Prevalence of Problematic Internet Use and its Risk Factors among the Adolescents in Colombo District, Sri Lanka

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ABSTRACT

Problematic Internet Use is growing as a potentially problematic condition parallel to existing behavioral disorders, especially among adolescents. Nonetheless, the condition is widespread and problematic, limited scientific evidence is available on the prevalence, diagnosis, risk factors, prevention, and efficacy of the treatment globally as well as locally. The objective of this study was to determine the prevalence and associated factors of Problematic Internet Use among 15-19-year-old adolescents in Colombo district. The Internet Addiction Test (IAT) developed by Young (1998) was adapted, translated, and validated for this study. A school-based descriptive cross-sectional study was conducted on 1351 school-going adolescents by the multi-stage stratified cluster sampling method. A self-administered questionnaire was used for the data collection and the data analysis was done using the SPSS-21 version. Initial bivariate analysis was followed up with Multivariate Logistic Regression analysis to determine the risk factors of Problematic Internet Use. The prevalence of Problematic Internet Use among adolescents was 17.2% (95% CI: 15.2-19.3). Male sex (AOR=2.27;95% CI:1.27-4.07), excessive use of social media (AOR=4.32; 95% CI:2.12-8.80), lack of engagement in outdoor sports(AOR=5.4; 95% CI:2.49-11.73), unemployed mother (AOR=2.06;95% CI:1.40-3.04), excessive engagement of internet gaming (AOR=1.94;95% CI:1.34-2.82), excessive internet usage time per day for nonacademic activities (AOR=2.59; 95%CI:1.71-3.91), higher duration of internet use in years (AOR=2.64;95% CI:1.80-3.85), and no excessive internet use by the parents (AOR=0.46; 95% CI:0.30-0.70) were the statistically significant risk factors. The prevalence of Problematic Internet Use among adolescents was within the range. The study findings will aid the policymakers and administrators in preventing, diagnosing, and managing Problematic Internet Use among this age group of adolescents.

INTRODUCTION

The Internet is an amazing invention. Across the globe, it is an integral part of modern life for many people. It has become a significant component of contemporary life for all age groups. People have increasingly adopted and used the internet for entertainment, socialization, and information retrieval. Easier access to smartphones and higher utilization of laptops provided people to use the internet freely. Although the positive aspects of the internet have been readily praised, there is a growing amount of literature on the negative side of its excessive and pathological use. Problematic Internet Use is called "Electronic heroin"(Williamsle, 2014). The Internet has become a significant component of contemporary life for all age groups. People have increasingly adopted and used the internet for entertainment, socialization, and information retrieval. Easier access to smartphones and higher utilization of laptops provided people to use the internet freely. Although the positive aspects of the internet have been readily praised, there is a growing amount of literature on the negative side of its excessive and pathological use. Problematic Internet Use is defined as "a psychological dependence on the Internet, regardless of the type of activity once logged on." (Kandell, 1998). The condition was also described as an impulse control disorder resulting in personal, professional, educational, and financial conflicts with life relationships (Shaw & Black, 2008). Internet penetration among the world population by 2020 has been estimated at 63.2%. Asia is having the greatest number of internet users of all continents accounting for 51.8% of all online users. Considering the rest of the world 14.8% is from Europe, 6.8% from North America, and 3.7% from the Middle East. Among the Asian countries, China is consisting of the greatest internet-using population. India is the second-largest online market in the world with over 560 million internet users, ranked only behind China by 2020 (Keelery, 2020). The internet penetration in Sri Lanka is 47% with 10.1 million internet users in January 2020. The number of mobile connections in Sri Lanka in January 2020 was equivalent to 149% of the total population (Simon Kemp 2020). Even though Internet addiction disorder has emerged as a universal issue, its international prevalence estimates vary vastly. There were limited estimates on Internet addiction in Sri Lanka. Perera (2017) revealed a prevalence of 16.1% among information and communication technology users in Gampaha district, Sri Lanka in 2017. A major challenge to analyzing these different prevalence rates is the availability of different instruments to assess this addictive behavior. Thus, prevalence data on Internet addiction disorder are limited by methodological difficulties considering the diagnosis and the heterogeneity of diagnostic tools. Therefore the preventive strategies should be geared

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towards addressing the risk factors. Prabhakaran *et al.* (2016) reported that male gender, having a personal device, time of internet use, using smartphones, permanent login status, chatting through the internet, making online friends, online shopping, watching films, online gaming, searching information through online and messaging have found to be significantly associated with the Problematic Internet Use. The duration of internet use, having higher levels of depression, compulsivity, aggressiveness, lower family cohesion, higher accessibility to internet cafes, and higher exposure to internet gaming was associated significantly with the disorder (Chung *et al.*, 2019), while Goel *et al.* (2013) reported social networking, chatting, downloading media files and pornography as associated factors. Despite many countries sharing the public health impact of Problematic Internet Use, much is not known about its associated factors among Sri Lankan adolescents.

