

## Research Article

# A Psychological Study of Instagram Addiction and Loneliness among Students

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### Background

Social media has become very popular among students. This widespread popularity necessitates a continued analysis of its impact on specific psychological parameters to identify and mitigate risks associated with virtual environments.

### Objective

This study examines the relationship between Instagram addiction and loneliness among students in Kazakhstan.

### Methods

The study involved 192 respondents who were randomly divided into three groups based on their level of Instagram addiction (low, moderate, and high). The Instagram Addiction Scale was employed to measure addiction levels, while the third version of the University of California, Los Angeles Loneliness Scale was used to assess loneliness. Spearman's correlation analysis revealed significant positive relationships among all variables.

### Results

The correlation coefficient between feed addiction and stories addiction was 0.902 ( $p < 0.001$ ). A moderate positive correlation was identified between feed addiction and loneliness levels ( $\rho = 0.696$ ,  $p < 0.001$ ), while a strong positive correlation was observed between stories addiction and loneliness levels ( $\rho = 0.728$ ,  $p < 0.001$ ).

### Conclusion

These findings confirm that an increase in Instagram addiction is associated with higher levels of loneliness among users. The Kruskal–Wallis test demonstrated significant differences among the groups across all three variables ( $p < 0.001$  for all indicators). The results indicate a direct relationship between the level of Instagram addiction and loneliness. The findings of this study may inform the development of programs aimed at reducing social media addiction and promoting mental health among students in Kazakhstan and other countries.

## 1. INTRODUCTION

The rapid advancement of information and communication technologies (ICT) and the subsequent emergence of social networks have significantly transformed daily life worldwide. Social media has become integral to both interpersonal and public

interactions, providing platforms for information exchange, communication, self-expression, and self-presentation.<sup>1,2</sup>

In Kazakhstan, one of the most popular social networks is Instagram, which allows users to share photos and videos, selectively consume digital content from others, manage likes and followers, and engage through comments. The impact of Instagram on the mental health of young people

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and adolescents who are active users of this platform has been a focus of academic attention for several years.<sup>3-5</sup>

Analyzing the negative consequences of regular and excessive use of platforms like Instagram remains highly relevant. Social media addiction typically manifests as an uncontrollable urge to use smartphones continuously for consuming multimedia content, thereby affecting overall quality of life and various mental health parameters such as self-esteem, body image, anxiety, depression, and psychological well-being.<sup>6-8</sup>

In this context, loneliness is defined as a subjective feeling of social isolation that can persist despite having numerous online connections.<sup>9,10</sup> While the transition to virtual communication offers new opportunities for interaction, it may also exacerbate loneliness. Numerous studies indicate that engaging with content and individuals on social media cannot compensate for the absence of meaningful face-to-face interpersonal relationships.<sup>11,12</sup>

The increasing use of Instagram among students highlights the need to analyze its impact across different countries.<sup>13,14</sup> One of the central issues remains the influence of Instagram addiction on feelings of loneliness. Several studies suggest that loneliness can result from and contribute to excessive social media use (SMU).<sup>5,8</sup> This phenomenon is associated with substitution, where virtual communication displaces real-life interpersonal interactions, intensifying feelings of isolation.<sup>11,15</sup>

As one of the most popular platforms, Instagram significantly influences self-esteem through mechanisms such as likes, comments, and posts.<sup>4,16</sup> Existing research indicates that Instagram usage correlates with various forms of social isolation, including loneliness, anxiety, and withdrawal from real-life communication.<sup>1,17</sup> The visual nature of Instagram content and its emphasis on self-presentation amplify social comparison, potentially undermining psychological well-being, especially among young people, when forming their social identity.<sup>9,18</sup>

A key question requiring further investigation is how varying degrees of Instagram addiction affect levels of loneliness. Current studies primarily focus on general trends, yet comparative analyses of groups with different levels of Instagram dependency are rare. This creates a gap in understanding how the intensity of platform use influences loneliness among adults under 35.<sup>19,20</sup>

The findings of this research are expected to inform recommendations for preventing social media addiction and mitigating the negative effects of regular platform use. They may also serve as a basis for further studies in psychology and social sciences aimed at improving the psycho-emotional well-being of youth.

