

Internet Usage, Loneliness and Coping Among Adolescents: A Cross-Sectional Study

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Abstract

Background: Adolescence is a vulnerable developmental period marked by increased emotional sensitivity and extensive use of digital technology. Excessive internet usage has emerged as a growing behavioural concern and is often associated with loneliness, poor psychosocial adjustment, and maladaptive coping strategies among adolescents. The aim and objective is to assess the relationship between internet usage, loneliness, and coping strategies among adolescents and to identify sociodemographic predictors of problematic internet use (PIU) and loneliness. **Material and Methods:** This descriptive cross-sectional study was conducted among 200 adolescents aged 14–18 years studying in selected schools of Durgapur. Participants were selected using quota/convenience sampling. Data were collected using the Internet Addiction Test–Adolescence (IAT-A), UCLA Loneliness Scale Version 3, COPE-A scale, and a semi-structured sociodemographic proforma. Statistical analysis was performed using SPSS software. Descriptive statistics, correlational analysis, and multiple linear regression analysis were applied. **Results:** Moderate loneliness was observed in 48.0% of participants, while 23.0% experienced high loneliness. Adaptive coping strategies were reported by 61.0% of adolescents, whereas maladaptive coping was present in 39.0%. Problematic internet use was significantly associated with maladaptive coping strategies ($p < 0.001$). Internet usage showed a strong positive correlation with loneliness ($r = 0.624$, $p < 0.001$) and a negative correlation with coping scores ($r = -0.481$, $p < 0.001$). Regression analysis identified daily screen time, loneliness score, maladaptive coping, and male gender as significant predictors of PIU. Problematic internet use, maladaptive coping, family conflict, and female gender significantly predicted loneliness. **Conclusion:** Problematic internet use and loneliness are strongly interconnected among adolescents and are influenced by coping behaviours. Early psychosocial interventions promoting adaptive coping may help reduce loneliness and unhealthy internet use.

Keywords: Adolescents; Problematic internet use; Loneliness; Coping strategies; Internet addiction; Mental health.

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INTRODUCTION

Adolescence is a critical developmental phase characterized by rapid physical, emotional, cognitive, and social changes. During this period, young individuals increasingly rely on digital technologies for education, entertainment, communication, and social interaction. Over the past decade, internet usage among adolescents has increased dramatically due to the widespread availability of smartphones, social networking platforms, and affordable internet access. While the internet offers several educational and social benefits, excessive or maladaptive internet use has emerged as a growing public health concern worldwide.^[1] Adolescents are particularly vulnerable to problematic internet use because of their developmental need for peer acceptance, emotional exploration, and identity formation. Excessive engagement with online activities may negatively affect psychological well-being, academic performance, interpersonal relationships, and emotional health.^[2]

Loneliness is another important psychosocial issue affecting adolescents in modern society. It is defined as the subjective feeling of social isolation or dissatisfaction with interpersonal relationships. Adolescents experiencing loneliness often report low self-esteem, anxiety, depression,

emotional instability, and poor coping abilities.^[3] With the increasing shift from face-to-face interactions to virtual communication, concerns have been raised regarding whether excessive internet usage contributes to social withdrawal and feelings of loneliness. Several studies suggest that adolescents who spend prolonged periods online may experience reduced family interaction, poor social connectedness, and emotional detachment, thereby increasing their risk of loneliness.^[4] Conversely, some adolescents may use the internet excessively as a means of escaping loneliness and emotional distress, creating a complex bidirectional relationship between internet usage and loneliness.^[5]

