

A Study on the Prevalence and Associated Risk Factors for Anxiety among Geriatric Population in Bangladesh

By

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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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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.

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Approval

The thesis titled “A Study on the Prevalence and Associated Risk Factors for Anxiety among Geriatric Population in Bangladesh” submitted by Maisha Rahman (20346014), of Summer, 2024 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy.

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Ethics Statement

The research protocol was approved by the Committee for Ethical Compliance in Research of the Southeast University, Dhaka, Bangladesh (Ref: SEU/Pharm/CECR/021/2024). The objectives of the study were mentioned to all participants, and their informed written consent was obtained before participation.

Abstract

Anxiety is considered the most prevalent psychological disorder among various mental health conditions across all age groups, including the geriatric population. The objective of this study is to evaluate the prevalence and identify the associated risk factors influencing anxiety in older adults aged 60 and above living in urban and rural settings using standardized evaluation tools. The study used the GAD-7 scale on 396 elderly individuals, which is a seven-item instrument designed to assess the severity of anxiety. The prevalence of anxiety was 88% among the elderly individuals who exhibited mild (48.5%), moderate (34.3%), severe (5.3%) symptoms of anxiety. Additionally, the study focuses on evaluating anxiety levels in relation to demographic variables including age, BMI range, sex, living area, marital status, living status, educational level, profession, economic condition, smoking habit and the presence of chronic diseases. The outcome will create a systematic understanding of the disease burden and associated risks of anxiety disorders, which will serve as the basis for focused public policy on mental health at the national, regional, and international levels.

Keywords: Geriatric population; Prevalence; Anxiety; GAD-7 scale; Risk factors

Dedication

This project is dedicated to my parents, whose love, encouragement, and unwavering support have made this journey possible, and to my partner, who has walked every step of the way with me.

Acknowledgement

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List of Acronyms

WHO World Health Organization

ADAA Anxiety and Depression Association of America

APA American Psychological Association

NMHS National Mental Health Survey

GAD Generalized Anxiety Disorder

BMI Body Mass Index

Chapter 1

Introduction

1.1 Background

Mental health refers to a condition of psychological wellness that empowers individuals to cope with life's difficulties, realize their potential, perform effectively in educational and occupational settings, and participate meaningfully in social life. It is a fundamental element of well-being and health that supports our individual and collective capacities to establish relationships, make decisions, and influence the world in which we live (WHO, 2022). Although it is an integral component of overall health, especially among the geriatric population, it is often underrecognized and undertreated. Mental health challenges can greatly affect the capacity of older adults to carry out essential daily activities, leading to reduced autonomy, diminished independence, and a lower overall quality of life (de Mendonça Lima and Ivbijaro, 2013). In addition, anxiety is regarded as the most common psychological disorder among a wide range of other mental health issues. Around 30 million new instances of anxiety disorder were reported globally between 2010 and 2019, representing an 11.2% increase in the population (Yang et al., 2021). In 2019, anxiety disorders were the most prevalent mental health condition worldwide, affecting 301 million individuals. Furthermore, anxiety in later life is a significant public health concern. The Anxiety and Depression Association of America states that anxiety disorders are the most common mental health issue among older persons (ADAA, 2010). Anxiety disorders can cause years of misery (Schuermans et al., 2005) and are estimated to affect one in ten older persons (Beekman et al., 1998).

The National Mental Health Survey of Bangladesh revealed that the highest incidence of mental illnesses was found among those aged 60 and over (20.2%), while the most common mental disease among individuals was generalized anxiety disorder (3.5%) (NMHS, 2021).

Despite this, older adults' mental health is often underestimated due to a lack of knowledge and a perception that physical health issues require medical attention. In contrast, concomitant mental illnesses are still underdiagnosed among the populace. Although there is a significant prevalence of mental illnesses in Bangladesh, this is an issue that is mainly neglected and poorly studied. To significantly enhance mental health services in Bangladesh, it is imperative to conduct well-designed clinical and epidemiological studies.

1.2 Problem Statement

In spite of the notable demographic transition towards an older populace, mental health concerns among the elderly in Bangladesh remain profoundly underexamined. Current healthcare systems predominantly emphasize physical health, with limited incorporation of mental health services, especially for those suffering from anxiety. Additionally, cultural stigma, insufficient awareness, financial dependence, and the normalizing of emotional distress in later life further hinder the identification of anxiety disorders among older individuals. Therefore, thorough, community-level research is desperately needed to identify the major sociodemographic, health-related, and environmental factors linked to anxiety as well as the prevalence of anxiety disorders in the elderly population.

1.3 Research Gap

Despite an increasing awareness of mental health issues in elderly people, a significant research gap remains about the prevalence and contributing causes of anxiety disorders among the older adults. Although diverse interventions are necessary to address geriatric mental disorders, there exists a deficiency in research-based and integrated knowledge about elderly mental health interventions at both national and regional levels (Mazumder et al., 2023). Due to the pre-existing stigma, absence of effective health management systems, limited healthcare access, and lack of resources, it is addressed on a minimal scale in developing nations. While some

studies in Bangladesh have investigated the mental health of older adults, the majority of this research has concentrated on depression and psychological distress, with only a small amount of attention focused on anxiety disorders and their underlying risk factors. Another significant gap is the incomplete knowledge of how demographic variables, including age, gender, socioeconomic position, and long-term medical disorders, affect the prevalence and severity of anxiety in the elderly. However, most prior research on anxiety prevalence among older adults has excluded participants aged 80 and above, thereby limiting the generalizability of their findings to the oldest segments of the population (Lejtzén et al., 2014; Martín-Merino et al., 2010; Sandanger et al., 1999), some investigations focused exclusively on specific subgroups within the elderly population, such as spouses of individuals with dementia or those with visual impairments (Heesterbeek et al., 2017; Joling et al., 2015) or did not use anxiety assessment tools specifically designed for older adults (Heesterbeek et al., 2017; Joling et al., 2015; Sandanger et al., 1999). Some studies relied on primary care records or electronically documented data to assess anxiety diagnoses, often without offering further details about the assessment methods employed (Samuelsson et al., 2005; Walters et al., 2012). In conclusion, there remains a clear need for further research on anxiety, particularly its prevalence among older adults, and for the identification of contributing risk factors across various demographic groups, utilizing appropriate and validated assessment tools.

1.4 Objectives

The purpose of this study is to evaluate the prevalence and identify the key factors influencing anxiety in older adults aged 60 and above living in urban and rural settings using standardized evaluation tools. The assessment utilizes the GAD-7 scale, a recognized tool for assessing anxiety severity. It further seeks to explore the correlation between anxiety and significant

sociodemographic factors. The result will help to determine targeted mental health interventions and policy formulation for geriatric care in Bangladesh.

1.5 Significance

The study holds significance as it sheds light on the burden of anxiety among the geriatric population in Bangladesh, particularly in relation to sociodemographic vulnerabilities. The findings can aid in the early identification of mental health risks in older adults by revealing the frequency of anxiety and identifying important demographic, health, and social variables. Moreover, the study aspires to enhance public health policies by supplying evidence required for the incorporation of geriatric mental health services into comprehensive public health frameworks, thereby improving psychological well-being and quality of life for Bangladesh's elderly population.

