

Determinants of Health Behaviors Among University Students: Insights from a Cross-Sectional Study in the Karaganda Region

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Abstract

Aim: Many scholars highlight the insufficient commitment to a healthy lifestyle among student populations, often attributed to the challenges associated with academic transitions and social adjustments. Understanding the factors influencing student health behaviors is crucial for promoting well-being and fostering healthy lifestyles.

Methods: This study employed a cross-sectional analysis using primary data of 1327 students. The survey covered socio-economic factors and aspects of a healthy lifestyle among students from various universities in the Karaganda region, including Medical, Technical, and Humanitarian universities. Multiple logistic regression analysis was conducted to identify determinants influencing students' health behaviors.

Results: Demographic analysis revealed that surveyed students were primarily urban-born, enrolled in medical university programs, and predominantly lived with parents or relatives. Most students reported financial capacity for medical care and rated their social standing favorably. A significant proportion exhibited a normal BMI, with a notable prevalence of chronic diseases. While emergency care utilization varied, general practitioner visits were common, albeit less frequent among students with chronic conditions. Factors influencing health behaviors included educational program enrollment, socio-economic status, residential circumstances, gender, age, vaccination status. Understanding the complex interplay of factors influencing student health behaviors is essential for designing effective health promotion programs within universities.

Conclusion: This study provides valuable insights into the determinants of health behaviors among students, shedding light on areas for intervention and emphasizing the importance of fostering a healthy lifestyle for overall well-being and academic success.

Keywords: health behavior, students, Kazakhstan, health promotion

Introduction

Health encompasses more than just the absence of illness; it embodies complete physical, mental, and social well-being, as articulated by the World Health Organization in 1946. It stands as a paramount value in every individual's life, demanding protection and preservation. Not only does health hold significance at a societal level, serving as a barometer of collective well-being, but it also holds personal value, serving as a

foundation for achieving life's aspirations [1, 2].

According to World Health Organization paradigm, health is shaped by various factors: socio-economic circumstances (50%), genetic predispositions (20%), environmental conditions (20%), and the level of healthcare access and quality (10%) [3, 4]. Consequently, health is heavily influenced by lifestyle choices. Thus, the field of valeology emerges with the goal of promoting and preserving health [5]. A pivotal

component of this endeavor is fostering a healthy lifestyle, which not only enhances personal well-being but also contributes to professional growth [6].

Despite its importance, many scholars highlight the insufficient commitment to a healthy lifestyle among student populations, who represent a vital segment of any nation's future [2]. This lack of commitment often stems from the challenges associated with transitioning to academic and professional pursuits and adapting to new social environments. The rigorous demands of academia frequently lead to unhealthy habits and compromised health due to time constraints [7-9].

A healthy lifestyle is multifaceted, encompassing behaviors that bolster physical, mental, and social well-being. It entails regular exercise, nutritious eating habits, abstaining from harmful substances like tobacco and alcohol, routine medical check-ups, and prioritizing mental health [10]. Aligned with national initiatives like the "Healthy Nation" project, healthcare policies increasingly prioritize the promotion of healthy lifestyles as a fundamental strategy [11].

Currently, addressing the health of students is a pressing research concern, given the escalating rates of health issues among young people. Despite their generally robust health, student life significantly influences health behaviors and habits [12-14]. Studies worldwide explore the myriad factors shaping students' adherence to healthy lifestyles [15]. For instance, Bronfenbrenner's ecological systems model underscores the impact of social, cultural, and political factors alongside individual experiences [16].

Research underscores divergent health behaviors across academic disciplines. While medical students typically prioritize health due to its professional relevance, students in humanities may exhibit contrasting habits, such as irregular eating or excessive alcohol consumption [17-19]. Notably, studies indicate variations in health consciousness among students of different specialties, with those in medical and biological fields demonstrating greater attentiveness compared to their peers in humanities or technical disciplines [20, 21]. However, students in technical fields often lack adequate valeducational education, highlighting the imperative of studying their orientation toward health [22].

Understanding these disciplinary differences is crucial for designing effective health promotion programs within universities, making detailed research in this area indispensable. Thus, this study aims to analyze and evaluate student behavior concerning health across various universities and education programs, using the Karaganda region as a case study.

