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The prevalence of TikTok addiction and its association with Depression, Anxiety and Stress in public health and nutrition students in Pham Ngoc Thach Medical University in Vietnam: a cross-sectional study

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Abstract

Background: Social media platforms, particularly the short-video application TikTok, have become integrated to youngsters' lives. While offering benefits, excessive use can lead to problematic behaviors characteristic of a behavioral addiction, which has been linked to adverse mental health outcomes. This issue is of particular concern among university students in high-pressure academic fields. However, there is a significant gap in the literature regarding the prevalence of TikTok addiction and its mental health relationship in public health and nutrition students in Pham Ngoc Thach medical university, Vietnam.

Objectives: This study aimed to determine the prevalence of TikTok addiction and to investigate its association with symptoms of depression, anxiety, and stress among undergraduate students at the Faculty of Public Health, Pham Ngoc Thach University of Medicine.

Methods: A cross-sectional study was conducted between March and May 2025, involving 269 undergraduate students from the Faculty of Public Health. Participants completed a self-administered online questionnaire that collected sociodemographic data and information on TikTok usage. TikTok addiction was assessed using the Bergen Social Media Addiction Scale (BSMAS), while mental health symptoms were measured with the Depression, Anxiety, and Stress Scale-21 (DASS-21). Data were analyzed using descriptive statistics, Chi-square tests, and Prevalence Ratios (PR) with 95% confidence intervals (CI) to quantify associations.

Results: The prevalence of TikTok addiction among the surveyed students was 6.7% (n =18; 95% CI: 4.1%–10.2%). In the association analysis (n=251), TikTok addiction was significantly associated with a higher prevalence of both depression (PR = 1.48, 95% CI: 1.05–2.08, p = .035) and stress (PR = 2.44, 95% CI: 1.76–3.37, p < .001). No significant association was observed between TikTok addiction and anxiety (PR = 1.18, 95% CI: 0.90–1.54, p = .247).

Conclusion: A notable minority of public health students exhibit symptoms of TikTok addiction, a condition statistically associated with a higher prevalence of depression and stress. These findings highlight the need for targeted mental health support and digital wellness interventions within this specific student population to mitigate the negative psychological impacts of problematic social media use.

Keywords: TikTok addiction; problematic social media use; depression; anxiety; stress; university students; public health.

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1. INTRODUCTION

In the context of international integration and the rapid advancement of digital technology, social media (SM) has become an indispensable part of life, especially among young people. Popular platforms in Vietnam currently include Facebook, YouTube, Zalo, and TikTok [1]. Although TikTok only emerged in 2019, it has experienced rapid growth thanks to its short-video format, friendly interface, and intelligent recommendation algorithm [2].

While TikTok offers numerous benefits such as entertainment, connection, learning support, and creativity promotion, it also carries the inherent risk of misuse and addiction [3,4]. Some surveys indicate that up to 72.4% of students experience distraction while using TikTok, and 84.6% show signs of susceptibility to addiction [5]. The consequence of this situation not only affects academic performance but is also linked to mental health, contributing to increased anxiety, depression, and stress.

Students in health-related fields, and Public Health students specifically, face a heavy academic workload, intense examination pressure, and numerous psychosocial changes. Using online entertainment such as TikTok to relieve stress is common. However, the addictive nature of this platform can lead to excessive usage, impaired concentration, and exacerbated mental health issues.

While student mental health is receiving increasing attention, the risks associated with TikTok addiction concerning depression, anxiety, and stress have not been fully elucidated in research within Vietnam. Currently, no specific study at Pham Ngoc Thach University of Medicine has addressed this relationship, especially within the Faculty of Public Health. This gap highlights the necessity of conducting research to provide empirical data and a scientific basis for appropriate support and intervention programs. Therefore, we conducted this study to determine the prevalence of TikTok addiction and analyze its relationship with common mental health issues in this target group.

2. METHODS

2.1. Study Design

A cross-sectional study was conducted at Pham Ngoc Thach University of Medicine in Ho Chi Minh City, Vietnam. Data were collected over an eight-week period from March 21 to May 12, 2025.