Chapter 2

Literature Review

2.1 Global Prevalence of Geriatric Anxiety

The world's population aged over 60 will double from the current 756 million to 1400 million by 2030, according to the most recent estimates (De Luca d'Alessandro et al., 2011). Mental disorders in later life have emerged as a significant public health issue as the number of older persons and life expectancy continue to rise on a global scale. One of the most common mental health issues impacting the elderly is anxiety disorders, but because of cultural stigma and symptoms that overlap with physical problems, they often get overlooked. A systematic study and meta-analysis conducted by Jalali et al. (2024) put the global prevalence of anxiety in the elderly at 16.5%. The study revealed significant regional diversity, with the greatest prevalence recorded in Africa at 29.5%. Factors contributing to this diversity encompass disparities in evaluation instruments, cultural attitudes towards mental health, and the accessibility of healthcare resources. Similarly, Shafiee et al. (2024) conducted a meta-analysis that focused on anxiety symptoms in older people, revealing a global prevalence of 28%. The mechanisms of anxiety in older adults differ from those in younger adults due to age-related neuropathology and the prevalent loss and isolation characteristic of late life (Andreescu and Varon, 2015). In addition, anxiety in this age group is frequently caused by deteriorating physical health, long-term illnesses, fear of dependency, loss, unstable finances, and social isolation. The well-being and quality of life of the populace are seriously threatened by the rising incidence of anxiety worldwide (Racine et al., 2021).

2.2 Geriatric Anxiety in South Asia

South Asia is home to approximately one-quarter of the global population and one-fifth of the world's psychiatrically ill patients (Trivedi et al., 2007). Although South Asian countries have high rates of mental diseases, there is an absence of thorough research regarding the incidence of mental disorders in this region. Numerous societal obstacles, such as the stigma associated with mental illnesses and a lack of knowledge, frequently result in underreporting or delayed reporting of mental illnesses, which raises the burden of mental illnesses at the population level (Trivedi et al., 2007). Anxiety disorders, specifically, have received less focus than depression or cognitive deterioration. The reported prevalence of anxiety among older individuals varies significantly across the region despite the shared socio-cultural contexts. This suggests that there are disparities in assessment tools, healthcare infrastructure, and community support systems. While Bangladesh and Pakistan had a greater pooled prevalence of anxiety, India had more studies than any other South Asian nation. There were no studies found in Bhutan, the Maldives, or Afghanistan (Hossain et al., 2021). In order to resolve these and enhance the knowledge base for future research and improved decision making, it is imperative to conduct a comprehensive assessment of the prevalence of mental disorders in South Asian countries (Hossain et al., 2020).

2.3 Studies on Geriatric Anxiety in Bangladesh

The burden of mental disorders is substantially higher in countries with low or middle incomes like Bangladesh than in economically developed countries. A cross-sectional study in an urban region of Bangladesh revealed that 65.8% of elderly participants displayed symptoms of anxiety. The study found that among older adults, things like health problems, financial worries, and family obligations were strongly linked to higher anxiety levels (Any et al., 2021). Furthermore, another study comparing anxiety disorders among older individuals in

government and private old care facilities indicates variations in prevalence rates. The study found that anxiety disorders were more prevalent in private old care homes compared to government funded autonomous old care homes. This disparity may be strongly linked to the stringent restrictions, rules, and regulations that are present in private old care homes (Harun et al., 2023). These studies illustrate that elderly individuals in Bangladesh experience a significant burden of anxiety, emphasizing the necessity of support networks and targeted interventions. However, more study is necessary to better understand prevalence patterns and particular risk factors, as there are not enough large scale, community based studies.

2.4 Factors Associated with Anxiety

A common misconception is that anxiety among the elderly is solely a consequence of the aging process; however, it is shaped by multiple interrelated factors that necessitate comprehensive analysis. Previous studies have shown that the key determinants influencing older persons psychological health include variations in their sociodemographic details, physical health, and social support and involvement (Li et al., 2014; Xie et al., 2022). In older individuals, the experience of anxiety and the fear of falling typically results from a combination of diverse influences, rather than a single determining factor. Several recurring risk factors have been recognized, including being female, physical limitations, multiple chronic conditions, prior incidents of falling, impaired balance, the presence of pain, cognitive impairment, compromised general health, experiences of loneliness or social isolation, insufficient social support, depressive symptoms, and disturbances in sleep such as insomnia (Whitmore et al., 2024). However, a lot of current research focuses on older people's psychological well-being in relation to public health issues or among certain populations, such as empty nesters and older adults with impairments, chronic illnesses, or other conditions (Wang et al., 2022; Zhong and Xiang, 2022). These results are consistent with earlier research

and imply that effective anxiety interventions for older adults should consider a holistic approach, targeting multiple dimensions of health and overall well-being.

Chapter 3

Methodology

3.1 Study Design

This research employed a cross-sectional design to examine the prevalence of anxiety and its associated risk factors among the elderly population residing in both urban and rural areas of Bangladesh. The approach was deemed both scientifically appropriate and practical due to the exploratory nature of the research and the necessity for rapid data capture across an extensive geographic region. The study population comprised 396 individuals, categorized into urban and rural community groups to reflect geographic diversity. Anxiety was assessed on the GAD-7 scale. Before participation, all respondents provided written informed consent, and data collection was conducted in accordance with stringent ethical standards.

3.2 Study Population

The study population consisted of 396 elderly individuals aged 60 years and above, selected from urban and rural areas. Incorporating both settings ensured that the study results would be applicable across various socio-economic levels and geographic regions. Participants included males and females, reflecting diverse marital statuses, educational levels, and health backgrounds. Data was obtained from older adults residing in rural as well as urban regions of Bangladesh, as indicated by the study's title, and participation was entirely voluntary.

3.3 Estimation and Questionnaire

A structured questionnaire was created as the primary method for gathering data to investigate the association between anxiety and sociodemographic factors among elderly individuals. The comprehensive questionnaire included sections on informed consent, sociodemographic characteristics, health-related information, and the GAD-7 psychometric scale for evaluating

anxiety symptoms in elderly participants. The GAD-7 scale, a seven-item instrument widely used to evaluate anxiety severity, was used to assess participants anxiety levels. The scale assesses the frequency of symptoms experienced in the preceding two weeks, resulting in a total score that classifies anxiety as minimal, mild, moderate, or severe. The GAD-7 section was maintained in its validated format, while the other questionnaire components were modified to accommodate the local context.

3.4 Method of Data Collection

The data for this study was gathered by using printed questionnaires that were distributed to elderly participants in both urban and rural settings. Each participant was approached respectfully, given a concise overview of the study's objectives, and invited to willingly complete the questionnaire. Measures were instituted to guarantee participants understood the questionnaire components, particularly those pertaining to the GAD-7 scale.

3.5 Anxiety Assessment Tool

The study evaluated anxiety symptoms utilizing the GAD-7 scale, a seven-item tool designed to assess the severity of anxiety. It is a widely used self-report instrument for the screening, diagnosis, and severity evaluation of anxiety disorders. Individuals are requested to evaluate the severity of their symptoms over the past two weeks for each item. There are four response options: "not at all," "several days," "more than half the days," and "nearly every day." The total GAD-7 scores range from 0 to 21. Scores of 4 or lower indicate minimal or no anxiety, scores of 5 to 9 suggest mild anxiety, scores of 10 to 14 indicate moderate anxiety, and scores of 15 or higher indicate severe anxiety.

The GAD-7 Scale

The Severity of Anxiety level (Anxiety and Depression Association America, ADAA)

Score	Anxiety Severity Level
0-4	Minimal/ No Anxiety
5-9	Mild Anxiety
10-14	Moderate Anxiety
15 or above	Severe Anxiety

3.6 Ethical Consideration

The study was conducted following stringent ethical standards to guarantee the confidentiality of all participants. All the participants were informed of the objectives of this study, and their informed written consent was obtained before their participation. The research also received ethical approval from the Committee for Ethical Compliance in Research of the Southeast University, Dhaka, Bangladesh (Ref: SEU/Pharm/CECR/021/2024).