## 1.1. LITERATURE REVIEW

Social media addiction has been the subject of numerous empirical and theoretical studies. Social networks, one of which is Instagram, create a virtual environment where users can immerse themselves in an alternative world, often replacing the real world where problems must be solved and challenges must be faced.<sup>6,9</sup> Most students (86.4%) reported spending their leisure time online, and 98.5% indicated regular use of social media. After considering demographic variables (gender and age) and substance use, the number of hours spent on social media daily and the measurement of social consequences significantly contributed to the prediction of positive psychotic-like experiences (strange experiences, perceptual anomalies, persecutory ideas, and magical thinking).

The study by Park and Park<sup>9</sup> aimed to explore the complex interrelations between SMU, loneliness, negative upward comparison, and relative deprivation, focusing on the mediating effect of negative upward comparison and relative deprivation in the relationship between social network site usage and loneliness. The findings supported the first hypothesis, demonstrating a significant and direct impact of SMU on feelings of loneliness. Moreover, the second hypothesis was confirmed, indicating that negative upward comparison plays a mediating role.

Social media addiction leads to an inability to complete routine tasks and responsibilities, fosters negative self-perceptions, encourages upward social comparison, artificially creates an environment for social competition, and motivates individuals to seek approval from an audience measured by likes, views, and comments.<sup>8,17</sup> Williams *et al.*<sup>8</sup> showed that social media users often interact with multiple platforms, spending nearly 3 h a day on these sites. These platforms offer social rewards, reinforcing their use. Importantly, due to this inherently reinforcing nature, some individuals may develop addictions to platforms such as Facebook, Instagram, Snapchat, TikTok, and Twitter. Linear regression models revealed that problematic use of all five platforms was associated with increased depression and loneliness. In other words, the more problematic the use of each platform, the poorer the mental health outcomes.

The buffering effect of social support is discussed by Caba Machado *et al.*<sup>17</sup> in the context of how online engagement may serve as an outlet for lonely and isolated students. The construct validity of social network sites was established with strong factor loadings for WhatsApp and Instagram. At the same time, Facebook was excluded due to improper loading in the latent measurement model, aligning with the decreased usage of Facebook among young students. Loneliness emerged as a key factor in the mediation model, and online social support from friends/significant others was notably predictive in the model, in contrast to support from family members.

Earlier studies indicate that Instagram addiction manifests as obsessive behavior associated with constant checking for updates, posting content, and monitoring the activity of other social media users. This behavior may lead to emotional exhaustion, increased anxiety, and diminished self-esteem.<sup>11,12</sup> These studies also highlight that loneliness and self-esteem serve as predictive factors for problematic SMU. Notably, social media addiction during adolescence and early adulthood is particularly undesirable, as social identity is being formed during this stage, and self-esteem is more dependent on feedback received from the external world.<sup>10,20</sup>

The phenomenon of loneliness in the context of social networks is explored through several conceptual frameworks. One theory suggests that social networks offer a platform for continuous communication; however, the quality of these interactions is often too low to satisfy the social needs of the average individual. As a result, active users may feel even more isolated and lonely.<sup>2,18</sup> This paradox is often analyzed using Instagram as an example, a platform dominated by idealized content often curated by individuals or companies. Such content may lead to feelings of social inadequacy, guilt, and shame for not being able to meet these life standards.<sup>4,9</sup>

In the study by Taylor *et al.*,<sup>18</sup> it was found that passive SMU is associated with increased symptoms of anxiety, depression, and stress. They also discovered that loneliness significantly mediates the relationship between

passive SMU and psychological distress. While active non-SMU was linked to a reduction in stress, only loneliness demonstrated significant mediating effects on the relationship between passive SMU and psychological distress. The research by Tang *et al.*<sup>2</sup> examines how loneliness, social media addiction, and the fear of missing out can influence the workplace, exacerbating feelings of loneliness and social media dependence in a professional setting. The study highlights how different forms of interaction with social networks can contribute to or alleviate these effects in the workplace.

In the study by Velela *et al.*,<sup>4</sup> the influence of social comparison, self-esteem, and emotional state on problematic Instagram use is explored. The study shows these factors can mediate the relationship between Instagram usage and users' psychological issues.