Materials and Methods

We conducted a cross-sectional, retrospective analysis using primary data. To examine students' health-related behaviors across different fields of study, we employed a survey method administered remotely through Google Forms. The questionnaire covered socio-economic factors like age, gender, education, place of residence, origin, financial and social status, as well as aspects of a healthy lifestyle such as physical activity, dietary habits, and substance use. Participation was voluntary and anonymous, involving students from various universities in Karaganda: Medical University (46% of respondents, referred to as "medical" henceforth), Technical University (26.8% of respondents, referred to as "technical"), and Humanitarian University (27.2% of respondents, referred to as "humanitarian").

Ethical approval for the study was obtained from the local Bioethics Commission at Karaganda Medical University. Karaganda was chosen due to its status as a major educational hub in Kazakhstan, attracting students from across the country. A total of 1327 students participated, comprising 666 first-year, 232 second-year, 232 third-year, 160 fourth-year, 35 fifth-year, and 1-6 year students. Among respondents, 64.2% were female and 35.8% were male. The majority (43.4%) fell within the 17–18 age bracket, followed by 19–20 years (31.9%), 21–23 years (11.6%), over 24 years (12%), with only 0.2% below 17 years. Data processing, descriptive analysis, and visualization were conducted using Microsoft Office Excel and R-Studio.

Multiple logistic regression analysis was employed to identify determinants influencing various aspects of students' health behavior, including tobacco use (including electronic cigarettes and vaping), alcohol consumption, healthy dietary patterns, and physical activity levels.

Results

The analysis of demographic data revealed that the surveyed students had an average age of 21 years. Regarding the demographic profile of the sample, the majority of participants were urban-born (61.9%, 821 individuals), enrolled in medical university programs (46%, 611 students), with an average age of 21.12 ± 7.24 years (Table 1).

Table 1 Demographical description of the sample

Variables	Total		Male		Female	
	n	%	n	%	n	%
<i>Area of origin</i>						
Urban	821	61.87	289	60.84	532	62.44
Rural	506	38.13	186	39.16	320	24.11
<i>Education field</i>						
Health science	611	46.04	169	35.58	442	51.88
Technical science	355	26.75	253	53.26	102	11.97
Humanitarian sciences	361	27.20	53	11.16	308	36.15
Age (mean, sd)	21.12 (7.24)	19.03 (2.49)	22.29 (8.64)			

Among students, various living arrangements were observed, with a slight majority opting to reside with their parents or relatives (389 individuals, constituting 29.31% of the total). When examining living situations by gender, it was noted that women tended to prefer living in their own apartments (252 individuals, comprising 29.58% of the sample). Notably, a significant proportion of both maternal (529 individuals, accounting for 39.86%) and paternal figures (428 individuals, representing 32.25%) boasted higher education qualifications, predominantly holding bachelor's degrees. A substantial 85.61% of students reported having both parents present in their lives. Moreover, the vast majority of students (888 individuals, totaling 66.92%) asserted their ability to comfortably afford medical medications, while a comparable number (835 individuals, encompassing 62.92%) affirmed their financial capacity for necessary medical examinations. On average, students rated their social standing at 7.80 ± 1.72 and their financial position at 7.21 ± 1.76 , utilizing a scale where 1 denoted a very low position and 10 signified a very high position.

As depicted in Table 3, the preponderance of students exhibits a body mass index (BMI) falling within the normal

Table 2

Socioeconomic information of the sample

Variables	Total		Male		Female	
	n	%	n	%	n	%
<i>Living condition</i>						
Dormitory	354	26.68	135	28.42	219	25.70
Apartment	341	25.69	89	18.74	252	29.58
Rent	243	18.31	83	17.47	160	18.78
Living with family	389	29.31	168	35.37	221	25.94
<i>Mother's education</i>						
Bachelor	529	39.86	195	41.05	334	39.20
Secondary	345	25.99	118	24.84	227	26.64
Professional	312	23.51	84	17.68	228	26.76
Master	131	9.87	71	14.95	60	7.04
PhD	10	0.75	7	1.47	3	0.35
<i>Father's education</i>						
Bachelor	428	32.25	164	34.53	264	30.99
Secondary	424	31.95	141	10.63	283	33.22
Professional	355	26.75	110	8.29	245	0.12
Master	69	5.19	36	2.71	33	3.87
PhD	10	0.75	7	0.53	3	0.35
<i>Nuclear family</i>						
Yes	1136	85.61	407	85.68	729	85.56
No	191	14.39	68	14.32	123	14.44
<i>Ability to buy medication (financial)</i>						
Easy	888	66.92	325	68.42	563	66.08
Very easy	219	16.50	64	4.82	155	18.19
Hard	208	15.67	80	6.03	128	15.02
Very hard	12	0.90	6	1.26	6	0.45
<i>Ability to get medical examination (financial)</i>						
Easy	835	62.92	298	62.74	537	63.03
Very easy	155	11.68	50	10.53	105	12.32
Hard	311	23.44	116	24.42	195	22.89
Very hard	26	1.96	11	2.32	15	1.76
Social status (mean, SD)	7.80 (1.72)		7.69 (1.69)		7.87 (1.76)	
Financial status	7.21 (1.76)		7.06 (1.76)		7.27 (1.75)	

