Original Article

Mental Health And Eating Patterns: Relationship Between Body Mass Index, Generalised Anxiety Disorder And Three-Factor Eating Scores Among University Students In Lahore

Muhammad Adil Agha[1], Khola Noreen[2], Muhammad Mohsin Javaid[3], Muhammad Hasnat Agha[4]

Abstract

Objective: To investigate the relationship between Body Mass Index (BMI) and eating behaviours, specifically cognitive restraint, uncontrolled eating, and emotional eating among university students in Lahore, Pakistan.

Methods: A cross-sectional study was conducted among 385 university students aged 18–24 years using random sampling. Anthropometric data were collected to calculate BMI, and validated questionnaires, including the Three-Factor Eating Questionnaire-R18 (TFEQ-R18) and Generalised Anxiety Disorder-7 (GAD-7), were administered. Data were analysed using IBM SPSS v21. Descriptive statistics and chi-square tests were used; p-values <0.05 were considered significant.

Results: Of the participants, 48.05% had normal BMI, 40.78% were overweight, and 6.23% were obese. A statistically significant association was found between BMI and emotional eating (p = 0.018), with higher scores in overweight and obese individuals. No significant relationship was observed between BMI and either cognitive restraint (p = 0.985) or uncontrolled eating (p = 0.443). Most participants (68.57%) exhibited minimal anxiety levels.

Conclusion: The study highlights a significant link between BMI and emotional eating among university students, suggesting emotional regulation as a potential target for obesity prevention strategies. Integrative interventions focusing on mental health and healthy eating behaviours are warranted in academic settings.

Keywords: anxiety, BMI, cognitive restraint, emotional eating, GAD-7.

Contributions:
MAA, MMJ, MHA - Conception, Design
KN - Acquisition, Analysis, Interpretation
KN, MHA - Drafting
MAA, MMJ, MHA - Critical Review

All authors approved the final version to be published & agreed to be accountable for all aspects of the work.

Conflicts of Interest: None
Financial Support: None to report
Potential Competing Interests: None to report

Institutional Review Board Approval
F. No. 000572/HAS/MSPH-2022
20-05-2025
Health Services Academy

Review began 31/05/2025
Review ended 05/08/2025
Published 29/09/2025

How to cite this article: Agha MA, Noreen K, Javaid MM, Agha MH. Mental Health And Eating Patterns: Relationship Between Body Mass Index, Generalised Anxiety Disorder And Three-Factor Eating Scores Among University Students In Lahore. JRMC. 2025 Sep. 29;29(3).

https://doi.org/10.37939/jrmc.v29i3.2938

Introduction

As evidenced from the literature, anxiety and depression are serious disabling conditions and correlate with a greater incidence of suicidal risks and morbidity.[1,2] Anxiety refers to "apprehension, tension or uneasiness that stems from an anticipation of danger, which may be external or internal".[3] As per the 5th edition of the manual for statistics & diagnosis of Mental Health Ailments, Generalised Anxiety Disorder (GAD) is defined as "excessive worry over things that happen to you or your life".[4] Generalised Anxiety Disorder (GAD) manifests as emotional liability, restlessness, fatigue, muscular stress and sleep disturbance.[5] Anxiety disorders set a significant burden on patients as well as on society. Individuals suffering from these conditions frequently face significant psychological distress, significant impairment, and a reduced standard of living.[6] Generalised anxiety disorder (GAD) is an active field that often explores the interplay between genetics and brain structure, as explored by research regarding the pathophysiology of GAD.[7]

A statistical index providing an estimate of body fat in females and males of any age using a person's weight and height is the Body Mass Index (BMI). It is measured by taking a person's weight, in kilograms, divided by their height, in meters squared, or BMI = weight (in kg)/ height^2 (in m^2). The number generated from this equation is then the individual's BMI number.[8] BMI is Quick, simple to calculate, Noninvasive, Inexpensive, and easily collected during routine health care visits.[9] Three Factor Eating Questionnaire-R18 evaluates three dimensions of eating behaviour: emotional eating, self-restraint, and uncontrolled (binge) eating.[10] Eating behaviours are characterised by regular eating schedules and patterns, while irregular eating behaviours are defined by irregular eating schedules and patterns. Specifically, irregular eating schedules are characterised as an average variation of more than 2 hours between the main meal times on weekends and weekdays.[11] Eating behaviour is widely recognised as the result of internalised multidimensional constructs that encompass behavioural, cognitive, and emotional elements. Since eating disorders usually start in the early years of adolescence, the estimated prevalence in college students was 4% for males and 11% to 17% for females.[12]