Another theory, the substitution theory, is based on the hypothesis that communication in social networks gradually displaces face-to-face communication, making it less acceptable and/or desirable. Students who spend a significant amount of time on social networks may voluntarily disengage from live interactions or fail to develop such skills, which exacerbates loneliness and encourages the preference for virtual interactions.<sup>5,15,21</sup> O'Day and Heimberg<sup>15</sup> found that social anxiety and loneliness may lead to problematic SMU. Individuals experiencing these states are more likely to seek support online, which does not always improve their social connections. Notably, loneliness emerges as a risk factor for problematic SMU. The study by Youssef *et al.*<sup>5</sup> revealed a connection between SMU disorder and feelings of loneliness among the adult population in Lebanon. The results suggest that active use of social media can intensify feelings of loneliness, emphasizing that virtual interactions do not always lead to real social satisfaction.

While virtual communication is safer and more controlled, it cannot fully replace physical presence and emotional closeness. As a result, social media users with many online contacts may experience profound loneliness.<sup>19,22</sup>

Moreover, the relationship between loneliness and social media is nonlinear. Platforms such as Facebook, Instagram, and others provide opportunities to maintain relationships at a distance, find like-minded individuals, and receive support.<sup>10,21</sup> However, excessive use of social media may lead to the opposite effect, where users first immerse themselves in the virtual world but fail to meet basic social needs, such as the need for closeness and attachment.<sup>7,23</sup> The study by Savci and Aysan<sup>23</sup> also showed that the frequency of SMU increases with the level of impulsivity among students. Moreover, a correlation was found between the level of loneliness and impulsivity, as well as between SMU and loneliness. Yilmaz *et al.*<sup>7</sup> reached alternative conclusions, discovering that different ways of using social media can positively and negatively affect feelings of loneliness, depending on how the platform is used. This emphasizes that social media can impact users' social well-being in different directions, depending on the specifics of its usage.

This study examined the relationship between Instagram addiction and feelings of loneliness. To achieve this, a comparative cohort study with varying degrees of Instagram addiction was conducted to better understand how it relates to feelings of loneliness. Although the impact of social media on mental health is actively studied by researchers in different countries, the link between Instagram addiction and feelings of loneliness remains underexplored in Kazakhstan<sup>13,14</sup>, making the topic particularly relevant.

## 1.2. PROBLEM STATEMENT

In Kazakhstan, Instagram is one of the most widely used social networks among students, providing a convenient platform for self-expression, visual content consumption, and online interactions.<sup>13,14</sup> The active engagement of students with Instagram makes it an optimal platform for examining digital addiction and its consequences. The rapid development of ICT has transformed how people interact and form social connections. As one of the most popular social networks, Instagram has gained widespread popularity among young people due to its focus on visual content and self-presentation.<sup>2,4</sup> However, its widespread use has raised concerns about its impact on mental health.<sup>8,11</sup> Research consistently shows that excessive use of Instagram can lead to adverse consequences, such as anxiety, depression, and decreased self-esteem.<sup>6,24</sup> Despite the widespread attention to this issue, there has been limited research addressing the active use of social media in Kazakhstan.<sup>13,14</sup> This study fills this gap by analyzing how Instagram addiction is related to loneliness among Kazakhstani students, offering critical insights into the psychological consequences of excessive SMU. The study explores the relationship between Instagram addiction and loneliness among Kazakhstani students. The first objective is to measure levels of Instagram addiction using a validated scale, categorizing participants into groups with low, moderate, and high levels of addiction. The second objective is to assess perceived loneliness using the University of California, Los Angeles (UCLA) loneliness scale, identifying significant differences between the levels of addiction. This approach provides a foundation for further research and practical interventions aimed at addressing social media addiction and its psychological consequences.

## 2. RESEARCH METHODS

The study used the third version of the UCLA loneliness scale to assess perceived loneliness, a tool widely utilized in various countries.<sup>25</sup> This self-report questionnaire consisted of 20 statements evaluated on a four-point scale ranging from "never" to "often" by the respondents. The statements addressed aspects such as social isolation, lack of communication, and satisfaction with existing social contacts. The total score on the scale can range from 20 to 80 points.<sup>26</sup> The higher the score, the more pronounced the sense of loneliness. In this study, the scale was adapted to Russian. The Cronbach's alpha coefficient in the first study was 0.86. For the retest (after 1 month), it was 0.89, indicating high internal consistency.