LITERATURE REVIEW

Once new media are becoming daily routine, Problematic Internet Use appears as a potential problem among young people. Adolescents, who have grown up in the digital technology era, are very much familiar with telecommunication devices and the internet from an early age. The internet has certain particular characteristics that make it particularly attractive to the adolescent population, such as being infinite, offering services, leisure and social interactions at any time, low cost, and anonymity, which can encourage uninhibited actions (Avila *et al.* 2020). Adolescence is a developmental period during which dependent children grow into independent adults. During adolescence, children undergo striking physical, intellectual, and emotional growth. Major changes in the structure and functioning of the brain occur during this period which results in significant cognitive and behavioral development. Adolescents move toward their peers as their primary social support system. Their mobile phones provide a constant connection to their friends as well as access to popular media. Therefore, it is not surprising that adolescents spend more time engaged in internet-related activities during the day. Avila *et al.* (2020) reported excessive use of the internet has been a problem for adolescents for so many years. The association between young age and Internet addiction has been proven since adolescents begin to psychologically separate from their parental figures and seek new social connections outside their families (Avila *et al.* 2020). Studies have shown that human brains continue to mature and develop throughout childhood, adolescence, and well into early adulthood. Structural neuroimaging studies of the brain among adolescents have found that individuals with Internet addiction disorder had structural abnormalities in their gray matter, such as decreased gray matter volume or gray-matter density in multiple cortical and subcortical areas. The findings further demonstrated that Internet addiction disorder is associated with dysfunction in the dopaminergic brain system. Internet addiction disorder is one of the fast-growing addictive behaviors and is a significant public health problem affecting a large number of adolescents worldwide. Therefore, preventive strategies should be geared toward addressing the risk factors. Anusha *et al.* (2016) reported that male gender, having a personal online device, time of internet use, using smartphones, permanent login status, chatting through the internet, making online friends, online shopping, watching films, online gaming, searching information through online and messaging have found to be significantly associated with the Internet addiction disorder. The duration of internet use, having higher levels of depression, compulsivity, aggressiveness, lower family cohesion, higher accessibility to internet cafes, and higher exposure to internet gaming was associated significantly with the disorder (Chung *et al.* 2019), while Goel, Subramanyam, and Kamath (2013) reported social networking, chatting, downloading media files and pornography as risk factors.

MATERIALS AND METHODS

This study was a school-based descriptive cross-sectional study with an analytical component conducted in Colombo district. The study was conducted in government schools having grades 10 to grade 13 in Colombo district. This descriptive cross-sectional study was carried out from October 2019 to July 2021. The data collection was completed in February and March 2021. Multi-stage stratified cluster sampling method was used. Cluster size was selected by considering the median number of students in a class according to the school health statistics of Colombo district. The number of students in each class has a skewed distribution. Therefore, the cluster size was considered according to the median number of students in a class. The number of students in each class varied from 10 to 43 in all the schools. The minimum possible cluster size and maximum cluster numbers have been considered for the internally heterogeneous groupings. Therefore, the cluster size was considered as 22. This low value of the cluster size was facilitated to increase the number of clusters. The final sample size was 1327. Internet Addiction Test was applied to detect Internet addiction disorder. The scale consists of 20 items with a six-point Likert scale with a range of 0 to 5. The total range of the questionnaire was 0 to 100. The sum of the scores for all the items of an individual was considered as the total score and higher scores indicated higher levels of addiction (Young 2009). Total Internet Addiction Test scores of an individual exceeding one standard deviation above the mean score were considered as the cut-off for having Problematic Internet Use. The value was calculated using the total IAT scores of the cross-sectional validation study. Data entry was done by the principal investigator. All the questionnaires were inspected for their completeness. The datasheet was rechecked for missing values and other inconsistencies. All the gathered data were manually cleaned and checked before entering the statistical package of social sciences

