

## ORIGINAL ARTICLE

# Internet Usage and Depression Level among Islamic University Students in Indonesia

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## ABSTRACT

**Introduction:** The internet has become an indispensable part of human life, and thus its usage has increased continuously. Excessive internet usage can produce a negative effect in the form of depression, with higher duration of internet use leading to higher levels of depression. This study aimed to determine the association between internet usage duration and levels of depression among Islamic university students. **Methods:** A quantitative non-experimental study design was adopted using a semi-structured questionnaire to determine the respondents' general characteristics and internet usage duration. In addition, a validated Patient Health Questionnaire-9 (PHQ-9) in Bahasa Indonesia was used to measure the level of depression. Responses were obtained from 750 students at the State Islamic University Jakarta using convenience sampling. After excluding those with incomplete submissions, the responses of 705 participants were analyzed by t-test and simple linear regression. **Results:** Of the 705 eligible respondents, 71.3% were female in the age range of 17 to 25 years. We found that more than half of the participants (57.9%) had excessive durations of use internet use, while 42.7% had moderate depression. Statistical analysis showed a significant association between the duration of internet usage and depression level ( $p=0.000$ ;  $R^2=0.018$ ). Moreover, longer durations of internet usage can lead to a higher level of depression. **Conclusion:** An association was proved between internet usage and depression among university students in Indonesia. Therefore, control of internet usage among students is important for their mental wellness.

**Keywords:** Internet usage, Depression, University students, PHQ-9

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## INTRODUCTION

In the modern-day, rapid technological change has rendered the internet and its convenient features become an indispensable element within various areas of human life. According to Global Digital Insight, in 2020, as many as 4.5 billion (60%) of the world's population used the internet. In Indonesia, a total of 175.4 million people (64%) used the internet in 2020, which was an increase from the 171.17 million internet users in 2018. This figures places Indonesia in the top-ranking position for internet users in South East Asia (1).

The duration of internet usage has increased in line with the number of internet users. On a daily basis, an average member of the Indonesian population aged between 16 and 64 years will spend 7 hours 59 minutes or more using internet. Based on data from the Indonesian Internet Service Providers Association in 2018, 19.8% of

internet users stated that they used the internet for more than 8 hours a day (2). According to the Diagnostic and Statistical Manual of Mental Disorders, the Fifth Edition (DSM-V), this level of usage falls within the excessive category (3). Meanwhile, Saputra found that university students spent an average 1–6 hours per day using the internet and social media (4).

With the rise in both internet use and duration per day, especially among university students, it is necessary to pay attention to the risk posed by excessive internet use. Many recent studies have examined the negative effects of excessive internet use. One such effect is depression and its severity, which can be measured using the Patient Health Questionnaire 9 (PHQ-9). In their respective studies, Morrison and Gore and Ayas and Horzum found a significant association between internet addiction, which includes excessive internet use, and depression (5,6). Depression is now the most common types of mental disorders that can interfere with various life activities. In 2014 as many as 53.1% of students at the Faculty of Medicine, Syarif Hidayatullah State Islamic University Jakarta, experienced depression with varying levels of severity, while 36.8% of students

at a university in Jakarta were found to be experiencing depression (7,8).

Knowing the association between the duration of internet use and the level of depression would make it possible to prevent and control excessive internet use, thereby helping to improve individual performance in various life activities. Therefore, this study aimed to determine the association between internet usage duration and the level of depression among university students at Universitas Islam Negeri Syarif Hidayatullah, Banten, Indonesia.

## MATERIALS AND METHODS

### Design and Participants

This study adopted a quantitative non-experimental study design and was conducted among undergraduate students at the Universitas Islam Negeri Syarif Hidayatullah, Banten, Indonesia between February and March 2020. A total of 750 responses were obtained using convenience sampling. After excluding the incomplete responses, 705 participants were included in the final analysis. The inclusion criteria were males and females aged between 17 and 25 years who used the internet in daily life and who were students willing to provide informed consent and become respondents. The exclusion criterion was respondents who did not fully complete the surveys questionnaires.

### Measures

This study used a semi-structured questionnaire to determine the general characteristics of the respondents. Regarding internet usage duration, an open-ended question about average time spent daily using internet of any purpose was inquired. DSM-V classifies internet usage of more than or equal to 8 hours per day as excessive and with shorter durations classified as normal usage (3). A validated Patient Health Questionnaire-9 (PHQ-9) in Bahasa Indonesia was also used to measure the level of depression. The PHQ-9 was validated by Confirmatory Factor Analysis (CFA) using Mplus software. The data collected from the respondents were processed using SPSS software version 25. The statistical techniques used to analyse the data were univariate analysis, t-test, and simple linear regression test. The statistical significance value was set at  $p < 0.05$ .

