Prevalence of internet use disorder and associated psychiatric co-morbidities in youth patients presenting to tertiary care center in Nepal

Rajendra Ghimire[1], Nidesh Sapkota[2], Dhana Ratna Shakya[3], Rinku Gautam Joshi[4], Suraj Nepal[5]

1. Rajendra Ghimire, Assistant Professor, Department of Psychiatry, Pokhara Academy of Health Sciences, Pokhara, Nepal

2. Nidesh Sapkota, Professor, Department of Psychiatry, Patan Academy of Health Sciences, Lalitpur, Nepal.

3. Dhana Ratna Shakya, Professor, Department of Psychiatry, BP Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal.

4. Rinku Gautam Joshi, Additional Professor, Department of Psychiatry, BP Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal

5. Suraj Nepal, Associate Professor, Department of Psychiatry, BP Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal.

Abstract

Background

Internet use is an integral part of daily living in current world; however, its misuse is likely to cause addiction and have negative impact in mental health. Internet use disorder (IUD) has been studied worldwide, however there are limited research on its prevalence and psychiatric co-relation among youth psychiatric patients in Nepal.

Objectives

To determine the prevalence of internet use disorder, find out its association with psychiatric co-morbidities, and describe socio-demographic characteristics among youth psychiatric out-patients in eastern Nepal.

Methods and materials

A cross-sectional study was conducted in psychiatry out-patient department of a tertiary care teaching hospital in eastern Nepal from January 2021 to January 2022. Total of 146 consenting youth patients aged 15-24 years were enrolled using consecutive sampling method. Young's Internet Addiction Test (YIAT) was administered to access IUD. Psychiatric diagnosis was made by a consultant psychiatrist using ICD-10/DCR criteria and data were analyzed using descriptive statistics and chi square tests at 95% confidence intervals.

Result

Among the 146 participants (80 male, 66 female; mean age was 19.99 ± 2.87 years), 89.7% of youth patients were internet users. The prevalence of internet use disorder was found in 33.6% (mild: 34.2%, moderate: 30.8% and severe: 2.7%). Higher level of internet use disorder was significantly associated with middle & high socioeconomic status, urban residence and single marital status. In psychiatric diagnosis; Anxiety (43.7%), substance use disorder (37.5%) and Depressive disorder (34.0%) showed higher but statistically insignificant association with internet use disorder.

Conclusion

Internet use disorder is found in 1/3rd youth psychiatric out-patients in Nepal, particularly among middle and high socio-economic status, urban residing population and single patients. These findings highlight the need for routine screening for IUD in psychiatric settings and intervene the youth psychiatric patients with its risk.

Keywords

Internet use disorder, ICD-10/DCR, Young's Internet addiction test, young Psychiatry out patients.

Abbreviations

ADHD- Attention Deficit Hyperactive Disorder, CIUS- Compulsive internet use scale, CIU- Compulsive internet User, DCR- Diagnostic Criteria for research, DSM- Diagnostic and Statistical Manual of Mental disorders, IAT- Internet Addiction test, IUD- Internet Use Disorder, ICD-10- International Classification of diseases, 10th revision, IRC- Institute ethical review board and committee, NIU- Normal internet user, OPD- Out-patient Department, PIU- Problematic Internet User, WHO- World Health Organization, YIAT- Young's Internet Addiction Test

***Corresponding Author**

Rajendra Ghimire

Assistant Professor, Department of Psychiatry

Pokhara Academy of Health Sciences

Pokhara, Nepal

Email: razendra812.rg@gmail.com

INTRODUCTION

Access to digital connections anytime, anywhere and for extended period of time has led to patterns of internet use that resembles substance addiction.[1] Internet use disorder (IUD), which was first reported in scientific literature since 1990's,[1] is characterized by poorly controlled

preoccupations, urges, or behaviors regarding computer use and internet access that leads to impairment or distress.[2] This phenomenon has emerged as a significant public health concern particularly among youth population.

