KMANPUB | Health Nexus Vol. 3 No. 3 (2025): 1-9

Article history:
Received 16 March 2025
Revised 25 May 2025
Accepted 05 June 2025
Published online 01 July 2025

The Mediating Role of Health-Promoting Behaviors in the Relationship between Generalized Anxiety Disorder Symptoms and Health-Related Quality of Life among University Students

Seyed Mahmood Motaghian[1], Ahmad Mansouri[2*], Mohammad Alipour Sakhavi[3]

[1] M.A. in Clinical Psychology, Department of Psychology, Ne.C., Islamic Azad University, Neyshabur, Iran
[2] Department of Psychology, Ne.C., Islamic Azad University, Neyshabur, Iran
[3] M.A. in Clinical Psychology, Department of Psychology, Fe.C., Islamic Azad University, Ferdows, Iran

*** Corresponding author email address**: mansoury_am@iau.ac.ir

A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Motaghian, S. M., Mansouri, A., & Alipour Sakhavi, M. (2025). The Mediating Role of Health-Promoting Behaviors in the Relationship between Generalized Anxiety Disorder Symptoms and Health-Related Quality of Life among University Students. *Health Nexus*, *3*(3), 1-9.
https://doi.org/10.61838/kman.hn.3.3.7

A B S T R A C T

The health-related quality of life (HRQoL) of university students significantly influences their long-term well-being. Therefore, identifying factors that affect HRQoL is crucial. This study aimed to investigate the mediating role of health-promoting behaviors in the relationship between generalized anxiety symptoms and health-related quality of life among university students. This study employed a fundamental research design with a descriptive, correlational approach to data collection. The statistical population included undergraduate, master's, and doctoral students enrolled in universities in Neyshabur during the 2023–2024 academic year. A total of 497 students were selected using cluster sampling. Data were gathered using the Generalized Anxiety Disorder Scale, the 12-item Short Form Health Survey (SF-12), and the Health-Promoting Lifestyle Profile–Short Form. Data analysis was performed using SPSS and LISREL software, with Structural Equation Modeling (SEM) used to test the hypothesized relationships. A significant relationship was found between generalized anxiety symptoms, health-promoting behaviors, and health-related quality of life ($p < 0.05$). Furthermore, health-promoting behaviors significantly mediated the relationship between generalized anxiety symptoms and health-related quality of life, as indicated by model fit indices (CFI = 0.96, NFI = 0.94, NNFI = 0.96, IFI = 0.96, RFI = 0.93, GFI = 0.92, RMSEA = 0.059). These findings suggest that professionals in psychology-related fields—such as clinical and health psychologists—can play a vital role in enhancing students' quality of life. By designing and implementing interventions that reduce generalized anxiety symptoms and promote health-enhancing behaviors, they can contribute meaningfully to the overall well-being of university students.

Keywords: *Generalized anxiety disorder, health-promoting behaviors, health-related quality of life.*

1. Introduction

The university period is a critical phase for personality development and physical and psychological growth, as students transition into independent adulthood. The lifestyle patterns formed during this stage can significantly influence long-term health outcomes. Consequently, identifying risk factors affecting students' mental health is essential for

developing effective public health interventions aimed at enhancing students' overall well-being (1). A review of the literature indicates that university students are particularly vulnerable to a range of physical, psychological, and social health challenges. Stressors such as academic demands, prolonged sedentary behavior, and unhealthy lifestyle choices contribute to this vulnerability. Additionally, factors such as social isolation, a lack of belonging (2), health concerns, environmental and academic pressures, financial stress, interpersonal conflicts (3), academic burnout (4), heavy coursework, frequent examinations, and poor time management (5) can impair students' psychological and social functioning, thereby negatively impacting their health-related quality of life (HRQoL). HRQoL is a broad, multidimensional concept that reflects individuals' perceptions of their health and well-being, encompassing physical, psychological, and social domains. Understanding students' HRQoL can inform strategies for improving healthcare services and identifying key challenges facing this population (2).

Global research has long focused on the multifactorial determinants of HRQoL due to their associations with important outcomes such as general well-being, productivity, longevity, and healthcare expenditures. Interest in HRQoL has grown in recent decades, with increasing recognition that it encompasses more than just physical health, extending to the psychological, social, and environmental dimensions outlined by the World Health Organization (6). A wide range of variables have been shown to influence students' HRQoL, including demographic (e.g., gender, age, religiosity, ethnicity, socioeconomic background, family dynamics), physiological (e.g., chronic illness, musculoskeletal pain), psychological (e.g., anxiety, depression, ADHD, history of trauma), social (e.g., experiences of abandonment), behavioral/lifestyle (e.g., physical activity, sedentary habits), and educational (e.g., academic stress, learning motivation, performance) factors (7-9). Among these, anxiety disorders—especially generalized anxiety disorder (GAD)—stand out as key contributors to impaired HRQoL (10-14).