### Ethics

The study protocol was reviewed by the Ethical Committee of Medical Research, Faculty of Medicine Universitas Islam Negeri Syarif Hidayatullah and granted ethical clearance (Protocol No. 3674022P1111320200225). The study objectives were explained to the participants, and written informed consent was obtained from all the participants.

## RESULTS

A total of 705 responses were eligible for this study. Statistics related to the respondents' demographic characteristics are presented in Table 1. In this study, 71.3% of the respondents were female, 46.2% were 20 years old and 69.6% were in the 6th semester. The respondents were drawn from 12 existing faculties, in the range of 7.4%–9.1% from each faculty. Most of the respondents (9.1%) were from the nursing studies programme.

The internet usage duration characteristics were determined based on the length of time the respondents

**Table 1: Demographic characteristics of the students**

Characteristics	n	%
<b>Age</b>		
17 years	2	0.3
18 years	34	4.8
19 years	208	29.5
20 years	326	46.2
21 years	110	15.6
22 years	20	2.8
23 years	3	0.4
24 years	1	0.1
25 years	1	0.1
<b>Gender</b>		
Male	202	28.7
Female	503	71.3
<b>Faculty</b>		
Tarbiyah and Teachers Training Sciences	58	8.2
Adab and Humanities	52	7.4
Ushuluddin	56	7.9
Syariah and Law	61	8.7
Da'wah and Communication	58	8.2
Islamic Studies	59	8.4
Psychology	56	7.9
Economic and Business	62	8.8
Science and Technology	58	8.2
Medicine	59	8.4
Health Sciences	64	9.1
Social and Political Sciences	62	8.8
<b>Study Program</b>		
Mathematics	31	4.4
Biology Education	27	3.8
Arabic Language and Literature	25	3.5
History of Islamic Civilization	13	1.8
Library Science	14	2.0
Study of Religions	30	4.3
Study of Hadith	26	3.7
Islamic Family Law	54	7.7
Law	6	0.9
Islamic Communication and Broadcasting	3	0.4
Islamic Counseling	3	0.4
Da'wah Management	2	0.3
Islamic Society Development	43	6.1
Social Welfare	4	0.6
Journalism	4	0.6
Dirasat Islamiyah	59	8.4
Psychology	56	7.9
Accounting	62	8.8
Agribusiness	49	7.0
Mining Engineering	9	1.3
Nursing Science	64	9.1
Sociology	62	8.8
Medicine	59	8.4
<b>Semester</b>		
2	24	3.4
4	177	25.2
6	491	69.6
8	12	1.7
10	1	0.1

spent using the internet daily. DSM-V classifies daily internet usage of  $\geq 8$  hours as excessive, with shorter durations classified as normal usage (3).

In this study, most of the respondents (57.9%) were found to use the internet excessively, that is  $\geq 8$  hours a day, which was 15.8% higher than the respondents who use the internet  $< 8$  hours a day. By gender, among both the male and female respondents, the highest percentages were for those with a daily internet usage duration of  $\geq 8$  hours. However, a higher percentage of excessive internet usage duration was recorded for the female compared to the male respondents, although statistically not significant ( $p > 0.05$ ) based on independent t-test analysis. As such, no difference was found in the duration of internet usage between the male and female students (Table II).

**Table II: Internet usage duration of the students**

Characteristics	Internet Usage Duration		p
	< 8 hours (%)	$\geq 8$ hours (%)	
<b>Gender</b>			
Male	87 (43.1)	115 (56.9)	0.129
Female	210 (41.7)	293 (58.3)	
<b>Total</b>	297 (42.1)	408 (57.9)	

The level of depression was divided into five categories as shown in Table III. From the results in Table III, moderate depression was the most common level of depression experienced by the respondents (42.7%). While it was also the most common level of depression among both genders, a slightly higher percentage of male than female respondents experienced moderate depression. Mild depression, meanwhile, was the second-highest level of depression among the male respondents (23.8%), which also differed from the female respondents, for whom moderate-severe depression was ranked second (23.5%). However, after the independent t-test returned a value of  $p > 0.05$ , meaning the difference was not statistically significant, or there no difference in the level of depression between the male and female respondents.

