ORIGINAL ARTICLE

Internet addiction among pharmacy undergraduate students in Malaysia

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Abstract

Internet addiction occurs due to excessive and uncontrolled use of the internet. It may hinder academic achievement and lead to reduction in quality of life of the students. This study aims to assess the prevalence of internet addiction (IA) among pharmacy students. A sample of 223 students from Kulliyyah of Pharmacy, International Islamic University Malaysia participated in this study. Chen Internet Addiction Scale (CIAS) was used to assess the prevalence of Internet addiction. The prevalence of IA among pharmacy students was 26.9% while 13.5% were at higher risk for addiction. Although the mean score was higher among male students but it was not statistically significant (P>0.05). IA is significantly higher among students who are spending more than 40 hours per week online. Students with poor social interaction had higher mean CIAS score than those who were socially active, however the difference was not statistically significant (P>0.05) In conclusion, Internet addiction need to be addressed early to prevent its effects on physical and mental wellbeing. Students need to be educated about controlling and managing time spent online to avoid progression into internet addiction.

Keywords: internet addiction, undergraduate, pharmacy, Malaysia

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Introduction

The Malaysian Communications and Multimedia Commission (MCMC) conducted the Internet Users Survey (IUS) which showed that 38.1% of internet users were between 20 to 29 years of age and the estimated number of internet users was 24.5 million people in 2016 (Internet Users Survey, 2017). Unrestricted unlimited access to internet services is generally available to undergraduates and it is envisioned to enrich education, communications and research.

The Kulliyyah of Pharmacy offers an undergraduate program of Bachelor of pharmacy which is four (4) years in duration. This program includes a significant amount of clinical practice in hospitals and other health care services together with on campus theory teaching and learning activities and so the use of internet is vital for the students to be updated with recent related knowledge and to solve assignments and many others.

However, prolonged and excessive internet use may result in serious adverse effects on academic achievement (Reed *et al.,* 2015), psychological well-being (Casale *et al.,* 2015), and quality of life (Cheng & Li 2014). The term addiction is now extended to be more broad and include addiction on behaviors that can cause problems and impairment other than addiction on substances (Van Rooij & Prause, 2014). Addiction to a substance and addiction to a behavior may look similar in their effects on behavioral patterns, emotions and physiology (Valentini & Biondi, 2016) Internet use, gambling, eating, sex, exercise, work and shopping are examples of behavioral addiction (Sussman *et al.*, 2011).

Internet addiction (IA), is a commonly used term to describe abnormal excessive internet use, it also describes the psychological problems that arise from prolonged heavy internet use (Chou *et al.*, 2005). IA is now considered a focus of many studies since it is becoming more prevalent all over the world. Although IA is not included in the Statistical Manual of Mental Disorders fifth edition (DSM-5), internet gaming disorder has been incorporated into section III of DSM-5 (Poli, 2017; American Psychiatric Association, 2013).

Many tools have been developed to detect and assess the severity of IA and it is very important to use a validated and reliable tool. An example of such a tool is the Chen Internet addiction scale (CIAS). It assesses five domains of Internet-related problems: compulsive use, withdrawal, tolerance, interpersonal and health consequences, and time management difficulties (Chen *et al.*, 2005).

Previous studies showed that emotional disturbances in the form of depression, anxiety and stress symptoms were known to occur among students during their university time study (Nayan *et al.*, 2017; Radeef & Faisal, 2018).

Since IA has impact on students' psychological well-being and academic performance, it is crucial to assess the occurrence of IA among undergraduate students therefore, our research aimed to assess the IA among pharmacy students.

Methodology

This a cross-sectional study conducted among undergraduate pharmacy students at the Kulliyyah (Faculty) of Pharmacy, International Islamic University Malaysia (IIUM). It was supported by a research grant from IIUM and approved by the Research Ethics Committee of the IIUM (approval number: IREC 662). Participation was entirely on a voluntary basis; students were ensured about confidentiality and consent was obtained prior to enrolment. In order to avoid the stressful effect of preparation for exams, the study was conducted early in the mid of the semester. The inclusion criteria are students who use the internet and agree to join in this study. Students who did not give consent or who could not understand English were excluded. The participant socio-demographic characteristics included in the study included nationality, age, marital status, gender, year of study, living accommodation during the studies and household income.