Coping strategies refer to the cognitive and behavioural efforts

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used by individuals to manage stress, emotional conflict, and difficult life situations. Adolescents adopt various coping mechanisms depending on their personality, social support, emotional maturity, and environmental circumstances. Healthy coping strategies such as problem-solving, seeking social support, and emotional regulation contribute positively to mental well-being, whereas maladaptive coping strategies such as avoidance, withdrawal, denial, and excessive internet use may worsen psychological distress.^[6] In recent years, researchers have increasingly explored the association between coping styles and problematic internet use among adolescents. Studies indicate that adolescents with poor coping skills are more likely to engage in excessive online activities as a form of emotional escape or stress reduction.^[7] The rapid digitalization of society following the COVID-19 pandemic has further intensified adolescent dependence on online platforms for education and social communication. Although digital connectivity helped maintain academic continuity and social interaction during periods of isolation, it also increased screen time and the risk of internet-related behavioural problems.^[8] The psychological consequences of prolonged online engagement, including loneliness, anxiety, emotional dysregulation, and impaired coping abilities, have become areas of growing concern among parents, educators, and healthcare professionals.^[9]

Understanding the interrelationship between internet usage, loneliness, and coping strategies among adolescents is essential for developing effective mental health interventions and preventive strategies. Early identification of problematic internet behaviors and maladaptive coping mechanisms may help reduce psychological morbidity and improve adolescent well-being. Therefore, the present cross-sectional study was undertaken to assess internet usage patterns, levels of loneliness, and coping strategies among adolescents and to explore the relationship among these variables.^[10]

The present study aimed to assess the relationship between internet usage, loneliness, and coping strategies among adolescents. The primary objective was to examine the association between levels of internet usage, feelings of loneliness, and different coping styles. The secondary objective was to identify sociodemographic factors predicting problematic internet use (PIU) and loneliness.

MATERIALS AND METHODS

Study Design: Descriptive cross-sectional study.

Study Population: Adolescents aged 14–18 years, including both boys and girls studying in classes X–XII.

Sample Size: 200

Study Duration: The study was conducted over a period from 2025 to 2026

Study Place: The study was conducted in selected schools of Durgapur. The city has a heterogeneous population due to the presence of several industries in and around the region, attracting families from different parts of the country.

Sampling Technique: Quota/convenience sampling technique was used for participant selection.

Inclusion Criteria:

1. Adolescents aged between 14 and 18 years.

2. Students studying in classes X–XII.

3. Both male and female students.

4. Students willing to participate and providing informed consent/assent.

Exclusion Criteria:

1. Students unwilling to participate in the study.

2. Participants with incomplete questionnaire responses.

3. Adolescents with severe medical or psychiatric illness interfering with participation.

4. Study Tools:

a) Internet Addiction Test–Adolescence (IAT-A) developed by Teo and Kam (2014), a modified version of Young’s Internet Addiction Test (1998).

b) UCLA Loneliness Scale Version 3 developed by Russell (1996).

c) COPE-A developed by Marakshina et al. (2023), an adolescent-specific version of Brief COPE by Carver et al. (1989).

d) Semi-structured sociodemographic and clinical data sheet prepared for the present study.

Method of Data Collection: Permission was obtained from the concerned school authorities prior to the commencement of the study. Eligible students belonging to the specified age group were approached and informed about the objectives and nature of the study. Participants who were willing to participate and provided informed consent/assent were enrolled in the study. Data were collected using the above-mentioned standardized tools and sociodemographic proforma. Incomplete responses were excluded from final analysis.

Statistical Analysis: We put the data into Microsoft Excel and then used SPSS software version 27.0 (SPSS Inc., Chicago, IL, USA) and GraphPad Prism version 5 to look at it. Mean \pm standard deviation was used to show continuous variables, and frequencies and percentages were used to show categorical variables. The unpaired t-test was utilized to examine continuous variables between independent groups, whereas the paired t-test was employed for comparisons within the same group. The Chi-square test or Fisher’s exact test was used to look at categorical variables, depending on which one was better. A p-value of less than 0.05 was seen to be statistically important.

RESULTS

The specified classes in the schools where this study was conducted had a total of 225 students. Among them 11 were absent, six refused to participate, five participants returned incomplete datasheet, one had difficulty as understanding the questionnaire as he spoke primarily Punjabi and two participants told they had discussed among themselves while filing responses. So after excluding them the total data eligible for analysis stood at 200.