range, constituting 842 respondents or 18% of the total. Among these individuals, 176 respondents, comprising 55% of all those with chronic conditions, report living with chronic diseases. Interestingly, while the sample includes the fewest obese students (41 individuals, representing 3.09% of the cohort), they account for 50% of the group afflicted with chronic illnesses. Overall, a significant 77.24% of all respondents have engaged in health-related information searches at some point. Furthermore, a striking 90% of students grappling with chronic diseases have pursued relevant health or healthcare-related information online at least once.

Approximately 44% of students reported no recollection of health issues necessitating activity restrictions. A vast majority (91.11%) have undergone all required vaccinations without hesitation. On average, students sought emergency medical attention 0.69 ± 1.39 times within the past 24 months. Remarkably, those with chronic ailments sought emergency care significantly more frequently (1.06 ± 1.19) than their healthier counterparts (0.57 ± 1.49), with a statistically significant difference (p-value < 0.001) observed.

Over the preceding 12 months, students predominantly visited general practitioners, averaging 1.68 ± 2.33 visits. Interestingly, students with chronic conditions exhibited a statistically significant lower rate of general practitioner visits

Table 3

Health behavior and health-related data

Variables	Total		Chronic diseases (yes)		Chronic diseases (no)		p-value
	n	%	n	%	n	%	
<i>BMI</i>							
Underweight	159	12.74	44	13.75	115	11.42	0.001
Normal	842	63.45	176	55.00	666	66.14	
Overweight	152	11.45	48	15.00	104	10.33	
Obese	41	3.09	16	50.00	25	2.48	
<i>Health-related information search</i>							
Yes	1025	77.24	288	90.00	737	73.19	< 0.001
No	302	22.76	32	10.00	270	26.81	
<i>Activity limitation because of health problem</i>							
No limitations	347	26.15	102	31.88	245	24.33	< 0.001
No health problems	579	43.63	29	9.06	550	54.62	
Limited, but not too much	401	30.22	189	59.06	212	21.05	
<i>Vaccination status</i>							
Yes	1209	91.11	294	91.88	915	90.86	0.66
No	118	8.89	26	8.12	92	9.14	
<i>Health self-assessment</i>							
Very good	268	20.19	13	4.06	255	25.32	< 0.001
Good	707	53.28	122	38.13	585	58.09	
Not bad but not good either	329	24.79	167	52.19	162	16.09	
Bad	21	1.58	17	5.31	4	0.39	
Very bad	2	0.15	1	0.31	1	0.09	
Number of emergency medical care received within 24 months (mean, SD)	0.69 (1.39)		1.06 (1.19)		0.57 (1.49)		< 0.001
Number of visits to a family doctor within 12 months (mean, SD)	1.68 (2.33)		1.51 (2.44)		1.78 (2.27)		< 0.001
Number of visits to a specialist doctor within 12 months (mean, SD)	1.01 (1.73)		0.87 (1.52)		1.09 (1.83)		< 0.001
Number of hospitalizations within 12 months (mean, SD)	0.15 (0.71)		0.18 (0.82)		0.14 (0.65)		< 0.001
Number of visits to day hospital during 12 months (mean, SD)	0.76 (1.89)		0.78 (2.20)		0.75 (1.69)		0.27
Number of study days missed due to health problems within 12 months (mean, SD)	3.58 (9.82)		2.61 (5.69)		4.12 (11.47)		< 0.001

(1.51 ± 2.44) compared to those without chronic ailments (1.78 ± 2.27), with a p-value < 0.001 .