Globally, the prevalence of internet use disorder ranges from 1% to 36% depending on the population studied and the types of tool used.[3] Among the studies done at clinical settings, the rates of IUD are relatively higher ranging from 30% to 70%.[4,5] Co-morbidity with other psychiatric conditions is common among addictive disorders clouding the actual awareness that a client may be suffering from IUD.[6] Most research has been conducted in Western and East Asian settings and there is significant gap in literature and understanding in South Asian context including Nepal.

Previous studies have been conducted in general populations which have established association between IUD and psychiatric conditions,[7,8] however there are limited findings among patients from clinical settings. Similarly, studies about IUD are scarce in Nepal though there is increased internet use and concerns related to it.[9]

This study addresses the knowledge gap by examining the prevalence of IUD and its psychiatric correlates in a clinical sample of youth patients seeking psychiatric services and their need for screening and help in development of intervention required. The main aim of the study is to determine prevalence of IUD, examine its association with psychiatric co-morbidities and describe socio-demographic characters associated with it in this population.

METHODS

Study design and setting:

This institution based cross-sectional study was conducted in Psychiatry Out-patient Department, B. P. Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal, a tertiary care hospital among youth patients aged 15-24 years attending psychiatric OPD from January 2021 to January, 2022. Consecutive sampling technique was used to enroll the first two new youth patients presenting each day. The sample size of 146 youth patients was calculated using the formula $N = Z^2 \times p \times (100 - p) / D^2$ with expected prevalence (p = 42%) based on previous study by Bhandari et al, [10] using 95% confidence level (Z = 1.96). The inclusion criteria were: Patients aged 15-24 years presenting to the psychiatry OPD during the study period and gave written informed consent (parental consent for minors). Exclusion criteria were: Patients below 15 years or above 24 years and patients with primary psychiatric conditions severely impairing assessment capacity (e.g., acute psychosis, severe intellectual disability).

Operational definition:

Internet use disorder (IUD):

IUD is defined as a maladaptive pattern of internet use resulting in significant impairment or distress, as measured by a total score of more than 50 on Young's Internet Addiction Test[1], a 20-item self-report scale assessing degree of problematic internet use over past 6 to 12 months.[12]

Youth, Adolescent and Adult:

The United Nations, for statistical purposes, defines those persons between the ages of 15 and 24 as youth without prejudice to other definitions by Member States.[13]

The World Health Organization (WHO) defines an adolescent as any person between ages 10 and 19.[14] According to the World Health Organization (WHO), an adult is a person older than 19 years of age unless national law delimits an earlier age, and an adolescent someone aged 10 to 19 years.[15]

So, based on above definition, we attempted to divide our study population as Adolescent (15-19 years) and adult (20-24 years).

Dependent and Independent Variables:

Internet Use Disorder (present/absent based on YIAT score) were the dependent variables and Age, gender, residence (urban/semi-urban/rural), socioeconomic status, education, marital status, psychiatric diagnosis were independent variables.

Data Collection Tools:

The tools for data collection were Self-structured proforma, developed by the authors to collect socio-demographic information (age, sex, religion, residential setting, marital status, educational status, occupation), internet use patterns (hours of use, types of devices) and Young's Internet Addiction Test (YIAT) which is a 20-item self-report questionnaire using a 5-point Likert scale (1 = rarely to 5 = always). This scale is freely available to be used for research purpose. Total scores range from 20-100, with higher scores indicating greater addiction severity. Standard cut-offs scores are: normal (<30), mild (31-49), moderate (50-79), and severe (≥80) addiction.

The YIAT was translated into Nepali using a systematic forward-backward translation method. Two independent bilingual experts performed forward translation, which was then back translated by two different experts. The translated version was reviewed by a panel of three psychiatrists for content validity and piloted with 20 patients (not included in the final sample) to assess clarity and comprehension. Clinical psychiatric diagnoses were established by consultant psychiatrists using ICD-10 /Diagnostic Criteria for Research (DCR-10) criteria.