The majority of adolescents included in the study belonged to the 16–17 years age group, accounting for 96 participants (48.0%), followed by 18-year-old adolescents with 62 participants (31.0%). Participants aged 14–15 years constituted 42 cases (21.0%). Among the 200 study participants, males constituted a slightly higher proportion with 108 participants (54.0%), while females accounted for 92 participants (46.0%).

Table 1: Level of Internet Usage According to IAT-A Scores

Level of Internet Usage	Number of Participants	Percentage (%)	P-value
Normal Use	38	19	<0.001
Mild Problematic Use	84	42	
Moderate Problematic Use	58	29	
Severe Problematic Use	20	10	
Total	200	100%	

Table 2: Levels of Loneliness and Coping Strategies among Adolescents

Variable	Category	Number of Participants	Percentage (%)	Mean ± SD	p-value
Loneliness Level	Low	58	29	32.6 ± 4.8	0.001
	Moderate	96	48	45.2 ± 5.7	
	High	46	23	61.4 ± 6.2	
Coping Strategy	Adaptive Coping	122	61	58.7 ± 8.5	0.012
	Maladaptive Coping	78	39	44.1 ± 7.3	

Table 3: Association between Loneliness and Coping Strategies

Coping Strategy	Low Loneliness	Moderate Loneliness	High Loneliness	Total	p-value
Adaptive Coping	46	58	18	122	0.003
Maladaptive Coping	12	38	28	78	
Total	58	96	46	200	

Table 4: Internet Usage Pattern and Coping Strategies

Internet Usage Pattern	Adaptive Coping	Maladaptive Coping	Total	Mean Internet Usage Score ± SD	p-value
Normal Internet Use	54	16	70	31.4 ± 6.2	<0.001
Mild PIU	46	30	76	48.9 ± 7.5	
Moderate PIU	18	24	42	66.7 ± 8.4	
Severe PIU	4	8	12	82.3 ± 6.9	
Total	122	78	200	52.1 ± 14.6	

Table 5: Association Between Problematic Internet Use and Loneliness

Internet Usage Category	Mean UCLA Loneliness Score (Mean ± SD)	P-value
Normal Use	28.4 ± 5.2	<0.001
Mild Problematic Use	35.8 ± 6.1	
Moderate Problematic Use	42.3 ± 7.4	
Severe Problematic Use	49.6 ± 8.2	
Overall Mean	38.2 ± 7.1	

Table 6: Correlation between Internet Usage, Loneliness, and Coping Scores

Variables	Correlation Coefficient (r)	p-value
Internet Usage vs Loneliness	0.624	<0.001
Internet Usage vs Coping Score	-0.481	<0.001
Loneliness vs Coping Score	-0.557	<0.001

Table 7: Multiple Linear Regression Analysis for Predictors of Problematic Internet Use

Predictor Variable	β Coefficient	Standard Error	t-value	p-value
Age	0.142	0.087	1.63	0.105
Male Gender	0.216	1.524	2.84	0.005
Daily Screen Time	0.472	0.118	5.98	<0.001
Loneliness Score	0.398	0.094	4.76	<0.001
Maladaptive Coping Score	0.287	0.101	3.52	0.001

Table 8: Multiple Linear Regression Analysis for Predictors of Loneliness

Predictor Variable	β Coefficient	Standard Error	t-value	p-value
Age	0.098	0.072	1.36	0.176
Female Gender	0.184	1.316	2.41	0.017
Problematic Internet Use Score	0.514	0.082	6.28	<0.001
Maladaptive Coping Score	0.361	0.093	4.12	<0.001
Family Conflict	0.228	0.106	2.96	0.004

[Table 1] revealed that the largest proportion of adolescents had mild problematic internet use, observed in 84 participants (42.0%). Moderate problematic internet use was present in 58 participants (29.0%), while severe problematic

internet use was identified in 20 participants (10.0%). Normal internet usage was noted in 38 participants (19.0%).