In terms of consultations with specialized medical professionals, students sought their expertise approximately once annually (1.68 ± 2.33 visits). Hospitalization and day hospital visits among students were infrequent, averaging 0.15 ± 0.71 and 0.76 ± 1.89 , respectively.

Students missed an average of 3.58 ± 9.82 study days due to health concerns, with those lacking chronic conditions

exhibiting a higher rate of absenteeism (4.12 ± 11.47 days), though not statistically significant.

In Figure 1, the frequency of tobacco smoking, alcohol consumption, healthy eating, and physical activity over a one-week span is illustrated. The overwhelming majority abstain from both alcohol consumption and tobacco smoking entirely, comprising 86.59% and 87.26% of respondents, respectively. Notably, none of the students reported consuming alcohol daily,

while a minor proportion (5.05%) admitted to smoking daily. A significant portion of students (21.32%) adhere to a healthy dietary regimen daily, ensuring adequate intake of fresh fruits and vegetables. However, a notable fraction (6.71%) claim to never prioritize healthy eating. As for physical activity, approximately equal proportions of students engage in exercise daily, less than once a week, and never, accounting for 15.22%, 15.37%, and 16.05% of the cohort, respectively.

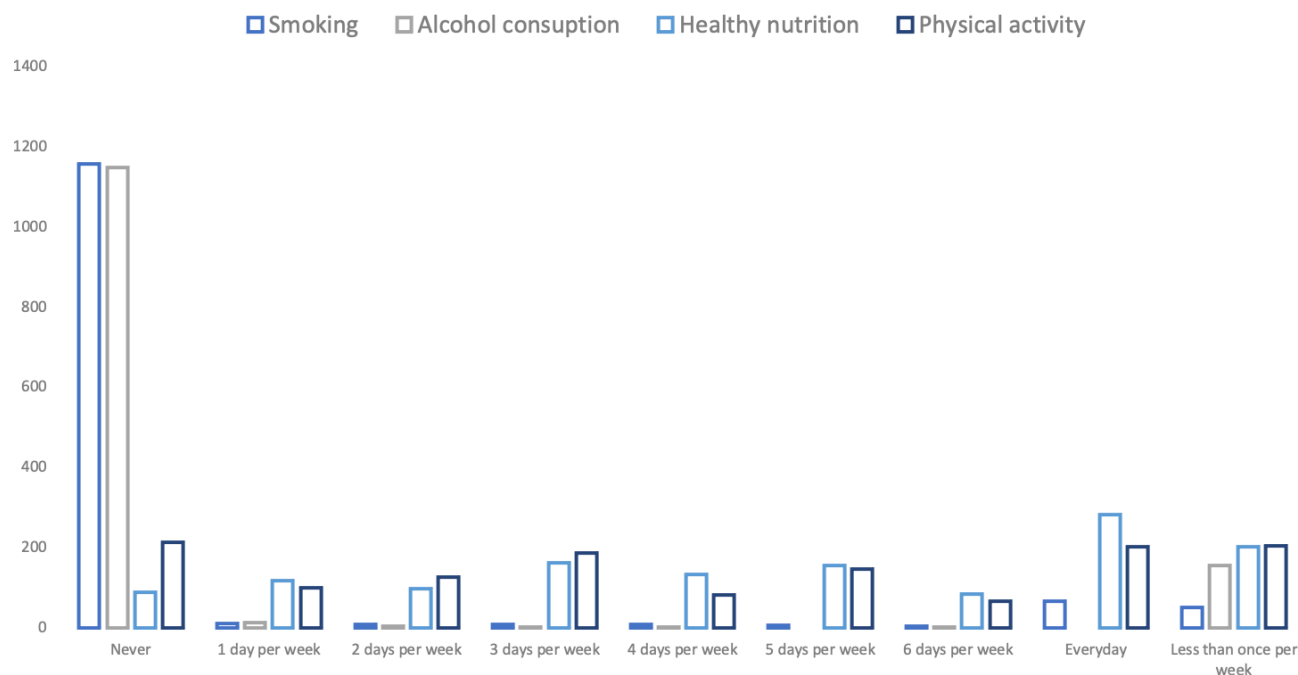


Figure 1 – Frequency of smoking, alcohol consumption, healthy nutrition and physical activity per week

Table 4 delineates factors influencing smoking, alcohol consumption, dietary habits, and physical activity among student participants. Notably, enrollment in a medical educational

program emerges as a significant protective factor against smoking, reducing the odds by 53% (OR=0.47, p-value<0.01). Conversely, increased frequency of emergency medical care

Table 4

Factors influencing smoking, alcohol consumption, physical activity, healthy eating

Smoking				Alcohol consumption			
Covariate	Odds Ratio	95% CI (2.5%, 97.5%)	p	Covariate	Odds Ratio	95% CI (2.5%, 97.5%)	p
Health-related Education Program	0.47	-1.33, -0.19	<0.01	Health-related Education Program	0.36	-1.57, -0.46	<0.001
Number of emergency medical care received within 24 months	1.24	0.06, 0.35	<0.01	Engineering Education Program	0.55	-1.11, -0.09	0.02
Year of study	1.32	0.09, 0.46	<0.01	Urban area of origin	2.23	0.33, 1.29	<0.01
Male	5.04	1.08, 2.17	<0.001	Vaccination status	2.28	0.07, 1.66	0.04
Having chronic diseases	1.75	0.09, 1.02	0.02	Age	1.07	0.04, 0.09	<0.001
Drinking Alcohol more than once per week	26.15	2.81, 3.74	<0.001	Smoking	27.31	2.87, 3.76	<0.001
Healthy nutrition				Physical activity			
Health-related Education Program	0.41	-1.28, -0.49	<0.001	Health-related Education Program	0.45	-1.16, -0.45	<0.001
Living in dormitory	0.59	-0.94, -0.13	<0.01	Health information searching	1.93	0.32, 0.99	<0.001
Living in rent apartment	0.57	-0.96, -0.11	<0.01	Number of visits to a specialist doctor within 12 months	1.10	0.01, 0.19	0.04
Number of visits to a specialist doctor within 12 months	1.12	0.01, 0.22	0.04	Healthy nutrition	9.51	1.96, 2.55	<0.001
Challenges in acquiring medications stemming from financial constraints	0.17	-3.12, -0.06	<0.01				
Male	0.65	-0.78, -0.09	<0.01				
Self-assessment of health as good	4.69	0.38, 2.69	<0.01				
Physical active more than once per week	9.76	1.98, 2.58	<0.001				

within 24 months, higher academic year, male gender, presence of chronic diseases, and frequent alcohol intake (more than once per week) elevate the likelihood of smoking among students.

Moreover, gender disparities are pronounced, with male students exhibiting a 5.04-fold higher likelihood of smoking compared to their female counterparts (p -value <0.001). Similarly, frequent alcohol consumption (more than once per week) escalates the odds of smoking by 26.15 times (p -value <0.001) in this cohort.

Medical and technical educational programs demonstrate protective effects against alcohol consumption, reducing the odds by 64% (OR=0.36, p -value <0.001) and 45% (OR=0.55, p -value <0.05), respectively. Conversely, urban residence status heightens the probability of alcohol use by 123% (OR=2.23, p -value <0.01) compared to rural counterparts. Additionally, smoking significantly amplifies the odds of alcohol consumption among students by 27.31 times (p -value <0.001).

Furthermore, male students residing in dormitories or rented apartments, enrolled in medical programs, and lacking financial resources for medication procurement exhibit notably poorer dietary habits compared to their peers. Conversely, engaging in physical activity more than once a week and self-assessing one's health positively enhance the likelihood of healthy eating behaviors among students, by 9.76 times (p -value <0.001) and 4.69 times (p -value <0.01), respectively.

Discussion

The problem of preserving and strengthening the health of students lies not only in the intrinsic value of health, but also in the socio-economic status [23]. A student's social background, including income level, access to resources and support, and social circle, can have a significant influence on the choice of healthy or unhealthy behavioral habits [24, 25]. Research shows that students from families with a high level of socio-economic status among their parents have greater access to housing, food, education, health care and various social services than students with a low level of socio-economic status among their parents [26-28]. Because these services increase students' self-esteem and self-confidence, which in turn promotes a healthy lifestyle [29, 30]. The relationship between having both parents and college students' health behaviors is an important topic of public health research. Students raised by both parents may exhibit varying levels of healthy and unhealthy behaviors, which may have an impact on their physical and mental well-being. Research shows that students who grow up in dual-parent families often have more stable social and economic conditions, which can lead to healthier habits and lifestyles [31, 32]. Support from loved ones plays an important role in developing a healthy lifestyle among students. In today's society, where stress, pressure and temptation play a huge role, support from friends, family and partners can be key to achieving health and well-being. It is important to recognize that students who feel supported in their efforts to maintain a healthy lifestyle are more likely to make good decisions and engage in healthy habits, which in turn improves their overall well-being and academic success [33, 34]. Housing conditions play a significant role in shaping students' health behavior. Dormitories, rented housing, owning a home, and living with parents can all impact students' physical, emotional, and psychological well-being. Various studies have been conducted where it was found that students living separately from their parents in rented apartments have negative health behavior due to the relative freedom of action

and lack of control. Students living in dormitories and living with their parents have relatively the same health behavior [35,36]. Adequate self-assessment of students' own health influences the preservation and improvement of their health status [37, 38]. Numerous studies indicate that the presence of health problems in family members, such as the risk of developing chronic diseases, dietary imbalances or low physical activity, has a significant impact on the health behavior of students [39, 40]. Health literacy is one of the most important determinants of health [41], which is associated with the social aspects of health [42-45] and represents a set of cognitive and social skills that determine the motivation and ability of people to seek, understand and use information for health promoting and maintaining good health [46-48]. Health literacy profoundly influences health behavior by equipping individuals with the ability to comprehend and utilize health information, thereby enhancing decision-making and health management. Conversely, low health literacy is associated with adverse health outcomes due to misunderstandings of medical instructions and difficulties in navigating the healthcare system.

A healthy lifestyle encompasses a multifaceted approach that includes maintaining a balanced diet, engaging in regular physical exercise, and eliminating harmful habits such as smoking and excessive alcohol consumption. Additionally, it involves consuming sweets in moderation, sustaining an active lifestyle, and prioritizing mental and psychological well-being. One of the core tenets of a healthy lifestyle is proper, balanced nutrition, which serves a crucial preventative function in mitigating the risk and progression of numerous chronic diseases. [49, 50]. According to WHO recommendations, vegetables and fruits should be present in the human diet every day, as they are sources of fiber, vitamins and minerals [51, 52]. One of the leading elements of educational processes is optimal physical activity. The level of physical fitness and the dynamics of somatic health are closely related to physical education [53, 54]. According to the recommendations of the World Health Organization, the norm for weekly physical activity of students is aerobic physical activity 2-3 times a week [55, 56]. One of the main aspects of a healthy lifestyle is avoiding alcohol and smoking. Such bad habits pose serious threats to a person's physical and mental health, and also increase the risk of developing many diseases, the transience of life and the deterioration of its quality. Scientists from all over the world conduct many studies confirming the harmful effects of alcohol and smoking on the human body. Impaired functioning of the cardiovascular system, the development of cancer, liver health problems and other complications are often associated with alcohol consumption. Student health researchers V.A. Medic and A.M. Osipov note that alcohol consumption has become a tradition among students and has persisted for decades. Students steeped in this tradition distort their perceptions of public opinion regarding problems associated with alcohol use [57-59]. In contemporary society, smoking is one of the most prevalent detrimental habits among students. This behavior not only jeopardizes the physical health of young individuals but also exerts a negative influence on their professional and personal growth. Tobacco smoking often signifies underlying issues in the social adaptation of students, indicating potential difficulties in coping with stress, peer pressure, and other social challenges. The habit of smoking substantially elevates the risk of dysfunction in multiple body systems, including the nervous, cardiovascular, endocrine, and immune systems. Moreover, it adversely affects other organs and systems within the body, leading to a broad spectrum of

health complications. This multifaceted impact underscores the critical need for targeted interventions and preventive measures to address smoking among students, thereby safeguarding their overall well-being and future potential [59, 60].

Conclusion

In conclusion, our analysis sheds light on various aspects of student health behavior and its determinants. Our findings underscore the multifaceted nature of student health, highlighting the interplay between individual characteristics, socio-economic factors, and environmental influences. By identifying key determinants of health behaviors, our study offers valuable insights for devising targeted interventions aimed at promoting student well-being and fostering healthier lifestyles.

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