

IMPACT OF INTERNET ADDICTION ON HEALTH ANXIETY IN MALAYSIAN YOUTH DURING COVID-19 PANDEMIC

Sonia Khodabakhsh^{1*}, Shamala Ramasamy², Tan Yen Teng³, Chan Siaw Leng⁴

¹Psychology and Counselling Department, Universiti Tunku Abdul Rahman (UTAR), Kampar, Malaysia

²Psychology Department, International Medical University (IMU), Kuala Lumpur, Malaysia

³Psychology Department, UCSI University, Kuala Lumpur, Malaysia

⁴Department of Social Science and Management, University Putra Malaysia (UPM), Sarawak, Malaysia

*Corresponding Author's Email: soniak@utar.edu.my

ABSTRACT

The COVID-19 pandemic affected the mental health of people. Individuals prefer to collect information from the Internet about the virus, disease, symptoms, reports on statistics, treatments, and any other information related to the pandemic. In this study, we aimed to explore the impact of Internet use in three different levels of users (Internet addicts, over-users, and average-users) on health anxiety during the pandemic among the young population in Malaysia. Four hundred and forty-eight young adults in Malaysia completed the online survey including demographic questionnaire, Short-form Health Anxiety Inventory, and Internet Addiction Test. Results showed that the Internet addict users have higher scores in the Total Health Anxiety and Health Anxiety factors (Illness Likelihood and Negative Consequences) compared to the average-users and over-users. It seems that high Internet usage is associated with high health anxiety. People may search more on the Internet for information related to the COVID-19 and the symptoms and it may increase their health anxiety. This study provides knowledge implications for mental health professionals about the association between Internet addiction and health anxiety. The findings may provide awareness to the public and professionals about one of the factors that are linked to individuals' health anxiety during the pandemic.

Keywords: COVID-19; Health Anxiety; Internet Addiction; Malaysia; Pandemic

INTRODUCTION

The coronavirus disease 2019 (COVID-19) has a profound influence on the lives of people and cultures around the world. People face problems in various facets of their lives, such as psychological, social, financial, educational, and physiological aspects. The pandemic has a direct and indirect effect on people's mental health in a number of ways. Social distancing, living under quarantine, shutting down colleges and institutions, halting a variety of jobs, and the general shutdown in cities intensify residents' frustration throughout the pandemic.

In this situation when people seek information about the COVID-19, symptoms, news, statistical reports, treatment, etc. from the Internet. Many people panic when they face this unknown virus and the uncertain situation. In this scenario, some of them will get information to gain knowledge and be updated about the pandemic news and some of them may worry about their health by reading any information or news about the situation.

In general, the Internet is one of the most widely and conveniently used media to assess information and all over the world. While the accessibility to Internet has become convenient, its excessive use convincingly causing a serious impairment in several aspects of life such as social, academic, career, and physical health (Kandasamy *et al.*, 2019; Khodabakhsh & Ahmadi, 2020; Khodabakhsh & Leng, 2020; Rezaei *et al.*, 2020; Young, 1998). Moreover, studies show that stress, depression, and anxiety are associated with excessive Internet use (Saikia *et al.*, 2019). Moreover, it is shown that sadness, feeling down, having a loss of interest in daily activities are some of the symptoms of Internet addiction (Masih & Rajkumar, 2019).

During the pandemic and in quarantine time, the usage of the Internet will be increased in many people. Therefore, overuse of the Internet and its consequences are increasingly becoming an area of concern for researchers. Accessibility of the Internet makes the communication of information faster than

before that people are developing dependence on online sources to obtain information and the latest updates in various areas related to their lives. One important aspect among them is health for which they rely on the Internet to ascertain their health condition.

Internet access is easily available in most countries and young adults view the Internet as an essential tool for their learning, social connection, work, etc. It has numerous benefits widely ranging from speedy communication, online education, online shopping to online access to medical and health care professionals and information. Over-use of the Internet also appears among Malaysian youth (Khodabakhsh *et al.*, 2020). Internet addiction refers to Internet usage to elude negative sentiments, persistent use of the Internet despite the desire to cease usage, having disagreeable emotions when unable to surf the Internet, or engaging in recurring thoughts about the Internet as well as facing other contrast or even self-conflicts following Internet use (Chou *et al.*, 2005; Ostovar *et al.*, 2016; Van der Aa *et al.*, 2008). In this regard among many other influences of Internet addiction, it is becoming a major source for health-related information seeking, particularly among people with health anxiety problems (Brown *et al.*, 2019; Eastin & Guinsler, 2006; Singh *et al.*, 2016).