For diagnosing Instagram addiction, the Russian-language adaptation of The Instagram Addiction Scale was developed and used to measure addictive behavior.<sup>27</sup> The Instagram Addiction Scale consisted of two subscales, assessing addiction to the feed (feed addiction) and addiction to stories (stories addiction). To evaluate the reliability of the scale, Cronbach's alpha coefficient was used, which showed high values for both subscales. For the feed addiction subscale, Cronbach's alpha was 0.915, and for the story's addiction subscale, it was 0.932, further confirming the high reliability of the instrument. The Instagram Feed Addiction subscale consisted of 20 questions. Each question was rated on a five-point Likert scale (from 1: Strongly disagree to 5: Strongly agree). The maximum score for this subscale is 100, and the minimum is 20. The Instagram



Stories Addiction subscale consisted of 22 questions.<sup>28</sup> The maximum score for this subscale is 110, and the minimum is 22. Although the total score is typically not calculated, in this study, it was used to categorize respondents into groups with low, medium, and high levels of addiction. This means that respondents could score between 42 and 210 points depending on the severity of their addiction.

## 2.1. PARTICIPANTS

The required sample size was calculated in advance using Cohen's *d* coefficient of 0.5 (medium effect), a significance level of 0.05, and a power of 0.8. Based on these calculations, the optimal number of participants for each group was determined to be 64. Since the study involves dividing participants into three groups, the minimum required sample size was 192. The mean age of participants was 21.3 years, ranging from 18 to 25. Of these, 68 were male (48.6%), and 72 were female (51.4%). Participants were enrolled in various academic disciplines, including humanities (32%), natural sciences (28%), social sciences (20%), and technical fields (20%), and represented students from 1<sup>st</sup>- to 4<sup>th</sup>-year cohorts. All participants were active Instagram users, as verified through a preliminary survey in which they reported spending at least 1 h/day on the platform.

Participants were selected randomly from various academic groups and faculties at L.N. Gumilyov Eurasian National University to ensure a representative sample. Randomization into groups based on Instagram dependency levels was conducted using the combined scores from two subscales: Instagram Feed Addiction and Instagram Stories Addiction. Participants with the lowest scores (the bottom 33% of the sample) were classified into the low-dependency group. Those with scores ranging from the 34<sup>th</sup> to 66<sup>th</sup> percentile (the middle 33%) were assigned to the medium-dependency group. Finally, participants with the highest scores (the top 33%) were placed in the high-dependency group. Participants were unaware of their group assignments.

## 2.2. STUDY DESIGN

A cross-sectional experimental design was employed for the study. The survey was conducted in classrooms to ensure consistent conditions for all participants. Students completed the questionnaires under the supervision of the researcher, minimizing external influences such as loss of interest or peer influence on responses. Participants were informed that their answers would be used solely for scientific purposes. Data collection required approximately 30 min, after which the responses were processed and prepared for subsequent statistical analysis.

## 2.3. DATA ANALYSIS

Before conducting the statistical analysis, the Shapiro–Wilk test was performed to assess the normality of the data distribution. The results indicated that the data did not follow a normal distribution ( $p < 0.05$ ). Consequently, the Kruskal–Wallis non-parametric test was selected to analyze group differences. This test does not assume normal data distribution and is suitable for comparing multiple independent groups on a single dependent variable (in this case, the severity of Instagram addiction). The significance of group differences was evaluated at a threshold of  $p < 0.05$ .

## 2.4. ETHICAL ISSUES

Informed consent was obtained from all participants. Written consent forms were collected before data collection, ensuring participants fully understood their involvement. All data collected were anonymized, with personal information stored separately from the survey responses. Results were presented in an aggregated format, ensuring that individual participants could not be identified. The study received ethical approval from the institutional ethics committee. This review process ensured compliance with all international ethical standards for research involving human subjects, including those outlined in the Declaration of Helsinki.

## 3. RESULTS

The results of the initial statistical analysis revealed significant differences among the groups with low, moderate, and high levels of Instagram dependency across all three variables: feed dependency, stories dependency, and loneliness. The data are presented in [Table 1](#).