The demographic profile of Pakistan shows a greater proportion of youth, with approximately 30% of its population falling within the 15 to 29 age range. Mental disorders become more prevalent in the second and third decades of life. People between the ages of 18 and 29 are particularly prone to disorders related to anxiety and mood, and 40% of them experience their first episode of depression depressive before turning 20. Addressing mental health issues among college students has become a recent concern among the community.[13] Raising awareness, offering early intervention, and providing appropriate support can all help lessen the effects of anxiety and improve the quality of life for those who experience it.[14]

Mental health concerns such as anxiety and depression are rising globally and pose a major public health burden, particularly among young adults. Generalised Anxiety Disorder (GAD), characterised by excessive worry, restlessness, and disturbed sleep, is highly prevalent during adolescence and early adulthood—a period marked by significant life transitions, including entry into university life. Research indicates that these mental health conditions not only impair quality of life but are also associated with dysfunctional eating patterns and changes in body weight.

In parallel, there is growing concern over disordered eating behaviours in youth, such as emotional eating, cognitive restraint, and uncontrolled eating, which are commonly assessed using the Three-Factor Eating Questionnaire (TFEQ-R18). These behaviours have been linked to body weight variations, often measured using Body Mass Index (BMI). Despite extensive global evidence, there is a paucity of data from low- and middle-income countries like Pakistan, where sociocultural norms, food environment, and awareness of mental health significantly differ from high-income settings.

This study aims to address this evidence gap by investigating the relationship between BMI and eating behaviours, including emotional eating, cognitive restraint, and uncontrolled eating among university students in Lahore, Pakistan. Exploring this relationship is essential to inform contextually relevant health promotion strategies and policy interventions targeting youth well-being in educational settings.

The findings will have practical implications for university health programs, enabling early identification of at-risk individuals and promoting healthier lifestyle practices. Moreover, it will contribute to the growing body of literature on the biopsychosocial determinants of health among youth in South Asia, laying the groundwork for future longitudinal and interventional research in this critical area. Therefore, the objective of this study is to investigate the relationship between Body Mass Index (BMI) and eating behaviours; specifically, cognitive restraint, uncontrolled eating, and emotional eating among university students in Lahore, Pakistan.

Materials And Methods

This cross-sectional study was conducted in the universities of Lahore from April to Oct 2024. The study population consisted of young adults aged 18-24 years. A random sampling technique was used to select participants via computer computer-generated process.

The sample size was estimated by using the following formula,

$n= (Z\alpha/2)^2 [P(1-P)]/d^2$,

where n is the sample size, Z is a confidence level (95%) and ($Z\alpha/2$) =1.96, P is the proportion (50%). Using these parameters, the calculated sample size was 385.

Inclusion Criteria were participants between 18-24 years old who are currently enrolled in a university in Lahore with no underlying mental ailments. Participants with diagnosed psychiatric or medical conditions were excluded.

Data collection includes measurement of Anthropometric Parameters like Measurement of BMI (kg/m^2), weight (kg). BMI was estimated by dividing a person's weight in kilograms by their height in meters squared. Three data collectors were trained and engaged for the entire process of data collection, who had a weighing machine/scale to measure weight in Kg and a tape to measure height in meters of every participant.

To gather data, this study employed 02 established & validated questionnaires, each targeting different aspects of research:

- **GAD-7 (Generalised Anxiety Disorder-7):**[15,16] This self-report validated and trustworthy tool is used frequently to screen and evaluate the severity of generalised anxiety disorder. It consists of 07 items that evaluate how frequently anxiety symptoms have arisen during the previous 02 weeks. It has revealed good outcomes in various situations and populations, such as in adolescents and university students. (GAD-7), have a sensitivity range of 57.6% to 93.9% and a specificity of 61% to 97%, making them useful for the identification of disorders related to anxiety in a primary care setting.
- **TFEQ-R18 (Three Factor Eating Questionnaire-R18):**[10] This questionnaire evaluates three dimensions of eating behaviour: emotional eating, self-restraint, and uncontrolled (binge) eating. It offers insights into how anxiety may influence eating patterns, including responses to stress and emotional triggers.