(SPSS version 21). The prevalence of Problematic Internet Use among 15-19-year-old adolescents in Colombo district was determined as a probability with a 95% confidence interval. Multivariate analysis was used to investigate the significant variables that have an impact on Problematic Internet Use. It was carried out to identify adjusted odds ratios of risk factors of Problematic Internet Use. Problematic Internet Use (having the disorder/not having the disorder) was the dichotomous outcome variable (dependent variable). Risk factors found to have significantly associated with the disorder were the covariates(Independent variables). A major use of this technique was to examine the series of risk factors to determine the best model to predict the disorder. Thus, the multiple logistic regression method was used as a mathematical model that can provide an adjusted odds ratio that has controlled for multiple

confounders. Variables observed with a p-value less than 0.1 in univariate analysis were included in the multivariate analysis and the backward elimination technique was used. It has been assured that all pertinent and potentially predictive variables were studied and included. The Hosmer-Lemeshow test was used to determine the goodness of fit of the logistic regression model.

RESULTS AND DISCUSSION

Prevalence of Problematic Internet Use among 15-19-year-old adolescents in Colombo district.
The sample was collected from 1380 study participants. The response rate was 99% and 15 questionnaires (1.1%) were removed due to incomplete entries. The final sample size was 1351, which exceeded the calculated sample size determined in the methodology (1327). The sociodemographic characteristics of the study population

Table 1: Frequency distribution of the study participants by age and sex

Characteristic	Number	Percentage
Age of the study participants		
15	292	21.8
16	573	42.7
17	246	18.3
18	231	17.2
Total	**1342**	**100**
Mean=16.3 SD=0.96		
Sex of the study participants		
Female	664	49.1
Male	687	50.9
Total	**1351**	**100**

were described using frequency distribution.
The highest proportion of adolescents was in the age group of 16 years (n=573,42.7%) and the lowest proportion was in the 18-year-old age group (n=231,17.2%). The mean age was 16.3 years (SD=0.96). A total of 687 adolescents in the study sample were males (50.9%) and 49.1% were females (n=664).

Internet Addiction Test (IAT) scores of the study participants
The study participants' level of Problematic Internet Use was measured using the validated Internet Addiction Test (IAT). The mean score value for the Internet Addiction Test (IAT) total score was 27.75 with a median of 24. The skewness was 0.792 and the kurtosis was 0.202 indicating

Table 2: Descriptive statistics of Internet Addiction Test (IAT) scores obtained by the study participants.

Descriptive statistics	Value
Mean	27.75 (95% CI: 26.73-28.75)
Median	24
Mode	22
Range	83
Skewness	0.792
Kurtosis	0.202

normal distribution.

Assessment of the Prevalence of Problematic Internet Use among 15–19-year-old adolescents in Colombo district
The prevalence of Problematic Internet Use among

15–19-year-old adolescents in the Colombo district was calculated and presented as a proportion with a 95% confidence interval. Cut-off values for the diagnosis of the disorder were calculated at the cross-sectional validation study as mean+1SD.
There were 17.2% (95% CI: 15.2-19.3) of adolescents

Table 3: Levels of Problematic Internet Use among 15–19-year-old adolescents in Colombo district

Level of Problematic Internet Use	Frequency	Percentage	95% CI
Adolescents with Problematic Internet Use	233	17.2	15.2-19.3
Adolescents without Problematic Internet Use	1118	82.8	80.7-84.8
Total	**1351**	**100**	

with Problematic Internet Use and 82.8% (95% CI: 80.7% - 84.8%) of adolescents without having the disorder. According to the present study, the prevalence is 17.2% (95% CI:15.2-19.3) among the 15-19-year-old adolescents in Colombo district. The figure is slightly above the study conducted among young information and communication technology users in Gampaha district, Sri Lanka(16.1%) (Perera, 2017). The later study used the same diagnostic criteria with validated 18-item IAT for the study group and a similar methodology. However, the study population has been different. A cross-sectional survey that was conducted among undergraduates in the faculty of medicine at, the university of Colombo revealed a higher value of Internet addiction disorder of 27.6% among the study population (Rodrigo *et al.* 2012). Since the present study has used IAT following a proper cultural adaptation and validation process it was difficult to compare the two prevalence values between the two studies. There are very few other local studies conducted on Problematic Internet Use among youth in Sri Lankan context. Nevertheless, the results cannot be compared attributed to variations in the diagnostic criteria and assessment questionnaires used for diagnosis, highly selective samples of online surveys, and inadequate sample sizes. Worldwide, there are huge variations in prevalence data on the disorder among adolescents. In Europe and the United States of America, rates ranged from 7.9 to 25.2% while in the Middle East and Africa rates from 17.3 to 23.6% among adolescents in 2012(Cheng and Li 2014). Studies in Asia have revealed a higher variation in prevalence among young people and adolescents, ranging from 8.1 to 50.9% (Cheng and Li 2014). The prevalence of Problematic Internet Use appeared to be higher in a study published in 2018 among 10–18-year-old adolescents in China revealed 26.5% of Internet addiction among the study participants.