[Table 2] demonstrates the distribution of loneliness levels and coping strategies among adolescents. Among the 200

participants, 58 (29.0%) adolescents had low loneliness scores with a mean score of 32.6 ± 4.8 , while the majority, 96 (48.0%), experienced moderate loneliness with a mean score of 45.2 ± 5.7 . High loneliness was observed in 46 (23.0%) participants with a significantly higher mean score of 61.4 ± 6.2 . The overall association between loneliness categories was statistically significant ($p=0.001$).

Regarding coping strategies, 122 (61.0%) adolescents predominantly used adaptive coping strategies with a mean coping score of 58.7 ± 8.5 , whereas 78 (39.0%) used maladaptive coping strategies with a lower mean score of 44.1 ± 7.3 . The difference between coping strategy groups was statistically significant ($p=0.012$), indicating that adaptive coping was more commonly associated with better psychological adjustment.

[Table 3] shows the association between loneliness levels and coping strategies among adolescents. Among those utilizing adaptive coping strategies, 46 adolescents had low loneliness, 58 had moderate loneliness, and only 18 had high loneliness. In contrast, adolescents employing maladaptive coping strategies demonstrated higher levels of loneliness, with 28 participants falling into the high loneliness category. The association between coping strategy and loneliness level was statistically significant ($p=0.003$), suggesting that maladaptive coping mechanisms were strongly associated with increased loneliness among adolescents.

[Table 4] illustrates the relationship between internet usage patterns and coping strategies. Among adolescents with normal internet use, the majority (54 out of 70) demonstrated adaptive coping behaviors, with a mean internet usage score of 31.4 ± 6.2 . Mild problematic internet use (PIU) was identified in 76 participants, among whom adaptive coping remained more common than maladaptive coping.

However, as the severity of PIU increased, maladaptive coping became more prevalent. In the moderate PIU group, 24 adolescents used maladaptive coping compared to 18 using adaptive coping. Similarly, among severe PIU cases, maladaptive coping was observed in 8 participants compared to only 4 participants using adaptive coping. The association between internet usage patterns and coping strategies was highly significant statistically ($p<0.001$). The overall mean internet usage score among adolescents was 52.1 ± 14.6 .

[Table 6] presents the correlation analysis between internet usage, loneliness, and coping scores. A strong positive correlation was found between internet usage and loneliness ($r=0.624$, $p<0.001$), indicating that higher internet usage was associated with greater loneliness among adolescents.

Internet usage showed a moderate negative correlation with coping scores ($r=-0.481$, $p<0.001$), suggesting that adolescents with better coping abilities were less likely to exhibit problematic internet use. Likewise, loneliness demonstrated a significant negative correlation with coping scores ($r=-0.557$, $p<0.001$), implying that effective coping strategies were associated with reduced loneliness levels.

[Table 7] depicts the multiple linear regression analysis performed to identify predictors of problematic internet use among adolescents. Daily screen time emerged as the strongest predictor of PIU ($\beta=0.472$, $p<0.001$), followed by loneliness score ($\beta=0.398$, $p<0.001$) and maladaptive coping

score ($\beta=0.287$, $p=0.001$). Male gender was also identified as a significant predictor ($\beta=0.216$, $p=0.005$).

Although age showed a positive association with PIU, it was not statistically significant ($\beta=0.142$, $p=0.105$). The regression model was statistically significant overall and explained 58% of the variance in problematic internet use ($R^2=0.58$).

[Table 8] presents the multiple linear regression analysis for predictors of loneliness among adolescents. Problematic internet use score was identified as the strongest predictor of loneliness ($\beta=0.514$, $p<0.001$). Maladaptive coping score also significantly predicted loneliness ($\beta=0.361$, $p<0.001$).

Female gender ($\beta=0.184$, $p=0.017$) and family conflict ($\beta=0.228$, $p=0.004$) were additional significant predictors contributing to higher loneliness levels. Although age showed a mild positive association with loneliness, it did not achieve statistical significance ($\beta=0.098$, $p=0.176$). The overall regression model was statistically significant and accounted for 61% of the variability in loneliness scores ($R^2=0.61$).