3.7 Statistical Analysis

The data analysis procedure is done using Microsoft Excel 2010 and IBM SPSS statistics version 30. The datasets were entered, organized, sorted, tabulated and classified in Microsoft Excel to prepare them for further analysis. Afterwards, the software known as SPSS was

employed for data analysis and to assess the differences in anxiety and the related factors, a chi-square analysis was performed. A Pearson correlation test was performed in SPSS to evaluate linear correlations between continuous variables and GAD. If the p-value was less than 0.05, all analyses were deemed statistically significant.

Chapter 4

Result

Anxiety symptoms were evaluated using the GAD-7 scale on 396 elderly individuals. The study focuses on assessing the level of anxiety in connection with demographic and health related variables. The data analysis employed Chi-Square and Pearson Correlation tests to identify significant relationships, with results categorized by subgroups including age, BMI range, sex, living area, marital status, living status, educational level, profession, economic condition, smoking habit and the presence of chronic diseases.

4.1 Prevalence of Anxiety among the Geriatric Population

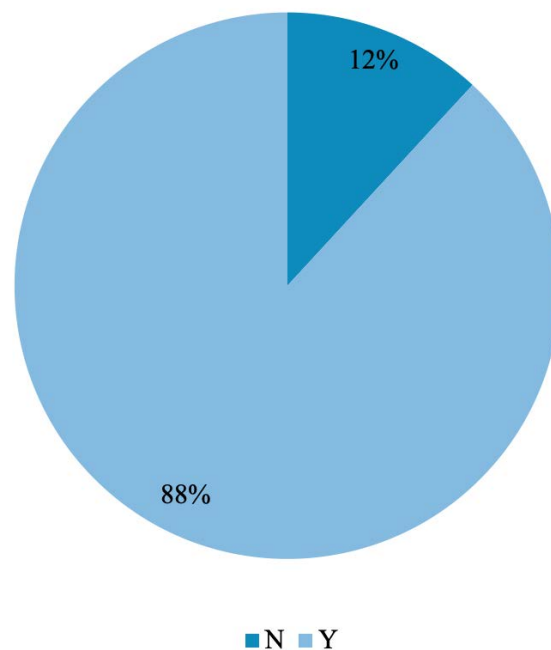


Figure 1: Prevalence of Anxiety among Participants

In figure 1, out of 396 participants, 349 (88%) individuals exhibited mild to severe symptoms of generalized anxiety disorder (GAD). The rest of the participants showed no symptoms related to anxiety.

4.2 Severity of Anxiety Symptoms in the Geriatric Population

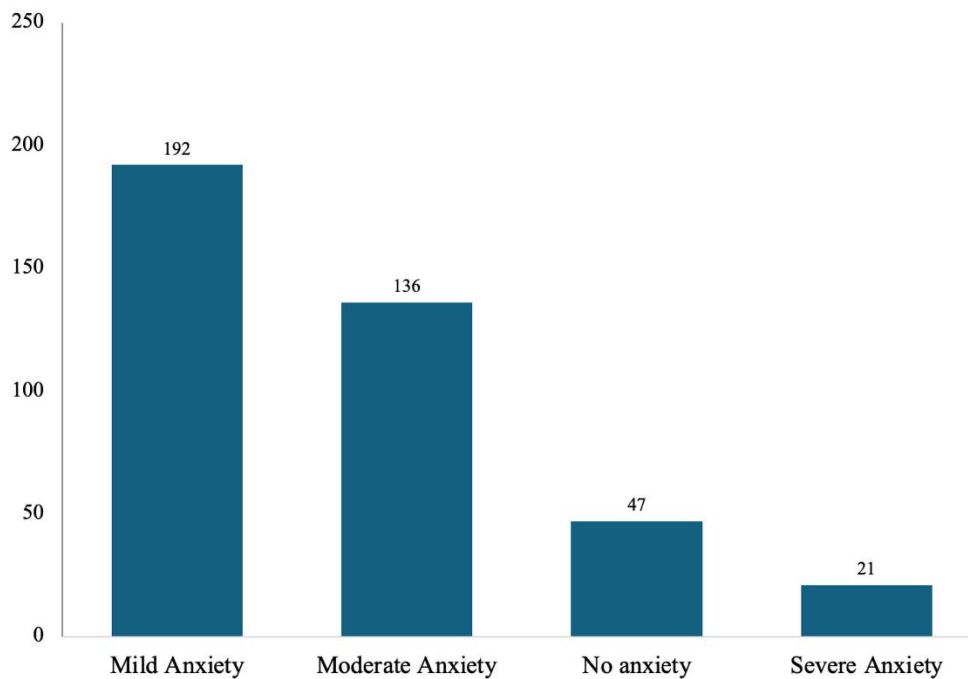


Figure 2: Severity of Anxiety in the Geriatric Population

In figure 2, out of 396 respondents, 192 participants exhibited mild anxiety symptoms, constituting 48.5% of the overall sample. 136 individuals exhibited moderate anxiety levels, which constitutes 34.3% of the total. About 47 participants showed no anxiety with a frequency of 11.9%. Finally, 21 respondents were identified as having severe anxiety, which accounted for 5.3% of the total sample.

4.3 Analysis of Chi-square Test Results

Chi-Square test was performed in SPSS to identify the association between demographic variables and Generalized Anxiety Disorder. The test variables were age, BMI range, sex,

living area, marital status, living status, educational level, profession, economic condition, smoking habit and chronic diseases.

Table 1: Results of Chi-square Analysis

Variable	Chi-Square (χ^2)	df	p value
1. Age	10.750	9	0.293
2. BMI Range	9.268	6	0.159
3. Sex	7.775	3	0.051
4. Living Area	51.398	3	<0.001
5. Marital Status	24.524	9	0.004
6. Living Status	9.770	3	0.021
7. Educational Level	25.687	9	0.002
8. Profession	14.912	3	0.002
9. Economic Condition	29.585	6	<0.001
10. Chronic Disease	46.129	3	<0.001
11. Smoking Habit	11.700	3	0.008