2.2. Sample Size Determination

The sample size was calculated using the formula for estimating a single proportion in a population for a cross-sectional study:

$$n = Z^2_{1-\frac{\alpha}{2}} * \frac{p(1-p)}{d^2} = 375$$

Where:

- n is the required sample size.
- $Z(1-\frac{\alpha}{2})$ is the Z-score corresponding to a 95% confidence level (1.96).
- d: is the desired precision or margin of error, set at .05.
- p: is the expected proportion of the outcome. Based on a prior study by Nguyen Thi Kim Anh et al. on TikTok usage among Vietnamese college students, which reported a usage rate of 42.17%, the value for p was set at .4217.

The initial calculation yielded a sample size of n0 = 375. As this figure exceeded 5% of the total population (N=373), a finite population correction was applied using the formula:

$$n_1 = \frac{(n_0 \times N)}{(n_0 + N)} = 187$$

The calculated sample size is 187. However, to prevent a low rate of response, we expand our recruitment and finally get 269 respondents.

2.3. Data Collection Tools

Data were collected via a self-administered questionnaire on Google Forms, accessible only with student email (provided by the University). The questionnaire comprised 4 domains: A. 9 questions on Sociodemographic and Academic Information; B. 7 questions on TikTok using habits; C. Bergen Social Media Addiction Scale (BSMAS) (6 items, using Likert 5-point scale); D. DASS-21 (21 validated questions in one questionnaire to screen Depression, Anxiety, and Stress.

2.4. Data Analysis and Processing

Data were exported to SPSS Statistics version 20.0 for analysis. Descriptive statistics (frequencies, percentages, median) were used to summarize variables. The association between TikTok addiction and mental health symptoms was examined using the Chi-square test (or Fisher's exact test). The Prevalence Ratio (PR) with its 95% Confidence Interval (CI) was calculated to quantify the magnitude of the association. A p-value <.05 was considered statistically significant.

2.5. Ethical Considerations

The study protocol received ethical approval from the Biomedical Research Ethics Committee of Pham Ngoc Thach University of Medicine (Decision No. 1313/TĐHYKPNT – HĐĐĐ, dated February 26, 2025). Electronic informed consent was obtained from all participants.

3. RESULTS

3.1. Participant Characteristics

A total of 269 students completed the survey and were included in the final analysis. The sociodemographic and academic characteristics of the study population are detailed in Table 1.

Table 1. Sociodemographic and Academic Characteristics of the Study Population (n=269)

Characteristic	Frequency (n)	Proportion (%)
Major		
Public Health	155	57.6
Nutrition	114	42.4
Academic Year		
Year 1	100	37.2
Year 2	43	16.0
Year 3	43	16.0
Year 4	83	30.8
Gender		
Male	73	27.1
Female	196	72.9
Ethnicity		
Kinh	249	92.6
Chinese	15	5.6
Khmer	5	1.8
Religion		
No religious affiliation	181	67.3
Buddhism	58	21.5
Catholicism	28	10.4
Other	2	0.8

Characteristic	Frequency (n)	Proportion (%)
Current Residence		
Rented accommodation	126	46.9
Living with parents	102	37.9
Living with relatives	31	11.5
Private house	7	2.6
Other	3	1.1
Age (years)		
Median	20	
Min - Max	19 - 23	

The majority of participants were female (72.9%) and were majoring in Public Health (57.6%), with the remaining 42.4% majoring in Nutrition. First-year students constituted the largest group (37.2%), followed by fourth-year students (30.8%). The median age of the participants was 20 years (Range: 19–23 years). The vast majority of participants were of the Kinh ethnicity (92.6%), and two-thirds reported having no religious affiliation (67.3%). The most common living arrangement was rented accommodation (46.9%), followed by living with parents (37.9%).

3.2. Prevalence of TikTok Addiction

Based on the BSMAS scoring (cutoff score ≥ 19) [6], 18 out of the 269 students met the criteria for TikTok addiction. This corresponds to a prevalence of 6.7% (95% CI: 4.1%–10.2%). The remaining 251 students (93.3%) were classified as non-addicted.

3.3. Association between TikTok Addiction and Mental Health Outcomes

The analysis of association was conducted with TikTok addiction as the exposure and mental health symptoms as the outcome. Percentages are calculated by row to show the prevalence of the outcome within each exposure group.