Ethical Consideration:

All subjects were informed about the study in detail and written informed consent was taken. All the patients received standard care whether he/she participated in study or not. All the clinical judgement regarding patient care and management was decided by the consultant Psychiatrist. The identity of the respondent and their response were kept confidential and data were used for research purpose only. Approval of the protocol was collected from institutional review committee before implementing the study (Reference No: Acd/422/077/078).

Procedure and data analysis:

The first two new youth patients presenting to psychiatry OPD who fulfilled inclusion and exclusion criteria were approached for participation and were enrolled after they consented for this study. The self-structured proforma and YIAT were administered through interview by the researcher.

Data were entered in Microsoft Excel and analyzed using SPSS version 20.0. Frequencies, percentages, means, and standard deviations were calculated for socio-demographic characteristics, internet use patterns, and psychiatric diagnoses. Chi-square tests were used to examine associations between categorical variables (IUD presence and socio-demographic/clinical factors). Statistical significance was set at $p<0.05$.

RESULTS

Socio-demographic Characteristics:

The study sample consisted of 146 youth subjects between 15-24 years of age (80 male, 66 female) with a mean age of 19.99 with standard deviation 2.87. Out of the study subjects, 63 were adolescent patients ranging from 15 to 19 years of age and 95 were adults ranging from 20 to 24 years of age. Majority of them were educated up to higher secondary (43%) followed by secondary (24%), Graduate level (23%) and illiterate (2.1%). Most subjects (75) were residing in urban, 47 in semi-urban and less (24) in rural setting. Most participants (127) were single, 18 were married and 1 was separated.

Internet Use parameters:

In this study, 131 (89.7%) subjects were internet users and rest 15 (10.3%) did not use internet. As per the cut off score of the YIAT scale, 49 (33.6%) subjects had internet use disorder and 82 (62.4%) did not. Among the subjects with internet use disorder, 45 had moderate and 4 had severe internet use disorder. Participants with mild form of IUD, scoring less than 50 but higher than 30 were 50.

Factors associated with Internet use disorder:

Adolescents (15-19 years) showed higher internet use disorder rates (39.7%) compared to (30.1%) young adults (20-24 years) which was statistically insignificant with p value 0.225. Internet use disorder were similar among male (33.7%) than females (33.3%) which was statistically insignificant with p value 0.196. We found that people residing at urban had highest number of IUD rates (45.3%), followed by semi-urban (31.9%0 and rural (8.3%) which was statistically significant with p value 0.002.

Higher level of IUD was observed in people with middle socio-economic groups (36%) followed by high SES (25%) than compared to low socio-economic group (17.6%) with statistically significant p value 0.024. Single (43.3%) showed higher IUD than married participants (11.1%) with p value 0.009 which was statistically significant. IUD was increased with educational level: secondary (20.0%), higher secondary (43.5%) and graduate (35.3%) with p value 0.133, however internet use during workplace and for study purposes were not included in those subjects.

Table 1: Sociodemographic variables with Internet Use Disorder

Characteristics	Categories	Total	Internet use disorder		P-value	Remarks
			Absent	Present		
Age	Adolescent (15-19)	63	60.3%	39.7%	0.225	Not significant
	Adult (20-24)	83	69.9%	30.1%		
Gender	Male	80	66.3%	33.7%	0.964	Not significant
	Female	66	66.7%	33.7%		
Socio-economic status	Low	17	82.4%	17.6%	0.024	Significant
	Middle	125	64%	36%		
	High	4	75%	25%		
Marital Status	Single	127	56.7%	43.3%	0.009	Significant
	Married	18	88.9%	11.1%		
	Separated	1	100%	0		

Residential Setting	Urban	75	54.7%	45.3%	0.002	Significant
	Semi-urban	47	68.1%	31.9%		
	Rural	24	91.7%	8.3%		
Education	Illiterate	3	100.0%	0	0.133	Not significant
	Lower Secondary	3	100.0%	0		
	Secondary	35	80%	20%		
	Higher secondary	69	56.5%	43.5%		
	Graduate	34	64.7%	35.3%		
	Post-graduate	2	50%	50%		