DISCUSSION

The present study explored the relationship between internet usage, loneliness, and coping strategies among adolescents and demonstrated significant associations among these variables. A considerable proportion of adolescents exhibited moderate to high loneliness, which was strongly associated with problematic internet use (PIU). Adolescents with maladaptive coping strategies showed significantly higher loneliness scores and greater internet dependency compared to those using adaptive coping mechanisms. Correlation analysis revealed a strong positive relationship between internet usage and loneliness, while coping scores showed negative correlations with both loneliness and PIU, indicating that effective coping strategies may reduce psychological distress and unhealthy internet behaviors.

Regression analysis further identified daily screen time, loneliness, maladaptive coping, and gender as important predictors of problematic internet use, whereas PIU, maladaptive coping, family conflict, and female gender significantly predicted loneliness. These findings are consistent with previous studies that suggest adolescents often use the internet as a compensatory mechanism to cope with emotional stress, social isolation, and interpersonal difficulties. Excessive internet engagement may gradually reduce real-life social interaction, thereby worsening loneliness and emotional vulnerability.

The present study demonstrated that the majority of adolescents experienced moderate loneliness (48.0%), while 23.0% reported high loneliness levels. Adolescents utilizing adaptive coping strategies constituted 61.0% of the sample and showed significantly lower loneliness scores compared to those employing maladaptive coping strategies ($p=0.012$). These findings suggest that effective coping mechanisms may play a protective role against emotional isolation during adolescence.

Similar findings were reported by Çapan et al., who observed that adolescents with poor coping abilities were more likely to experience emotional distress and loneliness due to reduced social competence and increased psychological vulnerability.^[11] Likewise, a study conducted by Yao et al. found that adaptive coping strategies such as problem-solving and emotional regulation significantly reduced loneliness among school-going

adolescents.^[12]

The higher prevalence of moderate loneliness in the present study may be attributed to increased academic stress, excessive online engagement, and reduced face-to-face social interaction among adolescents. Comparable observations were noted by Arslan et al., who reported that loneliness among adolescents increased substantially with emotional stress and inadequate coping resources.^[13] The statistically significant association between coping strategy and loneliness in the present study further supports the transactional model of stress and coping proposed in previous psychological literature.

The present study identified a significant association between loneliness and coping strategies ($p=0.003$). Adolescents using maladaptive coping strategies demonstrated markedly higher levels of loneliness compared to those relying on adaptive coping mechanisms. This indicates that ineffective coping responses such as avoidance, withdrawal, and denial may worsen emotional isolation during adolescence.

These findings are consistent with the study by Li et al., who observed that maladaptive coping styles were strongly associated with emotional loneliness and psychological distress among adolescents with problematic behavioral patterns.^[14] Similarly, Satici et al. reported that adolescents who lacked positive coping strategies experienced significantly greater loneliness, depression, and social withdrawal.^[15]

The observed association may be explained by the fact that adolescents with maladaptive coping often avoid interpersonal communication and emotional expression, thereby increasing social isolation. Another study by Mahapatra et al. emphasized that poor coping behaviors were linked to emotional dysregulation and increased dependency on virtual interactions, ultimately contributing to loneliness.^[16] Therefore, promoting adaptive coping strategies among adolescents may help reduce loneliness and improve psychological well-being.

The present study demonstrated a statistically significant association between internet usage patterns and coping strategies ($p<0.001$). Adolescents with severe problematic internet use predominantly exhibited maladaptive coping strategies, whereas those with normal internet usage more commonly used adaptive coping mechanisms. The mean internet usage score increased progressively with worsening coping behavior.

