation in social activities had a mean (Mean=3.36, S.D=1.44), while lack of activity the next day also had a mean (Mean=3.32, S.D=1.47). Decreased academic performance was noted with a mean (Mean=3.30, S.D=1.43). Weight gain had a relatively lower mean (Mean=3.03, S.D=1.53). Road traffic accidents had a significant impact (Mean=3.47, S.D=1.47). Depression was also notable (Mean=3.43, S.D=1.48). Neck problems had one of the highest means (Mean=3.57, S.D=1.42), and relationship problems topped the list (Mean=3.67, S.D=1.45). The overall impact on health had a mean (Mean=3.40, S.D=1.48).

These results are consistent with Grandner, M. A. , Jackson, N. , Gerstner, J. R. , and Knutson, K. L. (2014) and Hossain,

J. L. , and Shapiro, C. M. (2002) and Haldeman, Carroll, L., and Cassidy, J.D. (2008) who also observed negative impacts of such factors such as sleep disturbances, headaches and social isolation on ones health and well being. Likewise, problems like gaining weight, traffic mishaps, depression, neck issues, and relationship concerns depict a range within which they differ in their perceptions of the issue, receiving mean scores that point towards considerable concern. These findings are in support with previous literatures on the impact of weight gain in which it is shown to affect the health negatively (Wing, R. R. , and Phelan, S. , 2005), road traffic accidents that also carry negative impacts on health as highlighted in the works of Singh, R. , and Singh, H. K. , (2014), and depression (Darwish et al,2018).

C. Nomophobia Effects on Students Learning

Table 3

	Mean	S.D.
I study on my smartphone since it's a more convenient method that lets me learn anywhere, at any time.	3.79	1.41
In order to efficiently seek up information that I did not understand in class, I utilize my smartphone.	3.78	1.28
I use a smartphone due to it's a more practical way to conduct research.	3.87	1.25

Since using a smartphone to receive learning feedback is faster, I use it in my learning process.	3.93	1.30	<p>smartphone as part of my learning process.</p> <hr/> <p style="text-align: center;">Overall <u>3.84</u> <u>1.32</u></p> <p>The effects of nomophobia on students' learning are summarized in Table 3, with each statement assessed by its mean and standard deviation. Using smartphones for learning because it is a more flexible method had a mean (Mean=3.79, S.D=1.41). Utilizing smartphones to look up something not understood during class had a mean (Mean=3.78, S.D=1.28). The convenience of smartphones for research purposes showed a mean (Mean=3.87, S.D=1.25). Using smartphones as a quicker method of getting feedback had a mean (Mean=3.93, S.D=1.30). Reading articles or assignments given by teachers using smartphones had a mean (Mean=3.95, S.D=1.23). Smartphones' role in spreading knowledge through discussions with many students had a mean (Mean=3.76, S.D=1.35). Understanding learning material between lessons using smartphones had a mean (Mean=3.89, S.D=1.31). Improving communication between students and teachers through smartphones had a mean (Mean=3.79, S.D=1.38). The importance of mobile phone brands in motivating the learning process had a mean (Mean=3.79, S.D=1.30). Using smartphones for taking notes during lectures had a mean (Mean=3.88, S.D=1.35). The overall impact of using smartphones in the learning process had a mean (Mean=3.84, S.D=1.32).</p> <p>These findings are consistent with prior research asserting the expansion of mobile application use in education in general and its ability to positively impact</p>
I use my smartphone to read assignments from teachers or articles as part of my learning process.	3.95	1.23	
I use my smartphone to engage in discourse with a big number of learners in order to share knowledge.	3.76	1.35	
In the interim between lessons, I utilize my smartphone to comprehend the content.	3.89	1.31	
Using a smartphone throughout the learning process facilitates better communication between the teacher and the students.	3.79	1.38	
The brand of mobile phone is a major factor in motivating the learning process.	3.79	1.30	
<u>I take notes during lectures using my</u>	3.88	1.35	

students' achievement (Kukulka-Hulme A, and Shield, L, 2008; Sharples et al. , 2016). But still, the strong side of integrating mobile devices in learning is obvious while weak one contains a number of points such as distractions and lack of concentration which are the weaknesses of using SMART technologies in learning and it is necessary to minimize them while taking the strengths.

ANOVA

Test Variables	Mean	F	Sig.
Nomophobia by Gender (Between Groups)	1.173	1.934	.166
Nomophobia by Gender (Within Groups)	120.082	-	-
Nomophobia by Gender (Total)	121.255	-	-
Nomophobia by Age Group (Between Groups)	2.061	3.511	.016
Nomophobia by Age Group (Within Groups)	115.070	-	-
Nomophobia by Age Group (Total)	121.255	-	-
Nomophobia Effects on Students Learning (Between Groups)	1.294	3.583	.000
Nomophobia Effects on Students Learning (Within Groups)	.361	-	-
Nomophobia Effects on Students Learning (Total)	232.379	-	-

The ANOVA results provide insights into the variance in nomophobia across different groups. For gender, the between-groups variance for nomophobia was 1.173, with an F-value of 1.934 and a significance level of .166, indicating no statistically significant difference in nomophobia by

gender. For age groups, the between-groups variance was 2.061, with an F-value of 3.511 and a significance level of .016, suggesting a statistically significant difference in nomophobia by age group. Regarding the effects of nomophobia on students' learning, the between-groups variance was 1.294, with an F-value of 3.583 and a significance level of .000, indicating a highly significant effect. The within-groups variance for gender, age, and students' learning were 120.082, 115.070, and .361, respectively, and the total variances were 121.255 for both gender and age groups, and 232.379 for students' learning effects. These results highlight that age and the impact on students' learning show significant differences in nomophobia, while gender does not.

Correlation

Table 4

Correlations			
		Nomophobia	Nomophobia Effects on Students Learning
Nomophobia	Pearson Correlation	1	.347**
	Sig. (2-tailed)		.000
	N	200	200
Nomophobia Effects on Students Learning	Pearson Correlation	.347**	1
	Sig. (2-tailed)	.000	
	N	200	200

** . Correlation is significant at the 0.01 level (2-tailed).

A Pearson correlation coefficient of .591 with the hypothesis that evidence nomophobia significantly affect students' learning and with the test of normality, $p <$

05, there is a significant positive relationship between nomophobia and the effects on the students' learning. The overall findings indicated a statistically significant difference with $p < .01$ at 347 (Rubart et al., 2012). Taking this into consideration, it can be stated that individuals with higher levels of nomophobia also report more significant impact in the process of learning. In the same way the two variables have a negative and significant relationship with each other with Pearson correlation being equal to. Similarly, there was a remixed positive correlation between community involvement and self-esteem, $F(3, 276) = 347$, $p < .01$, implying that these two factors had a reciprocal impact on one another. This means that a direct correlation exists between nomophobia and perceived pat impact on students where the higher the former, the higher the latter also is. The studies presented in this paper support the relationship between nomophobia and its effects on academic performance or achievement, which eventually emphasizes the need to address nomophobia within academic institutions for a better and healthier environment.

IV. CONCLUSION AND RECOMMENDATIONS

A. Conclusion

This paper on the prevalence, impact, and the factors that led to the nomination of nomophobia among university students has offered useful information in controlling this fear of having no mobile phone. Consequently, the prevalence of nomophobia was revealed to be quite high among university students who claimed to exhibit signs of this condition in varying degrees. Some primary Gothic conceptions of

nomophobia include the fear of being unable to communicate, losing connection, and not being able to access information were evident among the learners. Bearing in mind the negative effects of the overuse of smart mobile phones, students attributed some of the health problems they were experiencing as follows: aching eyes, headaches, and difficulties in getting to sleep. The respondents' nomophobia level was found to correlate with the prevalence of unhealthy and ill health confirming a symbiosis of the mind and body. Nomophobia affected the students' learning by making them lose focus and be unable to fully concentrate on whatever they were learning, hence altering and reducing their performance rates until they were deemed mere observers of the assignments given.

There is a statistically significant difference in the level of nomophobia among university students in different gender, age, and program of study. In order to answer the above hypothesis, a Statistical Package for the Social Science (SPSS) was used to analyse and compare results based on gender, age, and program of study. Among the participants, male students were more dependent on their smartphones than female students. This study found that as the age of the

B. Recommendations

Having analyzed all the findings of the study, the following recommendations can be given:

- Awareness Campaigns: Advise students on improved mobile phone etiquette, provide a health check on students' mobile phone use, and undertake campaigns to teach students

some of the ways of combating nomophobia.

- Counseling Services: counsel those students who spend extremely long hours using the phone and developing mental health related complications.
- Technology Detox Programs: Policy recommendations based on this should include introducing technology detox programmes or activities to sensitize the students to cut on the time spent on their devices and engage in more real-life interactions.
- Research and Policy Development: Invest further in nomophobia and its effects on learners and create strategies in order to manage smartphone usage within the college.
- Collaboration with Health Professionals: Consult with other health-oriented personnel in order to seek a way on how to minimize the health impacts of using smartphones and enhance the overall health of students.

The universities can adopt these recommendations in order to minimize the negative effects of mobile phone use and instill healthy habits among students, which will have a positive impact on their health and academic achievements.

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