Students with low levels of Instagram dependency exhibited a mean score of 34.96 on the Instagram Feed Addiction scale and 27.94 on the Instagram Stories Addiction scale. The mean loneliness score for this group was 35.31, reflecting a lower level of loneliness than other groups. Standard deviations for these variables (ranging from 5.075 to 10.174) indicated moderate variability within the group, as evidenced by the range of values: from minimum scores (20 for feed addiction, 22 for stories addiction, and 20 for loneliness) to maximum scores (48, 40, and 64, respectively).

In the group with moderate levels of dependency, higher mean scores were observed: 49.23 on the Instagram Feed Addiction scale, 38.58 on the Instagram Stories Addiction scale, and 49.82 on the loneliness scale. These findings indicate more pronounced levels of dependency and loneliness compared to the low-dependency group. Standard deviations (ranging from 3.588 to 10.242) showed slightly less variability than the low-dependency group. In contrast, the range of scores (40 – 57 for feed addiction, 32 – 49 for stories addiction, and 30 – 75 for loneliness) supported moderate levels of dependency and loneliness.

Participants with high levels of Instagram dependency demonstrated the highest mean scores across all variables: 64.77 for feed addiction, 52.66 for stories addiction, and 66.02 for loneliness. These results support the hypothesis that increasing Instagram dependency correlates with higher levels of loneliness. Standard deviations (ranging from 6.653 to 9.132) indicated more significant variability compared to the other groups, as reflected in the broader range of scores: from minimum scores (53 for feed addiction, 41 for stories addiction, and 38 for loneliness) to maximum scores (92, 73, and 80, respectively).

The results of Spearman's correlation analysis revealed significant positive relationships among all the variables under study. The correlation between Instagram feed addiction and Instagram stories addiction was  $\rho = 0.902$  ( $p < 0.001$ ), indicating that participants with a high dependency on the Instagram feed also tend to exhibit a high dependency on stories. The correlation between feed addiction and loneliness was also significant and moderately strong ( $\rho = 0.696$ ,  $p < 0.001$ ), suggesting that higher dependency on the Instagram feed is associated with increased levels of loneliness among users.

**Table 1. Distribution of initial data based on levels of Instagram dependency**

Group	Instagram feed addiction score	Instagram stories addiction score	University of California, Los Angeles loneliness score
Low level of dependency			
Mean	34.96	27.94	35.31
Standard deviation	8.346	5.075	10.174
Median	37.00	28.50	34.50
Minimum	20	22	20
Maximum	48	40	64
Moderate level of dependency			
Mean	49.23	38.58	49.82
Standard deviation	4.225	3.588	10.242
Median	49.00	38.00	48.00
Minimum	40	32	30
Maximum	57	49	75
High level of dependency			
Mean	64.77	52.66	66.02
Standard deviation	8.243	6.653	9.132
Median	63.50	52.00	67.00
Minimum	53	41	38
Maximum	92	73	80
Total			
Mean	49.19	39.36	49.91
Standard deviation	14.241	11.460	16.017
Median	49.00	38.00	48.00
Minimum	20	22	20
Maximum	92	73	80

A strong positive correlation was observed between stories addiction and loneliness ( $\rho = 0.728, p < 0.001$ ), further supporting the association between intensive use of Instagram stories and elevated levels of loneliness. All correlations were significant at the  $p < 0.01$  level, indicating a consistent relationship between Instagram dependency and loneliness among the participants (Table 2).

The results of the Kruskal–Wallis test, shown in Table 3, revealed significant differences among the groups across all examined variables: Instagram feed addiction, Instagram stories addiction, and levels of loneliness. Statistically significant differences were found among groups with varying levels of Instagram addiction on the feed addiction scale ( $\chi^2 = 160.055, p < 0.001$ ). This indicates that the level of feed addiction significantly differs among groups with low, medium, and high levels of Instagram addiction. Significant differences were also found on the Instagram stories addiction scale ( $\chi^2 = 160.462, p < 0.001$ ). These results confirm that the differences in Instagram story addiction among the groups are also significant. The test further revealed statistically significant differences among the groups concerning the level of loneliness ( $\chi^2 = 120.623, p < 0.001$ ). This indicates that loneliness levels vary depending on the level of Instagram addiction.

This indicates that there are significant differences between groups with varying levels of Instagram addiction (low, medium, and high) across all investigated parameters: dependence on the Instagram feed, dependence on Instagram stories, and level of loneliness. These findings

confirm the presence of a relationship between Instagram addiction and loneliness among students. Participants with a high level of Instagram addiction not only exhibited a stronger attachment to the social network but also reported higher levels of loneliness. This suggests that the more a person is engaged with Instagram, the more likely they are to experience feelings of loneliness.