Psychiatric comorbidity

All subjects met ICD-10/DCR criteria for psychiatric diagnosis which was made by consultant psychiatrist in the department. The frequencies of the diagnostic groups were as follows: Depressive disorder (32.2%), anxiety disorder (21.9%), Bipolar disorder (9.6%), Psychotic disorder (4.1%), Substance use disorder (11%), Stress related disorder (8.9%) and 12.3% had other diagnosis (Table No. 1).

Table No. 2: Psychiatric diagnosis among youth psychiatry out-patients

Diagnosis	Total	Subtypes	ICD Code	Number	Percentage (%)
Depressive disorder	47	Mild Moderate Severe RDD	F32.0 F32.1 F32.2 F33	7 18 16 6	4.7 12.3 10.9 4.1
Anxiety disorder	32	Panic attack Mixed anxiety and depression Unspecified	F41.0 F41.2 F41.9	14 6 12	9.6 4.1 8.2
Bipolar disorder	14		F31	14	9.6
Psychotic disorder	6	Schizophrenia ATPD Unspecified Psychosi	F20 F23 F29	2 1 3	1.3 0.68 2.1
Substance related disorder	16	Alcohol Opioids Cannabinoids Multiple drug use	F10 F11 F12 F19	5 2 7 2	3.4 1.3 4.7 1.3
Stress related disorder	13	Adjustment disorder Dissociative disorder	F43 F44	9 4	6.2 2.7
Others	18	Male erectile d/o Headache Seizure No syndroma diagnosis	F52.2 - - -	3 6 5 4	2.0 4.1 3.4 2.7

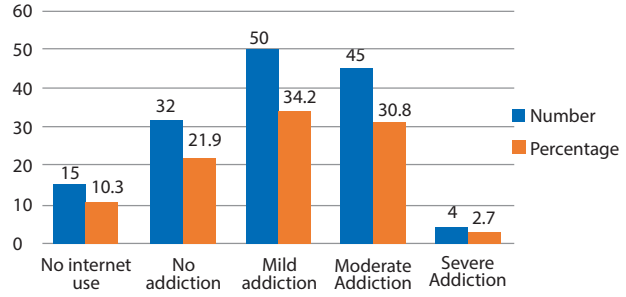

Figure 1: Internet addiction as per YIAT score

Internet use disorder with Psychiatric diagnosis:

Table No. 3: Comparison of Internet use disorder with psychiatric diagnosis

Diagnostic Categories	Total	Internet Addiction (%)		P-Value	Remarks
		Absent	Present		
Depressive Disorders	47	66	34.0	0.206	Not significant
Anxiety Disorder	32	56.3	43.7		
Bipolar disorders	14	78.6	21.4		
Psychotic disorders	6	100	0		
Substance related disorders	16	62.5	37.5		
Stress Related disorders	13	69.2	30.8		
Others	18	72.2	27.8		

Patients with Anxiety disorder was mostly associated with Internet addiction, followed by Substance use disorder, Depressive disorder and Stress related disorder, however they were not statistically significant.

DISCUSSION

This study reveals three main findings, first Internet use disorder affects around 33.6% youth psychiatric patients in eastern Nepal, second IUD was significant with socio-demographic correlates including urban residence, middle and high socioeconomic status and single marital status. Third, Anxiety, substance use and depressive disorders show high co-occurrence with internet use disorder, however these association were statistically insignificant in our sample.