According to the national survey in 2018 (Malaysian Communications and Multimedia, 2018), Malaysia has almost 87.4% Internet users and among them, an average of 12.1% of youth in their 20s spend approximately 8.0 hours daily to go online. The report from Malaysia Ministry of Health Malaysia and Institute for Health Behavioral Research by Malaysian Communications and Multimedia (2017) they concluded that among 86.9% of Internet users 77.2% depend on the Internet to seek online information about their health. The most commonly searched health-related information was on symptoms and diseases (91.4%), followed by health care tips 89.8% and treatment method 83.5%. Majority of them (73.7%) seek for information related to medications/drugs and treatment place. Surprisingly, according to that survey, 82.7% of them trusted the online health-related information, irrespective of the resources.

Health anxiety is a multidimensional concept encompassing mild forms to clinically significant

health-related fear, combined with disease conviction. Health anxiety exists on a continuum, ranging from mild and temporary to serious and chronic, being quantitative rather than qualitative (Taylor, 2004). As Salkovskis *et al.*, (2003) mentioned, the main risk factors for development and maintenance of health anxiety are dysfunctional health-related beliefs derived from previous experiences with illness and medical factors, which may remain latent. They could be triggered when a precipitating critical incident, such as bodily change, interacts with predisposed maladaptive / dysfunctional assumptions/beliefs about health. Singh *et al.*, (2016) concluded in an at hematic analysis that along with dysfunctional beliefs activated by internal or external stimuli to creating health misinterpreted health-related beliefs in the individuals. These beliefs are further supported by “cognitive (e.g., catastrophic misinterpretation), behavioural (e.g., reassurance seeking), physiological (e.g., increase autonomic arousal), and affective (e.g., depression) factors” are considered as major maintaining factors of health anxiety and are thought to maintain anxiety and constant concern and worry that one has or can develop a health-related issue or critical illness. In other words, these beliefs enhance the risk of developing disastrous awareness when individuals are exposed to situations where a person’s attention becomes focused on health concerns. For example, reading/hearing about the illness of people around them, words connoting diseases, health information from professionals, media, Internet and related sources (e.g., about avian flu, SARS, or AIDS), or changes in the body (comprising but not limited to bodily sensations, e.g., blemish, headache) (Abramowitz *et al.*, 2007). This usage of the Internet is more highlighted during the COVID-19 pandemic as people use the Internet to search and get more information about the virus, the disease, symptoms, treatment, and any other information to know more about the pandemic.

Although the obvious benefits of Internet have attracted the young population toward online health resources, researchers anticipate hazardous impacts of the Internet on young adults (Abdel-Salam *et al.*, 2019) or online health-related information on provoking anxiety (Muse *et al.*, 2012; Singh & Brown, 2014, 2015; Starcevic & Berle, 2013). It is indicated that health anxious people are more inclined towards excessive Internet use, which

augmented the likelihood of anguish and excessive visitation to doctors as some of the usual responses to excessive Internet use among health anxious people (Baumgartner & Hartmann, 2011; Eastin & Guinsler, 2006; Muse *et al.*, 2012). Moreover, health anxious folks were inclined to validate factors proposing potential infatuation to Internet use related to health care issues (Singh & Brown, 2014), confirming the assumption that excessive usage could become challenging in its way. Those duly concerned with health endeavour to seek information provides them with a sense of security from health-related threats, reassurance and satisfies their sense of uncertainty and anxiety about their health (Singh & Brown, 2016). Although these behavioural strategies lessen the anxiety for a minimum period it could serve as a sustaining factor for health anxiety (McMullan *et al.*, 2019; Salkovskis & Warwick, 1986). Health anxiety will return, and reassurance will result in increased anxiety and negative cognition if the bodily sensations recur, or if there is a lack of certainty about the results of any medical tests (Taylor, 2004; Te Poel *et al.*, 2016).

Eastin and Guinsler (2006) studied the association between health anxiety and online health search in the United States. Their findings postulated that even individuals with moderate anxiety tend to seek health-related information more frequently online than those lacking anxiety. Though lack of information may lead to health-related concerns and information seeking may also intensify anxious feelings, particularly in those with cognitive distortions.