#### 4. DISCUSSION

The current empirical study revealed that participants with a high level of Instagram addiction exhibit higher levels of loneliness at a statistically significant level. These findings align with previous research discussing the association between uncontrolled or difficult-to-control SMU and negative mental health outcomes, such as loneliness, depression, dysphoria, anxiety, body dysmorphophobia, eating disorders, and others.<sup>6–8</sup> The more time a person spends on social media, the higher the likelihood of experiencing feelings of loneliness and social isolation, as previously mentioned.<sup>11,17</sup> The positive correlation between social media addiction and loneliness found in this study also confirms earlier findings.<sup>10,12</sup>

The main finding is that the severity of Instagram addiction strongly correlates with loneliness. Higher scores on the Instagram Feed Addiction Scale and the Instagram Stories Addiction Scale are directly linked to more pronounced loneliness reported by participants. Several factors

**Table 2. Results of the correlation analysis between the subscales of the Instagram Addiction Scale and the University of California, Los Angeles Loneliness Scale**

Spearman's rho	Instagram feed addiction score	Instagram stories addiction score	University of California, Los Angeles loneliness score
Instagram feed addiction score			
Correlation coefficient	1.000	0.902**	0.696**
Significance (2-tailed)		0.000	0.000
N	192	192	192
Instagram stories addiction score			
Correlation coefficient	0.902**	1.000	0.728**
Significance (2-tailed)	0.000		0.000
N	192	192	192
University of California, Los Angeles loneliness score			
Correlation coefficient	0.696**	0.728**	1.000
Significance (2-tailed)	0.000	0.000	
N	192	192	192

Note: \*\*Refers to significance at the 0.01 level (two-tailed).

**Table 3. Results of the Kruskal–Wallis test**

Parameters	Chi-square	Degrees of freedom	Asymptotic significance
Instagram feed addiction score	160.055	2	0.000
Instagram stories addiction score	160.462	2	0.000
University of California, Los Angeles loneliness score	120.623	2	0.000

can explain this. First, social media addiction may create the illusion of social interaction, where individuals feel connected to others, but these relationships are shallow and situational in nature.<sup>2,15</sup> Regularly viewing the feed and stories encourages individuals, consciously or subconsciously, to compare themselves to others, their achievements, lifestyles, and more. In the context of low self-esteem, underdeveloped internal support, and consumption of retouched content, feelings of loneliness may become intertwined with shame, guilt, self-blame, devaluation of personal achievements, and autoaggression.<sup>4,9</sup>

It is essential to discuss the differences between addiction to the Instagram feed and addiction to stories. Although these two measures are strongly correlated, they reflect different internal needs. The feed typically contains edited and curated content, while stories are often comprised of spontaneous moments from the lives of the following users. For students addicted to stories, loneliness may be linked to the need to feel “connected” to the lives of others, which are often perceived as more interesting, fulfilling, and vibrant than one’s own life.<sup>18,22</sup> On the other hand, addiction to the feed can be explained by the fact that regular exposure to new visual and/or auditory stimuli serves as a form of escapism, which, in a broader context, may be associated with a refusal to take responsibility for one’s own life or with the activation of defense mechanisms. This may primarily involve daydreams or fantasies about a happier and/or more acceptable future.<sup>14,23</sup>

There are also studies suggesting that social media addiction is based on the activation of social comparison, in which individuals tend to compare their lives with others based on the content they share, rather than real-life experiences. This can create the illusion that others are living your ideal life, while you are not. This exacerbates the distress associated with the significant difference between virtual reality and everyday life.<sup>5,16</sup> This suggests that the same

individuals may feel envy toward each other’s lives because life on Instagram is always a curated part of the picture, the best part that someone wants to share with others. It can be said that this is a form of self-presentation, as discussed in earlier studies.<sup>1,17</sup>

Another aspect that should be discussed is the compensatory function of social media. For some users, Instagram may serve as a temporary means of alleviating loneliness or distress. However, in the long term, this may exacerbate problems related to overall life dissatisfaction, the intensification of internal conflicts, devaluation of one’s life and achievements, and the deepening sense of loneliness, which in turn leads to a worsening addiction to Instagram or other platforms.<sup>19,20</sup>

Given the growing concerns regarding digital addiction and its impact on mental health, it is essential to consider targeted measures aimed at mitigating the negative effects of social media among students. One practical approach involves the implementation of digital literacy programs that educate students on the psychological consequences of excessive SMU and promote mindful engagement with digital spaces.<sup>16,21</sup> Such programs can be integrated into university curricula or offered as optional training sessions to foster healthier social media consumption habits.