The 33.6% prevalence of internet use disorder is less than the reported rate in Nepali community studies by Bhandari et al[10] which showed 42% among undergraduates. Several factors may explain this low prevalence as participants were from treatment seeking group and lesser in number than community setting. However, our finding was higher than the study done by de Vries et al.[4] in Japanese population. The reason could be due to younger sample size in our study as age can be a risk factor. Similarly, the former study used cut-off score of 40 to define internet use disorder and we used 50 as the cut-off score, though we found higher prevalence. Other reasons could be the pandemic context where our data collection coincided with COVID-19 lockdown period where amount of internet use was high, [16] and similarly YIAT with standard cut off may overestimate clinical IUD compared to structured diagnostic interviews.[17] Our age group also coincides with the peak vulnerability period for IUD onset.[18] Similarly rapid urbanization and growing access to digital platform in our country might have resulted in such findings.

Internet use and Socio-demographic variants:

This study was conducted among adolescent and young adult psychiatry out-patient population whose mean age (19.99 ± SD 2.87) was comparable with other studies.[1,4] Internet use disorder was found higher in adolescent age group (39.7%) than in young adult age group (30.1%) ; this finding is consistent with other studies.[7,19,20] de Vries et al. [4] reported that lower age and psychiatric comorbidity were associated with PIU among Japanese adult psychiatric patients which is similar to our findings. A naturalistic study with adolescent in-patients showed higher prevalence of internet use disorder among in-patients compared to controls.[10] The differences in socio-cultural parameter, literacy rate, quality of life had impact on the findings of the studies conducted in two different countries. Both the studies have shown more internet use disorder in patients with psychiatric co-morbidity and young ages. The developmental vulnerability of adolescence population may relate to their higher reward sensitivity and greater socialization with peers through online activities.[21]

There was no significant gender difference in prevalence of internet use disorder in this study which is consistent with the findings of other studies,[4] however some early research suggests male predominance.[22] This shows that both the genders are equally liable to have internet use disorder as internet access has become universal.[23] However, some studies quote that internet use disorder is higher among females and addiction to online gaming is higher among males.[24]

We found that higher the educational status, higher was the level of internet use disorder; consistent with the finding of other study.[4,20,25] High prevalence of internet use was seen among college/ university students in our study; it may be attributed to its role in academics and sharing information.

Due to better access to the internet services, transportation and health services for people from semi-urban and urban regions, IUD was higher in urban residence (78.3%) compared to those from rural residence (29.2%) which was comparable to similar study in the past which shows differences in connectivity and digital literacy among people of different residence.[26]

Our study showed that middle and high socioeconomic status had higher prevalence of IUD. (25.0%in high and 36% in middle SES vs. 17.6% in low SES) comparable to other studies.[12] This may be due to better technology access and use of entertainment for coping in people with middle and higher socio-economic status. Similarly access to gadgets for internet use is also higher in middle and high socio-economic status compared to low.

We also found that the rate of internet use disorder was more among single (43.3%) than among married subjects (11.5%) (P-value 0.004 which is statistically significant). de Vries et al showed similar finding that single indwellers had IUD.[4] As married people get busy within themselves with added responsibility and single have more free time, the prevalence of IUD in these population might be higher. Our finding was similar to the finding of study conducted by Mamun et al.[8]

Internet use disorder and Psychiatric comorbidities:

Psychiatric comorbidities seen in this study were comparable to the finding from a study done at our setting by Shakya DR27 where major psychiatric diagnoses were Mood (affective), Anxiety, Seizure, Dissociative conversion disorders and Mental retardation. There were no major differences in the presentation of youth out-patients in the two studies; they were conducted at two different points of time in same setting.

This study showed higher IUD among patients with Anxiety disorder (43.7%), followed by Substance use disorder (37.5%), Depressive disorder (34.0%) and Stress related disorder (30.8%), Others (headache/ migraine/ erectile dysfunction/ no syndromal psychiatric diagnosis) (27.8%) and bipolar disorders (21.4%) was statistically not significant (p-value 0.318); compared to a meta-analysis involving studies with non-clinical participants which showed statistically positive co-relation between IUD and alcohol abuse, ADHD, Anxiety and Depression.[28] This study was conducted among youth out-patients who already had psychiatric disorder, hence likely, positive correlation could not be established. Similarly, a smaller number of participants might have been the cause for insignificant result. However, community studies suggest IUD was higher in the patients with Anxiety, Depression, Substance use disorder and Stress related disorder.[7,8,25] Highest co-occurrence of IUD was seen among patients with anxiety disorder suggesting internet use as avoidance coping for anxiety symptoms.[28] Similarly, socially anxious individuals may prefer online interactions for daily communication as safer and comfortable mode.[5]