A statistically significant association was found between TikTok addiction with both depression and stress. As shown in Table 2a, the prevalence of depression among addicted students was 88.9%, compared to 60.1% among non-addicted students. This association was statistically significant (PR = 1.48, 95% CI: 1.05–2.08, p = .035).

The association was stronger for stress (Table 2b). The prevalence of stress among addicted students was 88.9%, compared to 36.5% among non-addicted students (PR = 2.44, 95% CI: 1.76–3.37, p < .001).

As shown in Table 2c, no statistically significant association was found between TikTok addiction and anxiety (PR = 1.18, 95% CI: 0.90–1.54, p = .247).

Table 2a. Association between TikTok Addiction (Exposure) and Depression (Outcome) (n=251)

TikTok Addiction Status	Depression		p - value	PR
	Yes (%)	No (%)		95% CI
Addicted (Yes)	16 (88.9)	2 (11.1)	**.035***	1.48 (1.05-2.08)
Non-addicted (No)	140 (60.1)	93 (39.9)		

* Fisher's exact test

Table 2b. Association between TikTok Addiction (Exposure) and Depression (Outcome) (n=251)

TikTok Addiction Status	Stress		p - value	PR 95% CI
	Yes (%)	No (%)		
Addicted (Yes)	16 (88.9)	2 (11.1)	**.001***	2.44 (1.76-3.37)
Non-addicted (No)	85 (36.5)	148 (63.5)		

* Fisher exact's test

Table 2c. Association between TikTok Addiction (Exposure) and Anxiety (Outcome) (n = 251)

TikTok Addiction Status	Anxiety		p - value	PR 95% CI
	Yes (%)	No (%)		
Addicted (Yes)	16 (88.9)	2 (11.1)	**.247***	1.18 (.90-1.54)
Non-addicted (No)	176 (75.5)	57 (24.5)		

* Fisher exact's test

3.4. Other Factors Associated with TikTok Addiction

Table 3. Analysis of Factors Associated with TikTok Addiction (n=269)

Characteristic	Group	p - value	PR 95% CI
Academic Year	Year 2 vs. Year 1	**.033**	2.60 (1.08–6.74)
Age Group	≤ 20 years vs. > 20 years	**.006**	7.69 (1.81–32.74)
Current Residence	Living with parents vs. Rented	**.047**	2.59 (1.01–6.63)
Using TikTok for Shopping	Yes vs. No	**.047**	2.61 (1.01–6.72)

Further analysis was conducted to identify sociodemographic and usage factors associated with TikTok addiction (Table 3). Second-year students showed a significantly higher prevalence of addiction compared to first-year students (PR = 2.60, 95% CI: 1.08–6.74). A very strong association was found with age; students aged 20 or younger were 7.69 times more likely to be addicted than those over 20 (95% CI: 1.81–32.74).

Interestingly, students living with their parents had a 2.59 times higher prevalence of addiction than those living in rented accommodation (PR = 2.59, 95% CI: 1.01–6.63). Regarding usage patterns, using TikTok for shopping was associated with a 2.61 times higher prevalence of addiction (PR = 2.61, 95% CI: 1.01–6.72). No significant associations of TikTok addiction were found with academic performance, gender, ethnicity, or religion.

4. DISCUSSION

Regarding the status of TikTok usage, the study results indicated that the rate of students using this platform reached 93.3%. This finding is consistent with research by Phan Lan Chi et al, which reported that 90.25% of students used TikTok [3], and a study by Le Thi Xuan Sang et al, which recorded a usage rate of 94.9% [7]. The consistency among these studies suggests that TikTok has become one of the most widespread and appealing social media platforms among Vietnamese youth.

Our study reported the prevalence of TikTok addiction among students was 6.7%. This rate is significantly lower compared to the 42.1% found in the research by Nguyen Thi Kim Anh et al. [2]. This disparity can be attributed to several factors. Our study focused on Public Health students, who are trained to have a higher awareness of health behaviors and may better self-manage their social media use. Additionally, the survey was conducted after students returned to in-person learning, which, combined with extracurricular activities, likely reduced the time available for TikTok using compared to periods of online study. This purposeful and controlled usage pattern inherently lowers the risk of developing addictive behavior.

