

Prevalence and Correlates of Anxiety Symptoms Among Bangladeshi Women Aged 15–45: A Cross-Sectional Study Using the DASS-21 Scale

By

Ramisa Anjum
19346079

A thesis submitted to the School of Pharmacy in partial fulfillment of the requirements for
the degree of
Bachelor of Pharmacy (Hons.)

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BRAC University
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Declaration

It is hereby declared that

1. The thesis submitted is my/our own original work while completing degree at BRAC University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

Student's Full Name & Signature:

Ramisa Anjum
(19346079)

Approval

The thesis project titled “Prevalence and Correlates of Anxiety Symptoms Among Bangladeshi Women Aged 15–45: A Cross-Sectional Study Using the DASS-21 Scale” submitted by Ramisa Anjum (19346079), of Summer, 2024 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy.

Examining Committee:

Supervised by:

Dr. Md. Rabiul Islam
Associate Professor, School of Pharmacy
BRAC University

Approved by:

Acting Chairperson:

Raushanara Akter, PhD
Professor and Acting Chairperson, School of Pharmacy
BRAC University

Acting Dean:

A.F.M Yusuf Haider, PhD
Acting Dean, School of Pharmacy
Professor, Department of Mathematics and Natural Sciences
BRAC University

Ethics Statement

Informed assent was obtained from all participants, and ethical approval was granted by the Southeast University Ethics Committee (SEU/Pharm/CECR/022/2024).

Abstract

This cross-sectional study examined the prevalence and factors associated with anxiety symptoms in Bangladeshi women aged 15–45, utilizing the Anxiety subscale of the DASS-21. A total of 1,019 participants from both urban and rural environments were evaluated, uncovering a significant anxiety prevalence of 74%, with almost one-third exhibiting extremely severe symptoms. Statistical analyses revealed notable correlations between anxiety and factors such as urban living, elevated socioeconomic status, levels of education, job status, engagement in high physical labor, use of dietary supplements, variations in appetite, and somatic symptoms including dizziness and blurred vision. Logistic regression analysis provided additional evidence that urban living (OR=2.08), high physical labor (OR=4.32), supplement use (OR=2.35), and dysregulated eating behaviors serve as independent predictors of anxiety. In contrast, factors such as age, BMI, marital status, overall physical activity, and particular dietary patterns did not emerge as significant predictors. The results highlight the essential requirement for mental health interventions that are culturally specific, the necessity for broader screening with DASS-21 in community environments, and the importance of integrative strategies that consider somatic symptoms. Future longitudinal and qualitative studies are necessary to clarify causal mechanisms and obstacles to care, thus guiding focused public health strategies in Bangladesh.

Keywords: Anxiety; Bangladeshi women; DASS-21; Prevalence; Lifestyle factors; Cross-sectional study.

Dedication

I would like to dedicate this thesis to my parents for their unwavering love and support and to my grandparents, who were my guardians in my parents' absence—my grandmother for her continued encouragement and my late grandfather, whose memory and guidance still inspire me.

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List of Acronyms

- ACTH – Adrenocorticotrophic Hormone
- BDNF – Brain-Derived Neurotrophic Factor
- BMI – Body Mass Index
- CED - Chronic Energy Deficiency
- CI – Confidence Interval
- COVID-19 – Coronavirus Disease 2019
- DASS-21 – Depression Anxiety Stress Scale (21-item)
- DASS-21-BV – Depression Anxiety Stress Scale, Bangla Version
- GDP – Gross Domestic Product
- GAD-7: Generalized Anxiety Disorder (7-item scale)
- HPA – Hypothalamic–Pituitary–Adrenal Axis
- IBM SPSS – International Business Machines Statistical Package for the Social Sciences
- OR - Odds Ratio
- PHQ-9 - Patient Health Questionnaire
- SEU – Southeast University (Ethics Committee)
- SPSS – Statistical Package for the Social Sciences

Chapter 1

Introduction

1.1 Background

Women are about twice as likely as men to have anxiety disorders, especially when they are of childbearing age. About 4% of the people in the world have these disorders (Alonso et al., 2018). The 2022 Demographic and Health Survey in Bangladesh found that 19.5% of women between the ages of 15 and 49 who had ever been married had moderate to severe anxiety symptoms (Amin et al., 2025). But only 22% got professional help, and only 8% got medicine, which shows that there aren't enough services and that there is a stigma (Raza et al., 2025). DASS-21 is very reliable (Cronbach's $\alpha = 0.93$) and works the same way for men and women in adult samples. Still, it has mostly been used by students and professionals, leaving out people between the ages of 15 and 45. Because of this, this strong, multi-faceted tool has not been able to give national estimates of how common and serious the problem is (Abu Hena Mostafa Alim et al., 2014). International meta-analyses also show that diets that cause inflammation can raise the risk of anxiety by as much as 66% (OR 1.66; 95% CI 1.41–1.96). On the other hand, anti-inflammatory patterns, regular exercise, and good sleep hygiene can each lower symptoms by 20–30%. These results show how important it is to include a wider range of people in research and how necessary it is to make changes to people's lifestyles. We can better help people of all ages with mental health problems if we know how diet and health behaviors affect them. There haven't been any studies in Bangladesh that looked at these lifestyle factors and DASS-21 anxiety scores in women of childbearing age, though (Campisi et al., 2024). Systemic barriers make these research deficits worse: Bangladesh spends barely 0.5 percent of its health budget on the treatment of mental illnesses. There is around one psychiatrist for every 650,000 people, and more than half of the population has stigmatizing views that make it hard for people to get

care (Moitra et al., 2022). To make up for these gaps, This study aims to address these deficiencies by employing the DASS-21-BV in urban and rural cohorts of women aged 15 to 45 to (1) map the prevalence and severity of anxiety (Ahmed et al., 2022), (2) examine at demographic predictors (age, education, income, marital status, region)(Sheoti et al., 2024), (3) discover links between dietary inflammatory potential, physical activity, and sleep quality, (Torabynasab et al., 2023) (4) look at cultural beliefs and barriers to seeking help through qualitative interviews, (Al Azdi et al., 2025)and (5) create community-based interventions that are culturally appropriate to lower anxiety and make it easier to get care(Afreen et al., 2024).

1.2 Operational Definitions of Key Constructs

Anxiety, which is a future-focused emotional state, is characterized by excessive and uncontrollable concern, physiological hyperarousal, and cognitive issues that hinder daily tasks. It differs from ordinary fear in that it lasts longer and is more significant than actual threats (Craske & Stein, 2016). A demographic profile offers critical data regarding a population, encompassing age, gender, educational attainment, income, marital status, and geographic location. This data is employed to identify groups at elevated risk for health complications and to develop public health interventions (Kim & Kim, 2017). A person's lifestyle is made up of things they can change, like diet, exercise, sleep, and stress management. These things greatly affect their risk of anxiety, and meta-analytic research reveals that changing their way of life can lessen anxiety symptoms by 20–30% (Amiri et al., 2024).

1.3 Demographics Profile, Lifestyle, and Diet Correlate with Anxiety

Older, less educated, and poorer Bangladeshi women aged 15 to 45 are more likely to be anxious. For instance, women between the ages of 45 and 49 are almost twice as likely to have moderate to severe anxiety as teenagers. Furthermore, women in the lowest income group exhibit a greater than 20% increased likelihood of experiencing anxiety compared to those in

the highest income quintile. Women in the Rangpur, Khulna, and Sylhet divisions are substantially more likely to be anxious than women in other regions of the country (Sheoti et al., 2024). This makes the problem even worse. Diet, exercise, and sleep are all crucial components of life that can improve these demographics weaknesses. For instance, worldwide meta-analyses suggest that pro-inflammatory diets can boost the risk of anxiety by up to 66% (OR 1.66; 95% CI 1.41–1.96) (Firth et al., 2019). But moderate exercise on a regular basis, enough sleep, and a diet similar to that of the Mediterranean can reduce symptoms by 20–30% (Ensari et al., 2015). There hasn't been much research on the link between DASS-21 anxiety levels, dietary inflammatory indices, exercise metrics, and sleep quality indicators in the Bangladeshi market. More research is needed to connect these things and create culturally appropriate therapies (Alvaro et al., 2013).

1.4 Knowledge Gap and Research Imperatives

Insufficient research exists regarding anxiety in Bangladeshi women aged 15 to 45, with several critical gaps hindering prevention and treatment efforts. Although the Bangla DASS-21 demonstrates high reliability ($\alpha = 0.93$) and exhibits strong measurement invariance, it has not been administered to extensive, age-stratified cohorts of reproductive-aged women, leaving the prevalence and severity of the issue largely unknown (Ahmed et al., 2022). Secondly, national surveys predominantly employ the GAD-7 and PHQ-9 to ascertain that 19.5% of ever-married women experience moderate to severe anxiety (Amin et al., 2025). These instruments only assess general symptoms and exclude unmarried or younger women, which complicates the understanding of the issue at hand. Third, worldwide studies show that diets high in inflammation can raise the risk of anxiety by up to 66 percent, while following a Mediterranean diet, staying active, and getting enough sleep can each lower symptoms by 20–30 percent (Firth et al., 2019). No study has been conducted in Bangladesh examining DASS-21 anxiety levels among women aged 15 to 45 in relation to their nutrition, physical activity,

or sleep quality. Fourth, the fact that only 22% of people who needed help and 8% of those who sought therapy actually received it shows how little we know about cultural stigma and barriers to healthcare (Raza et al., 2025). This is because there isn't much qualitative or mixed-methods research on gender norms, stigma, and the way people seek care. In the end, intervention research is only done on short pilot studies and doesn't include full evaluations of community-based, culturally relevant preventive or therapeutic programs. To correct these problems, a lot of research has to be done. This study should include DASS-21-based epidemiology, lifestyle and sociodemographic correlations, in-depth qualitative studies, and early intervention trials. This will help us come up with ways to help Bangladeshi women in their peak reproductive years manage their anxiety and obtain mental health care more easily (Koly et al., 2022).