Study among adolescents undergoing in-patient psychiatric treatment by Muller et al found a high prevalence of IUD and an association with internalizing disorders (such as Anxiety and Depression)[5] which is consistent with our finding. Their study had a large sample size, adequate number of patients with different diagnosis. Future study is needed to validate the study findings.

To our best knowledge, this study is among the first studies examining IUD in a clinical psychiatry sample from Nepal. This research has provided baseline prevalence for future research, is helpful in identifying high risk groups and develop targeted intervention and demonstrate the need of screening IUD in routine psychiatric practices. Similarly finding of 34.3% with milder form suggests that they are in the prodromal phase and require more attention during intervention.

Implications and Limitations:

The findings of this study have important implication in the management of problematic internet use and highlight the importance of public awareness, monitoring internet use and need of interventions among youths. Clinicians should also be aware of this condition and explore during evaluation for psychiatric disorders, e.g., mood disorders.

The cross-sectional design of this study limits us to generalize and establish the causality between IUD and psychiatric disorders. The consecutive sampling technique has potential selection bias, however is practical in clinical settings. Single and clinical study site, study design, unequal sample size, sampling bias and difference in number of patients with different diagnosis warrant further study to show actual association between psychiatric disorders and IUD. The use of self-reported data from YIAT likely might have caused reporting bias in terms of internet use patterns.

CONCLUSION

Internet use disorder is higher among youth psychiatric patients, more in adolescent age (15-19 years) compared to young adult age (20-24 years). IUD is significantly higher among urban residents, those from middle/high socioeconomic status and single patients. Similarly, IUD is more prevalent among patients with anxiety disorder, substance use disorder and depressive disorders but these association were statistically insignificant. These findings highlight the importance of routine IUD screening and develop appropriate preventive and intervention strategies for targeted population. Future longitudinal research is essential to establish more casual relationship and develop evidence-based treatment approaches.