The most critical finding is the statistically significant association between TikTok addiction and a higher prevalence of both stress (PR = 2.44) and depression (PR = 1.48). This is consistent with previous research by Maguire et al, which also noted a strong link between these mental health issues and TikTok addiction [8]. This bidirectional relationship can be theoretically explained by two key psychological models. First, according to Coping Theory [9], students facing high academic stress may engage in 'maladaptive' or 'avoidant' coping strategies. TikTok, with its immersive design, provides a potent form of 'escapism', allowing students to temporarily flee from stressful tasks or depressive feelings. This creates a vicious cycle: stress leads to TikTok use for avoidance, which in turn leads to procrastination and guilt over unfinished tasks, thereby increasing the initial stress and depression, further reinforcing the need to escape [10].

Second, this cycle is powerfully maintained by the Negative Reinforcement Model of addiction [11]. While positive reinforcement (e.g., social rewards) might initiate use, negative reinforcement (the removal of an unpleasant state) is highly predictive of addictive behavior. In this model, students learn that using TikTok provides immediate, short-term relief from aversive feelings of stress or low mood. This expectation that social media can reduce negative emotions drives compulsive use, as the behavior (using TikTok) is reinforced every time it successfully (though temporarily) alleviates psychological distress.

Interestingly, this study did not find a significant association between TikTok addiction and anxiety (p =.247), which contrasts with some other findings [8]. This discrepancy may be attributable to the specific composition of our study population; our study focus on public health students, with their unique academic pressures, may have influenced their social media usage patterns differently compared to more diverse student populations in other studies.

The study utilized Google Forms as the online survey tool, which facilitated efficient, and time-saving data collection, automated data aggregation, and minimized data entry errors. The questionnaire was designed to ensure anonymity and voluntary

participation, encouraging honesty among students and thereby enhancing the quality and reliability of the collected data. Crucially, the research used the standardized DASS-21 (Depression Anxiety Stress Scale - 21) to assess symptoms of stress, anxiety, and depression in students. This scale has been validated for reliability in Vietnam and features 21 questions divided into three sub-scales, using a 4-point Likert scale (0-3), which makes it easy to implement, saves time, and permits scientific comparison with other studies.

Further analysis identified specific subgroups at higher risk for TikTok addiction. A very strong association was found with age; students aged 20 or younger were 7.69 times more likely to be addicted (PR = 7.69). Separately, second-year students also showed a significantly higher prevalence (PR = 2.60). It is important to acknowledge the likely overlap between these two variables, as many students in this age group are in their first or second year. The study finds/found out that relationship between addiction and age is statistically strong, suggesting age as a vulnerable factor. This may pinpoint a high-risk period during the transition into the second year for this younger cohort, who face increased academic demands while perhaps lacking the fully developed self-regulation skills of their older peers. Disentangling the independent effects of age from academic year would require a multivariable model, which is a limitation of this sub-analysis. Furthermore, students living at home may have fewer financial and domestic responsibilities, affording them more leisure time that can be consumed by digital platforms like TikTok.

This study has some strengths, including its novelty as the first to investigate TikTok addiction specifically among public health students at the university. The use of standardized and validated tools like the DASS-21 enhances the reliability of the data. However, limitations should be acknowledged. The cross-sectional design does not allow for causal inferences. Data were self-reported and may be subject to social desirability bias. Finally, the BSMAS is a general social media addiction scale and not specific to TikTok, which might not capture the unique addictive features of the short-video format.

In terms of application, the research provides a crucial scientific basis for the university to develop targeted psychological support programs. The findings can help identify at-risk students (e.g., second-year students, younger students) for early intervention and enhance counseling services. Additionally, the results can be used as reference material in courses on health behavior and health education to contextualize the link between technology usage and mental well-being for future public health professionals.

5. CONCLUSION

This study found that a small proportion (6.7%) of public health and nutrition students at Pham Ngoc Thach University of Medicine exhibit behaviors consistent with TikTok addiction. This condition is statistically associated with a higher prevalence of symptoms of depression or stress, identifying a vulnerable subgroup within the student population. These findings provide a critical local evidence base for the university to implement proactive, evidence-based strategies, such as targeted mental health support for at-risk groups and digital wellness programs, to mitigate the negative impacts of problematic social media use and promote the overall well-being of its students.

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