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The Relationship of Smartphone Addiction and Depression, Anxiety and Stress among UTHM Diploma Students

Muhammad Ammar Rahimi[1], Aleeya Saffiyah Azrul Fazli[1], Hafizul Taufik Tamrin[1], Adnin Afifi Nawi[1]*

1 Department of Science and Mathematics, Centre for Diploma Studies
Universiti Tun Hussein Onn Malaysia, Pagoh Higher Education Hub, 84600 Pagoh, Johor, MALAYSIA

*Corresponding Author: adnin@uthm.edu.my
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Abstract

This research investigates the relationship between smartphone addiction and depression, anxiety and stress among University Tun Hussein Onn (UTHM) diploma students. Using the software Statistical Package for the Social Sciences (SPSS), 199 students completed a survey that included the Smartphone Addiction Scale (SAS) and the Depression Anxiety Stress Scale (DASS-21). With the highest mean score of (3.47), showing a reasonable degree of smartphone addiction, implying that smartphones are reused after putting it down. The mean scores for stress, anxiety, and depression length from 1.87 to 2.43, indicating a mild level of condition. Correlation analysis showed a moderate and statistically significant positive correlation relationship between smartphone addiction and both depression ($r = 0.350$, $p < 0.001$) and stress ($r = 0.320$, $p < 0.001$), while a weak but significant positive correlation was constructed with anxiety ($r = 0.199$, $p = 0.007$). The results suggested that this psychological illness is connected to an intensity of smartphone addiction. The main point is to focus on digital wellness action and mental health education for diploma students to limit the destructive effects of excessive smartphone use.

1. Introduction

In this globalization era, smartphones have turned out to be an influential communication device with a multi-functional mechanism that coordinates internet access, social networking, entertainment and educational resources. These futuristic items have substantially enhanced daily life routine, this extreme and uncontrollable use of smartphones has introduced a heavy concern: smartphone addiction. This wide phenomenon describing compulsive smartphone use and complications in handling time spent on the device is famous amongst university students. As digital users, students always rely on smartphones for course tasks, social interactions and entertainment, declaring them in a tight spot for over usage and its related psychological effects. Smartphone addiction was found to be significantly associated with variables such as gender, academic level, marital status, and the number of hours spent using smartphones daily [1].

Numerous studies suggested a high link between smartphone addiction and conflicting mental health outcomes, such as depression, anxiety and stress. These cerebral situations are growingly reported among university populations, where academic tensions, social interactions, and environmental influences contribute to

emotional vulnerability. Smartphones have evolved into personal devices that not only facilitate communication and productivity but also reflect users' social identity and status. As Bian and Leung highlight, the constant internet connectivity of smartphones offers a wide range of gratifications, including sociability, entertainment, time management, and coping strategies [2]. Additionally, a study examining adolescents in Malaysia reported that problematic smartphone use is linked to higher levels of depression, anxiety, and stress, underscoring the need for interventions to address this growing concern [3]. Thus, the rise of smartphone addiction parallels the increasing concern for students' psychological well-being, especially in a higher academic setting in which students have declining access to proper mental health support. This investigation targets diploma students at Universiti Tun Hussein Onn Malaysia (UTHM), aiming to explore how smartphone addiction correlates with depression, anxiety, and stress within this demographic. The frequency of smartphone usage behaviours also leads to unfavourable outcomes for physical and mental health, such as decreasing work efficiency [4], the rising risk for anxiety and depression [5], insomnia, earache, and headache [6].

The study endorses a quantitative scale using regulated tools—named the Smartphone Addiction Scale (SAS) and the Depression, Anxiety and Stress Scale (DASS-21) —to help research on behavioural and psychological status. By collecting and analyzing data from samples of Year 1 and Year 2 diploma students across various courses, this paper aims to quantify the trend of smartphone addiction and determine its relationship with mental health aftermaths.