References

1. Young KS, De Abreu CN, editors. Internet addiction: A handbook and guide to evaluation and treatment. John Wiley & Sons; 2010.
2. Weinstein A, Lejoyeux M. Internet addiction or excessive internet use. The American Journal of Drug and Alcohol Abuse. 2010;36(5):277-83.
3. Kuss DJ, Griffiths MD, Karila L, Billieux J. Internet addiction: A systematic review of epidemiological research for the last decade. Current Pharmaceutical Design. 2014;20(25):4026-52.
4. de Vries HT, Nakamae T, Fukui K, Denys D, Narumoto J. Problematic internet use and psychiatric co-morbidity in a population of Japanese adult psychiatric patients. BMC Psychiatry. 2018;18(1):9.
5. Müller KW, Ammerschlaeger M, Freisleder FJ, Beutel ME, Woelfling K. Addictive internet use as a comorbid disorder among clients of an adolescent psychiatry—prevalence and psychopathological symptoms. Zeitschrift für Kinder- und Jugendpsychiatrie und Psychotherapie. 2012;40(5):331-7.
6. Shapira NA, Goldsmith TD, Keck Jr PE, Khosla UM, McElroy SL. Psychiatric features of individuals with problematic internet use. Journal of affective disorders. 2000 Jan 1;57(1-3):267-72.
7. Ho RC, Zhang MW, Tsang TY, Toh AH, Pan F, Lu Y, et al. The association between internet addiction and psychiatric co-morbidity: a meta-analysis. BMC Psychiatry. 2014;14:183.
8. Mamun MA, Hossain MS, Siddique AB, Sikder MT, Kuss DJ, Griffiths MD. Problematic internet use in Bangladeshi students: The role of socio-demographic factors, depression, anxiety, and stress. Asian Journal of Psychiatry. 2019;44:48-54.
9. Shakya R, Sharma P. Problematic Internet Use--An introduction and current status in Nepal. Journal of Psychiatrists' Association of Nepal. 2015;4(2):4-9.
10. Bhandari PM, Neupane D, Rijal S, Thapa K, Mishra SR, Poudyal AK. Sleep quality, internet addiction and depressive symptoms among undergraduate students in Nepal. BMC Psychiatry. 2017;17(1):106.
11. Young KS. Internet addiction: The emergence of a new clinical disorder. Cyberpsychology & Behavior. 1998;1(3):237-44.
12. Grover S, Sahoo S, Bhalla A, Avasthi A. Problematic internet use and its correlates among resident doctors of a tertiary care hospital of North India: A cross-sectional study. Asian Journal of Psychiatry. 2019;39:42-7.
13. United Nations. Secretary General's Report to the General Assembly.1981; 36:215.
14. World Health Organization (WHO) Definition of key terms. [Available from: http://www.who.int/hiv/pub/guide-lines/arv2013/intro/keyterms/en. 2016 Oct 28.
15. Young K. Internet addiction test (IAT). Stoelting; 2016 Dec 1.
16. Sun Y, Li Y, Bao Y, et al. Brief Report: Increased Addictive Internet and Substance Use Behavior During the COVID-19 Pandemic in China. The American Journal on Addictions. 2020;29(4):268-70
17. King DL, Chamberlain SR, Carragher N, et al. Screening and assessment tools for gaming disorder: A comprehensive systematic review. Clinical Psychology Review. 2020;77:101831
18. Sussman S, Arnett JJ. Emerging adulthood: developmental period facilitative of the addictions. Evaluation & the health professions. 2014;37(2):147-55.
19. Goel D, Subramanyam A, Kamath R. A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents. Indian Journal of Psychiatry. 2013 Apr;55(2):140.
20. Fuchs M, Riedl D, Bock A, Rumpold G, Sevecke K. Pathological internet use—an important comorbidity in child and adolescent psychiatry: prevalence and correlation patterns in a naturalistic sample of adolescent inpatients. BioMed research international. 2018 Mar 29;2018.
21. Madden M, Cortesi S, Gasser U, Lenhart A, Duggan M. Parents, Teens, and Online Privacy. Pew internet & American life project. 2012 Nov 14.
22. Feng Y, Xie W. Teens' concern for privacy when using social networking sites: An analysis of socialization agents and relationships with privacy-protecting behaviors. Computers in Human Behavior. 2014 Apr 1;33:153-62.
23. Balhara YP, Mahapatra A, Sharma P, Bhargava R. Problematic internet use among students in South-East Asia: Current state of evidence. Indian journal of public health. 2018 Jan 7;62(3):197.
24. Chamika RM, Dias SR. Relationship of internet addiction with depression, loneliness and health related lifestyle among university students. Journal of Health Science. 2018;6:310-5.
25. Bozkurt H, Coskun M, Ayaydin H, Adak I, Zoroglu SS. Prevalence and patterns of psychiatric disorders in referred adolescents with Internet addiction. Psychiatry and clinical neurosciences. 2013 Jul;67(5):352-9.
26. Tenzin K, Dorji T, Gurung MS, Dorji P, Tamang S, Pradhan U, Dorji G. Prevalence of Internet Addiction and Associated Psychological Co-morbidities among College Students in Bhutan. JNMA; journal of the Nepal Medical Association. 2018 Mar 1;56(210):558-64.
27. Shakya DR. Psychiatric morbidity profiles of Child and adolescent Psychiatry out-patients in a tertiary-care hospital. Journal of Nepal Paediatric Society. 2010 Jul 13;30(2):79-84
28. Shin L. A comparative study of mobile internet usage between the US and Korea. Journal of European Psychology Students. 2014 Aug 26;5(3).