1.5 Significance

The anxiety experienced by Bangladeshi women aged 15 to 45 warrants examination for several reasons, including social welfare, productivity, and health. The consequences go beyond a person's suffering to include the development of families, communities, and the country as a whole. From a public health perspective, anxiety disorders in women of childbearing age are the most common problems that happen during pregnancy and childbirth. They affect 800,000 families every year and are a major cause of maternal death by suicide and overdose in the first year after pregnancy (Fawcett et al., 2019). The economic impact is clear in the form of lost productivity and high healthcare costs. Systematic reviews from South Asia show that the monthly costs of healthcare and lost productivity for anxiety disorders range from \$18.68 to \$805.17. In 15 out of 18 studies, lost productivity costs were always higher than healthcare costs (McDaid et al., 2024). Mental health issues cost Bangladesh's economy roughly 0.76% of GDP. Women who have anxiety are more than twice as likely to have poor work performance, which is shown by less patience, trouble multitasking, trouble making

decisions, and overall, less employee engagement (Moitra et al., 2022). The impact on social and family well-being is equally severe. Mental health problems in mothers hurt not only the mothers themselves but also their families and communities. In countries with adequate healthcare systems, ignoring mental health problems in women can cost \$32,000 for each mother-infant pair, which adds up to \$14 billion a year (Fawcett et al., 2019). Anxiety can be passed down from one generation to the next. Teenagers can feel depressed and stressed for more than 20 years if their parents are sad or they have to confront challenging things. Long-term relationship stress can lead to inherited mental health issues in subsequent generations. It's also crucial to consider how such issues will affect the healthcare system, as women with anxiety disorders go to the doctor a lot more often than women who don't have these difficulties (Hammen et al., 2012). This makes Bangladesh's already strained healthcare system even worse. Mental health receives barely 0.5% of the healthcare budget, with only one psychiatrist for every 650,000 people (Moitra et al., 2022). The finding is a highly significant discovery since we still have a lot to learn. Women who can have children don't often use proven diagnostic tools like the DASS-21, and there aren't many clinical research studies that are appropriate for their culture. The finding shows that we need to do more focused research to identify evidence-based ways to help this important but at-risk group of people with anxiety disorders improve their health and quality of life.

1.6 Factor Contributing to High Anxiety in Women

Biological variables that make women more likely to be anxious throughout their reproductive years (ages 15–45) include changes in sex hormones and sex-specific stress-response systems: cyclical rises and falls in estrogen and progesterone modulate neural circuits of fear and arousal, with low estrogen phases (e.g., premenstrual, postpartum) linked to increased autonomic hyperreactivity and anxiety symptoms, while progesterone metabolites like allopregnanolone exert GABAergic, anxiolytic effects that vary across the cycle (Kundakovic

& Rocks, 2022); women also exhibit heightened HPA-axis reactivity—greater and more prolonged cortisol and ACTH responses to stress—due to estrogen enhancing corticotropin-releasing factor receptor sensitivity and attenuated negative feedback, contrasting with testosterone’s inhibitory role in men (Goel et al., 2014); neuroimaging evidence reveals that women show stronger and more persistent amygdala activation to negative stimuli and sex-specific amygdala–prefrontal connectivity patterns that correlate with anxiety severity (Heck & Handa, 2019); and genetic and epigenetic mechanisms, including sex-dependent polymorphisms in serotonin transporter and BDNF genes and hormone-driven chromatin remodeling, further prime women’s brains for greater anxiety susceptibility in interaction with environmental stressors (Li & Graham, 2017).

1.7 Aim and Objective

This project aims to ascertain the incidence and severity of anxiety symptoms among Bangladeshi women aged 15–45 and to identify significant demographic, lifestyle, and socio-cultural variables to guide evidence-based therapies. Finally, it is useful to specify the following objectives:

- Assess the frequency and intensity of anxiety in women from Bangladesh who are 15–45 years old using the DASS-21.
- Determining modifiable risk factors for anxiety, including demographics, lifestyle choices (including food, exercise, and sleep quality), and cultural and societal variables. This will facilitate the formulation of more precise preventative programs.
- The study is to investigate the obstacles that hinder women with moderate to severe anxiety from obtaining mental health care and seeking assistance and to develop strategies to improve their utilization of mental health services and address any shortcomings in treatment.

- The project will develop culturally suitable methods to lower anxiety levels and improve mental health results, such as community-based mental health literacy programs, integrated primary care screening processes, lifestyle adjustments, and policy changes (Ginsburg, 2009).

Chapter 2

Methodology

2.1 Project Framework and Duration of Data Collection

A descriptive, cross-sectional survey was conducted in urban and rural communities of Dhaka division (Mirpur, Shantinagor, Narayanganj), and Brahmanbaria districts (Akhaura), Munshiganj district (Sreenagar, and Bikrampur), Kishoreganj district, Rangpur district Bangladesh, from January to June, 2025.

2.2 Participants and Sampling

A total of 1019 women aged 15 to 45 years were recruited using purposive sampling. Inclusion criteria required Bangladeshi residency and voluntary consent, while exclusion criteria (as per supervisor guidance) eliminated women who had been pregnant or lactating within the preceding six months; were using iron supplements or medications that affect hemoglobin; had chronic illnesses (e.g., diabetes, renal, cardiovascular); had blood disorders; had undergone recent surgery or experienced major blood loss; suffered from autoimmune conditions; were undergoing chemotherapy or radiation; had an extreme BMI ($< 17 \text{ kg/m}^2$ or $> 30 \text{ kg/m}^2$); experienced gastrointestinal malabsorption; had recent or chronic infections; adhered to restrictive diets without supplementation; or faced significant psychological trauma.

2.3 Questionnaire Details

There were three components to the survey: First, a demographic profile that includes age group (15–25, 26–35, 36–45), education level (illiterate, primary, secondary, graduate+), profession (service, business, housewife, student, unemployed, other), marital status (unmarried, married, divorced, widowed), body weight (kg), height (ft/in), monthly family

income (thousand BDT), and area of There are three primary parts to the assessment: First, demographic information like where they live (urban/rural), how many people live in their household, whether they smoke (smoker/non-smoker/ex-smoker), and whether they drink alcohol or use recreational drugs (yes/no). Second, a history of their lifestyle and diet that includes specific diet types (e.g., vegetarian, keto), recent changes in appetite (overeating, loss of appetite, no change), supplement use, sleep problems, taking medication often, feeling too tired to do daily tasks, feeling dizzy or having blurry vision during normal work activities, their level of physical activity (high labor, medium, none), and how often they exercise (≥ 5 times/week: regular, irregular, none). Finally, the seven-item Anxiety subscale of the Bangla DASS-21 (listed 2, 4, 7, 9, 15, 19, 20) which measures physical arousal (Antony et al., 1998a). The people who answered scored each sentence on a 4-point scale: 0 = Not at all, 1 = Rarely, 2 = Sometimes, and 3 = Frequently. This showed how they felt throughout the prior week. Question 2(a): This question checks for physiological arousal alertness that comes with worry by asking if the person knew their mouth was dry. Question 4(a): "I had trouble breathing" (for example, breathing too quickly or not being able to breathe without doing anything physical). Question 7: "I felt shaky" (like in my hands)—this shows neuromuscular indications of anxiousness (tremors). 9th question: "I was worried about times when I might panic and make a fool of myself". The fifteenth question is, "I thought I was going to panic." Question 19: "I was aware of the action of my heart in the absence of physical exertion" (in other words, conscious of a rise in heart rate or a heartbeat). "I was scared for no good reason" is the 20th question. (Shah et al., 2021).

Lovibond (1995) developed the Depression Anxiety Stress Scales-21 (DASS-21), a concise self-report instrument that assesses the intensity of symptoms in three domains—depression, anxiety, and stress—over the preceding week. It has 21 questions, which are divided into three 7-item subscales. Each query is evaluated using a 4-point Likert scale. The scale employs a 4-

point Likert system, with 0 indicating "Did not apply to me at all" and 3 signifying "Applied to me most of the time." The Anxiety subscale consists of seven items designed to assess the level of autonomic activity (Antony et al., 1998b).

The raw scores from these seven items (ranging from 0 to 21) are summed and then multiplied by two to align with the original 42-item DASS norms (ranging from 0 to 42)(Antony et al., 1998b).

Severity Levels of Anxiety Classified Using DASS-21 Score:

Score Range	Anxiety Severity Level
0-7	No or minimal anxiety
8-9	Mild anxiety
10-14	Moderate anxiety
15-19	Severe anxiety
20+	Very severe

2.5 Ethical Consideration

Informed assent was obtained from all participants, and ethical approval was granted by the Southeast University Ethics Committee (SEU/Pharm/CECR/022/2024).

2.6 Statistical Analysis

The data analysis procedure utilizes Microsoft Excel 2021 and IBM SPSS Statistics version 27. The datasets were systematically entered, organized, sorted, tabulated, and classified in Microsoft Excel to facilitate subsequent analysis. Subsequently, the software referred to as SPSS was utilized for data analysis, and to evaluate the differences in anxiety and associated

factors, a chi-square analysis was conducted. A Pearson correlation test was conducted using SPSS to assess the linear relationships between outcome variables and the severity of anxiety symptoms. Analyses were considered statistically significant if the p-value was below 0.05.

Chapter 3

Result

Anxiety symptoms were assessed on the DASS-21 scale among 1,019 participants. The study aims to evaluate the correlation between anxiety levels and demographic profiles, lifestyle and dietary history, as well as aspects pertaining to mental health. The data analysis utilized Chi-Square tests to ascertain significant relationships among variables, and binary logistic regression analysis to evaluate correlations between dependent and independent variables, with results classified by subgroups such as age, BMI range, marital status, living status, educational attainment, occupational status, economic status, residential area, family type, smoking habits, physical exercise, daily physical activity, specific dietary practices, dietary supplements, medication intake, appetite changes, fatigue or drowsiness, dizziness or blurred vision, and sleep disturbances.

