Internet Addiction a Global Concern: A Cross-Sectional Appraisal amongst Imminent Medical Doctors of National Defence University of Malaysia

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Abstract

Background: Recent evolution in terms of technology and availability of the internet has brought several innovations that made work and access to information straightforward. Nonetheless, the danger of pathological internet addiction and its adverse consequences are frightening. **Objectives:** The primary goal of this research is to determine the level of internet addiction among undergraduate medical students at National Defence University, Malaysia. **Methods:** A structured questionnaire comprising of section A consisting of student demographic information and section B made up of Dr. Kimberly Young's 20 items internet addiction test (IAT) in 5-point Likert's scale. Internet addiction scores were classified based on Young's scale. **Results:** The response rate obtained from this study was 89.6%. Out of the 224 respondents, only 4 (1.8%) were found to be regular internet users, 98 (43.8%) were established to be mild addicts, 110 (49.1%) were moderate addicts and finally, 12 (5.4%) were severe internet addicts. There was a statistically significant difference in the mean internet addiction score between males and females, with males having higher ratings. **Conclusion:** The prevalence of internet addiction among undergraduate medical students is high and needs to be controlled. As such, the use of the internet at colleges and universities may need to be regulated.

Key words: Internet, Compulsion, Dependence, Apprehension, Medical Student, Smart Phone, Gadgets, Technology, Young's Internet Addiction Scale.

INTRODUCTION

In recent times, significant advancements have been made in the field of technology worldwide. The availability of the internet is one of the major contributing factors to this milestone. As a result, it has triggered competition among electronic companies leading to the fall in the price of desktop computers, laptops, pads and mobile phones.[1-4] The number of people using the internet worldwide is growing exponentially; the current report indicated that more than 4 billion people are using the internet globally. As such, over half of the world's population is now online, with about a quarter of a billion new users recorded for the first time in 2017.[5,6] Subsequently of these advancements, the use of the internet has skyrocketed; as a means of communication, for searching for information in the quest for knowledge and as a tool for marketing. Furthermore, increases in internet coverage, especially among developing countries and rural areas, have made the internet a source of entertainment and in fact, is fast becoming a part of daily life.[1-4] The use of the internet has brought several advantages in the field of education. The abundance of electronic books, encyclopedias and dictionaries has made the search for knowledge more accessible and faster. Moreover, simulation videos, PowerPoint presentations and online slides provide a more precise, unambiguous and elaborate view of the topic under study.[7-10]

Despite several advantages of the internet described above, many adverse effects are becoming more apparent. These involve economic issues such as income spent on internet subscriptions, time spent on internet surfing; mental health problems like anxiety, depression, broken relationships and loss of work. Arguably the most concerns manifestation of this is pathological internet addiction.[1,11-14] Addiction is considered as a repetitive pattern of behavior, partial or total loss of control that poses a risk of falling ill or leading to the social crisis.[15] Specifically, internet addiction can be defined as the use of internet devices for 7 hr or more per day, which predisposes one to dependence and mental health problems.[15,16] Additionally, health problems include sleep disturbance, neck pain, eye strain, road accident, etc.[1,2,9,10] Pathological internet addiction is a new mental disorder with growing health concerns globally. Signs and symptoms of pathological internet use include compulsive behavior, neglect of social and occupational responsibility as well as poor academic performance.[1,11,17-20] Other signs include cravings to use social media, such as Facebook, Twitter, Instagram, Snapchat, WhatsApp, etc. In addition, various specific activities engaged in on the internet were identified as a common cause of internet addiction. Examples include such as online gaming, downloading films and music, online shopping and gambling.[1-3,10,16]

Presently, internet addiction can be diagnosed based on 8 diagnostic questions; as such, giving responses to these queries can reveal the individuals' type of internet addiction.[4,21,22] Pathological internet addiction is more common among college and university students.[12,14] As such, the prevalence of internet addiction among medical students calls for serious concern. In addition, several studies have found an association between the medical profession and academic stress and between internet addiction and academic anxiety.[11,23,24] As medical students are our doctors of the future, reducing the risk of internet addiction is essential to ensuring their success in their chosen field.[1,25] In general, indiscriminate use of the internet among medical students needs to be adequately monitored and regulations imposed where necessary.[1,25] The objectives of the study was to determine Internet Addiction among medical students of National Defence University of Malaysia.