Some studies on the Internet and health among the clinical and non-clinical sample, have examined the behaviour patterns of Internet users communities (Powell *et al.*, 2003), constructed and analyzed online interventions, such as Internet-based health therapy (Andersson *et al.*, 2005; Christensen *et al.*, 2004), reviewed the quality of mental health information available on websites (Eysenbach, & Kohler, 2002), assessed online mental health information search (Powell & Clarke, 2006), determined the important criteria for selecting websites (Turner, 2009), and evaluated the use of the Internet for obtaining health information (Zhang *et al.*, 2009). These studies showed that 8 out of 10 American adults sought healthcare information online (White & Horvitz, 2009). Powell and Clarke (2006) also conducted a cross-sectional survey

on 18 years old individuals and above from the databank of Oxfordshire general practice patients. The results showed that 18% of Internet consumers depended on online resources for acquiring mental health-related information. Researchers are also concerned about investigating the role of gender as a moderating feature for Internet addiction and developing health-related issues. Ha and Hwang (2014) investigated the gender difference among adolescents in Internet addiction and its relationship with psychological health indicators. The study suggested higher Internet addiction among boys (3.6%) as compared to girls and factors like poor self-rated health, subjective unhappiness, and depressive symptoms were suggestively contributing to their Internet addiction.

Considering the increasing use of the Internet among young adults and the importance of mental health in individuals and societies, this study aimed to explore the differences among three Internet Addiction groups and Health Anxiety moderated by gender to explore this important concern among young adults in Malaysia.

METHODOLOGY

For this study, quantitative cross-sectional design was utilized. Data was collected during the COVID-19 pandemic from May 2020 to August 2020 through the online survey in the Malaysian youth population.

Participants

Four hundred and forty-eight young adult in Malaysia completed the online survey. The link of the online survey was shared through social media such as Facebook, Twitter, Telegram, WhatsApp, and other networks. Valid completed survey forms were 243 (54.2%) male and 205 (45.6%) females.

The average age of participants was 27.69 years old (SD = 5.13), with ages ranging from 22 to 48 years old. The average time of Internet use per day was 4.98 (SD = 3.53) hours; males a mean of 5.11 (SD = 3.61) hours and females a mean of 4.82 (SD = 3.44) hours. Participants reported a mean of 8.06 (SD = 3.45) years of internet experience with a range between 1 to 17 years.

Instruments

Short-form Health Anxiety Inventory (SHAI). The SHAI is a self-report measure proposed by Warwick and Salkovskis (1990). SHAI has 18 items evaluating health anxiety independent of physical health status; for each item, individuals are asked to choose one

statement out of four which most closely resembles their beliefs and emotions (there is an option to choose more than one statement). Response selections are then scored from 0 to 3 (if multiple responses were selected on an item, the highest score is used for total score computations) and summed to form a total score. The SHAI consisted of two factors. Fourteen items measuring (a) the perceived probability of acquiring a serious illness and attention toward physical sensations (“Illness Likelihood”), and four items (b) the perceived negative consequences of being seriously ill and calamitous thinking regarding the burden and outcome of having a severe illness (“Negative Consequences”). The SHAI has demonstrated good internal consistency ($\alpha = .89$) (Salkovskis *et al.*, 2002). In a subsequent study, Abramowitz *et al.*, (2007) evaluated the psychometric properties and factor structure of the SHAI in a non-clinical sample and found evidence of sound psychometrics ($\alpha = .86$).

Internet Addiction Test (IAT). Young’s (1998) Internet Addiction Test (IAT) was used to measure the participants’ level of Internet use. It is a widely used instrument to assess Internet addiction and alongside it has good internal consistency reliability and concurrent validity. Also, this assessment is the most widely used instrument in existing studies to measure Internet addiction. The IAT consists of 20 items meant for measuring Internet use, including psychological dependence, compulsive use, and withdrawal, besides associated problems of sleep, school, family, and time management. For each item, there is an option to choose a graded response (1 = “rarely” to 5 = “always”). The lowest score possible is 20, while the highest is 100; higher scores suggest escalated levels of Internet addiction. As suggested by Young, cut-off scores for the IAT were used to categorise internet users based on the severity of their addictive behaviour (Young, 1998).

Average-users (scores 20 to 39): average online users who may use the Internet for longer times but can regulate their Internet usage; Over-users (scores 40 to 69): those occasionally experiencing problems due to excessive Internet usage; Addictive users (scores 70 to 100): those having substantial problems due to excessive Internet usage. In another research, Cronbach’s alpha .92 for the IAT, and its test-retest reliability was reported acceptable (Yang *et al.*, 2005).