3.1 Prevalence of Anxiety among the Adult Females

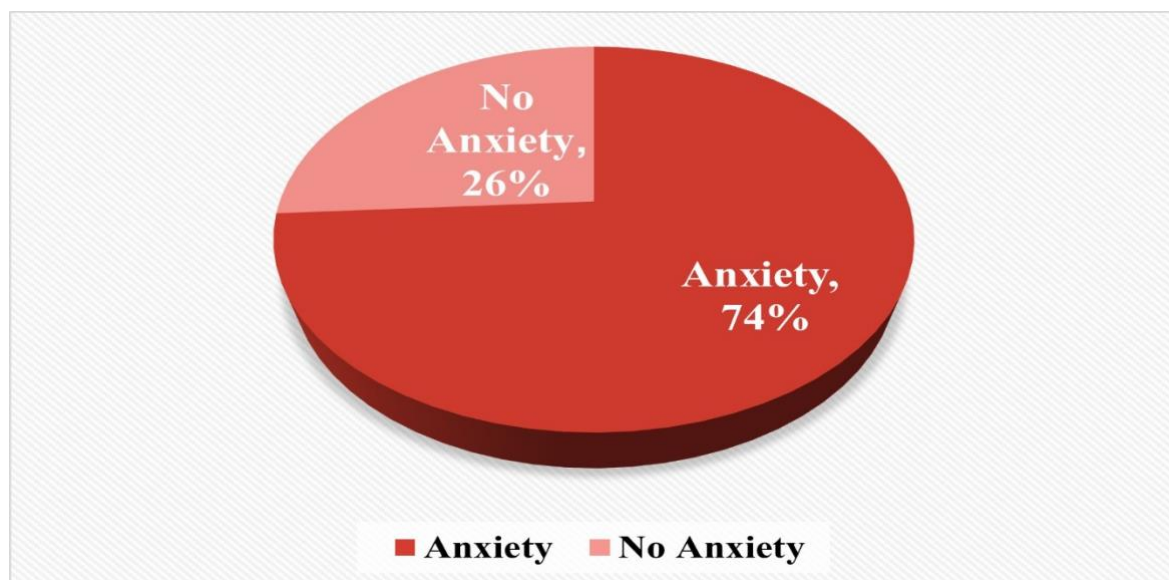


Figure 1: The Incidence of Anxiety among Women

The overall incidence of anxiety among adult females aged 15–45 is illustrated in this figure, with 74% of the population reporting anxiety and 26% reporting no anxiety.

3.2 Severity of Anxiety Symptoms in Adult Female Population

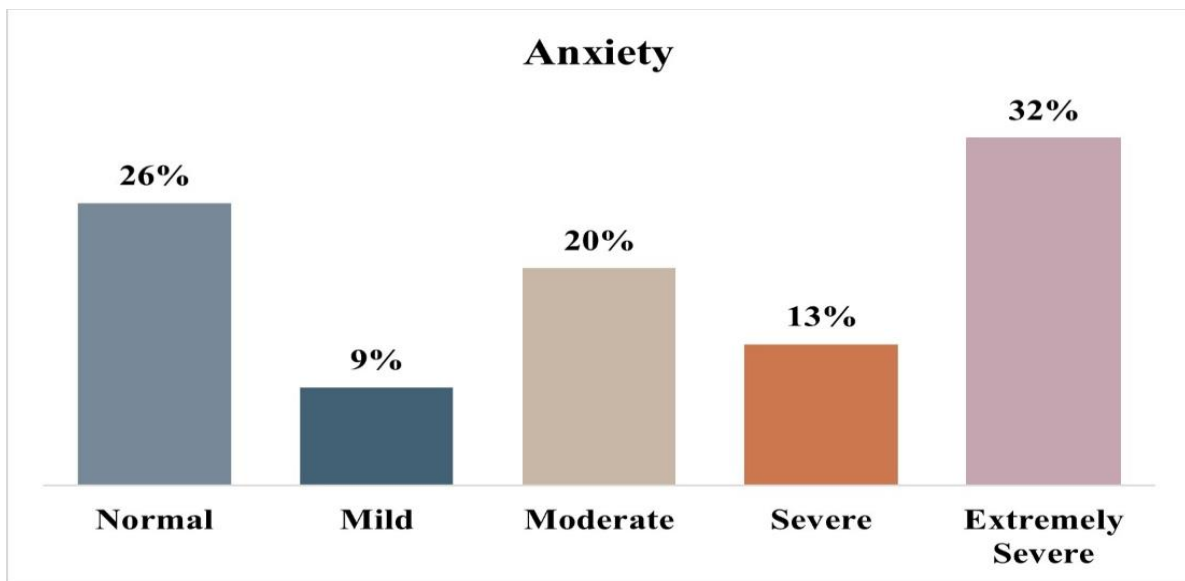


Figure 2:Severity of Anxiety Symptoms in Adult Female Population

In figure 2, out of 1019 respondents, 749 participants exhibited indications of anxiety. In the demographic of females aged 15-45, 26% are identified as having normal mental health, 9% are experiencing mild anxiety, 20% are classified with moderate anxiety, 13% are categorized as having severe anxiety, and 32% are dealing with extremely severe anxiety.

3.3 Comparison of Anxiety Levels Among Different Age Groups

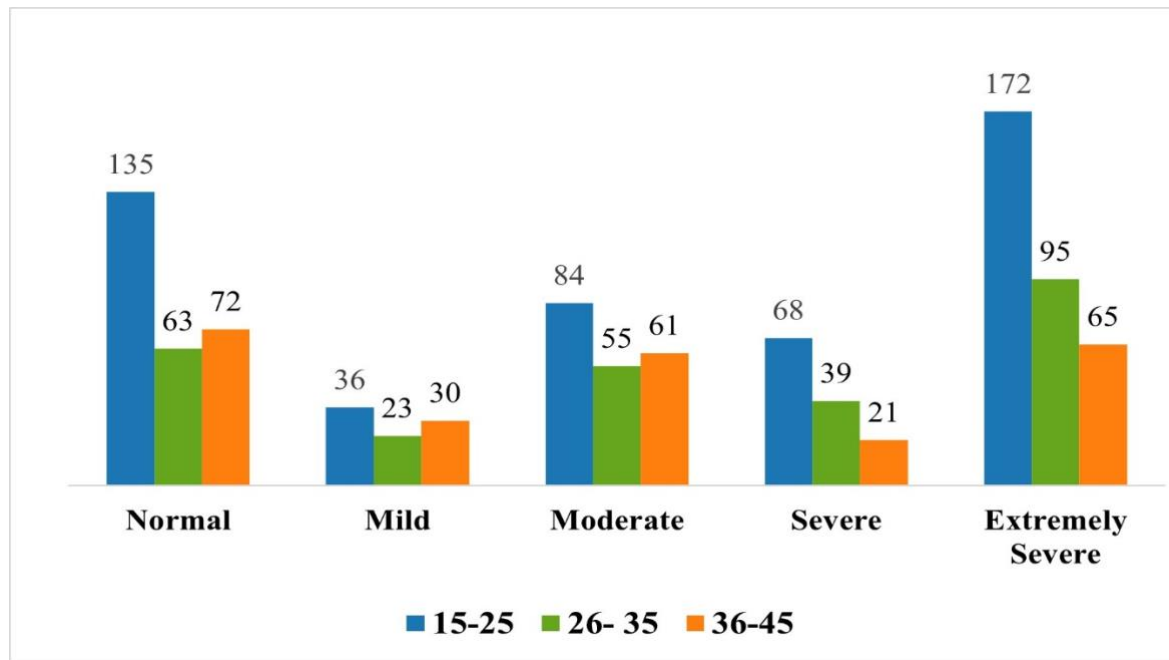


Figure 3: Comparison of Anxiety Levels among Different Age Groups

Figure 3 illustrates the differences in anxiety severity among three distinct age groups (15–25, 26–35, and 36–45 years; total $n = 1,019$). Individuals aged 15 to 25 demonstrate the highest occurrences of both normal ($n = 135$) and extremely severe ($n = 172$) anxiety levels, while those in the 26–35 age group reach a peak in extremely severe anxiety ($n = 95$) but present lower overall numbers. The 36–45 age group exhibits a more even distribution, with normal ($n = 72$) and moderate ($n = 61$) anxiety being the most prevalent categories. The chi-square test indicated that there was no significant relationship between age group and anxiety severity ($\chi^2 = 2.719$, $df = 2$, $p = 0.257$).

3.4 Anxiety Severity Levels by Body Mass Index (BMI) Range

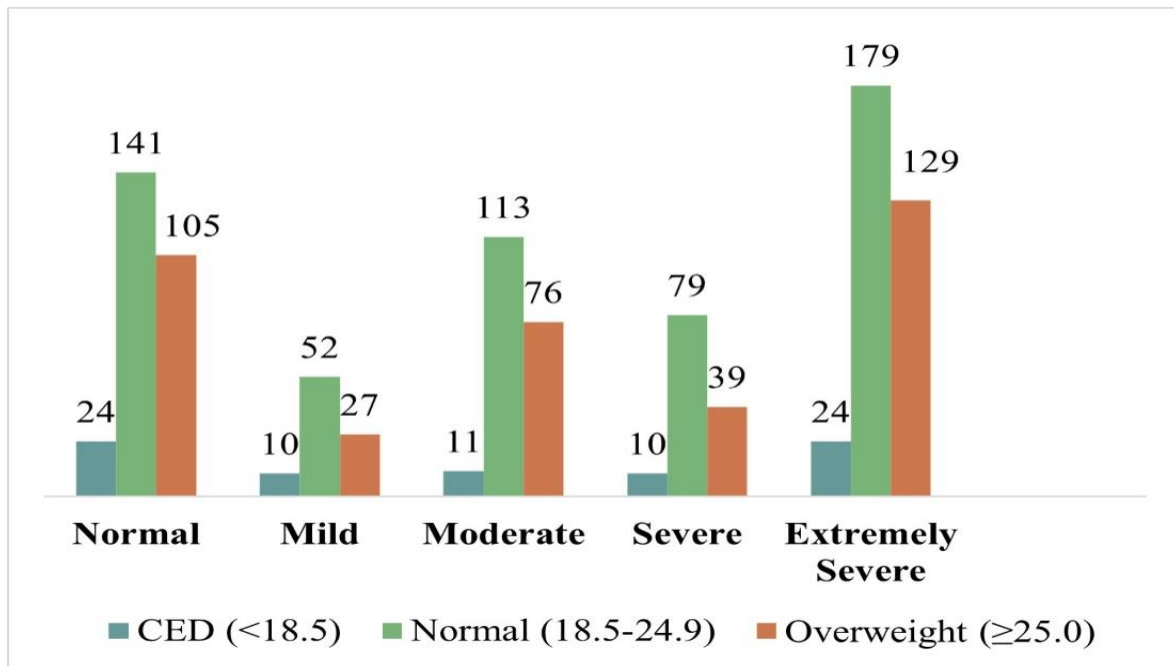


Figure 4: Anxiety Severity Levels by BMI Range

The fourth figure illustrates the levels of anxiety severity categorized by BMI classifications (CED <18.5, normal 18.5–24.9, overweight ≥25.0; total n = 1,019). Participants with a normal BMI most commonly reported both normal anxiety levels (n = 141) and extremely severe anxiety (n = 179), while those who were overweight similarly showed peaks at normal (n = 105) and extremely severe (n = 129) anxiety levels. Participants with CED exhibited reduced absolute counts while reflecting a bimodal pattern, with both normal and extremely severe categories each comprising n = 24. The chi-square test indicated that there was no significant relationship between BMI range and the prevalence or severity of anxiety ($\chi^2 = 1.654$, df = 2, p = 0.437).