However, the study used the cut-off value of the conventional 50 marks in the Chinese version of IAT (Xin *et al.* 2018). Variations in the prevalence of Internet Addiction could be due to differences across investigating sites, sample size, or the time frame of the performed research. However, the overall trend in China appears to be an increase in the rate of addiction, consistent with the dramatic increase in the role of Internet use in adolescents' social life in recent years (Xin *et al.* 2018). The overall figure of young internet subscribers has increased throughout along with the substantial counts of mobile internet connections. It is widely known that young adults are the most active internet users worldwide and early awareness is important for policymakers to examine the problem and implement effective measures to prevent it. With the government's substantial efforts to implement digital technology and revolutionize life on a mass scale, access to the internet is higher than ever. As a result, the number of addicts at an early age will be a problem shortly.

Multivariate logistic regression model with selected risk factors for Problematic Internet Use among 15–19-year-old adolescents in Colombo district

The Omnibus test of the model coefficient was significant. There were eight independent variables were retained in the final model. The Hosmer-Lemeshow test statistic indicated that the model adequately fits the data and supported the model ($\chi2=5.309$; df= 07; p=0.724). Furthermore, 59.4% of the data was correctly predicted by the new model. The independent variables which were included in the final model were presented and the association between each factor and the Problematic Internet Use was mentioned as an adjusted Odds Ratio (AOR). There were eight independent variables were retained in the model. The Hosmer-Lemeshow test

Table 4: Multivariate logistic regression model with selected risk factors for Problematic Internet Use among 15–19-year-old adolescents in Colombo district

Factor	B	SE	Wald	df	Sig	Exp(B)	95% CI for Exp(B)
The extent of attachment to social media (Self-perceived) Often and to some extent	1.465	0.362	16.32	1	0.001	4.32	2.12- 8.80
The extent of engagement in outdoor sports (Self-perceived) Rarely and never	1.688	0.395	18.22	1	0.001	5.40	2.49-11.73
Employment status of the mother Not employed	0.725	0.198	13.37	1	0.001	2.06	1.40-3.04
The extent of internet gaming (Self-perceived) Often and to some extent	0.665	0.189	12.34	1	0.001	1.94	1.34-2.82
Sex of the participant Male	0.823	0.297	7.655	1	0.001	2.27	1.27-4.07

Duration of internet use per day for nonacademic activities Three hours or more	0.959	0.210	20.53	1	0.001	2.59	1.71-3.91
The total duration of internet use in years Three years or more	0.971	0.193	25.29	1	0.001	2.64	1.80-3.85
Excessive use of the Internet by one or both parents(Self-perceived)No excessive use	0.763	0.214	12.75	1	0.001	0.46	0.30-0.70