In this study, Chen Internet Addiction Scale (CIAS) was used to assess the prevalence of IA. CIAS questionnaire has been tested to have good psychometric properties. It has excellent internal consistency. Its test–retest reliability has been reported to be good: r = .83 and r = .88 (Chen *et al.*, 2005; Kesici & Sahin, 2010), and so we can consider CIAS as a good tool which can be used to accurately find the prevalence of IA in Malaysia (Radeef *et al.*, 2018). It is made of 26 items that can be self-answered by the

participant. The 26 items are rated on a 4-point Likert scale. It assesses five domains of Internet-related problems: compulsive use, withdrawal, tolerance, interpersonal and health consequences, and time management difficulties. The total score is from 26 at the lowest to 104 highest. The higher the score the more it indicated higher severity of internet addiction. The cutoff point of 63/64 and 67/68 of the CIAS were considered to be the best for screening and diagnosis of IA among college students respectively, meaning that 26-63 shows normal use, 64-67 indicates at risk use and need for screening and 68-104 indicates IA (Ko *et al.*, 2009).

Regarding assessing the purpose of using the internet, the students were asked to rate the different purposes of internet use (Social media, online media viewing, study purpose searching for information other than studying, E-mails) on a scale of 1-5, where 1=strongly disagree, 5=strongly agree.

Statistical analysis

Statistical Package for Social Sciences (SPSS) software version 24.0 was used in this study for descriptive and inferential analysis. Sociodemographic factors were presented in numbers and percentages. Independent T-test and ANOVA test were used to compare the mean score of Chen internet addiction scale with all demographic variables to assess the relationship between these factors with internet addiction .A value of $P < 0.05$ was considered significant. The mean score ± SD was used to analyze the purpose of internet use.

Results

A total of 223 pharmacy students participated in the study. The majority were females older than 21 years of age, Malaysian, single, living in a student hostel and with a family monthly household income of more than 5000 Malaysian Ringgit (Table 1).

Students with poor social interaction were having higher mean CIAS score than those who were socially active, however the difference was not statistically significant($P>0.05$) and participants with more than 40 hours of internet use per week had a significantly higher CIAS mean score ($P<0.05$). Internet addiction is not statistically different in relation to income, gender and marital status (Table 1).

This study showed that the prevalence of internet addiction among students is 26.9%, while 13.5% are considered at risk of addiction (Table 2). Regarding the purpose of internet use among students, the top five were social media (Facebook/ Instagram/ WhatsApp/ chatting), online media viewing (videos, songs, YouTube), study purpose, searching for information rather than for study purpose, and emails (Table 3).

Discussion

Although our study showed the prevalence of IA to be 26.9%, however it is still lower compared to other previous study conducted among medical students in Malaysia using internet addiction test where the prevalence was 36.9% (Ching *et al.,* 2017) this may be due to the difference in the nature of the course of study between pharmacy and medicine. The effect of the type of course on IA can also be displayed through the results of studies among allied health and dental students were the rate of IA is 31.8% and 29.2% respectively (Othman & Lee, 2017; Radeef & Faisal, 2019).

Still, there are some studies among medical students that show results lower than ours (Siraj, 2015; Radeef & Faisal, 2018). This could be explained by the different tools used to detect IA.

Table 1. Socio-demographic factors and its association with internet addiction

	Total, n (%)	CIAS mean score	P-value
Gender			
Male	32(14.3)	64.2	0.11
Female	191 (85.7)	60.6	
Age (years)			
≤ 21	87 (39)	60.2	0.341
>21	136 (61)	61.7	
Family monthly income			
≤ RM1500	45 (20.2)	63.5	0.290
RM 1501-5000	76 (34.1)	60.8	
>RM 5000	102 (45.7)	60.3	
Marital status			
Married	3 (1.3)	55.7	0.568
Single	220 (98.7)	61.2	
Social interaction			
Socially active	123 (55.2)	60.2	0.220
Socially inactive	100 (44.8)	62.2	
Time of internet use per week			
> 40 hours	70 (31.4)	63.7	0.001
20-40 hours	115 (51.6)	61.6	
< 20 hours	38 (17.0)	55.0	

Table2. Prevalence of internet addiction (IA) among pharmacy student

Status of IA	Number (%)
No IA	133 (59.6)
At high risk	30 (13.5)
Have IA	60 (26.9)
Total	223 (100)

Table 3. The purpose of internet use

Purpose of internet use among students	Mean score ± SD
Social media (Facebook/Instagram/WhatsApp/chatting)	4.61 ± 0.731
Online media viewing (videos, songs, YouTube)	4.46 ± 0.792
Study purpose	4.43 ± 0.725
Searching for information rather than studying	4.32 ± 0.808
E-mails	4.13 ± 0.942

We can observe from the results of previous studies that there are no consistent results of IA among students of the same course and that can be due to the availability of different tools that can assess IA and also the effect of sample size and sampling method among different studies. The prevalence of IA can also be affected by cultural differences. A previous review article showed a wide range of IA prevalence from 0.8% to 26.7% (Kuss *et al.*, 2014). Another example on cultural effect on the prevalence of IA is the results

from two different studies on university students, one in Pakistan and the other in Taiwan revealed that the prevalence was 28% and 17.9% respectively (Saleem *et al.*, 2015; Tsai *et al.*, 2009).