3.5 Distribution of Residential Area among the Participants

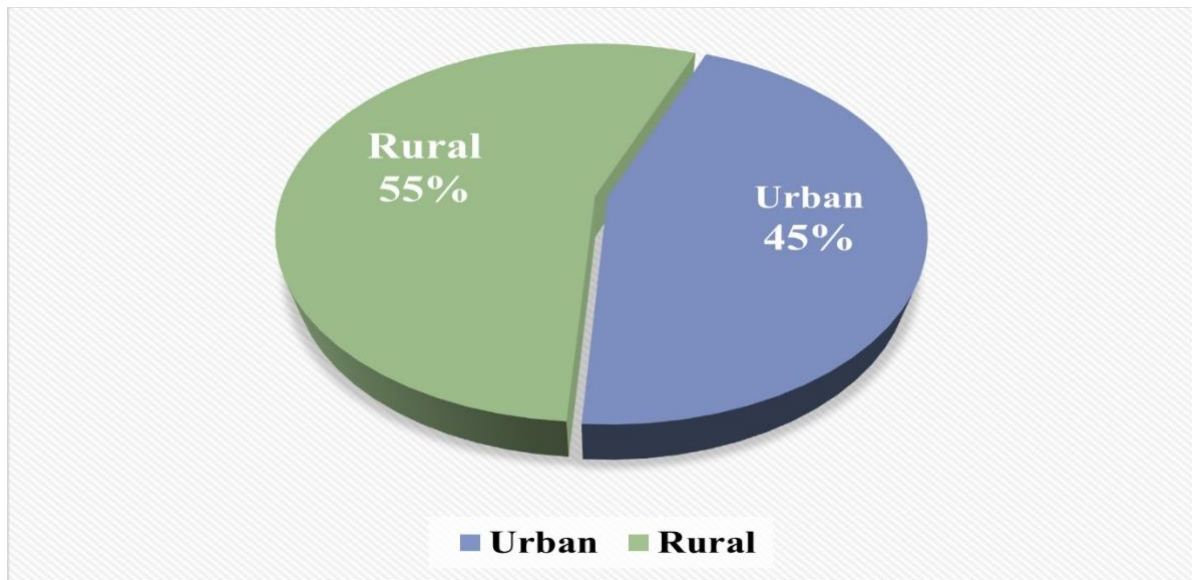


Figure 5: Distribution of Residential Area among the Participants

Figure 5 illustrates the residential distribution of study participants and highlights the relationship between residence and anxiety levels. The sample consists of 45% urban residents (n=459), with 396 individuals (86%) indicating anxiety. In contrast, rural residents make up 55% of the sample (n=560), where 353 individuals (63%) reported experiencing anxiety. The results of the chi-square test indicated a highly significant association between residential areas and the prevalence of anxiety ($\chi^2 = 69.945$, $df = 1$, $p < 0.001$).

3.6 Participants' Anxiety Levels by Marital Status

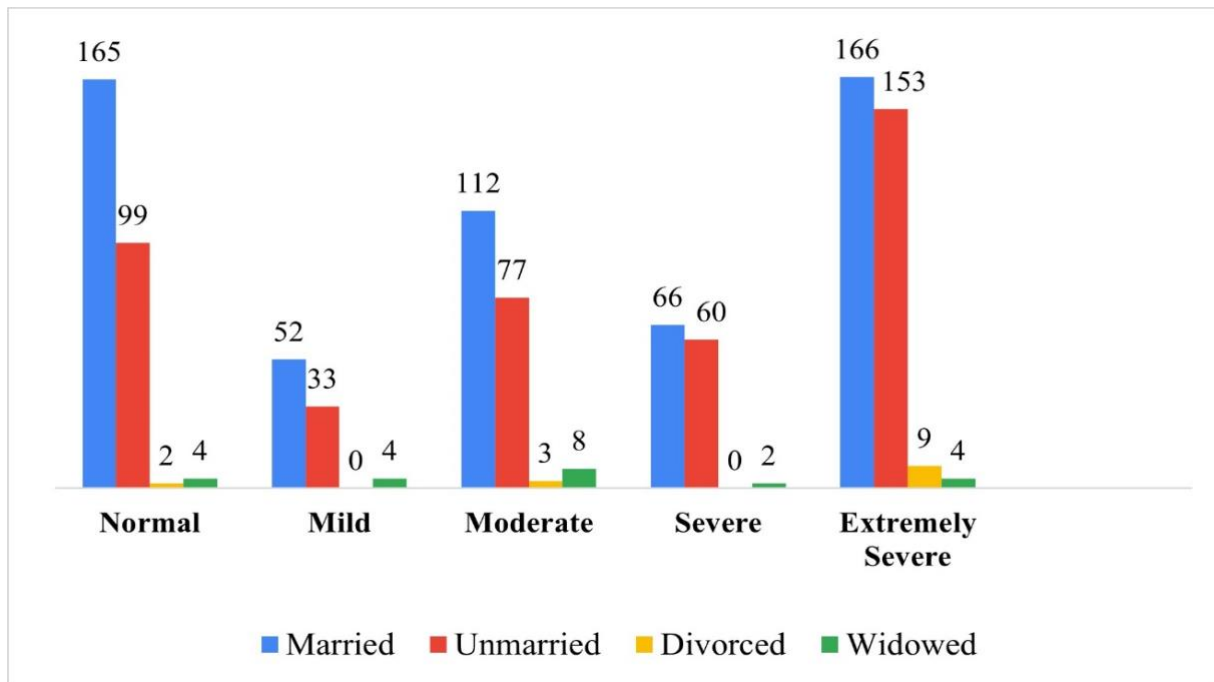


Figure 6: Participant's Anxiety Levels by Marital Status

Figure 6 illustrates the levels of anxiety severity categorized by marital status ($n = 1,019$). The data reveals a bimodal distribution among both married and unmarried participants, with peaks observed at normal anxiety levels (married: $n = 165$; unmarried: $n = 99$) and at extremely severe anxiety levels (married: $n = 166$; unmarried: $n = 153$). Divorced respondents primarily fall into the extremely severe category ($n = 9$), while widowed participants exhibit lower counts across the severity levels. The χ^2 test revealed no statistically significant relationship between marital status and the prevalence of anxiety ($\chi^2 = 6.299$, $df = 3$, $p = 0.098$).

3.7 Participants Economic Level in Relation to Anxiety

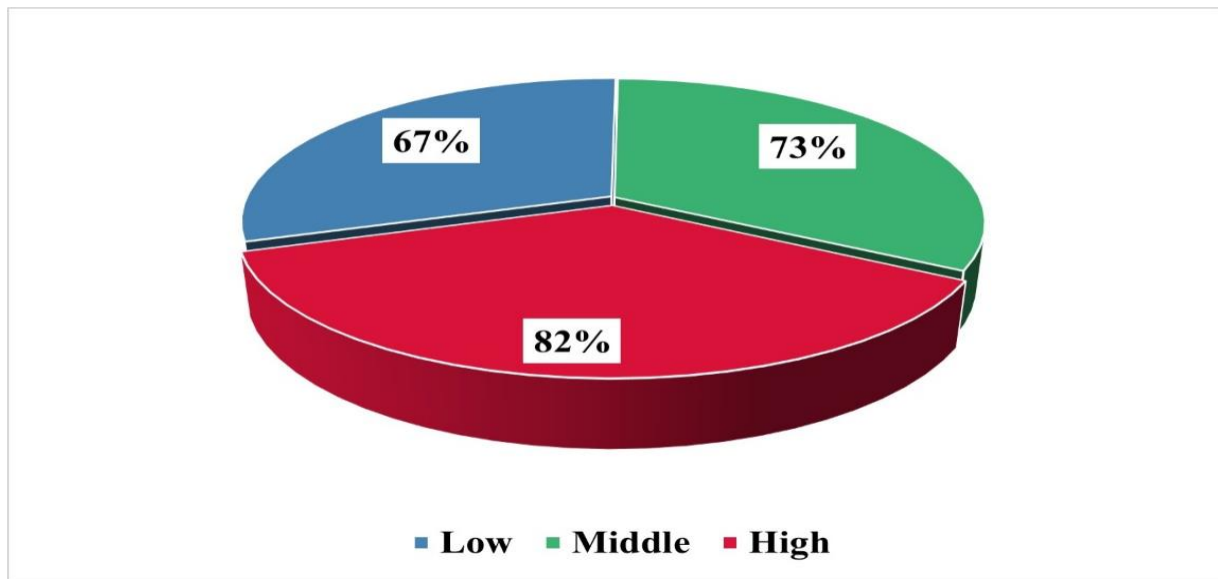


Figure 7: Participants Economic Level in Relation to Anxiety

Figure 7 illustrates the prevalence of anxiety across different economic levels, indicating rates of 67% among the low-income group, 73% within the middle-income group, and 82% for the high-income group. The chi-square test reveals a significant relationship between economic status and the prevalence of anxiety ($\chi^2 = 17.104$, $df = 2$, $p < 0.001$).

3.8 Anxiety Severity Distribution by Educational Level

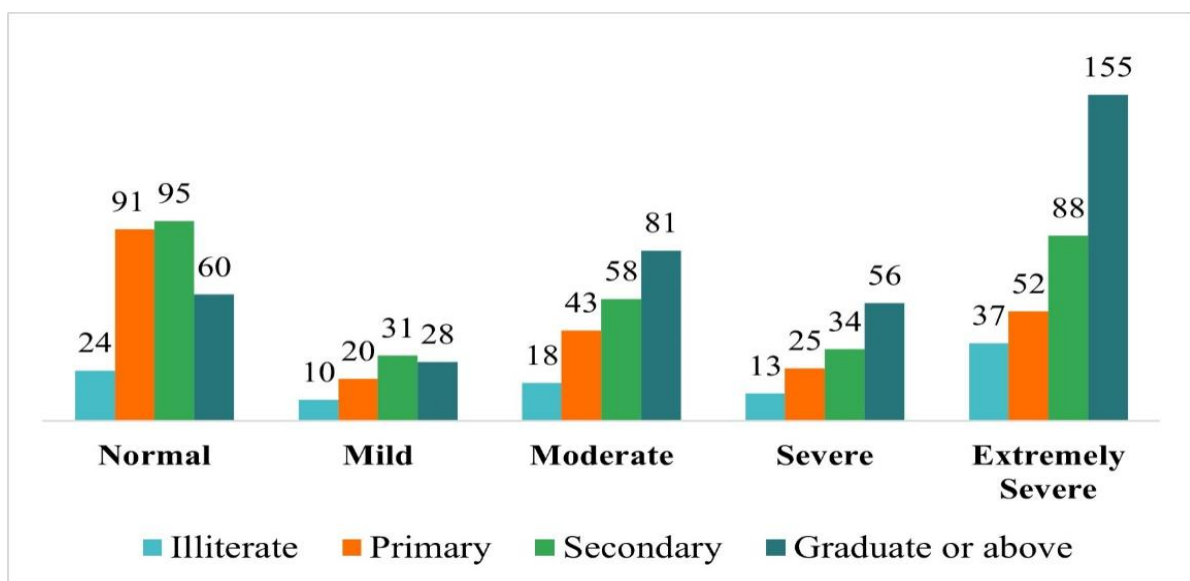


Figure 8: Anxiety Severity Distribution by Education Level

Figure 8 presents a detailed analysis of anxiety severity across different educational levels. It shows that individuals with graduate degrees or higher report the highest numbers in both the normal ($n = 60$) and extremely severe ($n = 155$) anxiety categories. In contrast, those with only primary education tend to group more within the normal anxiety range ($n = 91$), displaying significantly lower counts in the severe categories. Groups with limited literacy and those with secondary education show distributions that are intermediate. A chi-square test revealed a significant relationship between education level and anxiety severity ($\chi^2 = 45.810$, $df = 3$, $p < 0.001$).