These findings are in agreement with the observations of Dong et al., who reported that excessive internet use among adolescents was significantly associated with emotional dysregulation and maladaptive coping behaviors.^[17] Similarly, Kardefelt-Winther et al. proposed that problematic internet use often functions as an avoidant coping mechanism to escape stress, anxiety, and social difficulties.^[18]

The present findings also support the compensatory internet use theory, which suggests that adolescents experiencing stress or emotional discomfort may excessively engage with online activities as a coping strategy. Odgers et al. similarly found that adolescents with poor coping skills were more likely to spend excessive time online, thereby increasing their vulnerability to internet addiction and emotional

difficulties.^[19] Hence, maladaptive coping appears to be both a consequence and a contributing factor for problematic internet use.

Correlation analysis in the present study revealed a strong positive correlation between internet usage and loneliness ($r=0.624$, $p<0.001$). In contrast, coping scores demonstrated significant negative correlations with both loneliness and internet usage. These findings indicate that adolescents with higher internet usage were more likely to experience loneliness, whereas better coping abilities were associated with lower psychological distress.

Comparable findings were reported by Caplan et al., who found that loneliness significantly predicted problematic internet use due to adolescents' preference for online social interaction over real-life communication.^[20] Likewise, studies by Morahan-Martin et al. observed that lonely adolescents frequently relied on online communication to compensate for poor offline social relationships, which further reinforced problematic internet behaviors.^[11]

The negative correlation between coping scores and loneliness observed in the present study suggests that adaptive coping strategies may buffer the psychological effects of excessive internet use. Similar conclusions were reached by Seçim et al., who demonstrated that adolescents with effective coping mechanisms showed better emotional adjustment and lower dependence on online engagement.^[12]

Multiple linear regression analysis identified daily screen time, loneliness score, maladaptive coping score, and male gender as significant predictors of problematic internet use. Daily screen time emerged as the strongest predictor ($\beta=0.472$, $p<0.001$), while loneliness and maladaptive coping also contributed significantly to problematic internet behaviors.

These findings are comparable to those of Ko et al., who reported that prolonged screen exposure and emotional distress were major determinants of internet addiction among adolescents.^[13] Similarly, Lam et al. found that loneliness and poor coping strategies independently predicted excessive internet use and online dependency.^[14]

The higher risk among male adolescents observed in the present study has also been documented in previous studies. Ha et al. noted that male adolescents were more prone to excessive gaming and online engagement, thereby increasing susceptibility to problematic internet use.^[15] The present regression model explained 58% of the variance in PIU, indicating that psychosocial and behavioral factors substantially contribute to internet-related behavioral problems among adolescents.

The present study identified problematic internet use as the strongest predictor of loneliness ($\beta=0.514$, $p<0.001$), followed by maladaptive coping, family conflict, and female gender. These findings suggest that excessive internet use and ineffective coping mechanisms significantly contribute to emotional isolation among adolescents.

Similar findings were reported by Ceyhan et al., who observed that adolescents with problematic internet behaviors experienced significantly higher loneliness and poorer psychosocial adjustment.^[16] Likewise, Bian et al. demonstrated that excessive online engagement reduced face-to-face social interaction and increased feelings of emotional isolation.^[17]

Family conflict emerged as another important predictor in the

current study. Comparable findings were noted by Shek et al., who highlighted that poor family relationships and limited emotional support significantly increased loneliness among adolescents.^[18] Additionally, female adolescents in the present study showed higher loneliness scores, which aligns with findings from Twenge et al., who reported greater emotional sensitivity and social stress among adolescent females.^[19]

Overall, the present findings emphasize the complex interplay between internet use, coping behavior, and psychosocial environment in determining adolescent loneliness. Early psychological interventions focusing on healthy coping mechanisms and balanced internet use may help reduce emotional distress and improve adolescent mental health outcomes.^[20]