Another effective strategy is for universities to collaborate with psychologists to develop specialized counseling programs designed to address social media addiction and its emotional consequences. Both online and in-person counseling services could assist students in recognizing signs of unhealthy digital behavior and achieving a balance between online and offline activities.<sup>8,22,29</sup>

Despite the significance of the results, it is also important to consider certain limitations. First, the study was conducted exclusively on Kazakh students studying in Astana, which limits the generalizability of the findings to broader demographic groups. Second, the study was cross-sectional,

capturing correlations at a single point in time, thus preventing the establishment of causal relationships. Although a strong and significant correlation was found between Instagram addiction and loneliness, it is impossible to definitively state whether addiction causes loneliness or whether loneliness drives students to use social networks more frequently.<sup>21,30</sup> Another limitation is that only questionnaires were used in the study. While these are reliable psychometric tools, the subjective nature of responses should be considered when interpreting the results.

## 5. CONCLUSION

Instagram addiction significantly influences the level of loneliness among Kazakh students. A strong positive correlation was found between Instagram feeds and stories addiction and loneliness. Participants who reported a high level of addiction to Instagram also reported feeling lonelier more frequently. This supports the hypothesis that uncontrolled and unregulated use of social media leads to a deterioration in overall quality of life and psychological well-being. These findings align with existing research that has also highlighted the negative impact of social media on the mental health of adolescents and young adults. The illusion of social connection created through Instagram and other platforms can undermine genuine interpersonal relationships and deepen the sense of loneliness.

The results underscore the relevance of developing targeted prevention programs or psychoeducational initiatives in Kazakhstan aimed at promoting the cautious use of social media and enhancing the overall psychological literacy of students. It is anticipated that programs focusing on the relationship between the frequency of Instagram use and loneliness could mitigate the negative effects of social media on students' mental health. This is particularly relevant for Kazakhstan, where this issue has not been a central topic of scientific or public discourse. The practical value of this article lies in its potential to educate students about the reasons behind social media addiction and its impact on loneliness. These conclusions highlight the need to address social media addiction as a multidimensional issue that extends beyond psychological well-being and resilience. Future interventions should focus on developing digital literacy, promoting balanced online and offline interactions, and equipping young people with healthier coping strategies to mitigate the adverse effects of social media addiction. Such efforts can reduce the prevalence of loneliness and improve the overall quality of life for students both in Kazakhstan and beyond.

Despite the significance of the findings, this study serves as only a foundation for further exploration of the issue. One of the key aspects warranting attention is the establishment of causal relationships between Instagram addiction and loneliness. While the present study identified a strong correlation between these variables, the cross-sectional nature of the sample does not allow for definitive conclusions regarding whether social media addiction directly contributes to increased loneliness or, conversely, whether

feelings of loneliness drive more intensive Instagram use. Future longitudinal or experimental studies could provide more precise answers to this question.

Furthermore, a promising research direction is to examine the effectiveness of different interventions aimed at reducing social media addiction. Empirical validation is needed for digital literacy programs, educational initiatives, digital detox strategies, and psychological behavior correction methods to identify the most effective approaches for lessening the negative impact of Instagram on social well-being. In addition, specific user groups – such as students with high anxiety levels or low self-esteem – may respond differently to various types of interventions, requiring further investigation.

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## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

## AUTHOR CONTRIBUTIONS

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## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study received ethical approval from the Institutional Ethics Committee of L.N. Gumilyov Eurasian National University (Protocol No. 4 of 16.11.2023). Informed consent was obtained from all participants to participate.

## CONSENT FOR PUBLICATION

Consent for publication was obtained in oral form from all the participants.

## DATA AVAILABILITY STATEMENT

All data generated or analyzed during this study are included in this published article.

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