2. Materials and Methods

2.1 Study Design and Participants

Cross-sectional research was performed to examine the relationship between smartphone addiction and depression, anxiety, and stress among diploma students at Universiti Tun Hussein Onn Malaysia (UTHM), Pagoh campus. The targeted population for this study included students from Year 1 and Year 2 across various diploma programs such as Applied Science, Civil Engineering, Chemical Engineering Technology, Mechanical Engineering, Electrical Engineering, Information Technology, and Animation Technology. The estimated population of diploma students was 2000. According to Krejcie and Morgan's table (1970), 322 samples are needed to represent the whole UTHM Diploma students' population, but a total of 199 students, as limitation were selected to participate in the survey. The questionnaire was distributed online using platforms familiar to students, including WhatsApp and Telegram, during the second semester of the 2024/2025 academic year.

2.2 Instruments

In this study, the main instrument for collecting data from respondents was a questionnaire. It was created with Google Forms and separated into three sections. The first section gathered demographic information, including age, gender, course, and year of study. The second section assessed the severity of smartphone addiction using the Smartphone Addiction Scale - Short Form (SAS-SF), which consists of 11 questions graded on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." The final section assessed mental health using the Depression, Anxiety, and Stress Scale - 21 items (DASS-21). This measure consists of 21 items divided evenly into three categories: depression, anxiety, and stress. It employs a 4-point Likert scale, both instruments have been widely used in research and are proven to be reliable and valid for assessing smartphone addiction and mental health.

Table 1 *Distribution of items in the survey*

Section	Parameters	No. of Items	Total Items	Cronbach Alpha Values
B	Smartphone Addiction	11	11	0.754
C	Depression	7	21	0.834
	Anxiety	7		0.868
	Stress	7		0.861
		Total	32	0.906

Table 1 presents Cronbach's Alpha values for the four constructs measured in the study: smartphone addiction, depression, anxiety and stress. The number of items for each construct ranges from 7 to 11. All constructs show high internal consistency, with Cronbach's Alpha values above 0.70. Cronbach's Alpha values indicate a high level of reliability for all scales used in this study. According to Nunnally (1978), a Cronbach's Alpha value of 0.70 or higher is considered acceptable, while values above 0.80 indicate good internal consistency. The smartphone addiction scale has the lowest alpha (0.754), suggesting it's considered acceptable, and the items measure the same underlying construct reasonably well. Depression, anxiety, and stress show strong reliability,

with values of 0.834, 0.868, and 0.861, respectively. These results confirm that the measurement instruments used in the study are suitable for further analysis.

2.3 Statistical Analysis

Data collected from the Google Form responses were analysed using SPSS Statistics software version 27. Descriptive statistics, including frequency and percentage, were used to summarize the demographic data. Mean scores and standard deviations were computed for smartphone addiction levels and mental health indicators. Spearman correlation analysis was used to evaluate the direction and intensity of the relationship between smartphone addiction and stress, anxiety, and depression.

3. Result and Discussion

Below are the results and discussion of smartphone addiction, depression, anxiety and stress among UTHM Diploma students.

3.1 Statistical Analysis

This section will discuss demographic variables for each item.

Table 2 *Respondents' demographic data (N = 199)*

Demographic variable	Category	Frequency	Percentage (%)	Demographic variable
Age	18-19 years old	120	60.3	18-19 years old
	20-21 years old	79	39.7	20-21 years old
Gender	Male	109	54.8	Male
	Female	90	45.2	Female
Year of Study	Year 1	119	59.8	Year 1
	Year 2	80	40.2	Year 2
Course	Engineering	109	54.8	Engineering
	Non-engineering	90	45.2	Non-engineering

Table 2 shows a fairly balanced gender distribution, with 54.8 male and 45.2 female respondents. This balance suggests that the data represents perspectives from both genders relatively equally. Most respondents (60.3%) were in the 18-19 age group, indicating that the sample is primarily composed of younger individuals, likely newer university students. Only 39.7% were aged 20-21, which may limit the generalizability of the findings to the older population. The demographic analysis also shows a balanced course distribution, with 54.8% engineering courses and 45.2% non-engineering course respondents. This balance suggests that the data represent perspectives from both groups relatively equally. Most respondents (59.8%) were in Year 1, meanwhile 40.2% were in Year 2, which is a noticeable but not extreme imbalance. These demographic characteristics are important to consider when interpreting the results and assessing their relevance to the wider population.