RESULTS

Using descriptive statistics, the information about the participants’ age, years of having Internet experience /exposure, and hours spend on the Internet per day on average, has reported in Table 1.

Table 1: Descriptive Statistics of Age, Years of Internet Experience, and Average Time of Internet Use of Participants (n=448)

	Minimum	Maximum	Mean	SD
Age	22	48	27.69	5.13
Internet Experience (years)	1	17	8.06	3.45
Average time of Internet use (hours per day)				
	Total	4.98	3.53	
	Male	5.11	3.61	
	Female	4.82	3.44	

Before the administration of scales, a verbal debriefing was done with the participants to explain the purpose of the study and to explain the procedure of answering the questionnaires. The participants were requested to complete the questionnaire anonymously to reduce the possible reporting bias. It was also explained to them that the confidentiality of the data would be maintained. Participants’ privacy and anonymity were fully protected. Before conducting any analysis, the data were assessed to ensure accuracy (data were assessed for missing data, outliers, reliability, and normality). The analysis was done using SPSS. The three groups of Internet users were compared on Total Health Anxiety (THA) and Health Anxiety factors (Table 2).

Table 2: Analysis of Variance for THA and Health Anxiety Factors in Three IAT Groups (n=448)

Scale	Level of Internet use	Mean	SD	F	Sig
Total Health Anxiety (THA)	Average-use	14.64	5.96	19.751	0.000**
	Over-use	19.15	7.71		
	Internet addict	20.64	8.44		
Illness Likelihood	Average-use	11.95	5.07	18.182	0.000**
	Over-use	15.61	6.42		
	Internet addict	16.70	7.08		
Negative Consequences	Average-use	2.69	2.07	7.552	0.001**
	Over-use	3.54	2.42		
	Internet addict	3.94	2.50		

Note: ** $p < .01$ (2-tailed)

DISCUSSION

The three IAT groups were compared on total Health Anxiety (THA) and Health Anxiety factors (SHAI

Illness Likelihood and SHAI Negative Consequences factors). Group differences were found for THA; similarly, were significant group differences in both SHAI Illness Likelihood and SHAI Negative Consequences factors. THA, SHAI Illness Likelihood, and SHAI Negative Consequences factors scores differed significantly between all three IAT groups.

The level of THA was significantly higher in the Internet addict group than in the other two Internet use groups (over-use and average -use) combined. Besides, the Internet addict group reported a higher level in both HA factors (SHAI Illness Likelihood and SHAI Negative Consequences factors) than over-user and average-use groups. Therefore, the Internet addict users were higher in Total Health Anxiety and Health Anxiety factors than the average-user and over-user. It seems that the Internet can provide youth high on the trait of health anxiety a chance to seek websites offering valuable medical information. As Lewis (2006) indicated, there is a rising trend toward the general population accessing information about health-related matters online. Sufferers of health anxiety seek frequent reassurance from health information sources (Salkovskis *et al.*, 2003).

Since the Internet has become one of the most popular and readily accessible health information sources, it is not surprising that many youths with a high level of health anxiety have redirected their reassurance-seeking habits online. However, after reassurance-seeking, anxiety soon re-emerges, because they are unable to sustain the comfort from that reassurance; as a result, they may spend more time surfing the Internet and use it excessively to find more reassuring information.

CONCLUSION

The present study provided valuable information about the relationship between Internet addiction and developing health anxiety among young adults. The study was done during the COVID-19 pandemic that many people were preoccupied with their health issues and the news and information about the pandemic situation in the country and the world. It can be assumed that youth are among the most potential population groups who have excessive and easy exposure to the Internet, which sometimes leads to its irresponsible and hazardous use regarding acquiring health-related information. Due to the attractive nature of this medium and feasible attainment of the health-related information, it has already become an integral part of

their daily lives, while enhancing their knowledge information and getting reassurance about their health, it is depicting its negative impacts on their emotional, social and psychosomatic well-being and making them ultimately overly dependent on the online available health-related information. This study has implications for individuals and professionals by increasing the awareness that how excessive use of the Internet may be associated with health anxiety. This may increase the general anxiety in youth during the pandemic. It is required that health care providers and counsellors should design some intervention programs to educate these potential high Internet users to reduce the probability of developing health anxiety and other psychosomatic problems in the adversity times such as COVID-19 pandemic.

Conflict of Interest

The authors declare that there is no conflict of interest.

ACKNOWLEDGEMENT

We would like to thank all who had encouraged me to complete the article successfully.