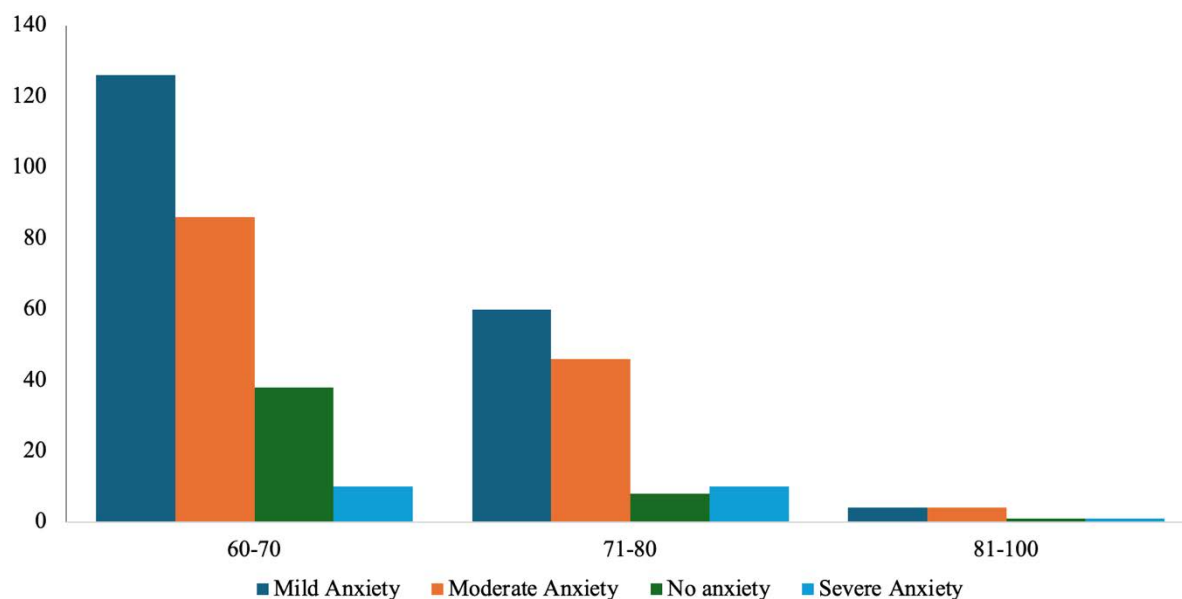


Figure 3: Distribution of Anxiety Levels across different Age Groups

In figure 3, mild anxiety is consistently the most prevalent among all age categories, with the 60–70 age group being particularly dominant. According to the data, anxiety symptoms are much more prevalent among younger elderly individuals (60–70) than other older groups. However, the Pearson Chi-Square test result ($\chi^2 = 10.750$, $p = 0.293$) suggests that there is no statistically meaningful association between age and the presence of Generalized Anxiety Disorder (GAD).

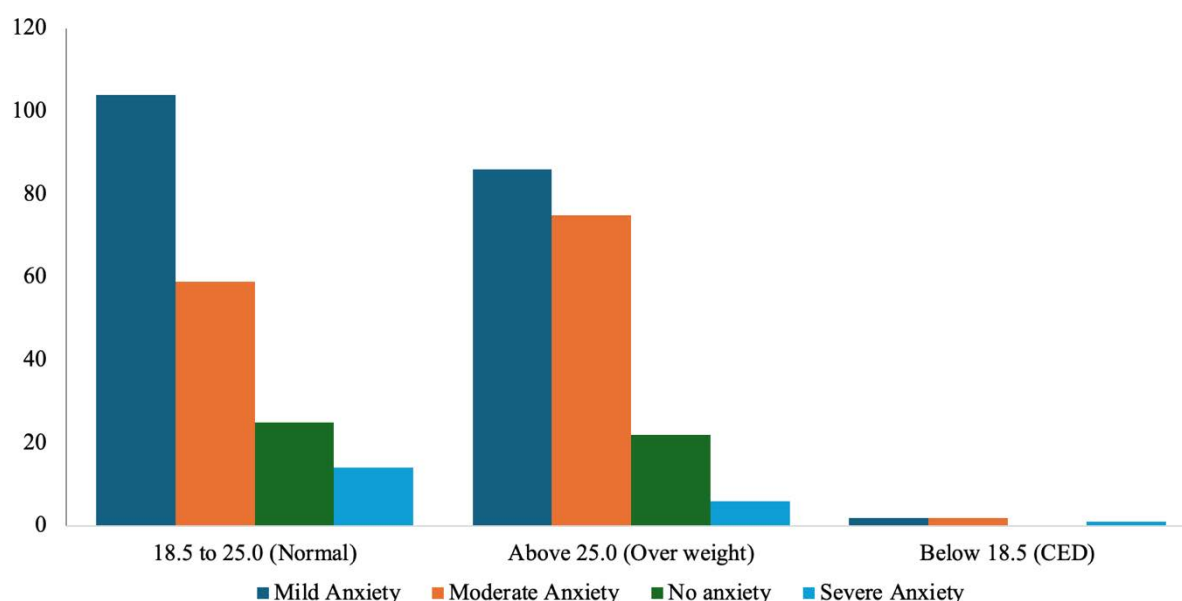


Figure 4: Distribution of Anxiety Severity across different BMI Range

In Figure 4, the majority of individuals with a normal or overweight BMI experience mild to moderate anxiety. Although mild anxiety seems to be slightly more prevalent in people with normal BMI, there is no noticeable variation in anxiety levels based on BMI. In Pearson Chi-Square analysis, there is no statistically significant relation between BMI range and Generalized Anxiety Disorder, with a value of ($\chi^2= 9.268$, $p= 0.159$).

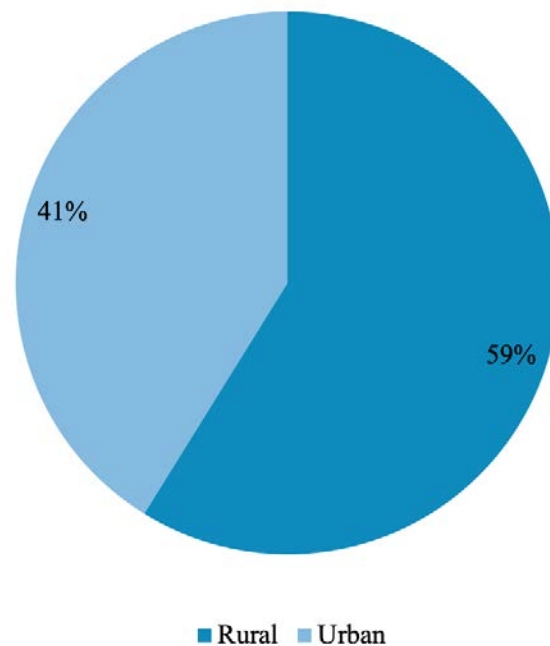


Figure 5: Distribution of Living Area among the Respondents

The pie chart in figure 5 shows the living area distribution of the respondents. 59% of the respondents reside in rural areas whereas 41% reside in urban areas. A strong association between living area and Generalized Anxiety Disorder is demonstrated by the Pearson Chi-Square analysis. The value is ($\chi^2= 51.398$, $p= <0.001$).

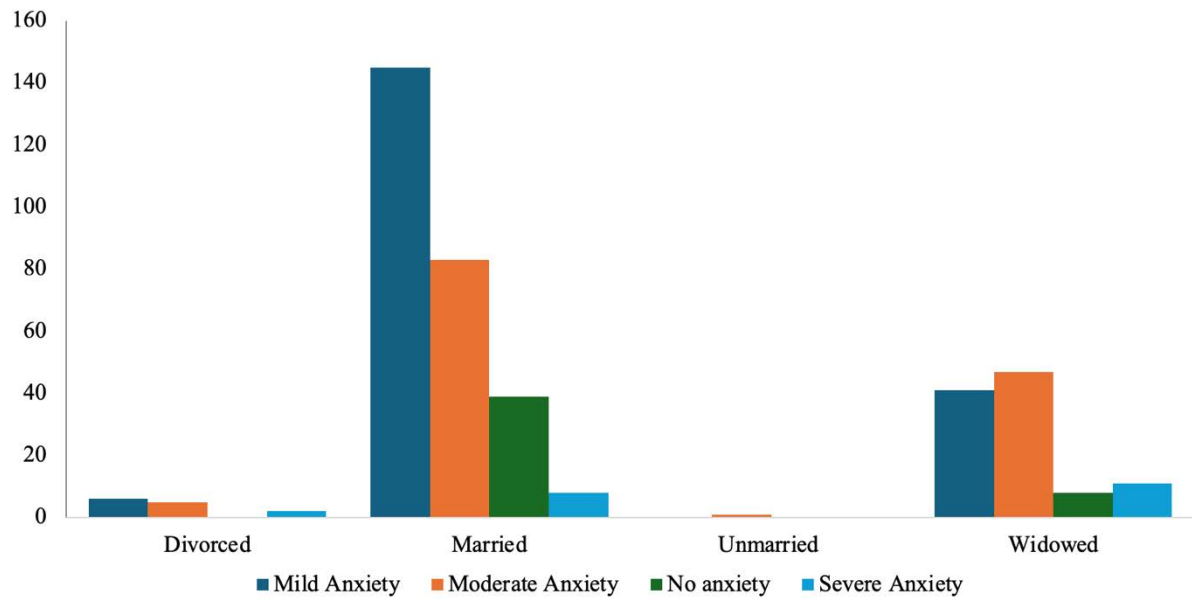


Figure 6: Anxiety Levels by Marital Status in the Geriatric Population

From figure 6, the majority of the sample consists of married people, who exhibit notable mild to moderate anxiety. Anxiety is also experienced by widowed individuals, although the incidence is lower. The insufficient sample sizes for the divorced and unmarried people restrict the ability to draw robust conclusions. However, a statistically significant relation between Generalized Anxiety Disorder and marital status is demonstrated by the Chi-Square analysis with a value of ($\chi^2 = 24.524$, $p = 0.004$).