3.2 Smartphone Addiction

This section will discuss each item in the smartphone addiction part.

Table 3 *Mean and standard deviation for smartphone addiction (N=199)*

Question Statement	Mean	Standard Deviation
1. I miss work that I planned, due to smartphone use	3.28	0.937
2. I have a hard time concentrating in class, while doing assignments, or while working, due to smartphone use	3.27	0.998
3. I feel pain in my wrists or at the back of my neck while using a smartphone	2.83	1.111
4. I wouldn't be able to stand not having a smartphone	2.83	1.072
5. I feel impatient and fretful when I am not holding my smartphone	2.64	0.985
6. I have my smartphone on my mind even when I am not using it	2.45	1.023

7. I would never give up using my smartphone even if my daily life were greatly affected by it	2.80	0.985
8. I constantly check my smartphone so as not to miss conversations between other people on Twitter, Facebook, Snapchat, Instagram, TikTok, or other social media	3.23	1.070
9. I use my smartphone longer than I intend	3.47	1.009
10. People around me tell me that I use my smartphone too much	2.54	1.029
11. I am addicted to my smartphone	2.88	1.080

Table 3 shows the mean and standard deviation for smartphone addiction among diploma students. In this part, 11 questions were asked to evaluate their addiction to smartphones. Each statement is required to select either “Strongly Disagree”, “Disagree”, “Neutral”, “Agree” or “Strongly Agree”. The mean represents the average response from the respondents. The highest mean is 3.47, while the lowest is 2.45. From this, we can conclude the average of the responses is between “Disagree” and “Neutral”. The standard deviation represents how spread out the responses are. The highest standard deviation is 1.111, while the lowest is 0.937. It can be concluded that there’s a difference in the respondents' answers, but it’s not too extreme.

3.3 Depression, Anxiety and Stress

3.3.1 Depression

This part will discuss each item in the depression instrument.

Table 4 *Mean and standard deviation for depression (N=199)*

Question Statement	Mean	Standard Deviation
1. I couldn’t seem to experience any positive feeling at all	1.99	0.749
2. I found it difficult to work up the initiative to do things	2.32	0.775
3. I felt that I had nothing to look forward to	2.16	0.825
4. I felt down-hearted and blue	2.19	0.831
5. I was unable to become enthusiastic about anything	2.11	0.744
6. I felt I wasn’t worth much as a person	2.26	0.906
7. I felt that life was meaningless	1.87	0.906

Table 4 shows the mean and standard deviation for depression level among UTHM Diploma students. Seven statements were given to assess the level of stress among UTHM Diploma students. Each statement is required to select either “Never”, “Sometimes”, “Often”, or “Most Always”. The highest mean is 2.32, meanwhile the lowest is 1.87, representing that the average answer by the respondents is between "Never” and “Sometimes”. The highest standard deviation is 0.906, and the lowest is 0.744. It can be concluded that there are differences in respondents' opinions, but it is not noticeable for the depression part.

3.3.2 Anxiety

This part will discuss each item in the anxiety instrument.