REFERENCES

- Abdel-Salam, D.M., Alrowaili, H.I., Albedaiwi, H.K., Alessa, A.I. & Alfayyadh, H.A. (2019). Prevalence of Internet addiction and its associated factors among female students at Jouf University, Saudi Arabia. *Journal of the Egyptian Public Health Association*, 94(1), pp.1-8.
- Abramowitz, J.S., Deacon, B.J. & Valentiner, D.P. (2007). The Short Health Anxiety Inventory: Psychometric properties and construct validity in a non-clinical sample. *Cognitive Therapy and Research*, 31(6), pp.871-883.
- Andersson, G., Bergström, J., Holländare, F., Carlbring, P.E.R., Kaldö, V. & Ekselius, L. (2005). Internet-based self-help for depression: randomised controlled trial. *The British Journal of Psychiatry*, 187(5), pp.456-461.
- Baumgartner, S.E. & Hartmann, T. (2011). The role of health anxiety in online health information search. *Cyberpsychology, Behavior and Social networking*, 14(10), pp.613-618.
- Brown, R.J., Skelly, N. & Chew-Graham, C.A. (2020). Online health research and health anxiety: A systematic review and conceptual integration.

- Clinical Psychology: Science and Practice*, 27(2), p.e12299.
- Chou, C., Condrón, L. & Belland, J.C. (2005). A review of the research on Internet addiction. *Educational Psychology Review*, 17(4), pp.363-388.
- Christensen, H., Griffiths, K.M. & Jorm, A.F. (2004). Delivering interventions for depression by using the internet: randomised controlled trial. *Bmj*, 328(7434), p.265.
- Eastin, M.S. & Guinsler, N.M. (2006). Worried and wired: effects of health anxiety on information-seeking and health care utilization behaviors. *Cyber Psychology & Behavior*, 9(4), pp.494-498.
- Eysenbach, G. & Köhler, C. (2002). How do consumers search for and appraise health information on the world wide web? Qualitative study using focus groups, usability tests, and in-depth interviews. *Bmj*, 324(7337), pp.573-577.
- Ha, Y.M. & Hwang, W.J. (2014). Gender differences in internet addiction associated with psychological health indicators among adolescents using a national web-based survey. *International Journal of Mental Health and Addiction*, 12(5), pp.660-669.
- Kandasamy, S., Buhari, A.M. & Janaki, S. (2019). A study on anxiety disorder among college students with internet addiction. *International Journal of Community Medicine and Public Health*, 6(4), pp.1695-1700.
- Khodabakhsh, S. & Ahmadi, S. (2020). The relationship between subjective happiness and social media usage during the COVID-19 pandemic: the moderating role of resilience. *Aloma: Revista de Psicologia, Ciències de L'educació i de L'esport Blanquerna*, 38(2), pp.105-112.
- Khodabakhsh, S. & Leng, C.S. (2020). Relationship Between Social Media Usage and Body Image Evaluation in Malaysian Youth. *Malaysian Journal of Medical Research (MJMR)*, 4(4), pp.62-67.
- Khodabakhsh, S., Rezaei, S., Rosli, N. A., Chaudhry, Z., Yen, C. & Tan, T. (2020). April. Preliminary Study on Associations between Demographic Variables (Gender, Type of Student and Program) and Level of Internet Use. *In Conference E-Proceeding*, pp. 38.
- Lewis, T. (2006). Seeking health information on the internet: Lifestyle choice or bad attack of cyberchondria? *Media, Culture & Society*, 28(4), pp.521-539.
- Malaysian Communications Commission and Multimedia (2017). *Internet Users Survey 2017 Statistical Brief Series Number Twenty-One*.
- Malaysian Communications and Multimedia Commission (2018). *Internet Users Survey 2018 The Statistical Brief Series Number Twenty-Three*.
- Masih, J., & Rajkumar, R. (2019). Internet Addiction Disorder and Mental Health in Adolescents. *Journal of Depression Anxiety*, S13.
- McMullan, R. D., Berle, D., Arnáez, S. & Starcevic, V. (2019). The relationships between health anxiety, online health information seeking, and cyberchondria: Systematic review and meta-analysis. *Journal of Affective Disorders*, 245, pp:270-278.
- Muse, K., McManus, F., Leung, B., Meghreblian, T. & Williams, J. M. G. (2012). Cyberchondriasis: Fact or fiction? A preliminary examination of the relationship between health anxiety and searching for health information on the Internet. *Journal of Anxiety Disorders*, 26, pp:189–196.
- Ostovar, S., Allahyar, N., Aminpoor, H., Moafian, F., Nor, M.B.M. & Griffiths, M.D. (2016). Internet addiction and its psychosocial risks (depression, anxiety, stress and loneliness) among Iranian adolescents and young adults: A structural equation model in a cross-sectional study. *International Journal of Mental Health and Addiction*, 14(3), pp.257-267.
- Powell, J. & Clarke, A. (2006). Internet information-seeking in mental health: population survey. *The British Journal of Psychiatry*, 189(3), pp.273-277.
- Powell, J., McCarthy, N. & Eysenbach, G. (2003). Cross-sectional survey of users of Internet depression communities. *BMC Psychiatry*, 3(1), pp.1-7.
- Rezaei, S., Khodabakhsh, S. & Rabbani, M. (2020). Relationship Between Sensation Seeking and Internet Use Among International Students. *Malaysian Journal of Medical Research (MJMR)*,