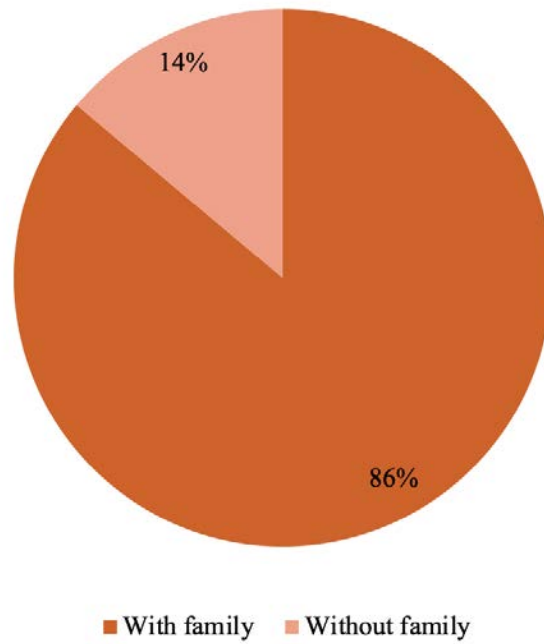


Figure 7: Living Status of the Respondents

The pie chart in figure 7 shows the living status of the participants. 86% of the participants live with their family and 14% live without family. In Pearson Chi-Square, there is a significant association between living status and Generalized Anxiety Disorder with a value of ($\chi^2= 9.770$, $p= 0.021$).

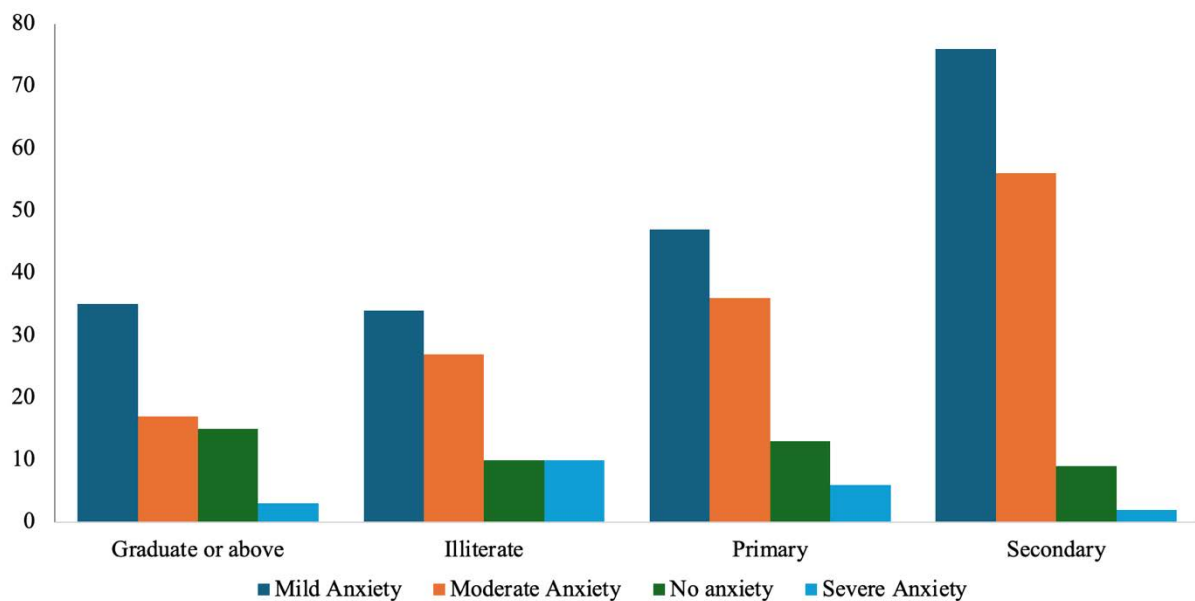


Figure 8: Distribution of Anxiety Severity by Educational Level

Figure 8 shows the relationship between educational level and anxiety severity among geriatric population. Individuals with secondary education exhibit higher prevalence rates of both mild and moderate anxiety symptoms. However, a statistically significant relation between Generalized Anxiety Disorder and educational level is demonstrated by the Chi-Square analysis and the value is ($\chi^2= 25.687$, $p= 0.002$).

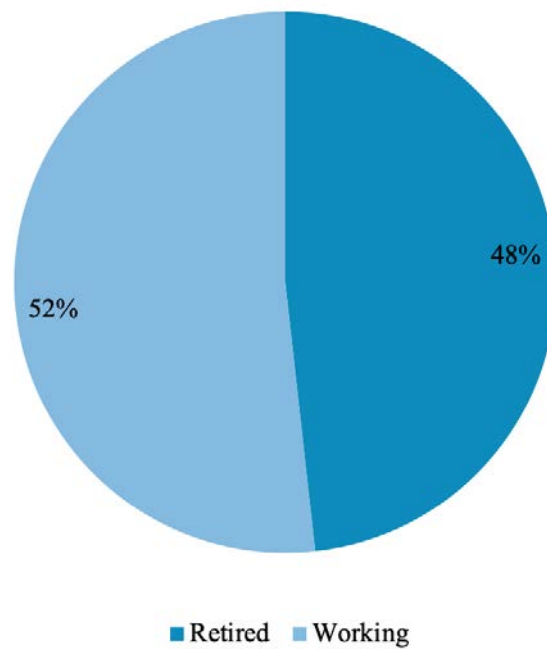


Figure 9: Profession of the Respondents

In figure 9, the pie chart shows the distribution of professions of the elderly respondents. 52% of the respondents are still working, whereas 48% are retired. In Pearson Chi-Square, shows that there is statistically significant relation between profession and Generalized Anxiety Disorder, with a value of ($\chi^2= 14.912$, $p= 0.002$).