indicated that the model adequately fits the data and supported the model (χ2=5.309; df= 07; p=0.724). Furthermore, 59.4% of the data was correctly predicted by the new model. Male sex (AOR=2.27;95% CI:1.27-4.07), excessive use of social media (AOR=4.32; 95% CI:2.12-8.80), lack of engagement in outdoor sports (AOR=5.4; 95% CI:2.49-11.73), unemployed mother (AOR=2.06;95% CI:1.40-3.04), excessive engagement of internet gaming (AOR=1.94; 95% CI:1.34-2.82), Excessive internet usage time per day for non-academic activities (AOR=2.59; 95% CI:1.71-3.91), higher duration of internet use in years (AOR=2.64;95% CI:1.80-3.85), and no excessive use of the internet by the parents (AOR=0.46;95% CI:0.30-0.70) were identified as statistically significant risk factors of Problematic Internet Use in multivariate logistic regression analysis among 15-19-year-old adolescents in Colombo district. Among the risk factors of Problematic Internet Use, the male sex emerged as a significant predictor in the multivariable analysis. The findings corroborate with many previous studies stating that addiction is more common in males than in females. According to the present study, being a male (AOR=2.27;95%CI:1.27-4.07) has increased the odds of having Internet addiction. Since this figure has been consistent throughout, the finding may be possibly due to the male adolescents who are generally more passionate about knowing the unknown facts or exploring new inventions or they are usually more attracted to addictive objects such as pornography, cybersex, and online gaming compared with the female. They also have more freedom than the females to engage in online activities. A cross-sectional study conducted among Greek adolescents with a mean age of 14.7 years reported male gender was having higher levels of Internet addiction (OR:2.01,95% CI:1.35-3.00) (Kormas et al. 2011) and Krishnamurthy and Chetlapalli (2015) revealed similar results (AOR 1.69, 95% CI:1.081- 2.65, p = 0.021) where the findings were very much consistent with the present study. Among the local studies, Sachitra (2015) reported that there was a male preponderance to have addiction in undergraduates at the University of Sri Jayawardenepura(<0.05). It has been known that adolescent boys utilize the internet more frequently and extensively than adolescent girls (Krishnamurthy and Chetlapalli 2015).

These gender differences observed could be attributed to the potential confounding effect of the differences in the frequency of internet utilization between genders. Excessive social media can lead to an uncontrollable urge to log on and devote so much time and effort to the users. Behavioral models explain excessive use of social media can be viewed as one form of an Internet addiction

disorder, where individuals exhibit a compulsion to use it (Griffiths et al. 2016). According to the current study excessive use of social media has increased the odds of having Problematic Internet Use (AOR=4.32,95% CI:2.12-8.80,p=0.001). This finding of the study has been persistent throughout. Hassan et al. (2020) concluded that spending time on social media websites was the most common online activity among adolescents (p<0.05).

Guedes et al. (2016) revealed that the increased prevalence of social media usage has become addictive among the youth(p<0.001). However, in the above-mentioned studies, an association between Internet addiction and social media use has not been reported as Odds ratios compared to the present study where the odds ratio was computed to quantify the strength of the association. This alarming statistic of the current study sheds light on policy implications. Program planners in the education and health sectors could consider the possibility of students being addicted to social media usage and educate students about the negative consequences of such addictive behaviour. Multivariate logistic regression analysis revealed that adolescents' lack of engagement in outdoor sports was more likely to have Problematic Internet Use (AOR=5.40, 95% CI: 2.49-11.73,p=0.001). Li et al. (2020) reported exercise and sports can significantly reduce the levels of internet addiction (<0.05).

The study also elaborated Internet addiction leads to changes in neural structure, decreases the activity of the dopaminergic system, and limits neurocognitive function which can be reversed by an exercise-based intervention (Li et al. 2020). The other possible explanation is that outdoor sports and exercise can substantially reduce the time spent online and make adolescents physically active. A cross-sectional study carried out on the effect of gender and physical Activity on Internet addiction among medical undergraduates in the army medical college, Rawalpindi in 2015 reported that the total score and frequency of Internet addiction diagnosed by IAT were higher in students lacking physical activity as compared to those with regular physical activity (p=0.01) (Khan, Shabbir, and Rajput 2017). However, an association between Internet addiction and engagement in outdoor sports among adolescents has not been reported as Odds ratios compared with the present study. Students who take part in any kind of physical activity outdoors tend to stay away from gadgets that use the internet. They are more inclined towards healthy activities instead of spending time on the internet. They tend to sleep early because of physical tiredness, so the chances of internet usage till late at night are rare in these students. On the other hand, students who do not participate in physical

activities are lazy and remain stuck with internet devices. Unemployment of the mother was reported to have higher levels of Problematic Internet Use among the 15–19-year-old adolescents in multivariate logistic regression analysis (AOR=2.06,95%CI:1.40-3.04, p=0.001). This was an unexpected finding in the present study contradicting the previous research. Despite that, the association between parental depression and adolescent Internet addiction in South Korea has been investigated and found that there are strong positive associations between Internet addiction and high maternal education level (p<0.05) which again contradicts the finding of the current study (Choi et al. 2018).