- 4(4), pp.1-6.
- Saikia, A.M., Das, J., Barman, P. & Bharali, M.D. (2019). Internet addiction and its relationships with depression, anxiety, and stress in urban adolescents of Kamrup District. Assam. *Journal of Family & Community Medicine*, 26(2), p.108.
- Salkovskis, P.M. & Warwick, H.M. (1986). Morbid preoccupations, health anxiety and reassurance: a cognitive-behavioural approach to hypochondriasis. *Behaviour Research and Therapy*, 24(5), pp.597-602.
- Salkovskis, P.M., Rimes, K.A., Warwick, H.M.C. & Clark, D.M. (2002). The Health Anxiety Inventory: development and validation of scales for the measurement of health anxiety and hypochondriasis. *Psychological Medicine*, 32(5), pp.843-853.
- Salkovskis, P.M., Warwick, H.M. & Deale, A.C. (2003). Cognitive-Behavioral Treatment for Severe and Persistent Health Anxiety (Hypochondriasis). *Brief Treatment & Crisis Intervention*, 3(3).
- Singh, K. & Brown, R.J. (2014). Health-related Internet habits and health anxiety in university students. *Anxiety, Stress & Coping*, 27(5), pp.542-554.
- Singh, K., Fox, J.R. & Brown, R.J. (2016). Health anxiety and Internet use: A thematic analysis. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 10(2).
- Starcevic, V. & Berle, D. (2013). Cyberchondria: towards a better understanding of excessive health-related Internet use. *Expert Review of Neurotherapeutics*, 13(2), pp.205-213.
- Taylor, S. (2004). Understanding and treating Health Anxiety: A cognitive-behavioral approach. *Cognitive and Behavioral Practice*, 11, pp:112-123.
- Te Poel, F., Baumgartner, S.E., Hartmann, T. & Tanis, M. (2016). The curious case of cyberchondria: A longitudinal study on the reciprocal relationship between health anxiety and online health information seeking. *Journal of Anxiety Disorders*, 43, pp.32-40.
- Turner, A.M., Petrochilos, D., Nelson, D.E., Allen, E. & Liddy, E.D. (2009). Access and use of the Internet for health information seeking: a survey of local public health professionals in the northwest. *Journal of Public Health Management and Practice*, 15(1), pp.67-69.
- Van der Aa, N., Overbeek, G., Engels, R.C., Scholte, R.H., Meerkerk, G.J. & Van den Eijnden, R.J. (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(6), p.765.
- Warwick, H.M. & Salkovskis, P.M. (1990). Hypochondriasis. *Behaviour research and therapy*, 28(2), pp.105-117.
- White, R.W. & Horvitz, E. (2009). Cyberchondria: studies of the escalation of medical concerns in web search. *ACM Transactions on Information Systems (TOIS)*, 27(4), pp.1-37.
- Yang, C.K., Choe, B.M., Baity, M., Lee, J.H. & Cho, J.S. (2005). SCL-90-R and 16PF profiles of senior high school students with excessive internet use. *The Canadian Journal of Psychiatry*, 50(7), pp.407-414.
- Young, K.S. (1998). Internet addiction: The emergence of a new clinical disorder. *Cyberpsychology & Behavior*, 1(3), pp.237-244.
- Zhang, Y., Jones, B., Spalding, M., Young, R. & Ragain, M. (2009). Use of the internet for health information among primary care patients in rural West Texas. *Southern Medical Journal*, 102(6), pp.595-601.