Internet addiction can also be associated with gender, however the results in different studies around the world showed varied results. In some studies, IA is associated with male gender (Ching *et al.*, 2017; Tsai *et al.*, 2009; Salehi *et al.,* 2014) but in a study done in Japan the rate of IA

was more among females (Mihara *et al.,* 2016). However in our study there was no significant gender difference which is consistent with previous studies in Malaysia (Radeef & Faisal, 2019; Haque *et al.*, 2016; Usman *et al.,* 2014), Vietnam (Tran *et al.,* 2017), India (Malviya *et al.,* 22014) and USA (Beavers *et al.,* 2015).

Defects in social interaction play a role in encouraging people to use the internet more to fulfill their needs to interact with people and studies have found that poor social interaction is significantly associated with increased prevalence of internet addiction (Radeef & Faisal, 2019; Van der *et al.,* 2009; Liu, ,2007). However, in this study, although the students with poor social interaction were having higher mean CIAS score than those who were socially active but the difference was not statistically significant (P >0.05). This can be explained by the current trend of increasing use of social media for social interaction instead of real socialization and so a student who is socially active might also have a high mean score for IA. Which results in both socially active and inactive students being heavy users of internet; students with poor social interaction spend more time online to replace the time spent on social interaction, while socially active students spend more time online to socialize with their friends through social media.

Conclusion

Internet addiction is prevalent among pharmacy students. Although female participants were more than males, however, there were no statistically significant gender differences in the prevalence of IA. Students using the internet for more than 40 hours per week have higher levels of IA. Internet addiction need to be addressed early to prevent its effects on physical and mental wellbeing.

Students need to be educated about controlling and managing time spent online to avoid progression into internet addiction.

Acknowledgements

References

American Psychiatric Association (APA) (2013). Diagnostic and statistical manual of mental disorders (DSM-5).

Beavers, L., Bell, R. L., Choudhury, D., Guyot, W., Meier, R. (2015). Online time and gender perceptions of internet addiction. *Journal of Higher Education Theory and Practice*, 15(3), 84.

Casale, S., Lecchi, S., Fioravanti, G. (2015). The association between psychological well-being and problematic use of Internet communicative services among young people. *The Journal of Psychology*, 149 (5), 480-97.

Chen, S. H., Weng, L. C., Su, Y. J *et al.* (2003). Development of chinese internet addiction scale and its psychometric study. Chinese Journal of Psychology, 45, 279-94.

Cheng, C. & Li, A. Y. (2014). Internet addiction prevalence and quality of (real) life: A meta-analysis of 31 nations across seven world regions. *Cyberpsychology, Behavior, and Social Networking*,17 (12), 755-60.

Ching, S. M., Hamidin, A., Vasudevan, R., Sazlyna, M. S., Wan Aliaa, W. S., Foo, Y. L. *et al*. (2017). Prevalence and factors associated with internet addiction among medical students-A cross-sectional study in Malaysia. *Medical Journal of Malaysia*, 72(1), 7.

Chou, C., Condron, L., Belland, J. C. (2005). A review of the research on internet addiction. *Educational Psychology Reviews*, 17, 363-88.

Haque, M., Rahman, N. A., Majumder, M. A., Haque, S. Z., Kamal, Z. M., Islam, Z. *et al.* (2016). Internet use and addiction among medical students of Universiti Sultan Zainal Abidin, Malaysia. *Psychology Research and Behavior Management*, 9, 297.

Internet Users Survey 2017 (2017). Malaysian communications and multimedia

commission. https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/MCMC-Internet-Users-Survey-2017.

Kuss, J. D., D. Griffiths, M., Karila, L., Billieux, J. (2014).Internet addiction: a systematic review of epidemiological research for the last decade. *Current Pharmaceutical Design*, 20(25), 4026-52.

Kesici, S., & Sahin, I. Turkish adaptation study of internet addiction scale. (2010). *Cyberpsychology, Behavior, and Social Networking*, 13(2), 185–189.

Ko, C. H., Yen, J. Y., Chen, S. H., Yang, M. J., Lin, H. C., Yen, C. F. (2009). Proposed diagnostic criteria and the screening and diagnosing tool of Internet addiction in college students. *Comprehensive Psychiatry*, 50(4), 378-84.

Liu, C. Y. & Kuo, F. Y. (2007). A study of internet addiction through the lens of the interpersonal theory. *Cyberpsychology Behavior*, 10(6), 799–804.