Studies show that maternal unemployment is associated with low life satisfaction in adolescents (Johansson et al. 2019). It is unclear whether this translates to an association between unemployment and Internet addiction among adolescents in the present study. It is debatable that children and adolescents are wholly mediated by the situation within the family and if the mother is unemployed, she has to be with her children most of the time and Internet addiction among the children should be less. However, Maternal unemployment can also be associated with low-income levels in families, and they may generally have lower educational achievements. Mothers in such families may not be aware of the adverse effects of Internet addiction and possibly not supervise the use of the Internet by their children, which may lead to overuse and addiction. Excessive engagement in internet gaming was reported to have higher levels of Problematic Internet Use among 15–19-year-old adolescents in multivariate logistic regression analysis(AOR=1.94; 95% CI:1.34-2.82).

Internet gaming is an emerging issue for adolescents as well as their parents which was increasingly discussed over the last decade. Excessive online video gaming is considered to be associated with addictive behaviour that often leads to significant daily, work, and educational disruptions among adolescents. Several studies have similar findings which support the current study result. A cross-sectional study conducted among Greek adolescents using IAT reported that internet gaming has been positively associated with Internet addiction (AOR: 1.85; 95% CI: 1.21-2.82) (Kormas et al. 2011). Association between internet gaming and Internet addiction was further investigated by Tsitsika et al. (2014) among 14-17-year-old adolescents in seven European countries and reported to have a positive association between Multiplayer role-playing games and Internet addiction(AOR=1.82 95%CI= 1.63–2.04). Factors associated with Internet addiction among Tunisian adolescents have been investigated in 2019 and reported to have a strong association between Internet gaming frequency and Internet addiction(AOR=3.28, p=0.002) (Ben Thabet et al. 2019). The excessive average daily hours spent online for non-academic activities among adolescents were reported to have higher levels of addiction (AOR=2.59,95% CI:1.71-3.91,p=0.001). Considering the available literature, similar association

patterns have been often identified. A study conducted on the prevalence and associated factors of internet addiction among young adults in Bangladesh reported excessive time spent daily online was having higher levels of Internet addiction disorder (p<0.01) (Hassan et al. 2020). Rodgers et al. (2013) revealed higher levels of Internet addiction disorder among participants who spent more weekly online hours. Sharma et al. (2014) found a significant relationship between hours spent using the internet and the presence of Internet addiction($\chi2$=43.940, p=0.001) among students in professional courses in central India in 2014. The association between the time spent online and the Internet addiction of these studies was similar. However, these were methodologically different from the current study since there are differences in time limits used in the analysis.

The total duration of internet use in years among adolescents was reported to have higher levels of Problematic Internet Use in multivariate logistic regression analysis (AOR=2.64; 95% CI:1.80-3.85). Hassan et al. (2020) reported a statistically significant relationship between the duration of internet use and Internet addiction($\chi2$ =7.366,p=0.03), and if the duration was less than 6 months that reduce the level of Internet addiction(AOR=0.622, 95% CI: 0.14–3.21). Therefore, increased online engagement for a longer duration can be significantly associated with Internet addiction. This is also reflecting the early initiation of internet activities in early adolescents which need to be controlled by the parents. Multivariate logistic regression analysis in the present study reported that less use of the internet by the parents has been negatively associated with Problematic Internet Use and considered as a protective factor (AOR=0.46, 95% CI=0.30-0.70). The supportive evidence has been identified that Ben Thabet et al. (2019) revealed excessive use of the Internet by parents has a positive association with Internet addiction (AOR=3.256, p=0.002). Adolescents who have more time to spend with their parents have less risk of having internet addiction(Hassan et al. 2020). Excessive parental use of the Internet can cause family relationship detachment and can attribute to the higher level of Internet addiction among adolescents due to lack of supervision.

CONCLUSIONS

The prevalence of Problematic Internet Use among 15- to 19-year-old adolescents in Colombo district was 17.2% (95%CI: 15.2-19.3) and the current prevalence of the disorder among the 15-to 19-year-old adolescents in Colombo district is comparable with the published local and regional estimates. The prevalence was assessed in a random and adequate sample of adolescents using the validated IAT with a scientifically determined cut-off point. The multivariate logistic regression model included eight independent variables and the model adequately fits the data ($\chi2$=5.309; df= 07; p=0.724) and 59.4% of the data was correctly predicted by the new model. Male sex, excessive use of social media, lack of engagement

in outdoor sports, unemployed mother, excessive engagement of internet gaming, excessive internet usage time per day for non-academic activities, higher duration of internet use in years, and no excessive use of internet among parents were identified as statistically significant risk factors of Problematic Internet Use among 15-19-year-old adolescents in Colombo district.

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