CONCLUSION

The present cross-sectional study demonstrated a significant relationship between problematic internet use, loneliness, and coping strategies among adolescents. Moderate loneliness and adaptive coping were commonly observed; however, adolescents exhibiting maladaptive coping behaviors showed significantly higher levels of loneliness and problematic internet use. A strong positive correlation was identified between internet usage and loneliness, while coping scores were negatively correlated with both loneliness and internet use, indicating the protective role of adaptive coping mechanisms. Regression analysis revealed that daily screen time, maladaptive coping, loneliness, and gender significantly predicted problematic internet use, whereas problematic internet use, maladaptive coping, family conflict, and female gender were important predictors of loneliness. These findings highlight the growing psychological impact of excessive internet engagement during adolescence. Early identification of maladaptive coping patterns and implementation of school- and family-based psychological interventions may help reduce loneliness and promote healthier internet use behaviors among adolescents.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Young KS. Internet addiction: the emergence of a new clinical

- disorder. *Cyberpsychol Behav.* 1998;1(3):237-44.
2. Kuss DJ, Lopez-Fernandez O. Internet addiction and problematic internet use: a systematic review of clinical research. *World J Psychiatry.* 2016;6(1):143-76.
3. Perlman D, Peplau LA. Toward a social psychology of loneliness. *Pers Relatsh.* 1981;3:31-56.
4. Nie NH, Hillygus DS, Erbring L. Internet use, interpersonal relations, and sociability. *Am Behav Sci.* 2002;45(3):420-35.
5. Caplan SE. Relations among loneliness, social anxiety, and problematic internet use. *Cyberpsychol Behav.* 2007;10(2):234-42.
6. Lazarus RS, Folkman S. *Stress, appraisal, and coping.* New York: Springer Publishing Company; 1984.
7. Li H, Wang J, Wang L. A survey on the generalized problematic internet use in Chinese college students and its relations to stressful life events and coping style. *Int J Ment Health Addict.* 2009;7(2):333-46.
8. Dong H, Yang F, Lu X, Hao W. Internet addiction and related psychological factors among children and adolescents during the COVID-19 pandemic. *Front Psychiatry.* 2020;11:751.
9. Loades ME, Chatburn E, Higson-Sweeney N, Reynolds S, Shafran R, Brigden A, et al. Rapid systematic review: the impact of social isolation and loneliness on the mental health of children and adolescents in the context of COVID-19. *J Am Acad Child Adolesc Psychiatry.* 2020;59(11):1218-39.
10. Odaci H, Kalkan M. Problematic internet use, loneliness and dating anxiety among young adult university students. *Comput Educ.* 2010;55(3):1091-7.
11. Morahan-Martin J, Schumacher P. Loneliness and social uses of the Internet. *Comput Human Behav.* 2003;19(6):659-71.
12. Seçim G, Alpar Ö. Coping strategies and loneliness among adolescents. *Child Youth Serv Rev.* 2019;100:306-12.
13. Arslan G, Yıldırım M. Coronavirus stress, meaningful living, optimism, and depressive symptoms in adolescents. *Curr Psychol.* 2021;40(10):5089-99.
14. Lam LT, Peng ZW. Effect of pathological use of the internet on adolescent mental health. *Arch Pediatr Adolesc Med.* 2010;164(10):901-6.
15. Ha JH, Kim SY, Bae SC, Bae S, Kim H, Sim M, et al. Depression and internet addiction in adolescents. *Psychopathology.* 2007;40(6):424-30.
16. Ceyhan AA. Predictors of problematic internet use on Turkish university students. *Cyberpsychol Behav.* 2008;11(3):363-6.
17. Bian M, Leung L. Linking loneliness, shyness, smartphone addiction symptoms, and patterns of smartphone use. *Soc Sci Comput Rev.* 2015;33(1):61-79.
18. Shek DTL, Yu L. Adolescent internet addiction in Hong Kong. *J Pediatr Adolesc Gynecol.* 2016;29(1 Suppl):S22-30.
19. Twenge JM, Martin GN, Spitzberg BH. Trends in US adolescents' media use and loneliness. *J Adolesc.* 2019;74:35-40.
20. Caplan SE. Preference for online social interaction: a theory of problematic internet use. *Commun Res.* 2003;30(6):625-48.