GAD is characterized by excessive, persistent worry about various aspects of daily life, including work, health, finances, and interpersonal responsibilities. Individuals with GAD often find it difficult to control their anxiety and may experience symptoms such as restlessness, fatigue, muscle tension, irritability, and sleep disturbances. This condition can lead to significant impairments in social, academic, psychological, and occupational functioning, as well as increased healthcare utilization and a heightened risk of physical illnesses such as cardiovascular disease (15). University students are exposed to numerous psychosocial stressors—including academic pressures, uncertainty about the future, difficulty managing responsibilities, and financial constraints—that increase their susceptibility to GAD. Prevalence estimates of GAD among students range from 7% to 17.5%, and it is known to be a predictor of depression, substance use, and other psychiatric conditions (16). While the negative impact of GAD on HRQoL is well-documented (17-23), the mechanisms underlying this relationship remain underexplored. One such potential mechanism is the role of health-promoting behaviors (HPBs).

Health promotion refers to the process of empowering individuals and communities to take greater control over their health and its determinants, often through increased health literacy and multi-sectoral action. It targets behavioral risk factors such as tobacco use, poor diet, physical inactivity, mental health, and harmful substance use (24). HPBs encompass actions aimed at improving or maintaining health, enhancing self-awareness, and fostering personal development (25). Interventions that promote behaviors such as regular exercise, healthy eating, and smoking cessation have been shown to significantly impact disease prevention, quality of life, and mortality (26). Research has demonstrated associations between both GAD symptoms (17-23) and HPBs (27-33) with HRQoL Although no previous studies have specifically examined the mediating role of HPBs in the relationship between GAD symptoms and HRQoL among university students, related evidence suggests the plausibility of this pathway. For example, Seo et al. found that depressive symptoms and HPBs mediated the relationship between perceived stress and HRQoL in students (34). Other studies have shown that HPBs mediate the effects of e-health literacy on HRQoL in older adults (29, 30), personal mastery on HRQoL in patients with atrial fibrillation (35), psychiatric symptoms on HRQoL in individuals with mental illness (36), and stressful life events

Health Nexus
E-ISSN: 2981-2569

on HRQoL in people with diabetes (32). Additionally, Mo et al. reported that HPBs mediate the relationship between social support and both HRQoL and subjective well-being in adults of various ages (37).

Given the importance of HRQoL in guiding health policy and student support strategies, and the critical role of universities in fostering long-term health behaviors (1), further exploration of this topic is warranted. The prevalence and impact of GAD on multiple domains of functioning (16), combined with the effectiveness of health promotion strategies (26), underline the need to investigate the potential mediating role of HPBs. Therefore, the present study aimed to examine whether HPBs mediate the relationship between GAD symptoms and HRQoL among university students.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a quantitative, fundamental, cross-sectional, and descriptive research design with a correlational approach. The statistical population included all undergraduate, master's, and doctoral students enrolled at universities in Neyshabur during the 2023–2024 academic year. A total of 500 students were selected through cluster sampling.

First, among the universities in Neyshabur—Neyshabur University of Medical Sciences, Neyshabur University, Islamic Azad University – Neyshabur Branch, Farhangian University, Payam Noor University, and several private non-profit institutions—four academic centers were selected for sampling:

Neyshabur University (N= 2,800); Islamic Azad University – Neyshabur Branch (N= 7,863); Farhangian University of Neyshabur (N= 250); Neyshabur University of Medical Sciences (N =750). After obtaining ethical approval from the Biomedical Research Ethics Committee of the Islamic Azad University, Neyshabur Branch, and securing official letters of introduction, the research team contacted the selected universities. The study's objectives were explained to university administrators, and necessary permissions were obtained. Following coordination, researchers visited classrooms, distributed informed consent forms along with the questionnaires to students who agreed to participate, and collected the completed responses. Inclusion criteria were: being a currently enrolled student, willingness to participate, and provision of informed consent. The exclusion criterion was incomplete responses on the research instruments.

2.2. Measures

2.2.1. Generalized Anxiety Disorder Scale (GAD-7)

Developed by Spitzer et al. (2006), this 7-item scale measures symptoms of generalized anxiety disorder (38). Items are rated on a 4-point Likert scale from 0 (not at all) to 3 (nearly every day), yielding total scores from 0 to 21, with higher scores indicating greater anxiety severity. Reported internal consistency (Cronbach's alpha) and test-retest reliability were 0.92 and 0.83, respectively. Convergent validity with the Beck Anxiety Inventory and the anxiety subscale of the Symptom Checklist was 0.72 and 0.74, respectively (38). For the Persian version, Cronbach's alpha was reported at 0.79, with satisfactory construct validity (16). In the current study, Cronbach's alpha was 0.87, and fit indices were acceptable (CFI = 0.99, NFI = 0.98, NNFI = 0.98, IFI = 0.99, GFI = 0.98, RMSEA = 0.071).

2.2.2. 12-Item Short Form Health Survey (SF-12)

Developed by Ware et al. (1996), this instrument assesses health-related quality of life (HRQoL) across two major domains: physical health (general health, physical functioning, role physical, bodily pain) and mental health (vitality, role emotional, mental health, social functioning) (39). Scoring varies by item, with higher total scores (ranging from 0 to 100) indicating better perceived health. In U.S. samples, test-retest reliabilities were 0.89 (physical) and 0.76 (mental), with correlations of 0.95 and 0.96 between the SF-12 and SF-36 (39). The Persian version demonstrated Cronbach's alphas of 0.73 (physical) and 0.72 (mental), with acceptable construct validity (40). In this study, Cronbach's alpha was 0.78, with fit indices indicating an acceptable model (CFI = 0.96, NFI = 0.95, NNFI = 0.94, IFI = 0.96, GFI = 0.97, RMSEA = 0.084).

2.2.3. Health-Promoting Lifestyle Profile – Short Form (HPLP-SF)

Originally developed by Walker et al. (1987) and later shortened by Stokret (2000), this 22-item instrument

Health Nexus
E-ISSN: 2981-2569

evaluates six dimensions of health-promoting behaviors (HPBs): physical activity, nutrition, health responsibility, spiritual growth, stress management, and interpersonal relationships. Items are rated on a 4-point Likert scale from 1 (never) to 4 (always), yielding total scores from 22 to 88, with higher scores indicating greater engagement in HPBs (41). Internal consistency (Cronbach's alpha) has been reported at 0.89, with strong construct validity (41). In the current study, Cronbach's alpha and split-half reliability were 0.78 and 0.75, respectively. The model fit was acceptable (CFI = 0.96, NFI = 0.95, NNFI = 0.93, IFI = 0.96, GFI = 0.97, RMSEA = 0.078).

2.3. Data Analysis

Data analysis was performed using SPSS version 26, LISREL version 8.8, and Structural Equation Modeling (SEM).

3. Findings and Results

The students had a mean age of 24.03 years (SD = 5.94). Additional demographic characteristics, descriptive statistics, and Pearson correlation coefficients for the study variables are provided in Tables 1 and 2.

Table 1

Demographic Characteristics of the Study Participants

Demographic Variables	Frequency	Percentage	Demographic Variables	Frequency	Percentage
Marital Status			Gender		
Single	416	88.9%	Male	270	57.7%
Married	47	10.0%	Female	198	42.3%
Divorced	3	0.6%	Academic Degree		
Faculty			Bachelor's	389	83.5%
Humanities	207	44.2%	Master's	77	16.5%
Basic Sciences	59	12.6%	University		
Medical Sciences	105	22.5%	Islamic Azad University	236	50.4%
Engineering	96	20.5%	Farhangian University	127	27.1%
Economic Status			Neyshabur Medical University	105	22.5%
High	9	1.9%	Accommodation Status		
Upper-middle	83	17.7%	With family	237	50.6%
Middle	302	64.5%	Dormitory	212	45.3%
Lower-middle	49	10.5%	Rented housing	10	2.1%
Low	20	4.3%	Living alone	5	1.1%

Table 2

Descriptive Statistics and Correlation Coefficients Among the Study Variables

Variable	Generalized Anxiety Symptoms	Health-Promoting Behaviors	Health-Related Quality of Life
Generalized Anxiety Symptoms	–		
Health-Promoting Behaviors	-0.265	–	
Health-Related Quality of Life	-0.629	0.518	–
Mean	7.16	54.16	35.27
Standard Deviation	4.73	10.74	5.60
Skewness	0.52	0.31	-0.09
Kurtosis	-0.35	0.16	0.59

$p < 0.01$ for all correlations.

As presented in Table 2, the mean scores for generalized anxiety disorder (GAD) symptoms, health-promoting behaviors (HPBs), and health-related quality of life (HRQoL) were 7.16, 54.16, and 35.27, respectively. The distribution of the study variables met the assumption of normality based on skewness and kurtosis values. A negative correlation was observed between GAD symptoms and both HPBs and HRQoL, while a positive correlation was found between HPBs and HRQoL. To assess the mediating role of HPBs in the relationship between GAD symptoms and HRQoL, Structural Equation Modeling (SEM) was conducted (see Figure 1 and Table 3). Model fit was

Health Nexus
E-ISSN: 2981-2569

evaluated using multiple indices, including Chi-square, Comparative Fit Index (CFI), Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), Incremental Fit Index (IFI), Relative Fit Index (RFI), Goodness-of-Fit Index (GFI), and Root Mean Square Error of Approximation (RMSEA). The values for these fit indices are reported in Table 4.

Figure 1

The fitted model illustrating the mediating role of HPBs in the relationship between GAD symptoms and HRQoL

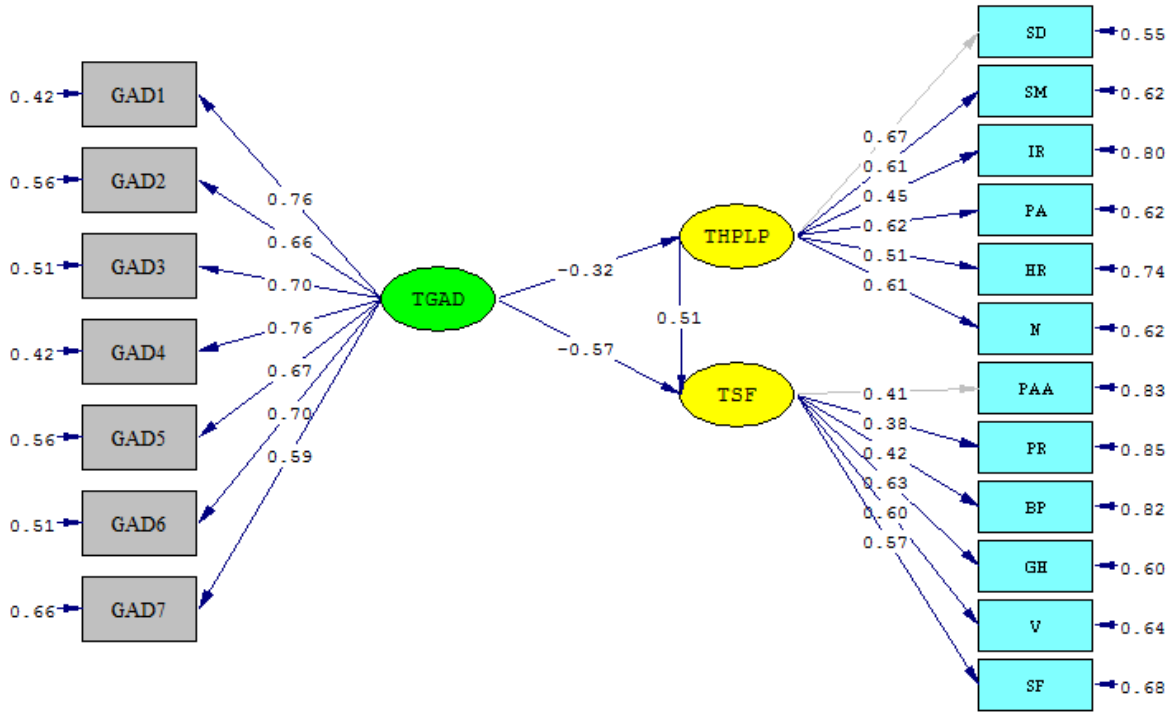

Table 3

Direct and Indirect Effects in the Fitted Model

Effect	Predictor Variable	Outcome Variable	β	t	p
Direct	Generalized Anxiety Disorder Symptoms	Health-Related Quality of Life	-0.57	-7.06	< 0.05
	Generalized Anxiety Disorder Symptoms	Health-Promoting Behaviors	-0.32	-5.55	< 0.05
	Health-Promoting Behaviors	Health-Related Quality of Life	0.51	6.26	< 0.05
Indirect	Generalized Anxiety Disorder Symptoms	Health-Related Quality of Life via Health-Promoting Behaviors	-0.16	-4.49	< 0.05

Table 4

Fit Indices for the Fitted Model

χ^2 (p = 0.01)	RMSEA	CFI	NFI	NNFI	IFI	RFI	GFI
390.34	0.059	0.96	0.94	0.96	0.96	0.93	0.92

Based on the results presented in Figure 1 and Table 3, the direct effect of GAD symptoms on HRQoL was statistically significant ($\beta = -0.57$, $t = -7.06$, $p < 0.05$), as was their effect on health-promoting behaviors (HPBs) ($\beta = -0.32$, $t = -5.55$, $p < 0.05$). The direct effect of HPBs on HRQoL was also significant ($\beta = 0.51$, $t = 6.26$, $p < 0.05$). In addition, the indirect effect of GAD symptoms on HRQoL via HPBs was statistically significant ($\beta = -0.16$, $t = -4.49$, $p < 0.05$). Regarding model fit, the indices reported in Table 4—$\chi^2 = 390.34$, $p = 0.01$; CFI = 0.96; NFI = 0.94; NNFI = 0.96; IFI = 0.96; RFI = 0.93; GFI = 0.92; RMSEA = 0.059—indicate a good model fit, with CFI, NFI, NNFI, IFI, RFI,

Health Nexus
E-ISSN: 2981-2569

and GFI all exceeding the recommended threshold of 0.90, and RMSEA falling below the acceptable upper limit of 0.08. Taken together, these results support the conclusion that health-promoting behaviors significantly mediate the relationship between generalized anxiety disorder symptoms and health-related quality of life among university students.

4. Discussion and Conclusion

The primary objective of this study was to examine the mediating role of health-promoting behaviors (HPBs) in the relationship between generalized anxiety disorder (GAD) symptoms and health-related quality of life (HRQoL) among university students. First, consistent with prior research (10-12, 14, 17-23, 35), the findings confirmed a significant association between GAD symptoms and HRQoL, with higher levels of GAD symptoms predicting lower HRQoL. For instance, Wang et al. reported that individuals in China suffering from depression and anxiety experienced significantly lower HRQoL than those without such conditions (35). Similarly, a study on adults with hyperlipidemia found that comorbid depression or anxiety was associated with lower HRQoL (10). Amoozadeh et al. observed a significant relationship between health anxiety and lower HRQoL among nurses (11), and Wilmer et al. found that anxiety severity was inversely related to HRQoL, with transdiagnostic mechanisms—such as anxiety sensitivity, distress tolerance, emotion regulation, and avoidant coping—playing a mediating role (14). Preti et al. also reported that individuals with GAD scored significantly lower on HRQoL measures (12). In clinical populations, Ji et al. found that anxiety negatively impacted both HRQoL and survival in patients with pancreatic ductal adenocarcinoma (20). Comer et al., in a U.S. national survey, found that both GAD and panic disorder independently reduced HRQoL (19). In psychiatric samples, Bobes et al. demonstrated that GAD significantly impaired psychological functioning and HRQoL (18). Among older adults, Porensky et al. observed that GAD, even in the absence of comorbid psychiatric conditions, was associated with greater disability and poorer HRQoL (21). Wyrwich et al. and Revicki et al. further confirmed this relationship, noting that higher anxiety severity was associated with lower HRQoL (22, 23). Finally, in a multinational study, Allgulander et al. reported that individuals with GAD in France, Canada, Germany, and Sweden reported significantly lower HRQoL than the general population (17).

Second, in line with previous findings (10, 19, 22, 25-27, 29, 31, 32), the present study showed that HPBs are positively associated with, and predictive of, HRQoL among various populations, including students. For example, comorbid chronic illnesses have been shown to reduce HRQoL, whereas factors such as employment and regular physical activity can enhance both physical and mental well-being (10). Comer et al. highlighted the value of early detection of anxiety disorders and the promotion of health behaviors in improving HRQoL (19). Similarly, Revicki et al. noted that adopting healthy lifestyle behaviors significantly reduced anxiety symptoms (22). Maheri et al., in a study on individuals with type 2 diabetes, found significant associations between HPBs and demographic variables such as age, disease duration, education level, employment, income, and BMI (25). Kennedy et al. demonstrated that massage therapy, as part of broader health promotion efforts, improved HRQoL and reduced anxiety (26). Qin et al. observed that students engaging in low physical activity, poor sleep hygiene, high screen time, and excessive consumption of sugary drinks and fast food reported lower HRQoL (31). These findings underscore that HPBs—such as engaging in physical activity, maintaining healthy sleep habits, and reducing unhealthy dietary intake—may significantly enhance students' HRQoL. Salari et al. reported that multiple dimensions of HPBs—including physical activity, nutrition, stress management, and interpersonal relationships—were significantly correlated with HRQoL among diabetic patients (32). Similar patterns were observed in elderly populations, with Li et al. and Zheng et al. emphasizing the importance of HPBs and psychosocial resources like social support and economic stability in promoting HRQoL (29, 33). Third, the current study demonstrated that HPBs mediate the relationship between GAD symptoms and HRQoL. Although no previous study has directly examined this specific mediation pathway, similar mechanisms have been reported. For example, Salari et al. found that HPBs and self-management mediated the relationship between stressful life events and HRQoL among diabetic individuals (32). Li et al. observed that HPBs mediated the impact of e-health literacy on HRQoL, suggesting that these behaviors enhance not only

Health Nexus
E-ISSN: 2981-2569

quality of life but also related constructs such as perceived stress and self-efficacy (29). Liu et al. identified a two-step mediation model, where digital health literacy influenced HRQoL through its effect on health-promoting lifestyles (30). Seo et al. demonstrated that depressive symptoms and HPBs jointly mediated the relationship between perceived stress and HRQoL among university students (34). Wang et al., in a study on patients with atrial fibrillation, found that HPBs mediated the relationship between personal mastery and HRQoL (35). Mo et al. reported that health-promoting activities—such as regular exercise and balanced nutrition—mediated the effects of psychiatric symptom severity on HRQoL among individuals with chronic psychological disorders (36). These findings suggest that university students experiencing symptoms of GAD—such as excessive worry and anxiety about daily responsibilities (e.g., academic performance, finances, health, family matters, punctuality)—often struggle to regulate their anxiety. This difficulty, compounded by physical and emotional symptoms such as restlessness, fatigue, muscle tension, irritability, and sleep disturbances, may reduce the likelihood of engaging in HPBs (e.g., avoiding harmful substances, maintaining a healthy diet, exercising regularly), ultimately leading to a reduction in HRQoL.

In summary, both GAD symptoms and HPBs are key predictors of HRQoL in university students. Chronic worry and anxiety, poor stress management, unhealthy eating habits, physical inactivity, weak interpersonal connections, low health responsibility, and lack of spiritual growth can substantially diminish perceived HRQoL. The findings suggest that interventions to improve student well-being should aim to reduce GAD symptoms and promote HPBs. University counseling centers, therapists, and academic advisors can contribute to this goal by increasing awareness, facilitating access to mental health resources, and supporting the adoption of healthier lifestyles. Structured programs aimed at enhancing HPBs may significantly improve both physical and psychological well-being in students with GAD symptoms. Furthermore, mental health professionals may reduce the incidence, severity, and chronicity of GAD by implementing evidence-based therapies such as cognitive-behavioral therapy (CBT), acceptance and commitment therapy (ACT), emotion-focused therapy, transdiagnostic interventions, and mindfulness-based approaches. Finally, higher education institutions are encouraged to establish dedicated counseling centers and implement ongoing mental health education programs across campuses. These initiatives can help identify and address the factors contributing to GAD, thereby enhancing students' overall quality of life. Limitations of this study should be acknowledged. First, the cross-sectional and correlational design limits causal interpretations. Longitudinal studies are recommended to establish temporal relationships. Second, the reliance on self-report measures may introduce response bias, especially for sensitive variables such as HPBs and HRQoL. Future studies should consider employing mixed methods, including qualitative interviews or observational tools, to obtain richer and more accurate data.

Authors' Contributions

Authors equally contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We would like to express our gratitude to all individuals helped us to do the project.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethics Considerations

The study adhered to the ethical guidelines for research with human subjects as outlined in the Declaration of Helsinki. After being informed of the study objectives, participants signed an informed consent form. This study

Health Nexus
E-ISSN: 2981-2569

was approved by the Ethics Committee of Islamic Azad University, Neyshabur Branch (Ethics Code: IR.IAU.NEYSHABUR.REC.1403.034).

References

1. Wang Y, Zhang J, Huang L, Li X, Zhong Y. Association between healthy lifestyle choices and mental health among students: a cross sectional study. BMC Public Health. 2025;25(1):247. [PMID: 39838333] [PMCID: PMC11749073] [DOI]
2. Rodrigues MCJ, Rocha ACR, Couto CR. Measuring health-related quality of life among university students: a scoping review protocol. Syst Rev. 2025;14:63. [PMID: 40089766] [PMCID: PMC11909982] [DOI]
3. Wang Y, Wang X, Wang X. Stressors in university life and anxiety symptoms among international students: a sequential mediation model. BMC Psychiatry. 2023;23(1):556. [PMID: 37528380] [PMCID: PMC10394910] [DOI]
4. Olson N, Oberhoffer-Fritz R, Reiner B, Schulz T. Stress, student burnout and study engagement - a cross-sectional comparison of university students of different academic subjects. BMC Psychol. 2025;13(1):293. [PMID: 40128867] [PMCID: PMC11931745] [DOI]
5. Amiri M, Dowran B, Salimi SH, Zarghami MH, Gholami Fesharaki M. The relationships between student stressors with psychological problems in students in a military Medical Sciences University in Tehran. Journal of Military Medicine. 2022;21(4):380-9.
6. Tehrani SO, Perkins JM, Perkins DD. Health-related quality of life and perceptions of neighborhood physical and social environment in Tehran, Iran. Cities Health. 2024;9(1):38-54. [DOI]
7. Li HM, Zhong BL. Quality of life among college students and its associated factors: a narrative review. AME Medical Journal. 2022;7:38. [DOI]
8. Stefanelli KJ. Meditation and guided imagery show reduction in chronic stress and increase in mental health-related quality of life for college students. J Am Coll Health. 2024. [PMID: 39804719] [DOI]
9. Zebardast A, Rezaei S, Mofakhami S, Esfandyari Garkerudi S. The mediating role of emotion regulation in the relationship between Corona disease Anxiety and health-related quality of life in students. Journal of Applied Psychological Research. 2024;15(1):223-37.
10. Alwhaibi M. The impact of anxiety and depression on health-related quality of life in hyperlipidemic adults in the United States. J Clin Med. 2025;14(2):370. [PMID: 39860375] [PMCID: PMC11766087] [DOI]
11. Amoozadeh Z, Ahmadi Y, Pishgooie AH. Assessment the relationship between health anxiety and Iranian nurses' quality of life: a cross-sectional study. Front Psychiatry. 2025;16:1447816. [PMID: 40212834] [PMCID: PMC11983459] [DOI]
12. Preti A, Demontis R, Cossu G. The lifetime prevalence and impact of generalized anxiety disorders in an epidemiologic Italian National Survey carried out by clinicians by means of semi-structured interviews. BMC Psychiatry. 2021;21(1):48. [PMID: 33472585] [PMCID: PMC7816458] [DOI]
13. Wang T, Zhang S, Yang Y, Zu B, Pan C, Yin J. Health-related quality of life and its factors in Chinese people with depression and anxiety: A national multi-center cross-sectional study. J Affect Disord. 2025;372:241-50. [PMID: 39643215] [DOI]
14. Wilmer MT, Anderson K, Reynolds M. Correlates of quality of life in anxiety disorders: Review of recent research. Curr Psychiatry Rep. 2021;23(11):77. [PMID: 34613508] [PMCID: PMC8493947] [DOI]
15. American Psychiatric A. Diagnostic and statistical manual of mental disorders, Fifth Edition, Text Revision: American Psychiatric Association; 2022. [DOI]
16. Pour H, Mansouri A. The mediating role of worry and rumination in the relationship between behavioral brain systems and generalized anxiety disorder in students. Clinical Psychology and Personality. 2021;19(1):121-30. [DOI]
17. Allgulander C, Jørgensen T, Wade A. Health-related quality of life (HRQOL) among patients with generalized anxiety disorder: evaluation conducted alongside an escitalopram relapse prevention trial. Curr Med Res Opin. 2007;23(10):2543-9. [PMID: 17825130] [DOI]
18. Bobes J, Caballero L, Vilardaga I, Rejas J. Disability and health-related quality of life in outpatients with generalized anxiety disorder treated in psychiatric clinics: is there still room for improvement? Ann Gen Psychiatry. 2011;10(1):7. [PMID: 21401940] [PMCID: PMC3064614] [DOI]
19. Comer JS, Blanco C, Hasin DS. Health-related quality of life across the anxiety disorders: results from the national epidemiologic survey on alcohol and related conditions (NESARC). J Clin Psychiatry. 2011;72(1):43-50. [PMID: 20816036] [PMCID: PMC3000882] [DOI]
20. Ji Y, Chen H, Yang Y. Health-related quality of life and survival outcomes for patients with major depressive disorder and anxiety: A longitudinal study in pancreatic ductal adenocarcinoma. Cancer Med. 2023;12(19):20070-80. [PMID: 37746894] [PMCID: PMC10587956] [DOI]
21. Porensky EK, Dew MA, Karp JF. The burden of late-life generalized anxiety disorder: effects on disability, health-related quality of life, and healthcare utilization. Am J Geriatr Psychiatry. 2009;17(6):473-82. [PMID: 19472438] [PMCID: PMC3408215] [DOI]
22. Revicki DA, Brandenburg N, Matza L, Hornbrook MC, Feeny D. Health-related quality of life and utilities in primary-care patients with generalized anxiety disorder. Qual Life Res. 2008;17(10):1285-94. [PMID: 18949580] [DOI]
23. Wyrwich K, Harnam N, Revicki DA, Locklear JC, Svedsäter H, Endicott J. Assessing health-related quality of life in generalized anxiety disorder using the quality of life enjoyment and satisfaction questionnaire. Int Clin Psychopharmacol. 2009;24(6):289-95. [PMID: 19707153] [DOI]
24. World Health O. Health promotion and disease prevention through population-based interventions, including action to address social determinants and health inequity 2025 [Available from: https://www.emro.who.int/about-who/public-health-functions/health-promotion-disease-prevention.html
25. Maheri M, Darabi F, Elahi M, Yaseri M. Assessment of health promoting behaviors and relevant factors among type 2 diabetic patients covered by Asadabad School of Medical Sciences. Iranian Journal of Endocrinology and Metabolism. 2021;22(6):478-89. [DOI]
26. Kennedy AB, Cambron JA, Dexheimer JM, Trilk JL, Saunders RP. Advancing health promotion through massage therapy practice: A cross-sectional survey study. Prev Med Rep. 2018;11:49-55. [PMID: 29984138] [PMCID: PMC6030570] [DOI]
27. Cho S, Lee H, Oh EG, Kim GS, Kim YC, Park CG. Health-related quality of life among migrant workers: The impact of health-promoting behaviors. Nurs Health Sci. 2020;22:318-27. [PMID: 31667923] [DOI]
28. Hong M, Shin H, De Gagne JC. Social networks, health-promoting behaviors, and health-related quality of life in older adults with and without arthritis. PLoS One. 2019;14(7):e0220180. [PMID: 31339940] [PMCID: PMC6655701] [DOI]

Health Nexus
E-ISSN: 2981-2569

29. Li S, Cui G, Yin Y, Wang S, Liu X, Chen L. Health-promoting behaviors mediate the relationship between eHealth literacy and health-related quality of life among Chinese older adults: a cross-sectional study. Qual Life Res. 2021;30(8):2235-43. [PMID: 33661455] [PMCID: PMC8298362] [DOI]
30. Liu S, Lu Y, Wang D. Impact of digital health literacy on health-related quality of life in Chinese community-dwelling older adults: the mediating effect of health-promoting lifestyle. Front Public Health. 2023;11:1200722. [PMID: 37415711] [PMCID: PMC10321557] [DOI]
31. Qin Z, Wang N, Ware RS, Sha Y, Xu F. Lifestyle-related behaviors and health-related quality of life among children and adolescents in China. Health Qual Life Outcomes. 2021;19(1):8. [PMID: 33407589] [PMCID: PMC7788787] [DOI]
32. Salari L, Ahi Q, Mansouri A, Shahabizadeh F. Stressful life events and health-related quality of life among diabetic patients: The mediating role health-promoting behaviors and self-management behaviors. J Diabetes Nurs. 2021;9(4):1699-717.
33. Zheng X, Xue Y, Dong F. The association between health-promoting lifestyles, and socioeconomic, family relationships, social support, health-related quality of life among older adults in China: a cross sectional study. Health Qual Life Outcomes. 2022;20(1):64. [DOI]
34. Seo EJ, Ahn JA, Hayman LL, Kim CJ. The Association Between Perceived Stress and Quality of Life in University Students: The Parallel Mediating Role of Depressive Symptoms and Health-Promoting Behaviors. Asian Nurs Res (Korean Soc Nurs Sci). 2018;12(3):190-6. [PMID: 30103040] [DOI]
35. Wang FJ, Zhang C, Cai MM, Zhang JQ, Wang HX. Personal mastery and quality of life in patients with atrial fibrillation after radiofrequency ablation: The mediating role of health promoting behavior. Heart Lung. 2024;67:46-52. [PMID: 38657400] [DOI]
36. Mo PKH, So GYK, Lu Z, Mak WWS. The mediating role of health-promoting behaviors on the association between symptom severity and quality of life among Chinese individuals with mental illness: A cross-sectional study. Psychopathology. 2023;56(3):194-205. [PMID: 35901786] [PMCID: PMC8895671] [DOI]
37. Mo PKH, Wong ELY, Yeung NCY. Differential associations among social support, health promoting behaviors, health-related quality of life and subjective well-being in older and younger persons: a structural equation modelling approach. Health Qual Life Outcomes. 2022;20(1):38. [PMID: 19758427] [PMCID: PMC2749829] [DOI]
38. Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med. 2006;166(10):1092-7. [DOI]
39. Ware J, Jr., Kosinski M, Keller SD. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. Med Care. 1996;34(3):220-33. [PMID: 8628042] [DOI]
40. Montazeri A, Vahdaninia M, Mousavi SJ, Omidvari S. The Iranian version of 12-item Short Form Health Survey (SF-12): Factor structure, internal consistency and construct validity. BMC Public Health. 2009;9:341. [PMID: 19758427] [PMCID: PMC2749829] [DOI]
41. Stockert PA. The determinants of a health-promoting lifestyle in older adults: PhD Dissertation, Saint Louis University; 2000.

Health Nexus
E-ISSN: 2981-2569