**Table III: Depression level of the students**

Characteristics	Depression Level					p
	None-Minimal (%)	Mild (%)	Moderate (%)	Moderate-Severe (%)	Severe (%)	
<b>Gender</b>						
Male	12 (5.9)	48 (23.8)	90 (44.6)	40 (19.8)	12 (5.9)	0.302
Female	33 (6.6)	109 (21.7)	211 (41.9)	118 (23.5)	32 (6.4)	
<b>Total</b>	45 (6.4)	157 (22.3)	301 (42.7)	158 (22.4)	44 (6.2)	

Simple linear regression analysis was performed to identify the association between internet usage duration and depression level among the university students' respondents, as shown in Table IV. Internet usage duration was found to be significantly associated with depression among the university students ( $p = 0.000$ ). The  $R^2$  value of 0.018 indicates that 1.8% of the various depression levels was influenced by the duration of daily internet use, while 98.2% was influenced by

**Table IV: Association between internet usage duration and depression level**

Variable	Regression Coefficient	t	p
<b>Constant</b>	48.092		
<b>Internet Usage Duration</b>	0.204	3.585	0.000*
<b>F</b>	12.851		0.000*
<b>R<sup>2</sup></b>	0.018		

Dependent Variable: Depression Level

the other factors that were not examined in this study. The value of the regression coefficient was found to be positive, which indicates that longer daily internet usage durations result in higher level of depression. In this study, the depression level variable was analysed based on PHQ-9 instrument and using T-score; it therefore also considered the factors scores of each item in the instrument.

## DISCUSSION

This study had 705 respondents ranging in age from 17 to 25 years with an average of 19.84 years and a female composition of 71.3%. This represents a greater number of respondents and more varied characteristics than a study conducted by AlAmer et al. in Saudi Arabia, that had 341 respondents comprising 58.9% females and an average age of 22 years, with an SD of 4.6 (9).

In this study, 57.9% of the respondents used the internet  $\geq 8$  hours a day, which is classed as excessive internet usage. Based on gender, the percentage of excessive internet usage duration was higher among the female respondents, although this was not statistically significant. This result was in line with that obtained by Rabadi et al. in Jordan, where the highest prevalence was for respondents who spend 4–6 hours per day using the internet, followed by those who used the internet for 7–12 hours per day (10). Meanwhile, in Thailand, Boonvisudhi found that the higher the daily internet use, the greater the risk of experiencing internet addiction and depression. It was found that those who spent  $> 5$  hours a day using the internet had a 2.64 times greater risk of experiencing internet addiction. While those at risk or with the possibility of experiencing internet addiction had a 1.58 times greater chance of suffering from depression (11).

The levels of depression of the respondents in this study were split into five categories: none-minimal depression, mild, moderate, moderate-severe, and severe depression. The results showed that moderate depression was the most common level of depression experienced by respondents, at 42.7%, followed by moderate-severe depression at 22.4%. Meanwhile, based on gender, there was no significant difference in the level of

depression between male and female respondents. This result differs slightly from that obtained by Flesch et al. in southern Brazil using the same instrument PHQ-9, which found that mild depression was most prevalent among respondents, at 29.7%, while 22.3% of the study's respondents experienced moderate depression (12). This may be due to how that study used a total score to interpret the level of depression, whereas this study employed the T-score when analysing the level of depression and thus also considered the factors scores of each item in the instrument. Nevertheless, the result mirrored that by Parker et al., who found no significant difference regarding the level of depression between males and females (13).

This study identified a significant relationship between the duration of internet use and the student respondents' level of depression. The longer the duration of daily internet use, the higher the level of depression experienced. Those who used the internet excessively had higher depression severity scores than those who were within normal usage limits. This is in line with previous studies by Morrison and Gore, Rabadi et al. and Yang et al., who explained that the more time spent using the internet in a day, the higher the internet addiction score and the higher level of depression experienced (5,10,14). Similarly, AlAmer et al. found a moderate level of relationship between the tendency for internet addiction and the level of depression (9). This was further explained by Alavi et al., where those who use the internet excessively have a sense of responsibility towards the social environment as well as lower self-control abilities and less social support, thereby increasing the severity of depression (15).

## CONCLUSION

Based on the results of this study, the following conclusions are drawn. More than half of the university students were found to use the internet excessively. There was no significant difference in the duration of internet use between the male and female students. It was also found that almost half of the students experienced moderate depression, again with no significant difference in the level of depression between males and females. A significant association was identified between the duration of internet use and the level of depression among university students. Other factors that may have contributed to the depression severity level were not included in this study and should therefore be explored in further research.

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