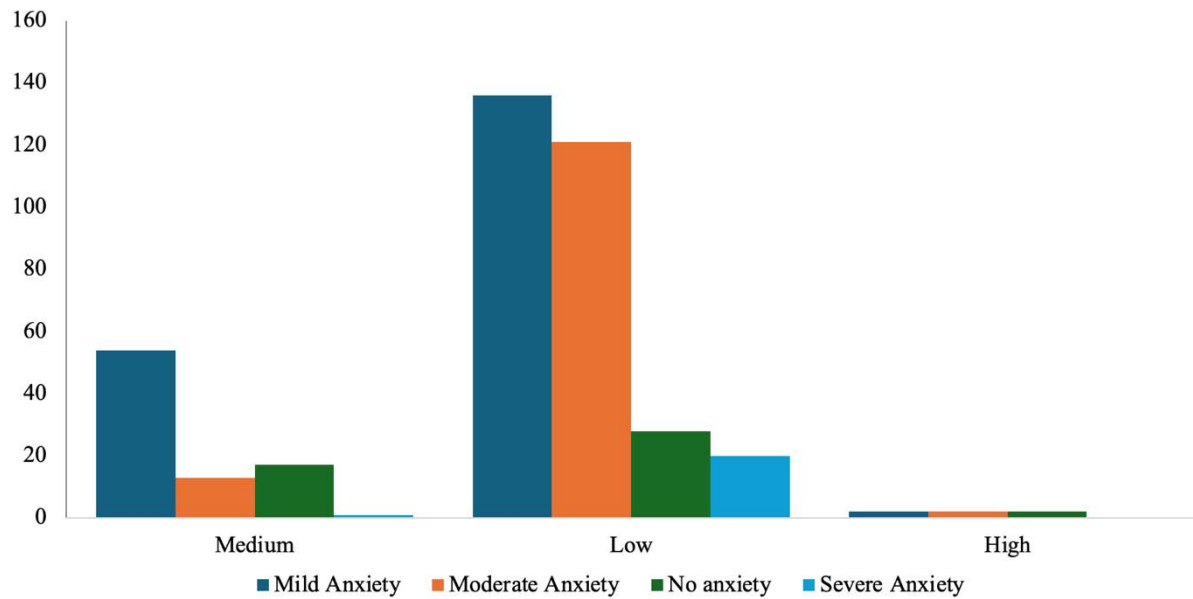


Figure 10: Anxiety Levels in relation to Economic Condition

The bar graph in figure 10 shows that anxiety is most prevalent among low-income participants. Also, anxiety levels decrease significantly with high income. However, the Pearson Chi-Square analysis indicates a statistically significant relation between economic conditions and Generalized Anxiety Disorder and the value is ($\chi^2= 29.585$, $p= <0.001$).

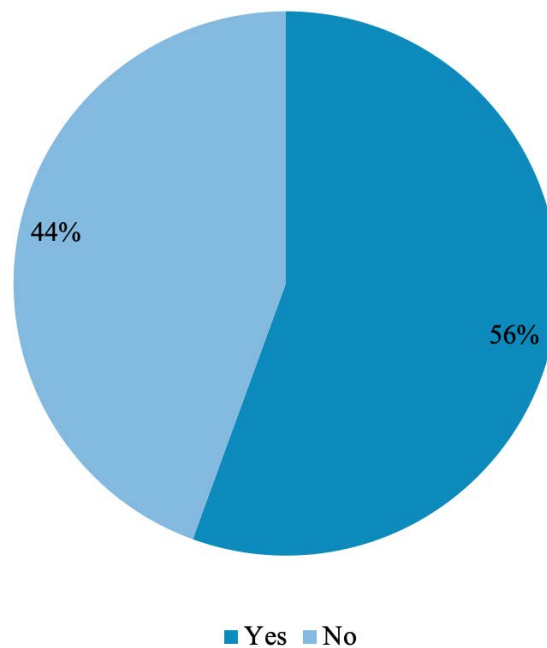


Figure 11: Presence of Chronic Disease in Participants

In figure 5, the pie chart shows 56% of the participants have chronic disease, while 44% do not have any chronic disease. However, in The Pearson Chi-Square analysis, there is a statistically significant relation between chronic disease and Generalized Anxiety Disorder with a value of ($\chi^2= 46.129$, $p= <0.001$).

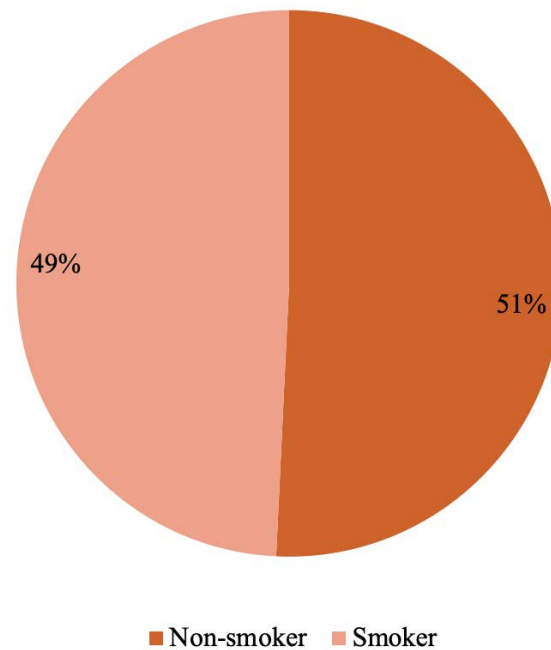


Figure 12: Smoking Habit in Participants

The pie chart in figure 12 shows 51% of respondents identified as non-smokers and 49% as smokers. In Pearson Chi-Square, there is a statistically significant association between smoking habit and Generalized Anxiety Disorder with a value of ($\chi^2= 11.7$, $p= 0.008$).

4.4 Correlation between Demographic Variables and GAD

Pearson Correlation test was performed in SPSS to identify the correlation between Generalized Anxiety Disorder and demographic variables. The test variables were age, BMI range, sex, living area, marital status, living status, educational level, profession, economic condition, smoking habit and chronic diseases.

Table 2: Correlation between Continuous Variables and GAD

Variable	Pearson Correlation (r)	p-value
1. Age vs GAD	0.128	0.011
2. BMI vs GAD	-0.024	0.633
3. Sex vs GAD	0.098	0.051
4. Living Area vs GAD	-0.348	<0.001
5. Marital Status vs GAD	-0.221	<0.001
6. Living Status vs GAD	0.154	0.002
7. Educational Level vs GAD	0.013	0.803
8. Profession vs GAD	0.194	<0.001
9. Economic Condition vs GAD	-0.247	<0.001
10. Chronic Disease vs GAD	-0.252	<0.001
11. Smoking Habit vs GAD	0.104	0.038

Table 2 presents the correlation between various demographic variables and Generalized Anxiety Disorder. The results indicate statistically significant but weak positive correlations between GAD symptoms and several factors: age ($r = 0.128$, $p = 0.011$), living status ($r = 0.154$, $p = 0.002$), profession ($r = 0.194$, $p < 0.001$), and smoking habit ($r = 0.104$, $p = 0.038$). These findings suggest that these variables are meaningfully associated with GAD symptoms among the 396 participants assessed in this study. As per the Pearson Correlation, there is a negligible positive observed with sex ($r=0.098$, $p=0.051$), educational level ($r=0.013$, $p=0.803$), which is not statistically significant and no evidence suggests that sex and educational level is associated with GAD symptoms in the sample. Lastly, the analysis revealed statistically significant weak negative correlations between GAD symptoms and the following variables: living area ($r = -0.348$, $p < 0.001$), marital status ($r = -0.221$, $p < 0.001$), economic condition ($r = -0.247$, $p < 0.001$), and presence of chronic disease ($r = -0.252$, $p < 0.001$). These results indicate that these

factors are inversely associated with anxiety symptoms among the 396 individuals in the sample.

Chapter 5

Discussion

The study assessed the occurrence of anxiety and its contributing risk factors among older adults living in urban and rural settings across Bangladesh. The outcome indicates that out of 396 respondents, 349 (88%) individuals exhibited mild to severe symptoms of generalized anxiety disorder. Among these respondents, about 192 participants showed mild anxiety symptoms, constituting 48.5% of the total sample. 136 individuals showed moderate anxiety levels, which constitutes 34.3% of the total. About 47 participants did not exhibit anxiety with a frequency of 11.9%. Lastly, 21 respondents were identified as having severe anxiety, which accounted for 5.3% of the overall sample. This study shows how prevalent anxiety is in this population, which emphasizes the importance of addressing and providing support for older adults affected by anxiety.