3.9 Prevalence of Anxiety with Association to Daily Physical Activity

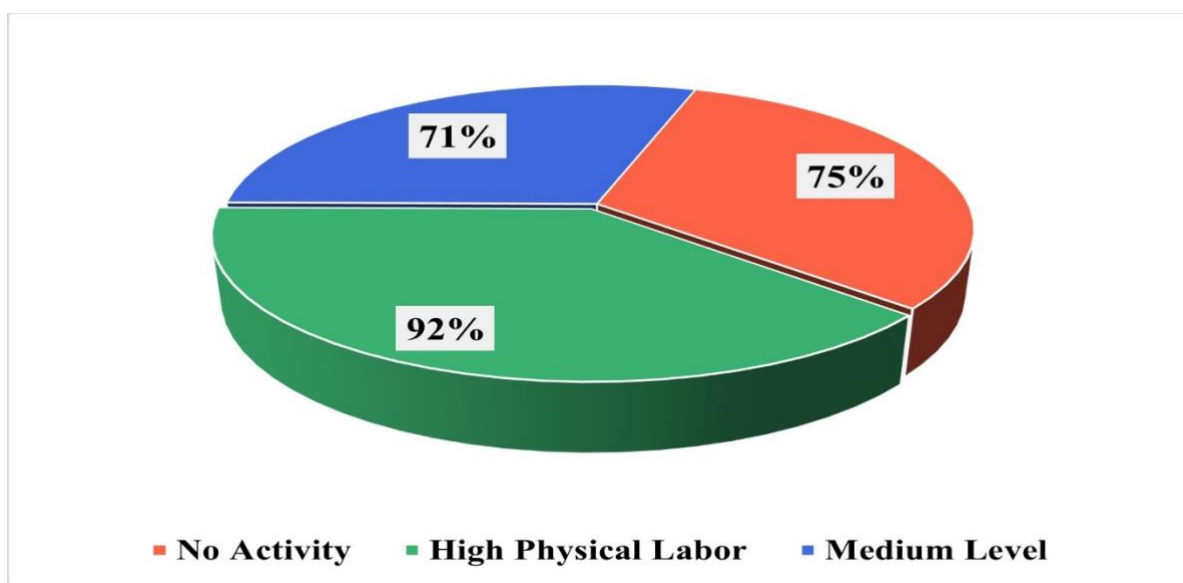


Figure 9: Prevalence of Anxiety with Association to Daily Physical Activity

Figure 9 presents the prevalence of anxiety in relation to daily physical activity levels. The participants engaged in high physical labor exhibited the highest anxiety rate at 92%, followed by those with no activity at 75%, and those with medium-level activity at 71%. A chi-square

test indicated a significant relationship between activity level and the prevalence of anxiety ($\chi^2 = 19.812$, $df = 2$, $p < 0.001$).

3.10 Occupational Status Influences the Distribution of Anxiety Severity

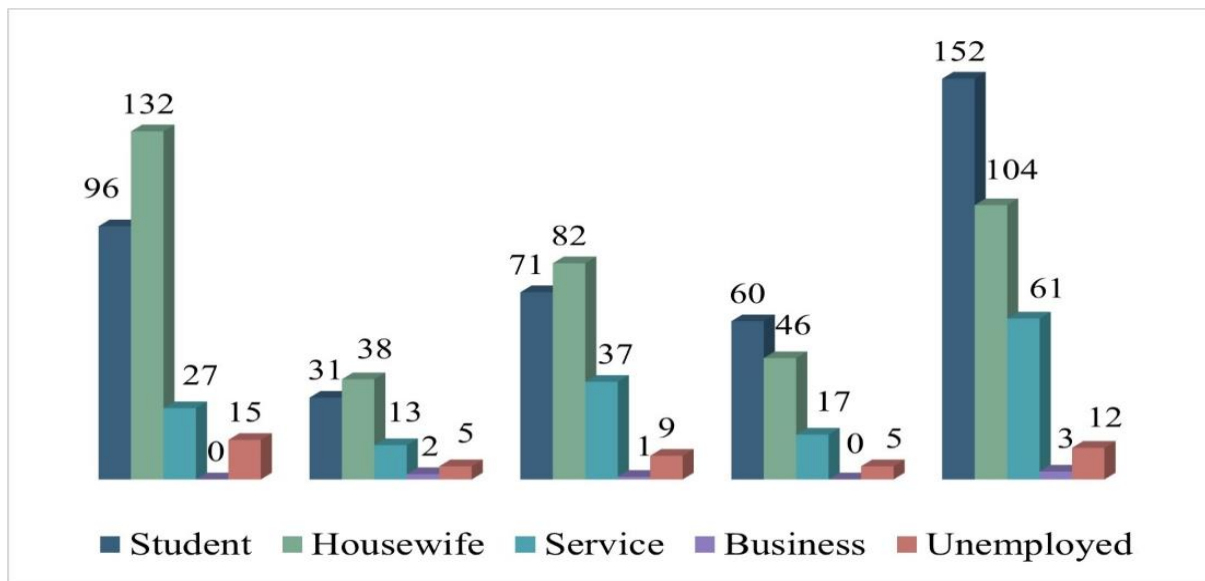


Figure 10: Occupational Status Influences the Distribution of Anxiety Severity

Figure 10 illustrates the distribution of anxiety severity among various occupational categories, including students, housewives, service workers, business owners, and the unemployed, with a total sample size of 1,019. Students and housewives show bimodal distributions, with the most significant frequencies observed in the normal (students: $n = 96$; housewives: $n = 132$) and extremely severe (students: $n = 152$; housewives: $n = 104$) anxiety categories. Service workers predominantly experience moderate ($n = 37$) and extremely severe ($n = 61$) anxiety levels, while business owners exhibit minimal anxiety overall (normal: $n = 0$; extremely severe: $n = 3$). Participants who are unemployed show increased numbers in both the normal ($n = 15$) and extremely severe ($n = 12$) categories. It is noteworthy that students exhibit the highest absolute count of extremely severe anxiety. A chi-square test revealed a significant correlation between occupational status and anxiety severity ($\chi^2 = 19.897$, $df = 4$, $p < 0.001$).

3.11 Analysis of Chi-Square Test Outcomes

The prevalence of anxiety was notably elevated in (1) individuals with graduate education or higher compared to those with primary education (84% vs 61%, $p < 0.001$), (2) business owners in contrast to housewives (100% vs 67%, $p < 0.001$), (3) high-income groups relative to low-income groups (82% vs 67%, $p < 0.001$), and (4) urban residents compared to their rural counterparts (86% vs 63%, $p < 0.001$). Furthermore, the prevalence of anxiety was higher in smokers compared to non-smokers (100% vs 73%, $p = 0.045$), in supplement users versus non-users (83% vs 72%, $p = 0.001$), and among those on medications compared to those not taking them (84% vs 70%, $p < 0.001$). The data indicates that respondents experiencing appetite loss (78% compared to 69%, $p < 0.001$), excessive eating (86% compared to 69%, $p < 0.001$), tiredness/drowsiness (78% compared to 68%, $p < 0.001$), dizziness/blurred vision (81% compared to 66%, $p < 0.001$), and difficulty sleeping (79% compared to 71%, $p = 0.006$) demonstrated a greater prevalence of anxiety. Physical exercise (78% vs 73%, $p = 0.281$), BMI categories (75% vs 72%, $p = 0.437$), marital status (77% vs 71%, $p = 0.098$), family type (75% vs 70%, $p = 0.056$), and specific diet (78% vs 73%, $p = 0.468$) did not show significant associations with anxiety.

Table 1: Distribution of Variables and their Association with Anxiety among the Respondents

	Total N=1,019		Anxiety N=749				
			Yes				
	n	%	n	%	χ^2	df	p-value
Age (years)							
15-25	495	49	360	73	2.719	2	0.257
26-35	275	27	212	77			
36-45	249	24	177	71			
BMI (kg/m²)							
CED (<18.5)	79	8	55	70	1.654	2	0.437
Normal (18.5–24.9)	564	55	423	75			
Overweight (≥25.0)	376	37	271	72			
Marital status							
Married	561	55	396	71	6.299	3	0.098
Unmarried	422	41	323	77			
Divorced	14	1	12	86			
Widowed	22	2	18	82			
Level of education							
Illiterate	102	10	78	76	45.810	3	<0.001
Primary	231	23	140	61			
Secondary	306	30	211	69			
Graduate or above	380	37	320	84			
Occupational status							
Student	410	40	314	77	19.897	4	<0.001
Housewife	402	39	270	67			
Service	155	15	128	83			
Business	6	0.6	6	100			
Unemployed	46	5	31	67			
Economic status							
Low	344	34	232	67	17.104	2	<0.001
Middle	414	41	302	73			
High	261	26	215	82			
Residence area							
Urban	459	45	396	86	69.945	1	<0.001
Rural	560	55	353	63			
Family type							
Nuclear	671	66	506	75	3.666	1	0.056
Joint	348	34	243	70			
Smoking habit							
Smoker	11	1	11	100	4.009	1	0.045
Non-smoker	1008	99	738	73			
Physical exercise							
Yes	96	9	75	78	1.162	1	0.281
No	923	91	674	73			
Daily physical activity							
No activity	185	18	138	75	19.812	2	<0.001

High physical labor	98	10	90	92			
Medium level	736	72	521	71			
Specific diet							
Yes	58	6	45	78	0.526	1	0.468
No	961	94	704	73			
Dietary supplements							
Yes	169	17	141	83	10.254	1	0.001
No	850	83	608	72			
Intake of medications							
Yes	235	23	198	84	18.130	1	<0.001
No	784	77	551	70			
Changes in appetite							
Loss of appetite	326	32	255	78	19.685	2	<0.001
Excessive eating	103	10	89	86			
No change	590	58	405	69			
Tiredness or drowsiness							
Yes	556	55	432	78	11.054	1	<0.001
No	463	45	317	68			
Dizziness or blurred vision							
Yes	501	49	408	81	31.852	1	<0.001
No	518	51	341	66			
Difficulty in sleeping							
Yes	345	34	272	79	7.629	1	0.006
No	674	66	477	71			
Anxiety							
Yes	749	74	418	56	25.817	1	<0.001
No	270	26	102	38			

3.12 The Correlation between Continuous Variables and Anxiety

We performed binary logistic regression to identify factors associated with anxiety (table 2). Respondents aged 15–25 years had lower odds than those 36–45 years (OR 0.63, 95% CI 0.38–1.05, $p < 0.075$). Urban residence increased odds (OR 2.08, 95% CI 1.30–3.32, $p < 0.002$), as did high physical labor versus medium activity (OR 4.32, 95% CI 2.02–9.22, $p < 0.001$) and dietary supplement use (OR 2.35, 95% CI 1.35–4.10, $p < 0.003$). Loss of appetite (OR 1.49, 95% CI 1.07–2.08, $p < 0.017$), excessive eating (OR 2.77, 95% CI 1.52–5.08, $p < 0.001$), dizziness/blurred vision (OR 2.57, 95% CI 1.71–3.88, $p < 0.001$), and difficulty sleeping (OR 1.19, 95% CI 0.80–1.79, $p < 0.395$) were examined (Das et al., 2021)

Table 2: Regression Analysis of Variables Correlated with Anxiety among Respondents

	Anxiety N=749		
	OR	95% CI	p-value
Age (years)			
15-25	0.632	0.382 to 1.047	0.075
26-35	1.302	0.859 to 1.972	0.213
36-45	1		
BMI (kg/m²)			
CED (<18.5)	0.964	0.550 to 1.689	0.899
Normal (18.5–24.9)	1.103	0.805 to 1.511	0.541
Overweight (≥25.0)	1		
Marital status			
Married	0.491	0.158 to 1.527	0.219
Unmarried	0.663	0.179 to 2.451	0.538
Divorced	0.913	0.137 to 6.069	0.925
Widowed	1		
Level of education			
Illiterate	0.853	0.399 to 1.821	0.681
Primary	0.670	0.385 to 1.167	0.157
Secondary	0.734	0.448 to 1.201	0.218
Graduate or above	1		
Occupational status			
Student	1.941	0.884 to 4.260	0.098
Housewife	0.994	0.480 to 2.058	0.987
Service	1.832	0.822 to 4.081	0.138
Business	676014776.872	0.000	0.999
Unemployed	1		
Economic status			
Low	1.110	0.635 to 1.939	0.714
Middle	0.936	0.569 to 1.540	0.795
High	1		
Residence area			
Urban	2.080	1.302 to 3.324	0.002
Rural	1		
Family type			
Nuclear	1.133	0.784 to 1.637	0.508
Joint	1		
Smoking habit			
Smoker	118105209.047	0.000	0.999
Non-smoker	1		
Physical exercise			
Yes	1.164	0.621 to 2.179	0.636
No	1		
Daily physical activity			
No activity	1.047	0.708 to 1.547	0.819

High physical labor	4.319	2.024 to 9.217	<0.001
Medium level	1		
Specific diet			
Yes	0.507	0.224 to 1.151	0.104
No	1		
Dietary supplements			
Yes	2.352	1.350 to 4.097	0.003
No	1		
Intake of medications			
Yes	1.189	0.727 to 1.945	0.491
No	1		
Changes in appetite			
Loss of appetite	1.492	1.073 to 2.076	0.017
Excessive eating	2.774	1.515 to 5.077	0.001
No change	1		
Tiredness or drowsiness			
Yes	1.041	0.699 to 1.550	0.842
No	1		
Dizziness or blurred vision			
Yes	2.573	1.705 to 3.880	<0.001
No	1		
Difficulty in sleeping			
Yes	1.192	0.795 to 1.789	0.395
No	1		
Anxiety			
Yes	1.968	1.388 to 2.792	<0.001
No	1		

Chapter 4

Discussion

The current study offers an in-depth evaluation of anxiety symptoms in a cohort of 1,019 Bangladeshi women aged 15–45, utilizing the Anxiety subscale of the DASS-21. The overall prevalence of anxiety (74%) was significantly greater than the rates observed in previous studies involving students and professionals using the DASS-21, highlighting the extensive impact on the community in both urban and rural areas. The severity distribution indicated that almost one-third of participants faced very severe anxiety, whereas more than half displayed at least moderate symptoms. Chi-square analyses revealed notable associations between the prevalence of anxiety and various demographic, socioeconomic, and lifestyle factors. Additionally, binary logistic regression underscored independent predictors such as urban living, engaging in high-physical-labor activities, the use of dietary supplements, changes in appetite, and the presence of somatic symptoms.

Previous uses of the Bangla DASS-21 have primarily concentrated on specific groups—like university students or healthcare workers—indicating a moderate to severe anxiety prevalence of approximately 30–35%. In contrast, this community sample indicated a prevalence of 74%, which is more than double previous estimates. This discrepancy likely indicates variations in sampling frames: earlier studies often omitted unmarried and rural women and were typically conducted in controlled institutional environments. The deliberate selection of both urban and rural districts allowed us to encompass a broader sociocultural and economic range, thus uncovering a significantly heightened level of anxiety burden. Furthermore, previous research has established the DASS-21's high reliability ($\alpha = 0.93$) (Ahmed et al., 2022) and its measurement invariance across various demographic subgroups. This study reaffirms those

psychometric properties while broadening normative anxiety estimates to encompass a vital reproductive-aged population (Abu Hena Mostafa Alim et al., 2014)

Chi-square tests indicated significant associations between anxiety prevalence and factors such as urban residence, economic status, education level, occupational status, physical activity level, smoking, supplement use, medication intake, appetite changes, dizziness/blurred vision, and sleep difficulty. In a comparison between urban and rural populations, it was found that 86% of urban participants experienced anxiety, while only 63% of rural women reported similar feelings ($\chi^2 = 69.95$, $p < 0.001$). Women in urban settings often encounter heightened environmental stressors such as overcrowding, noise, and pressures related to academics or work, which can intensify symptoms of anxiety. The prevalence of anxiety increased from 67% in low-income groups to 82% in high-income groups ($\chi^2 = 17.10$, $p < 0.001$). Interestingly, a correlation was observed between higher income and increased anxiety levels, indicating that the burdens of financial obligations, job pressures, or societal expectations might surpass the benefits typically associated with economic advantages. In terms of education level, women with graduate degrees exhibited the highest prevalence of anxiety at 84%, whereas those with only primary education showed the lowest prevalence at 61% ($\chi^2 = 45.81$, $p < 0.001$). Higher levels of education might be associated with more competitive academic or professional settings, enhanced self-awareness of symptoms, or varying tendencies to seek help, which could lead to a rise in reported prevalence.

Occupational Status: Business owners (100%) and service workers (83%) demonstrated the highest levels of anxiety ($\chi^2 = 19.90$, $p < 0.001$). Owning a business in resource-constrained environments can lead to considerable financial and operational challenges. Individuals in service roles frequently encounter the pressures of customer engagement and unpredictable schedules, which can intensify stress reactions. **Physical Activity:** Engaging in high-physical labor correlated with a 92% prevalence of anxiety ($\chi^2 = 19.81$, $p < 0.001$). Physically

demanding jobs can lead to ongoing fatigue, strain on the musculoskeletal system, and various workplace risks, which can further exacerbate psychological stress. Somatic and Behavioral Factors: Smoking (100% vs. 73%, $\chi^2 = 4.01$, $p = 0.045$), supplement use (83% vs. 72%, $\chi^2 = 10.25$, $p = 0.001$), medication intake (84% vs. 70%, $\chi^2 = 18.13$, $p < 0.001$), appetite changes ($\chi^2 = 19.69$, $p < 0.001$), dizziness/blurred vision ($\chi^2 = 31.85$, $p < 0.001$), and sleep difficulty ($\chi^2 = 7.63$, $p = 0.006$) were all associated with increased anxiety levels. The results correspond with the DASS-21's emphasis on autonomic arousal and somatic symptomatology, illustrating that physical and behavioral changes occur alongside emotional distress. The analysis revealed that factors including age group, BMI category, marital status, family type, general physical exercise, and specific diet did not demonstrate significant associations, suggesting that these elements alone may not serve as reliable predictors of anxiety prevalence within this population.

Binary logistic regression revealed multiple independent predictors of anxiety following the adjustment for confounding variables: Urban Residence: Women residing in urban settings exhibited more than double the likelihood of experiencing anxiety in comparison to their rural counterparts (OR 2.08; 95% CI 1.30–3.32; $p = 0.002$), highlighting the influence of urban stressors. High-Physical Labor: Participation in high-physical labor significantly elevated the likelihood of experiencing anxiety, with an odds ratio of 4.32 (95% CI 2.02–9.22; $p < 0.001$) compared to medium activity, underscoring the mental health impact of demanding work. The use of dietary supplements was associated with a 2.35-fold increase in the likelihood of reporting anxiety (95% CI 1.35–4.10; $p = 0.003$). The utilization of supplements could indicate potential health issues or efforts to independently address symptoms, suggesting an increased level of health-related anxiety. Appetite Changes: A notable loss of appetite (OR 1.49; 95% CI 1.07–2.08; $p = 0.017$) and instances of excessive eating (OR 2.77; 95% CI 1.52–5.08; $p = 0.001$) emerged as significant findings, indicating that dysregulated eating behaviors may serve

as both indicators and possible contributors to anxiety. Dizziness and blurred vision were associated with 2.57 times greater odds of experiencing anxiety (95% CI 1.71–3.88; $p < 0.001$), which is consistent with the DASS-21's focus on physiological arousal. In the adjusted model, variables such as age, BMI, education, marital status, family type, smoking habit, general physical exercise, specific diet, medication intake, tiredness/drowsiness, and sleep difficulty lost their significance. These factors may have indirect effects on anxiety or may necessitate interaction analyses to better understand their roles.

The high incidence of anxiety and modifiable factors have practical implications: Expanded Screening: Primary care and community health practitioners should screen all women of reproductive age, especially unmarried and rural women, using the DASS-21 to detect anxiety early. Targeted Interventions: Urban clinics should create stress-reduction programs for urban life and high-labor jobs. Ergonomic changes, break scheduling, and mental health assistance can reduce the effects of hard labor. Integrating Somatic Assessment: Clinical examinations could ask about appetite changes, supplement usage, and somatic symptoms like dizziness as anxiety markers, leading mental health referral. Health Literacy Campaigns: Since only 22% of worried women sought professional care, public health campaigns must enhance knowledge of anxiety symptoms, particularly bodily manifestations, and eliminate stigma to encourage help-seeking.

The data suggest various research avenues: Prospective longitudinal studies are needed to determine causal linkages between urban stresses, professional demands, lifestyle practices, and anxiety trajectories. In-depth qualitative study should examine cultural views and impediments to care to explain why better-income and graduate-educated women had more anxiety despite more resources. Dietary Assessment Refinement: To explain the lack of relationship between particular diets and anxiety prevalence, detailed dietary inflammatory index studies customized to Bangladeshi foods and meal patterns are needed. Intervention

studies: Randomized controlled studies should investigate community-based, culturally appropriate treatments such peer support groups, stress management seminars, and integrated primary care screening for DASS-21 anxiety reduction.

There are several limitations that should be taken into account: Cross-Sectional Design: The establishment of causality is not feasible; there remains a possibility of reverse causation between anxiety and lifestyle behaviors. The sampling frame employs purposive sampling across four districts and one division, which restricts the generalizability of findings to the broader population of Bangladeshi women. Additionally, the exclusion of pregnant or lactating women, individuals with extreme BMI, and those with various clinical conditions could lead to an underestimation of the true prevalence within high-risk subgroups. Self-Report Bias: The use of self-administered questionnaires can lead to recall bias and social desirability effects, especially concerning sensitive subjects like mental health and substance use. Residual Confounding: Unmeasured variables—such as comorbid depression, social support, and childhood trauma—could impact anxiety outcomes and must be considered in future multivariable models. The DASS-21 accurately detects anxiety symptoms, but organized clinical interviews would improve diagnostic accuracy.

By addressing these limitations with broader sampling, mixed-methods designs, and longitudinal follow-up, future studies will be enhanced and will contribute to evidence-based strategies aimed at alleviating anxiety burden among Bangladeshi women.

Chapter 5

Conclusion

According to this study, 74% of Bangladeshi women between the ages of 15 and 45 suffer from anxiety, with one-third reporting really severe symptoms. We expanded prior student- and professional-based estimates (30–35% moderate–severe) to a larger, reproductive-aged population by using the DASS-21 across urban and rural cohorts. Higher income and graduate education, in contrast to expectations, were associated with greater symptom burden, while urban residence, high-physical-labor occupations, dietary supplement use, appetite disturbances, and autonomic symptoms (dizziness/blurred vision) emerged as independent predictors of anxiety. While characteristics including age, BMI, marital status, and particular diets were not predictive, chi-square analysis highlighted substantial relationships between anxiety and socioeconomic, vocational, and somatic variables. These results highlight the necessity of developing workplace and urban stress-reduction strategies, integrating somatic symptom evaluation into primary care, and extending DASS-21 screening outside of clinical and academic contexts. To clarify causal pathways, improve nutritional evaluations customized for local contexts, and assess culturally aware, community-based treatments, future research should use qualitative and longitudinal methodologies. Purposive sampling, cross-sectional design, and self-report biases are among the limitations that call for careful generalization. However, in order to lessen the hidden anxiety pandemic among Bangladeshi women of reproductive age, our work offers vital epidemiological and analytical underpinnings for focused mental health interventions.

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Appendix A.

Appendix-1

A Study on Hemoglobin Levels and Mental Health Status Among Adult Females in Bangladesh

[বাংলাদেশে প্রাপ্তবয়স্ক মহিলাদের মধ্যে হিমোগ্লোবিনের মাত্রা এবং মানসিক স্বাস্থ্যের অবস্থার উপর একটি সমীক্ষা]

This survey has been designed to evaluate any correlation between hemoglobin levels and the mental health of adult females (15-45 years) in Bangladesh. The research has received ethical approval from the Committee of Ethical Compliance of Southeast University (SEU/Pharm/CECR/022/2024). This is a completely anonymous survey, ensuring your identity remains confidential and your privacy is respected. All collected information will be used solely for this study and kept confidential. Your consent to participate in this survey is crucial. Thank you for your cooperation in this important initiative.

[এই সমীক্ষাটি বাংলাদেশে প্রাপ্তবয়স্ক মহিলাদের (১৫-৪৫ বছর) হিমোগ্লোবিনের মাত্রা এবং মানসিক স্বাস্থ্যের মধ্যে কোনো সম্পর্ক মূল্যায়ন করতে ডিজাইন করা হয়েছে। গবেষণাটি সাউথইস্ট ইউনিভার্সিটির নৈতিক সম্মতি কমিটির (SEU/Pharm/CECR/022/2024) থেকে নৈতিক অনুমোদন পেয়েছে। এটি একটি সম্পূর্ণ বেনামী সমীক্ষা, যাতে আপনার পরিচয় গোপন থাকে এবং আপনার গোপনীয়তাকে সম্মান করা হয়। সমস্ত সংগৃহীত তথ্য শুধুমাত্র এই গবেষণার জন্য ব্যবহার করা হবে এবং গোপন রাখা হবে। এই সমীক্ষায় অংশগ্রহণের জন্য আপনার সম্মতি অত্যন্ত গুরুত্বপূর্ণ। এই গুরুত্বপূর্ণ উদ্যোগে আপনার সহযোগিতার জন্য ধন্যবাদ।]

Please Express Your Consent to Participate in the Research and Processing of Anonymous Data for Scientific Purposes [বৈজ্ঞানিক সমীক্ষার জন্য বেনামী ডেটা গবেষণা এবং প্রক্রিয়াকরণে অংশগ্রহণের জন্য আপনার সম্মতি প্রকাশ করুন]

- I am an adult female from Bangladesh and have no objection to the privacy policy of this survey and the information collected. I voluntarily agree to take part in this study.

[আমি একজন বাংলাদেশী প্রাপ্তবয়স্ক মহিলা এবং এই সমীক্ষার গোপনীয়তা নীতি এবং সংগৃহীত তথ্য নিয়ে আমার কোন আপত্তি নেই। আমি স্বেচ্ছায় এই গবেষণায় অংশ নিতে সম্মত।]

☐ আমি একমত (I do agree)

☐ আমি একমত নই (I do not agree)

স্বাক্ষর:

তারিখ:

Please tick one box for each statement [প্রতিটি উক্তির জন্য যে উত্তরটি আপনার মতামতকে সবচেয়ে ভালোভাবে বর্ণনা করে তা চিহ্নিত করুন]

Section 1: Demographic questions

1.1 বয়স বছরে (Age in years)

☐ ১৫-২৫ (15-25)

☐ ২৬-৩৫ (26-35)

☐ ৩৬-৪৫ (36-45)

1.2 শিক্ষার স্তর (Level of education)

☐ পড়ালেখা করি নাই (Illiterate)

☐ প্রাথমিক (Primary)

☐ মাধ্যমিক (Secondary)

☐ স্নাতকোত্তর/উর্ধ্ব (Graduate/above)

1.3 পেশা (Profession)

☐ চাকরি (Service)

☐ ব্যবসা (Business)

☐ গৃহিণী (Housewife)

☐ ছাত্র (Student)

☐ বর্তমানে কাজ করছেন না (Unemployed)

☐ অন্যান্য (Others) (Please specify)

1.4 বৈবাহিক অবস্থা (Marital Status):

☐ অবিবাহিত (Unmarried)

☐ বিবাহিত (Married)

☐ তালকপ্রাপ্ত (Divorced)

☐ বিধবা (Widowed)

1.5 ওজন-কেজিতে (Body weight in Kg):

1.6 উচ্চতা- ফুট ও ইঞ্চিতে (Height in Feet and Inches):

1.7 পরিবারের মাসিক আয়- হাজারে (টাকা) (Monthly family income) (BDT in thousand):

1.8 বসবাসের এলাকা (Area of residence)

☐ শহর (Urban)

☐ গ্রাম (Rural)

1.9 আপনার সাথে বসবাসরত মানুষের সংখ্যা (Number of people living with you):

1.10 ধূমপানের অভ্যাস? (Smoking status?)

☐ ধূমপায়ী (Smoker)

☐ অধূমপায়ী (Non-smoker)

☐ প্রাক্তন ধূমপায়ী (Ex-smoker)

1.11 অ্যালকোহল বা কোনো বিনোদনমূলক ওষুধ সেবনের অভ্যাস (Alcohol or any recreational drugs consumption habit?)

☐ হ্যাঁ (Yes)

☐ না (No)

Section 2: Lifestyle and diet history (জীবনধারা এবং খাদ্য সম্পর্কিত তথ্য)

2.1. আপনি কি কোনো নির্দিষ্ট ডায়েট অনুসরণ করেন? (Do you follow a specific diet e.g., vegetarian, keto)?

☐ হ্যাঁ (Yes)

☐ না (No)

2.2 আপনি আপনার ক্ষুধায় কোন সাম্প্রতিক পরিবর্তন অনুভব করেছেন? (Did you experience any recent change in your appetite?)

☐ হ্যাঁ, অতিরিক্ত খাওয়ার অভ্যাস (Yes, overeating habit)

☐ ক্ষুধা কমে যাওয়া (Loss of appetite)

☐ কোন পরিবর্তন নেই (No change)

2.3 আপনি কি কোনো পুষ্টি বা ভিটামিন সম্পূরক গ্রহণ করে থাকেন? (Do you take any Food/Nutritional/vitamin supplements):

☐ হ্যাঁ (Yes)

☐ না (No)

2.4 আপনি কি ঘুমাতে অসুবিধা অনুভব করেন বা ঘুমের ব্যাধির কোন অভিজ্ঞতা আছে? (Do you experience difficulty sleeping or have any experience of sleeping disorders?)

☐ হ্যাঁ (Yes)

☐ না (No)

2.5 আপনি কি প্রায়শই কোনো ধরনের ওষুধ নেন? (Do you take any sort of medications frequently?)

☐ হ্যাঁ (Yes)

☐ না (No)

যদি হ্যাঁ হয়, অনুগ্রহ করে বলুন [If yes, name of medicine(s)]

2.6 আপনি কি দৈনন্দিন কাজে স্বাভাবিকের চেয়ে বেশি ক্লান্ত বা তন্দ্রাচ্ছন্ন হয়ে পড়েন? (Do you feel tired or drowsy doing daily chores more than usual?)

☐ হ্যাঁ (Yes)

☐ না (No)

2.7 আপনি কি প্রায়ই স্বাভাবিক কাজ করতে মাথা ঘোরা অনুভব করেন বা ঝাপসা দেখতে পান? (Do you often feel dizzy or have blurred vision while doing normal work?)

☐ হ্যাঁ (Yes)

☐ না (No)

2.9. আপনার দৈনন্দিন শারীরিক কার্যকলাপের মাত্রা কি? (Are you involved in daily physical activity?)

- ☐ উচ্চ শারীরিক শ্রম (High physical labor)
- ☐ মাঝারি স্তর (Medium level)
- ☐ কোন কার্যকলাপ নেই (ডেস্ক কাজ) (No activity at all (desk job))

2.10. আপনি কি সপ্তাহে অন্তত পাঁচবার নিয়মিত ব্যায়াম করেন? (Do you perform regular exercise at least five times a week?)

- ☐ নিয়মিত (Regular)
- ☐ অনিয়মিত (Irregular)
- ☐ একদমই নয় (Not at all)

Section 3: Mental health related information (মানসিক স্বাস্থ্য বিষয়ক তথ্য)

1 (s). আমার স্থির হতে কষ্ট হয় (I found it hard to wind down)

- ☐ একেবারেই না (Not at all)
- ☐ কদাচিৎ (Rarely)
- ☐ মাঝে মাঝে (Sometimes)
- ☐ প্রায়ই (Frequently)

2 (a). আমার গলা শুকানোর মতো অবস্থা হয় (I was aware of dryness of my mouth)

- ☐ একেবারেই না (Not at all)
- ☐ কদাচিৎ (Rarely)
- ☐ মাঝে মাঝে (Sometimes)
- ☐ প্রায়ই (Frequently)

3 (d). আমি কোন ইতিবাচক অনুভূতি পাই না (I couldn't seem to experience any positive feeling at all)

- ☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

4 (a). আমার দমবন্ধ হয়ে যাওয়ার মতো অবস্থা হয় (I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion))

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

5 (d). কোনো নতুন কাজ শুরু করার মতো ইচ্ছাশক্তি পাই না (I found it difficult to work up the initiative to do things)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

6 (s). যেকোনো পরিস্থিতিতে আমি অতিরিক্ত প্রতিক্রিয়া দেখাই (I tended to over-react to situations)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

7 (a). বিরূপ পরিস্থিতিতে কাপুনি অনুভব হয়। যেমন, হাতে (I experienced trembling (e.g., in the hands))

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

8 (s). আমার মনে হয় আমি অনেক নেতিবাচক মনোভাব পোষণ করি (I felt that I was using a lot of nervous energy)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

9(a). আমি অতিরিক্ত দুশ্চিন্তা করি এবং আতঙ্কিত হয়ে যাই (I was worried about situations in which I might panic and make a fool of myself)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

10 (d). আমার মনে হয় আমার জীবনের সামনে ভালো কিছু নেই (I felt that I had nothing to look forward to)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

11 (s). আমি নিজে নিজে রাগান্বিত হয়ে যাই (I found myself getting agitated).

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

12 (s). নিজেকে শান্ত করতে পারি না (I found it difficult to relax)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

13 (d). আমি কষ্ট এবং হতাশায় ডুবে যাই (I felt down-hearted and blue)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

14 (s). কোনো কিছু আমার প্রতিকূলে গেলে আমি সহ্য করতে পারি না (I was intolerant of anything that kept me from getting on with what I was doing)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

15 (a). আমার মনে হয় আমি আতঙ্কে আছি (I felt I was close to panic)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

16 (d). আজকাল জীবনের কোনো কিছু আমাকে উৎসাহিত করতে পারে না (I was unable to become enthusiastic about anything)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

17 (d). আমার জীবন মূল্যহীন মনে হয় (I felt I wasn't worth much as a person)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

18 (s). আমার মনে হয় আমি একজন স্পর্শকাতর মানুষ (I felt that I was rather touchy)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

19 (a). আমি স্থির থাকা অবস্থায়ও আমার বুক ধড়ফড় অনুভব করি (I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat))

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

20 (a). আমি কোনও কারণ ছাড়াই ভয় পেয়ে যাই (I felt scared without any good reason)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

21 (d). আমার মনে হয় জীবন অর্থহীন (I felt that life was meaningless)

☐ একেবারেই না (Not at all)

☐ কদাচিৎ (Rarely)

☐ মাঝে মাঝে (Sometimes)

☐ প্রায়ই (Frequently)

** Blood Hb level:_____ g/dL

** Are you aware about your Hb level?

Yes

No

Any comments

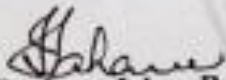
Thank you for completing this survey.

গবেষকের নাম:

স্বাক্ষর:

তারিখ:

Appendix-2

 SOUTHEAST UNIVERSITY	Fax: 880-2-55034109 E-mail: info@seu.edu.bd Web: www.seu.edu.bd FB: @southeastuniv
Ref: <u>SEU/Pharm/CECR/022/2024</u> Date: <u>19.11.2024</u>	
Project Title: A study on the hemoglobin levels and mental health status among the adult females in Bangladesh	
Name of the Investigators: Dr. Md. Rabiul Islam, School of Pharmacy, BRAC University and Dr. Md. Siddiqui Islam, Department of Pharmacy, Southeast University	
CECR Reference No.: SEU/Pharm/CECR/022/2024	
Ethical Approval	
This is to certify that the research project entitled "A study on the hemoglobin levels and mental health status among the adult females in Bangladesh" presented by Dr. Md. Rabiul Islam, School of Pharmacy, BRAC University and Dr. Md. Siddiqui Islam, Department of Pharmacy, Southeast University was reviewed by Committee for Ethical Compliance in Research and was found to be compliant with Ethical Standards of Department of Pharmacy, SEU.	
 Dr. Israt Jahan Bulbul Convener (Acting) Committee for Ethical Compliance in Research	

Appendix-3

QUESTIONNAIRE FOR THE INFORM-CONSENT

১. এই গবেষণা কর্মের ধরণ, উদ্দেশ্য এবং পদ্ধতি সম্পর্কে কি পুরো : হ্যাঁ/ না
জানতে পেরেছেন?
২. এই গবেষণায় যে আপনাকে শারীরিক, মানসিক এবং সামাজিক কোন : হ্যাঁ/ না
ঝুঁকির সম্মুখীন হতে হবে না, এ বিষয়ে কি যথেষ্ট অবহিত হয়েছেন?
৩. এই গবেষণায় আপনার শরীর অথবা কোন অঙ্গ-প্রত্যঙ্গে যে ক্ষত বা : হ্যাঁ/ না
আঘাত তৈরী করা হবে না, এ সম্পর্কে কি অবহিত হয়েছেন?
৪. এই গবেষণার ফলাফল এবং সম্ভাব্য কল্যাণের বিষয়ে আপনার : হ্যাঁ/ না
ধারণাটি স্পষ্ট হয়েছে কি?
৫. এই গবেষণা কর্মে অংশগ্রহণ, সহযোগিতাদান, অথবা বিরত থাকার : হ্যাঁ/ না
সিদ্ধান্ত আপনি কি স্বাধীন ভাবে গ্রহণ করতে পারছেন?
৬. গবেষণা কর্মে অংশগ্রহণের ফলে আপনার মৌলিক মানবাধিকার কি : হ্যাঁ/ না
ক্ষুণ্ণ হচ্ছে?
৭. আপনি কি, পরিপূর্ণ ভাবে জ্ঞাত যে, আপনার তথ্যাবলীর গোপনীয়তা : হ্যাঁ/ না
বজায় রাখা হবে?
৮. গবেষণা কর্মে অংশগ্রহণের জন্য আপনাকে কোন পারিশ্রমিক অথবা : হ্যাঁ/ না
ভ্রমণভাতা দেয়া হবে না, এ বিষয়টি কি যথেষ্ট অবগত আছেন?

অনুমতি পত্র

এই গবেষণা কর্মের উদ্দেশ্য, পদ্ধতি ও উপযোগিতা সম্পর্কে পূর্ণ ধারণা পেয়ে, এর নীতিগত বৈশিষ্ট্য সমূহের প্রতি আমার সম্মতি প্রকাশ করছি। গবেষণা কর্মে অংশগ্রহণের জন্য আমি কোন ব্যক্তি বা গোষ্ঠী দ্বারা প্রভাবান্বিত হইনি অথবা আমার মৌলিক মানবাধিকার ক্ষুণ্ণ হয়নি। অতএব, যথাযথ পর্যালোচনা সাপেক্ষে আমি স্ব-প্রণোদিত হয়ে এই অনুমতি পত্রে স্বাক্ষর করছি।

Appendix-4 (DASS-21 Tools)



DASS 21 NAME _____ DATE _____

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all - NEVER
- 1 Applied to me to some degree, or some of the time - SOMETIMES
- 2 Applied to me to a considerable degree, or a good part of time - OFTEN
- 3 Applied to me very much, or most of the time - ALMOST ALWAYS

FOR OFFICE USE

		N	S	O	AA	D	A	S
1	I found it hard to wind down	0	1	2	3			
2	I was aware of dryness of my mouth	0	1	2	3			
3	I couldn't seem to experience any positive feeling at all	0	1	2	3			
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3			
5	I found it difficult to work up the initiative to do things	0	1	2	3			
6	I tended to over-react to situations	0	1	2	3			
7	I experienced trembling (eg, in the hands)	0	1	2	3			
8	I felt that I was using a lot of nervous energy	0	1	2	3			
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3			
10	I felt that I had nothing to look forward to	0	1	2	3			
11	I found myself getting agitated	0	1	2	3			
12	I found it difficult to relax	0	1	2	3			
13	I felt down-hearted and blue	0	1	2	3			
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3			
15	I felt I was close to panic	0	1	2	3			
16	I was unable to become enthusiastic about anything	0	1	2	3			
17	I felt I wasn't worth much as a person	0	1	2	3			
18	I felt that I was rather touchy	0	1	2	3			
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3			
20	I felt scared without any good reason	0	1	2	3			
21	I felt that life was meaningless	0	1	2	3			