MATERIALS AND METHODS

A cross-sectional study was conducted among 250 undergraduate medical students of National Defence University, Malaysia. A total of 250 questionnaires were distributed, of which 224 were duly completed and returned. Incentives such as medical textbooks and dictionaries were provided as compensation for participating in the study.

Sampling Method: A sampling method was employed, which involved the use of year I, II, III, IV and V undergraduate medical students of National Defence University, Malaysia.

Inclusion Criteria: All medical students in the year I, II, III, IV and V who volunteered to participate were included. Medical students who give their consent to participate were involved.

Exclusion Criteria: All medical students who are not in the year I, II, III, IV and V were excluded from the study. Also, any medical students that did not sign the consent form were excluded.

Ethical Approval: This study was scrutinized and approved by the Centre for Research and Innovation Management, Universiti Pertahanan Nasional Malaysia (National Defence University of Malaysia), Kem Sungai Besi, 57000 Kuala Lumpur, Malaysia [Code of Research: UPNM/2017/SF/SKK/06, Memo No: UPNM (PPPI) 16.01/02/026 (2), 12 December 2017].

Questionnaire: A structured questionnaire comprising of two sections was adopted from Dr. Kimberly Young (4). Section A consists of student demographic information such as age, gender, marital status, ethnicity, religion and year of study. Section B consisted of Young's 20 items internet addiction test (IAT) on a 5-point Likert scale. It measures the severity of self-reported compulsive use of the internet. Internet addiction scores were categorized according to Dr. Kimberly Young's extent, the scores of the total 20 items ranged from 20 to 100. Based on Young's criteria, overall IAT scores less than 20 represent Normal internet users, scores of 21-49 Mild addiction, 50-79 Moderate addiction and 79-100 Severe addiction.

Informed Consent: The study to be conducted was explained to the student until they fully understood the concept, aims and objectives of the research. In addition, they were given a consent form to sign.

Statistical Analysis: Descriptive statistics were performed to summarize demographic data. Quantitative variables were analyzed using two-tailed t-tests and One-Way ANOVA, while qualitative variables were summarized by charts using SPSS version 21 at 95% CI and $p<0.05$.

RESULTS

A total of 250 questionnaires were distributed to Year I, II, III, IV and V undergraduate medical students of the National Defence University of Malaysia. A total of 224 filled and returned the questionnaires giving a response rate of 89.6%. The normality distribution of the data was tested using Kolmogorov-Smirnov and Shapiro-Wilk tests, also by looking at the skewness and kurtosis value. Reliability analysis was also done and the Cronbach's alpha obtained was 0.812.

Demographic Information

The demographic data were analyzed using descriptive statistics and presented as frequency and percentage. Among the total of 224 medical students that filled and returned the questionnaire, 126 (56.2%) were males, 98 (43.8%) were females. In terms of age, 21-years old respondents were the highest 50 (22.3%), followed by 20-years aged respondents 48 (21.4%), then 23-years old 46 (20.5%), then 22-years old (18.3%), followed by 24-years old 37 (16.5%) and the lowest number of respondents were 25-years 2 (0.89%). Based on ethnicity, most of the respondents were Malay 148 (66.1%), followed by Indian 51 (22.8%), then Chinese 19 (8.5%) and others 6 (2.7%). In terms of religion, most of the respondents were Muslim 154 (68.8%), followed by Hindu 44 (19.6%) and Buddhists and Christian were both 13 (5.8%), respectively. The result of demographic information is shown in Table 1 below.

Classification of Internet Addiction Scores

Based on the finding of this study, internet addiction scores of the year I, II, III, IV and V undergraduate medical students of National Defence University, Malaysia, were categorized according to Dr. Kimberly Young's scale. Out of the 224 respondents, only 4 (1.8%) were found to be regular internet users, 98 (43.8%) were established to be mild addicts, 110 (49.1%) were moderate addicts and finally, small number 12 (5.4%) were severe internet addicts. Based on the respondents' choices for each statement in the questionnaire, 168 (75%) strongly agreed that they often stay online longer than intended. In addition, 88 (39.2%) of the respondents also agreed they prefer the excitement of the Internet to intimacy with their partner; even, same 88 (39.2%) admitted they feel depressed, moody or nervous when they are off-line, a feeling which disappears once they are back on-line. The classification of internet addiction of undergraduate medical students is shown in Table 2 below and displayed in Figure 1 below.

Analysis of Internet Addiction Scores Based on Demographic Information

Internet Addiction Total Score According to Gender

The result of two-tailed t-tests for gender has shown that there was a statistically significant difference in internet addiction scores between male and female medical students at $p<0.05$. The male medical students are more addicted to the internet than females. The result of internet addiction scores based on gender is shown in Table 1 above.

Internet Addiction Total Score According to Age

The effect of the One-way ANOVA test has been demonstrated that 20 years of age had the highest mean internet addiction score, while 25 years of age had the lowest internet addiction mean score. In addition, using the Scheffe Test (a *Post-hoc* test used in Analysis of Variance) for multiple comparisons has shown that statistically significant differences in internet addiction only

Table 1: Summary of medical students' demographic information with corresponding addiction score (*n*=224).

S/N	ITEM		Frequency (%)	ADDICTION SCORE (Mean ± SD)	*p*-value
1	Gender	MALE	126 (56.2)	53.37 (16.67)	
		FEMALE	98 (43.8)	38.23 (13.32)	0.023
2	Age	20	48(21.4)	58.00 (15.49)	
		21	50(22.3)	54.82 (15.49)	
		22	41(18.3)	49.56 (14.40)	
		23	46(20.5)	47.00 (17.91)	0.031
		24	37(16.5)	45.49 (17.39)	
		25	2(0.89)	24.00 (2.83)	
3	Ethnicity	Malay	148(66.1)	53.32 (16.03)	
		Chinese	19(8.5)	43.63 (17.66)	
		Indian	51(22.8)	48.59(17.96)	0.026
		Others	6(2.7)	42.00 (15.52)	
4	Religion	Islam	154(68.8)	51.63(16.15)	
		Buddha	13(5.8)	43.92 (18.84)	
		Hindu	44(19.6)	48.93(18.02)	0.114
		Christian	13(5.8)	49.77(17.13)	

Table 2: Summary of medical students' addiction score distribution (*n*=224).

S/N	Level of addiction	Frequency (%)	Total Score Range
1	Normal Internet Use	4 (1.8)	<20 points
2	Mild	98 (43.8)	20-49 points
3	Moderate	110 (49.1)	50-79 points
4	Severe	12 (5.4)	80-100 points

exist between age 20-years and 21-years age groups compared to others (Normal internet users) at *p*<0.05. The result of internet addiction scores based on age is shown in Table 1 above.

Internet Addiction Total Score According to Ethnicity

Based on the outcome of the One-way ANOVA test among different ethnic groups, Malay students had the highest internet addiction mean score, followed by Indians, Chinese and others. In addition, using the Scheffe test for multiple comparisons statistically significant difference was obtained only between Malays and the others (Normal internet users) *p*<0.05. The result of internet addiction scores based on ethnicity is shown in Table 1 above.

Internet Addiction Total Score According to Religion

The descriptive statistic has shown that according to religion, Islam had the highest mean internet addiction score while Buddhists had the lowest mean internet addiction score. Furthermore, One-way ANOVA indicated that there was no statistically significant difference in the mean internet addiction according to religion. The result of internet addiction scores based on religious belief was shown in Table 1 above.

DISCUSSION

Presently utilization of the internet as a means of livelihood is skyrocketing and almost becoming a necessity in our daily lives. As a result, positive gains made utilizing the internet are apparent. However, despite these advantages, several adverse effects of internet utilization are noticeable. Furthermore, students at all levels are more likely to fall victim to internet addiction. As such, studying the magnitude of internet addiction among medical students is the way forward. In this study, the response rate of 89.6% was encouraging; this
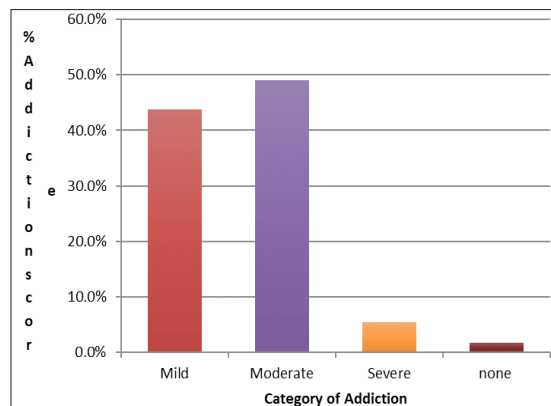

Figure 1: Bar diagram showing the category of internet addiction among medical students (*n*=224).

could be due to the incentive given to the students and a proper explanation of the study's aims and objectives. Also, the questionnaires were distributed to the respondent after morning lectures; as such, the majority were able to fill and return the forms on time.

The result of this study has shown that only 1.8% of the respondents were found to be regular internet users. This number is very low, indicating that internet addiction is rampant in this cohort. The result was like the outcome of another study.[26] Nevertheless, there are other pieces of research that show a different issue.[27,28] However, our survey discovered that only 5.4% were severe internet addicts and many researchers also found corresponding results.[27,29,30] Interestingly, another experiment reported no severe addict was found at all.[28]

Notably, this research revealed that 43.8% of the respondents were mild addicts and 49.1% were moderate addicts. This finding was equivalent to the outcome of other studies.[17,30] Furthermore, it was established the prevalence of internet addiction based on this study is 98.2%. This is quite alarming; this could be because medical students of National Defence University are located at Kuala Lumpur, which is the capital city of Malaysia, where there is the availability of free wireless internet and utilization by students is not regulated. Related results that revealed high prevalence were reported.[29-31] Nonetheless, the outcome is the difference from other studies, which reported a very low prevalence.[32-34] These findings were further reaffirmed by

a meta-analysis of 26 studies from China, which reported a low incidence.[35]

It was also established that male medical students are more addicted to the internet than their female counterparts. The result is comparable to the outcome of other experiments.[23,25-27,29,31,33] In addition, the meta-analysis of 26 studies from China further confirmed male students are more addicted to the internet than females.[35] However, the outcome is in contrast with the findings of another study.[28] Furthermore, other researchers found no difference in the mean internet addiction scores in terms of gender.[17,18,30,36,37]

In this study, 20 years of age group had the highest mean internet addiction score, while 25 years had the lowest internet addiction score. This indicated that the younger the medical students are, the more addicted to the internet they were likely to be. This is possible because older medical students perhaps engaged in other more important responsibilities than internet surfing. The finding is like what was found in earlier studies.[16,36,37] Conversely, the result is in contrast with other.[19,27,28] Subsequently, one researcher reported no difference in the mean internet addiction scores in terms of age.[38]

It was discovered that Malays had the highest internet addiction scores compared to other ethnic groups. This could be explained because they have more numbers by far compared to Indians, Chinese and others in this study. The result contrasts with the findings of another research that reported a higher prevalence among those of the Chinese ethnic group.[33] Lastly, it has been established according to religion; Islam had the highest mean internet addiction score, while Buddhists had the lowest mean internet addiction score. This could also be explained because Muslims are the majority by far, according to the population of the respondents.

CONCLUSION

Current advancements made in the field of science and technology and the availability of the internet have made work, business and the quest for knowledge much more accessible. However, the menace of pathological internet addiction is on the rise worldwide. The prevalence of Internet addiction is high, with distinct social and mental consequences. In addition, internet addiction can lead to poor performance at the workplace as well as poor academic outcomes. Furthermore, the availability of free wireless networks in our primary schools, colleges and universities may become a distraction to students, especially at a young age. Even though it has advantages academically, the internet is now causing side effects. Perhaps it should be considered that the use of the internet at colleges and universities could be regulated, especially among medical students. This can be implemented by modifying the hour's internet is made available for free to the students. In addition, nighttime access should be reduced to avoid interference with sleep. Another suggestion is the need to study internet addiction among other students, like pharmacy and nursing, as well as that of practicing doctors, pharmacists and nurses.

Core Message: This planet observed in the last two decades, a volatile evolution and progress of internet usage in both developed and developing nations. Firstly, the internet was used for information exchange and research purposes. Later, the internet has infiltrated every single part of human life. The extreme use of the internet has led to the advent of the notion of internet addiction. Psychological and environmental factors of human life, especially among young university students, may cause them, pathological Internet users. The primary goal of this research is to determine the level of internet addiction among undergraduate medical students at National Defence University, Malaysia. This study revealed that the prevalence of internet addiction among undergraduate medical students is high and needs to be controlled.

CONFLICT OF INTEREST

This research has no funding and the researchers declared no conflict of interest.

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