Malviya, A., Dixit, S., Shukla, H., Mishra, A., Jain, A., Tripathi, A. (2014). A study to evaluate internet addiction disorder among students of a medical college and associated hospital of central India. *National Journal of Community Medicine*, 5(1), 93–95.

Mihara, S., Osaki, Y., Nakayama, H., Sakuma, H., Ikeda, M., Itani, O., Kaneita, Y., Kanda, H., Ohida, T., Higuchi, S. (2016). Internet use and problematic internet use among adolescents in Japan: a nationwide representative survey. *Addictive Behaviors Report*, 4, 58-64. 27.

Nayan, N. A., Daud, A. Z., Jamaluddin, T. I., Talib, S. S. (2017). Perceived depression, anxiety and stress among UiTM dental undergraduates in clinical years. Proceeding of the 3rd ABRA international conference on quality of life; Riverside Majestic Hotel, Kuching, Malaysia: 14-16 Oct 2017. *Environment-Behaviour Proceedings Journal*, 2, 81-6.

Othman, Z., Lee, C. W. (2017). Internet addiction and depression among college students in Malaysia. *International Medical Journal*, 24(6), 447-50.

Poli, R. (2017). Internet addiction update: Diagnostic criteria, assessment and prevalence. *Neuropsychiatry*, 7(1), 04-8.

Radeef, A. S & Faisal, G. G. (2018). Stressors and their association with symptoms of depression, anxiety and stress in dental students. *Makara Journal of Health Research*, 22(2), 58-62.

Radeef, A. S. & Faisal, G. G. (2019). Internet addiction among dental students in Malaysia. *Journal of International Dental & Medical Research*, 12(4), 1450-1456.

Radeef, A. S & Faisal, G. G. (2018). Prevalence of internet addiction and its association with depression, anxiety and stress among medical students in Malaysia. *Mediterranean Journal of Clinical Psychology*, 6(3), 1-17.

Radeef, A. S., Faisal, G. G, Musa, R. (2018). Translation and validation study of the chen internet addiction scale (CIAS) among malaysian college students. *Journal of International Dental and Medical Research*,11(1), 32-7.

Reed, P. & Reay, E. (2015). Relationship between levels of problematic internet usage and motivation to study in university students. *Higher Education*, 70 (4), 711-23.

Saleem, M., Waseem, M., Khan, R., Ismail, R. (2015). Internet addiction: It's relation with loneliness among undergraduate students of south-punjab, Pakistan. *Science International Lahore*, 27(2), 1469-79.

Salehi, M., Khalili, M. N., Hojjat, S. K., Salehi, M., Danesh, A. (2014).Prevalence of internet addiction and associated factors among medical students from Mashhad, Iran in 2013. *Iranian Red Crescent Medical Journal*, 16(5).

Siraj, H. H., Salam, A., Hasan, N. A, Jin, T. H., Roslan, R. B., Othman, M. N. (2015). Internet usage and academic performance: a study in a Malaysian public university. *International Medical Journal*, 22(2), 83-6.

Sussman, S., Lisha, N., Griffiths, M. (2011).Prevalence of the addictions: a problem of the majority or the minority?. *Evaluation & the Health Professions*, 34(1), 3-56.

Tran, B. X., Hinh, N. D., Nguyen, L. H., Le, B N., Nong, V. M., Thuc, V. T. *et al.* (2017). A study on the influence of internet addiction and online interpersonal influences on health-related quality of life in young Vietnamese. *BMC Public Health*, 17(1), 138.

Tsai, H. F., Cheng, S. H., Yeh, T. L., Shih, C. C., Chen, K. C., Yang, Y. C., Yang, Y. K. (2009). The risk factors of internet addiction—a survey of university freshmen. *Psychiatry Research*, 167(3), 294-9.

Usman, N. H., Alavi, M., Shafeq, S. M. (2014). Relationship between internet addiction and academic performance among foreign undergraduate students. *Procedia-Social and Behavioral Sciences*,114, 845-51.

Valentini, M., Biondi, M. (2016).The emergence of behavioral addictions. *Rivista di Psichiatria*, 51(1), 85-86.

Van der Aa N., Overbeek, G., Engels, R. C. M. E., Scholte, R. H. J., Meerkerk, G. J., Van den Eijnden, R. J. J. M. (2009). Daily and compulsive Internet use and well-being in adolescence: A diathesis-stress model based on Big Five personality traits. *Journal of Youth and Adolescence*, 38, 765-76.

Van Rooij, A. J & Prause, N. (2014).A critical review of internet addiction criteria with suggestions for the future. *Journal of Behaviour Addiction*, 3(4), 203-213