The results of the Chi-square analysis and Pearson correlation analysis demonstrated statistically significant associations between several demographic variables and anxiety. The variables were age, BMI range, sex, living area, marital status, living status, educational level, profession, economic condition, smoking habit and chronic diseases. Based on the results, living area, chronic disease and economic condition were the strongest associated risk factors. The strongest association was identified with living areas, suggesting that elderly adults in rural areas were markedly more prone to anxiety, possibly due to limited access to healthcare and social assistance. Chronic disease also has a strong association with anxiety, which indicates that the existence of long-term health issues significantly contributes to psychological distress in the older population. In addition, economic condition was also highly associated with anxiety, which indicates participants who were financially unstable showed elevated anxiety

levels. These results highlight the necessity of addressing structural and health-related vulnerabilities in order to enhance the mental health outcomes of geriatric population.

The study employed both Chi-square and Pearson correlation coefficient analyses to investigate the association between a variety of sociodemographic variables and anxiety. The Chi-Square test showed statistically significant associations between anxiety and a variety of categorical variables, such as living area, economic condition, chronic disease, educational level, profession, marital status, living status, and smoking habit ($p < 0.05$). Among these demographic variables living areas is the strongest associated risk factor of anxiety. A Chi-square test yielded a value of 51.398 with 3 degrees of freedom and a p-value less than 0.001, demonstrating a significant association between individuals living areas and symptoms of generalized anxiety disorder. This implies that due to differences in social support, infrastructure, and environmental stressors, people who live in different environments such as urban vs rural experience anxiety on different levels. In this analysis, chronic disease was also strongly associated. The Chi-square statistic (χ^2) is 46.129 with df (3) and a p-value of <0.001 . The p-value is lower than 0.05, which indicates a statistically significant relation between chronic disease and GAD symptoms. This implies that individuals with chronic health issues may be more susceptible to anxiety. Another highly associated factor is economic conditions. The Chi-square value (χ^2) 29.585 with df (6) and a p-value of <0.001 , which implies that poor economic conditions frequently elevate GAD symptoms. Educational level is another factor which showed statistically significant relation with anxiety. The Chi-square (χ^2) value obtained is 25.687 with df (9) and a p-value of 0.002, which signifies a statistically significant relation between educational level and GAD. For profession the Chi-square (χ^2) value obtained is 14.912 with df (3) and a p-value of 0.002, which implies that there is an association between profession and GAD. The Chi-square test revealed a value of 24.524 with 9 degrees of freedom and a p-value of 0.004, suggesting that being alone, widowed, or divorced might be associated

with increased anxiety symptoms, possibly due to diminished emotional or financial support. Other variables, living status ($p = 0.021$) and smoking habit ($p = 0.008$), also showed statistically significant association with GAD. On the other hand, no statistically significant association was found between age ($p = 0.293$), BMI ($p = 0.159$), and sex ($p = 0.051$), although the result for sex was borderline. These results indicate that anxiety is significantly influenced by specific demographic factors among the participants yet other common variables such as age, BMI and sex may not have the same impact on this particular population.

The Pearson correlation analysis provided further evidence to support these findings and provided additional insights into the direction and strength of the associations. According to the Pearson correlation analysis, there is a weak positive correlation observed with age ($r = 0.128$), living status ($r = 0.154$), profession ($r = 0.194$), and smoking habit ($r = 0.104$), suggests that if these factor increases, there is a slight tendency for GAD scores to increase as well. Since the p-values for age, living status, profession, and smoking habit are also less than 0.05, which suggests that the correlation is statistically significant. Additionally, there is a weak negative correlation observed with the living area ($r = -0.348$), chronic disease ($r = -0.252$), economic condition ($r = -0.247$), and marital status ($r = -0.221$), suggests that if these factor increases, there is a slight tendency for GAD scores to decrease. The p-values for living area, chronic disease, economic condition, and marital status are also less than 0.05, which suggests that the correlation is statistically significant. On the other hand, there is no significant correlation between BMI, sex and educational level with generalized anxiety disorder. In case of BMI, sex and educational level, the p values of 0.633, 0.051, and 0.803 indicate that there is no significant correlation between GAD and BMI, sex, and educational level.

This study provides valuable insights into the prevalence and associated risk factors of anxiety among the geriatric population in Bangladesh, utilizing a standardized and validated anxiety assessment tool GAD-7 scale. A key strength of the study is its inclusion of participants from

both urban and rural areas of Bangladesh. Thus, the geographical scope of the study may adequately include the diverse experiences of the geriatric population in various regions of Bangladesh. Furthermore, the utilization of both Pearson correlation and Chi-square analyses enabled a thorough investigation of the association between anxiety and a variety of sociodemographic variables. However, there are some limitations of the study. The cross-sectional design of the study restricts the capacity to discover causal connections among the variables. The dependence on self-reported data may also introduce reporting bias, especially among elderly adults with limited literacy or cognitive impairments.

Chapter 6

Conclusion

This study examined the prevalence of anxiety and its related risk factors among the elderly population residing in urban and rural areas of Bangladesh. Anxiety symptoms were assessed utilizing the GAD-7 scale and the high prevalence of anxiety indicates a significant mental health burden among the geriatric population, emphasizing the need to address mental health issues in older adults. Among the various variables examined, living area, economic condition, chronic disease, profession, marital status, living status, and smoking habit were found to have a correlation with anxiety. Identifying the factors that contribute to anxiety can facilitate the development of targeted interventions and strategies to prevent and manage anxiety symptoms in older adults. To enhance the well-being of older adults worldwide and gain a deeper understanding of the complex nature of anxiety in this population, future research should concentrate on longitudinal studies, standardized measurement instruments, and culturally sensitive approaches.

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Appendix A

A study on the prevalence and associated risk factors for mental health problems among Geriatric Population in Bangladesh

[বাংলাদেশি প্রবীণ জনসংখ্যার উপর মানসিক স্বাস্থ্য এবং তার কারণ নিয়ে একটি গবেষণা]

[এই গবেষণাটি বাংলাদেশের প্রবীণ জনসংখ্যার মানসিক স্বাস্থ্য এবং তার কারণ মূল্যায়ন করার জন্য করা হয়েছে। এই গবেষণা কার্যক্রমটি একটি ইনস্টিটিউশনাল রিভিউ বোর্ড (SEU/Pharm/CECR/021/2024) থেকে নৈতিক অনুমোদন পেয়েছে। এটি সম্পূর্ণরূপে একটি অজ্ঞাতনামা/নামবিহীন জরিপ যেখানে আপনাকে সনাক্ত করা যাবে না কিংবা আপনার প্রদানকৃত সকল তথ্য শতভাগ গোপন ও সুরক্ষিত থাকবে। আপনার দেওয়া সকল তথ্য শুধুমাত্র গবেষণা কাজে এবং একাডেমিক উদ্দেশ্যে গোপনীয়তা বজায় রেখে ব্যবহার করা হবে। এই গবেষণায় অংশগ্রহণের জন্য সম্মতি খুব গুরুত্বপূর্ণ। এই মহৎ উদ্যোগে আপনার সহযোগিতার জন্য অগ্রিম ধন্যবাদ।]