Table 5 *Mean and standard deviation for anxiety (N=199)*

Question Statement	Mean	Standard Deviation
1. I was aware of dryness of my mouth	2.36	0.953
2. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	1.93	0.865
3. I experienced trembling (eg, in the hands)	2.08	0.966
4. I was worried about situations in which I might panic and make a fool of myself	2.43	0.912
5. I felt I was close to panic	2.11	0.950
6. I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	2.09	0.906

7. I felt scared without any good reason	2.09	0.999

Table 5 shows the anxiety level experienced among UTHM Diploma students. The highest mean is 2.43 while the lowest is 1.93, indicating that the average answer is between "Never" and "Sometimes". The standard deviation's highest value is 0.999, and the lowest is 0.865. We can conclude that there's a moderate difference between respondents' opinions regarding anxiety.

3.3.3 Stress

This part will discuss each item in the stress instrument.

Table 6 *Mean and standard deviation for stress (N=199)*

Question Statement	Mean	Standard Deviation
1. I found it hard to wind down	2.19	0.829
2. I tended to over-react to situations	2.37	0.877
3. I felt that I was using a lot of nervous energy	2.37	0.922
4. I found myself getting agitated	2.20	0.921
5. I found it difficult to relax	2.17	0.882
6. I was intolerant of anything that kept me from getting on with what I was doing	2.20	0.876
7. I felt that I was rather touchy	2.22	0.887

Table 6 shows the stress level among UTHM Diploma students. Out of the seven items answered by the respondents, the highest mean is 2.37, meanwhile the lowest is 2.17, representing that the average answer by the respondents is sometimes. The highest standard deviation is 0.922, while the lowest is 0.829, indicating there's variation in respondents' responses for the stress part.

3.4 Relationship Between Smartphone Addiction and Depression, Anxiety and Stress

This section will discuss the relationship between smartphone addiction, depression, anxiety and stress.

Table 7 *Correlation between smartphone addiction, depression, anxiety and stress (N=199)*

Parameters	Smartphone Addiction	
	Correlation coefficient, *r*	*p*-value
Depression	0.350	<0.001
Anxiety	0..199	0.005
Stress	0.320	<0.001

Table 7 presents the correlation between smartphone addiction and depression, anxiety, and stress. There was a weak to moderate and highly statistically significant positive correlation between Smartphone Addiction and Depression ($r = 0.350$, $p < 0.001$), indicating that as smartphone addiction increases, depression levels also tend to increase slightly. There's also a weak and statistically significant positive correlation found between Smartphone Addiction and Anxiety ($r = 0.199$, $p = 0.005$). Although the strength of the correlation between smartphone addiction and anxiety is low, the result is statistically meaningful. Lastly, there was a weak to moderate and very statistically significant positive correlation found between Smartphone Addiction and Stress ($r = 0.320$, $p < 0.001$). This indicates a consistent upward trend between smartphone addiction and stress.

4. Conclusion

This study states a significant positive relationship between smartphone addiction and levels of depression, anxiety, and stress among UTHM diploma students. Usually, students showed a mild to moderate diagnostic in an increasing smartphone use that is connected to advanced psychological distress. This research highlights the need for digital wellness education and mental health support provided by academic institutions to help pupils manage smartphone use and maintain emotional contentment. In comparison [7], both studies confirm a significant positive relationship between smartphone addiction and adverse mental health outcomes among students, reinforcing smartphone addiction as a critical mental health risk factor in academic settings.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: ***study conception and design:*** *Aleeya Saffiyah Azrul Fazli, Hafizul Taufik Tamrin, Muhammad AmmarRahimi;* ***data collection:*** *Aleeya Saffiyah Azrul Fazli, Hafizul Taufik Tamrin, Muhammad Ammar Rahimi;* ***analysis and interpretation of results:*** *Aleeya Saffiyah Azrul Fazli,, Hafizul Taufik Tamrin , Muhammad Ammar Rahimi, Adnin Afifi Nawi;* ***draft manuscript preparation:*** *Aleeya Saffiyah, Hafizul Taufik Tamrin, Muhammad Ammar Rahimi, Adnin Afifi Nawi. All authors reviewed the results and approved the final version of the manuscript.*

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