Data analysis was done by using IBM SPSS (version 21). The analysis plan involved descriptive statistics including standard deviations, means, percentages and frequencies. The chi-square test was used to explore the relationships between categorical variables. A p-value less than 0.05 was considered statistically significant.

Results

Out of 385 participants, Males were 193 (50.13%) while women were 192 (49.87). Almost half of the students, 185 (48.05%), have normal BMI, and 19 (4.94%) fall into the underweight category. Nevertheless, a significant proportion of participants fell in the overweight category, 157 (40.78%), whereas just 24 (6.23%) were in the obese category. Mean weight was reported 69.99 ± 9.92, Mean BMI 24.60 ± 2.71 and Mean age 23.44 ± 1.94.

Table 1: Generalised anxiety disorder (GAD) score among the study population

Generalised Anxiety Disorder Status			N (%)		
Minimal			264 (68.57)		
Mild			80 (20.78)		
Moderate			31 (8.05)		
Severe			10 (2.6)		
	Range	Min	Max	Mean	SD
GAD Score	21	0	21	4.45	3.64

Table 2: Responses of the Three-Factor Eating Questionnaire among the participants

The Three Factor Eating Questionnaire; N%	False	Mostly false	Mostly true	True
1. When I smell a delicious food, I find it very difficult to keep from eating, even if I have just finished a meal.	43 (11.2)	117 (30.4)	179 (46.5)	46 (11.9)
2. I deliberately take small helpings as a means of controlling my weight.	127 (33)	199 (51.7)	50 (13)	9 (2.3)
3. When I feel anxious, I find myself eating.	131 (34)	172 (44.7)	74 (19.2)	8(2.1)
4. Sometimes when I start eating, I just can't seem to stop.	146 (37.9)	178 (46.2)	56 (14.5)	5 (1.3)
5. Being with someone who is eating often makes me hungry enough to eat also.	116 (30.1)	151 (39.2)	103 (26.8)	15 (3.9)
6. When I feel blue, I often overeat.	123 (31.9)	121 (31.4)	130 (33.8)	11 (2.9)
7. When I see a real delicacy, I often get so hungry that I have to eat right away.	80 (20.8)	115 (29.9)	170 (44.2)	20 (5.2)
8. I get so hungry that my stomach often seems like a bottomless pit.	156 (40.5)	157 (40.8)	66 (17.1)	6 (1.6)
9. I am always hungry, so it is hard for me to stop eating before I finish the food on my plate.	167 (43.4)	155 (40.3)	53 (13.8)	10 (2.6)
10. When I feel lonely, I console myself by eating.	147 (38.2)	126 (32.7)	104 (27)	8 (2.1)
11. I consciously hold back at meals in order not to gain weight.	162 (42.1)	137 (35.6)	82 (21.3)	4 (1)
12. I do not eat some foods because they make me fat.	145 (37.7)	146 (37.9)	87 (22.6)	7 (1.8)
13. I am always hungry enough to eat at any time.	158 (41)	150 (39)	67 (17.4)	10 (2.6)
The Three Factor Eating Questionnaire				**N (%)**
14. How often do you feel hungry?				
Sometimes between meals				118 (30.6)
Often between meals				153 (39.7)
Almost always				64 (16.6)
Only at meals				50 (13)
15. How frequently do you avoid "stocking up" on tempting foods?				
Moderately likely				131 (34)
Seldom				172 (44.7)
Almost always				38 (9.9)
Rarely				44 (11.4)
16. How likely are you to consciously eat less than you want?				
Slightly likely				128 (33.2)
Very likely				52 (13.5)
Moderately likely				103 (26.8)
Unlikely				102 (26.5)
17. Do you go on eating binges though you are not hungry?				
Rarely				166 (43.1)
Sometimes				117 (30.4)
Never				58 (15.1)
At least once a week				44 (1.40
18. On a scale of 1 to 8, where 1 means no restraint in eating (eating whatever you want, whenever you want it) and 8 means total restraint (constantly limiting food intake and never "giving in"), what number would you give yourself?				
1-2				283 (73.5)
3-4				102 (26.5)

The severity of the GAD symptoms is used to categorise the participants. The majority of the participants, 264 individuals (68.57%), fall into the "Minimal" anxiety category. A smaller portion, 80 individuals (20.78%), experience "Mild" anxiety. Moreover, 31 (8.05%) are classified under "Moderate" anxiety. However, only 10 (2.6%) are categorised as having "Severe" anxiety. The GAD scores go from 0 to 21, where 0 denotes no anxiety symptoms at all and 21 is the highest degree of anxiety severity that the study found. With an average GAD score of 4.45, the population is generally thought to experience mild symptoms of anxiety. The GAD scores show a moderate degree of variability, with a standard deviation of 3.64 (Table 1). Cognitive restraint was given a score that ranged from 1 to 3.2, with a standard deviation of 0.39 and a mean of 1.88. A score of one was the minimum, and 3.2 was the maximum. Scores for uncontrollably eating ranged from 1 to 3.6. This behaviour had a mean score of 2.02 and a standard deviation of 0.40. A score as low as 1 was recorded, and as high as 3.6. Emotional eating

scores range from 1 to 4. The mean score for emotional eating was 1.97, with a standard deviation of 0.59. The three-factor eating questionnaire is represented in Table 3

Table 3: Descriptive analysis of cognitive restraint, uncontrolled eating and emotional eating scores observed in young adults

TFEQ scores	Range	Min.	Max.	Mean	SD
Cognitive Restraint Score	2.2	1	3.2	1.88	0.39
Uncontrolled Eating Score	2.6	1	3.6	2.02	0.40
Emotional Eating Score	3	1	4	1.97	0.59

There is minimal difference between the BMI categories when it comes to the Cognitive Restraint Score, which gauges the conscious restriction of food intake to control body weight. The scores are quite similar: 1.85 ± 0.35 for underweight, 1.88 ± 0.4 for normal, 1.88 ± 0.37 for overweight, and 1.9 ± 0.51 for obese individuals. The P-value of 0.985 indicates no significant relationship between BMI and cognitive restraint.

For the Uncontrolled Eating Score, which reflects the tendency to eat in response to feelings of hunger and loss of control over eating, the scores range from 1.96 ± 0.38 in underweight individuals to 2.09 ± 0.48 in obese individuals. The P-value of 0.443 indicates no significant difference between BMI and uncontrolled eating. The Emotional Eating Score, which measures the extent to which emotions influence eating behaviour, shows more variation across BMI categories. The scores were 1.76 ± 0.65 for underweight, 1.92 ± 0.59 for normal, 2.01 ± 0.56 for overweight and 2.25 ± 0.69 for obese individuals. A statistically significant correlation between BMI and emotional eating was indicated by the P-value of 0.018. As shown in Table 4

Table 4: Relationship of BMI with three-factor eating scores (Cognitive Restraint Score, Uncontrolled Eating Score and Emotional Eating Score) in the study population

BMI	Cognitive Restraint Score	Uncontrolled Eating Score	Emotional Eating Score
Underweight	1.85 ±0.35	1.96 ±0.38	1.76 ±0.65
Normal	1.88 ±0.4	2 ±0.41	1.92 ±0.59
Overweight	1.88 ±0.37	2.05 ±0.39	2.01 ±0.56
Obese	1.9 ±0.51	2.09 ±0.48	2.25 ±0.69
P value	0.985	0.443	0.018*

Discussion

The current study aimed to investigate the association between Body Mass Index (BMI) and eating behaviours, specifically emotional eating, uncontrolled eating, and cognitive restraint, among university students in Lahore. The findings reveal several important trends that contribute to the broader understanding of how psychological and behavioural factors interplay with physical health indicators in a young adult population.

One of the most notable findings is the significant association between BMI and emotional eating ($p = 0.018$), suggesting that individuals with higher BMI scores are more likely to engage in eating behaviour influenced by emotional states. This aligns with existing literature indicating that emotional eating serves as a maladaptive coping mechanism for stress and anxiety, potentially contributing to increased caloric intake and weight gain over time.[17] Emotional cues such as loneliness, sadness, and stress have previously been reported as strong triggers for overeating, particularly in populations with limited emotional regulation strategies.[18]

Conversely, no statistically significant relationship was observed between BMI and either cognitive restraint or uncontrolled eating. This finding is somewhat unexpected, especially given evidence from other populations suggesting that cognitive restraint is often higher in individuals with elevated BMI.[19] One explanation may lie in the relatively young age of the participants, many of whom may not yet engage in structured or conscious dietary control strategies. Similarly, the lack of a strong link between BMI and uncontrolled eating suggests that factors other than impulsivity around food, such as emotional regulation or metabolic differences, may play a more prominent role in shaping weight trajectories in this cohort.[20]

Another key insight is that while the average scores for all three eating behaviour domains fell within mid-range values, emotional eating emerged as a potentially modifiable target for intervention, especially in overweight and obese students. The findings suggest that interventions aimed at improving emotional coping skills, such as mindfulness-based stress reduction or cognitive behavioural therapy, could have beneficial effects on both psychological well-being and weight outcomes.[21]

Additionally, the high proportion of participants categorised as overweight (40.78%) and obese (6.23%) underscores the growing public health concern of rising obesity rates in Pakistani youth. This trend mirrors global observations and suggests an urgent need for culturally tailored health promotion programs that address not only physical activity and nutrition but also mental health awareness and resilience building.[22]

Interestingly, the majority of participants reported minimal to mild anxiety symptoms according to the GAD-7 scores, which contrasts with previous evidence from similar student populations reporting higher rates of moderate to severe anxiety.[23] This could reflect regional or institutional differences in mental health awareness, social support structures, or even variations in

academic pressure.[24] It is also worth considering that stigma around mental health may lead to under-reporting of anxiety symptoms in self-report questionnaires, a limitation frequently cited in psychological research.[25]
Overall, these findings support a growing body of evidence indicating that eating behaviours, particularly emotional eating, are closely linked to BMI in youth populations. Importantly, they highlight the need for integrated, interdisciplinary approaches that combine mental health support with nutritional counselling in university settings.

Conclusions

The study highlights a significant link between BMI and emotional eating among university students, suggesting emotional regulation as a potential target for obesity prevention strategies. Integrative interventions focusing on mental health and healthy eating behaviours are warranted in academic settings.

Author Information

1. Ex House Officer, CIMS Multan 2. Associate Professor Community Medicine, Rawalpindi Medical University, Rawalpindi 3. Demonstrator, School of Dentistry, SZABMU, Islamabad 4. Alumni, Health Services Academy, Islamabad
Corresponding author: Dr. Khola Noreen khauladr66@gmail.com

References

1. Baqi A, Zia Q, Shaikh SP, Shoaib M, Javaid MM, Malik MS. Determinants of Anxiety in Amputees Owed to Traumatic & Non-Traumatic Causes in Quetta. Ann Pak Inst Med Sci. 2022; 18(3):175-180. https://doi.org/10.48036/apims.v18i3.671
2. Obuobi-Donkor G, Nkire N, Agyapong VI. Prevalence of major depressive disorder and correlates of thoughts of death, suicidal behaviour, and death by suicide in the geriatric population—A general review of literature. Behavioral Sciences. 2021 Oct 21;11(11):142. https://doi.org/10.3390/bs11110142
3. Griffin JB JR. Anxiety. In: Walker HK, Hall WD, Hurst JW, editors. Clinical Methods: The History, Physical, and Laboratory Examinations. 3rd edition. Boston: Butterworths; 1990. Chapter 202.
4. Association AP. Diagnostic and statistical manual of mental disorders: DSM-5: American psychiatric association; 2013.
5. Mishra AK, Varma AR, Varma A. A comprehensive review of the generalized anxiety disorder. Cureus. 2023 Sep 28;15(9). Doi: 10.7759/cureus.46115
6. Revicki DA, Travers K, Wyrwich KW, Svedsäter H, Locklear J, Mattera MS Et al. Humanistic and economic burden of generalized anxiety disorder in North America and Europe. J Affect Disord. 2012 Oct 1;140(2):103-12. https://doi.org/10.1016/j.jad.2011.11.014
7. Baldwin D, Stein MB, Hermann R. Generalized anxiety disorder in adults: Epidemiology, pathogenesis, clinical manifestations, course, assessment, and diagnosis. UpToDate. Waltham (MA): UpToDate. 2018 Oct 10.
8. Jan A, Weir CB. BMI classification percentile and cut off points. Stat Pearls: Treasure Island, FL, USA. 2021:1-4.
9. About Body Mass Index (BMI). CDC. 2024.
10. Alhebshi S, Hilary S, Safi SK, Ali HI, Ismail LC, Al Dhaheri A Et al. Validity and reliability of the Arabic version of the Three-Factor Eating Questionnaire-R18. Heliyon. 2023 Jul 1;9(7). https://doi.org/10.1016/j.heliyon.2023.e17623
11. Adnan D, Trinh J, Bishehsari F. Inconsistent eating time is associated with obesity: A prospective study. EXCLI J. 2022 Jan 14;21: 300-06. https://doi.org/10.17179/excli2021-4324
12. Harrer M, Adam SH, Messner EM, Baumeister H, Cuijpers P, Bruffaerts R, Auerbach RP, Kessler RC, Jacobi C, Taylor CB, Ebert DD. Prevention of eating disorders at universities: A systematic review and meta-analysis. Int J Eat Disord. 2020 Jun;53(6):813-33. https://doi.org/10.1002/eat.23224
13. Khan MN, Akhtar P, Ijaz S, Waqas A. Prevalence of depressive symptoms among university students in Pakistan: a systematic review and meta-analysis. Front Public Health. 2021 Jan 8;8: https://doi.org/10.3389/fpubh.2020.603357
14. Haller H, Cramer H, Lauche R, Gass F, Dobos GJ. The prevalence and burden of subthreshold generalized anxiety disorder: a systematic review. BMC psychiatry. 2014 Dec; 14:1-3. https://doi.org/10.1186/1471-244X-14-128.
15. Villarreal-Zegarra D, Paredes-Angeles R, Mayo-Puchoc N, Arenas-Minaya E, Huarcaya-Victoria J, Copez-Lonzoy A. Psychometric properties of the GAD-7 (General Anxiety Disorder-7): a cross-sectional study of the Peruvian general population. BMC Psychol. 2024 Apr 2;12(1):183. https://doi.org/10.1186/s40359-024-01688-8
16. Szuhany KL, Simon NM. Anxiety disorders: a review. Jama. 2022 Dec 27;328(24):2431-45. Doi:10.1001/jama.2022.22744
17. Brytek-Matera, A. Negative Affect and Maladaptive Eating Behavior as a Regulation Strategy in Normal-Weight Individuals: A Narrative Review. Sustainability 2021, 13, 13704. https://doi.org/10.3390/su132413704
18. Frayn M, Livshits S, Knäuper B. Emotional eating and weight regulation: a qualitative study of compensatory behaviors and concerns. J Eat Disord. 2018 Sep 14;6:23. doi: 10.1186/s40337-018-0210-6.
19. Alqahtani RM, Alhazmi A. Association between cognitive restraint, emotional eating, uncontrolled eating, and body mass index among health care professionals. Sci Rep. 2025 Jan 20;15(1):2570. https://doi.org/10.1038/s41598-025-86419-8.

20. Garcia-Garcia I, Neseliler S, Morys F, Dadar M, Yau YHC, Scala SG, Zeighami Y, Sun N, Collins DL, Vainik U, Dagher A. Relationship between impulsivity, uncontrolled eating and body mass index: a hierarchical model. Int J Obes (Lond). 2022 Jan;46(1):129-136. https://doi.org/10.1038/s41366-021-00966-4. Epub 2021 Sep 22.
21. Zhang D, Lee EKP, Mak ECW, Ho CY, Wong SYS. Mindfulness-based interventions: an overall review. Br Med Bull. 2021 Jun 10;138(1):41-57. https://doi.org/10.1093/bmb/ldab005.
22. Li M, Gong W, Wang S, Li Z. Trends in body mass index, overweight and obesity among adults in the USA, the NHANES from 2003 to 2018: a repeat cross-sectional survey. BMJ Open. 2022 Dec 16;12(12):e065425
23. Kandasamy, G., Almanasef, M., Almeleebia, T. et al. Prevalence of anxiety and depression among university students in Southern Saudi Arabia based on a cross sectional survey. Sci Rep 15, 15482 (2025). https://doi.org/10.1038/s41598-025-00695-y
24. Al-Garni, A.M., Shati, A.A., Almonawar, N.A. et al. Prevalence of depression, anxiety, and stress among students enrolled at King Khalid University: a cross-sectional study. BMC Public Health 25, 354 (2025). https://doi.org/10.1186/s12889-025-21277-7
25. Ahad AA, Sanchez-Gonzalez M, Junquera P. Understanding and Addressing Mental Health Stigma Across Cultures for Improving Psychiatric Care: A Narrative Review. Cureus. 2023 May 26;15(5):e39549. https://doi.org/10.7759/cureus.39549.