Express your consent to participate in the research and processing of anonymous data for scientific purposes [এই নামবিহীন/অজ্ঞাতনামা বৈজ্ঞানিক সমীক্ষায় অংশগ্রহণের জন্য সম্মতি প্রকাশ করুন]

*I am a Bangladeshi senior citizen 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 বাংলাদেশি প্রবীণ ব্যক্তি এবং এই সমীক্ষার গোপনীয়তা নীতি এবং সংগৃহীত তথ্য নিয়ে আমার কোন আপত্তি নেই। আমি স্বেচ্ছায় এই গবেষণায় অংশ নিতে সম্মত।]

I do agree (আমি একমত)

I do not agree (আমি একমত নই)

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

১. বয়স বছরে (Age in years): _____
২. ওজন কেজিতে (Weight in kg): _____
৩. উচ্চতা (Height): _____
৪. লিঙ্গ (Sex):
 - পুরুষ (Male)
 - মহিলা (Female)
 - অন্যান্য (Others)

৫.বসবাসের স্থান (Living Area)

গ্রাম (Rural Area)

শহর (Urban Area)

৬.বৈবাহিক অবস্থা (Marital Status):

অবিবাহিত (Unmarried)

বিবাহিত (Married)

বিধবা/বিপ্লবীক (Widowed)

তালকপ্রাপ্ত (Divorced)

৭. বসবাসের অবস্থান (Living Arrangement):

পরিবার ছাড়া (Without Family)

পরিবারের সাথে (With Family)

৮. পরিবারের ধরন (Family Type):

যৌথ পরিবার (Joint Family)

একক পরিবার (Nuclear Family)

৯. আপনার সাথে বসবাসরত মানুষের সংখ্যা (Number of people living with you): _____

১০. শিক্ষার স্তর (Level of Education):

পড়ালেখা করি নাই (No formal education)

প্রাথমিক (Primary)

মাধ্যমিক (Secondary)

স্নাতক/স্নাতকোত্তর (Graduate/above)

১১.পেশা (Profession):

বর্তমানে কাজ করছেন (Currently working)

কাজ করছেন না (Not working)

১২. মাসিক পারিবারিক আয় (Monthly Family Income): _____

১৩.আপনার কি কোনো দীর্ঘস্থায়ী রোগ বা অবস্থা রয়েছে? (Do you have any chronic disease or conditions)?

হ্যাঁ (Yes)

না (No)

১৪.আপনার নিজের দৈনন্দিন কাজে অন্যের সাহায্যের প্রয়োজন হয় কি না? (Do you need any help to perform your regular activities)?

হ্যাঁ (Yes)

না (No)

১৫. সামাজিক কর্মকাণ্ডে অংশগ্রহণ করবার প্রবণতা (How often do you participate in social activities?)

দৈনিক (Daily)

সাপ্তাহিক (Weekly)

মাসিক (Monthly)

বিরলভাবে (Rarely)

কখনো না (Never)

১৬. আপনি কি সামাজিক যোগাযোগ মাধ্যম ব্যবহার করেন? (Do you use social media to communicate with others):

হ্যাঁ (Yes)

না (No)

১৭. আপনি কি ধর্মীয় আচার-বিধি পালন করেন? (Do you follow any religious or spiritual practices)?

হ্যাঁ (Yes)

না (No)

১৮. আপনি কি নিয়মিত শরীরচর্চা (ব্যায়াম) করেন? (Do you perform regular physical exercise)?

হ্যাঁ (Yes)

না (No)

১৯. আপনার কি কোনো শখ বা আগ্রহ আছে, যেখানে আপনি প্রতিদিন কিছু সময় ব্যয় করেন? (Any hobby or interest where you spend some time daily):

হ্যাঁ (Yes)

না (No)

২০. ধূমপানের অভ্যাস (Smoking Habit):

ধূমপায়ী (Smoker)

ধূমপান মুক্ত (Non-smoker)

২১. ফাস্ট-ফুড খাওয়ার অভ্যাস (Frequent Consumption of Fast-foods):

মাসে দুইবার বা তার বেশি (Two or more in a month)

মাসে দুইবারের কম (Less than twice in a month)

২২. আপনি কি নিয়মিত ভিটামিন/মিনারেল/ফুড গ্রহণ করেন? (Do you take any Food/Nutritional/vitamin supplements):

হ্যাঁ (Yes)

না (No)

Section 2: Psychometric measures: Generalized anxiety related questions (GAD-7)

১. বিগত দুই সপ্তাহে কতবার আপনি বিচলিত, উদ্বেগ এবং চিন্তিত অনুভব করেছেন? [Over the last 2 weeks, how often have you been bothered by feeling nervous, anxious or on edge?]
- একদিনও না (০) Not at all
বেশ কিছু দিন (১) several days
অর্ধেকেরও বেশি দিন (২) More than half the days
প্রায় প্রতিদিন (৩) Nearly every day
২. বিগত দুই সপ্তাহে কতবার আপনি উদ্বেগ প্রশমিত করতে না পেরে বিচলিত হয়েছেন? [Over the last 2 weeks, how often have you been bothered by not being able to stop or control worrying?]
- একদিনও না (০) Not at all
বেশ কিছু দিন (১) several days
অর্ধেকেরও বেশি দিন (২) More than half the days
প্রায় প্রতিদিন (৩) Nearly every day
৩. বিগত দুই সপ্তাহে আপনি কতবার বিভিন্ন বিষয় নিয়ে অতিরিক্ত উদ্বেগবোধ করেছেন? [Over the last 2 weeks, how often have you been bothered by worrying too much about different things?]
- একদিনও না (০) Not at all
বেশ কিছু দিন (১) several days
অর্ধেকেরও বেশি দিন (২) More than half the days
প্রায় প্রতিদিন (৩) Nearly every day
৪. বিগত দুই সপ্তাহে কতবার আপনি বিশ্রাম করতে অসুবিধাবোধ করেছেন? [Over the last 2 weeks, how often have you been bothered by trouble relaxing?]
- একদিনও না (০) Not at all
বেশ কিছু দিন (১) several days
অর্ধেকেরও বেশি দিন (২) More than half the days
প্রায় প্রতিদিন (৩) Nearly every day
৫. বিগত দুই সপ্তাহে কতবার আপনি এতটাই অস্থিরবোধ করেছেন যে আপনার কাছে স্থির হয়ে বসা কঠিন মনে হয়েছে? [Over the last 2 weeks, how often have you been bothered by being so restless that it's hard to sit still?]
- একদিনও না (০) Not at all
বেশ কিছু দিন (১) several days
অর্ধেকেরও বেশি দিন (২) More than half the days
প্রায় প্রতিদিন (৩) Nearly every day

৬. বিগত দুই সপ্তাহে কতবার আপনি অতি সহজেই বিরক্তবোধ করে বিচলিত হয়েছেন? [Over the last 2 weeks, how often have you been bothered by becoming easily annoyed or irritable?]

একদিনও না (০) Not at all

বেশ কিছু দিন (১) several days

অর্ধেকেরও বেশি দিন (২) More than half the days

প্রায় প্রতিদিন (৩) Nearly every day

৭. বিগত দুই সপ্তাহে কতবার আপনি ভয়াবহ কিছু ঘটার সম্ভাবনায় ভীত বোধ করে বিচলিত হয়েছেন? [How often have you been bothered by feeling afraid as if something awful might happen?]

একদিনও না (০) Not at all

বেশ কিছু দিন (১) several days

অর্ধেকেরও বেশি দিন (২) More than half the days

প্রায় প্রতিদিন (৩) Nearly every day

অন্য কোন মন্তব্য:.....

গবেষকের নাম:

স্বাক্ষর:

তারিখ: