Original Article

Quantifying Psychological Distress: Prevalence of Anxiety and Depression of 136 Participants using GAD-7 and PHQ-9 Scales

Gowri Nambiar Sengupta[1], Sanjana Palakodeti[2], Devisha Batra[3], Nayamat Bawa[4], Shipra Dawar[5]

[1]DDG(PH) & Director CHEB, [2]Research & Development Coordinator, IWill ePsyClinic, [3]Senior Psychologist, IWill ePsyClinic, [4]Head Psychologist, IWill ePsyClinic, [5]Founder & CEO, IWillePsyClinic.

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Abstract

Background: The global health burden has surged due to a significant rise in anxiety and depression cases. In India, pandemic-related factors caused an increase in depression and anxiety levels. Various studies highlight the lifetime prevalence of these mental health disorders.

It is essential to identify and monitor depression and anxiety symptoms in individuals across age groups. This study aims to gain insight into anxiety and depression prevalence by utilizing Generalized Anxiety Disorder-7 (GAD-7) and Patient Health Questionnaire-9 (PHQ-9) to assess symptoms and their correlation with age and gender.

Methods: A total of 136 individuals, both male and female, completed PHQ-9 and GAD-7 in a self-report format. Informed consent was obtained from each participant prior to their participation in the research. Data was collected and analyzed using Microsoft Excel. Charts and graphs aided data interpretation.

Conclusion: Results revealed correlations between age and anxiety or depression severity. Younger age groups consistently reported higher symptom levels than older individuals. Tailored mental health interventions considering age and gender dynamics are crucial, like severe symptom intervention for ages '18-24,' addressing severe anxiety and depression in the '25-44' group, and implementing prevention initiatives for the '45 and above' group.

Keywords: Anxiety, Age, Depression, Gender, GAD-7, PHQ-9

Introduction

Mental health disorders are one of the largest contributors to the global health burden. Two of the most prevalent mental health concerns, anxiety and depression, impact millions of people.

Following the pandemic, the prevalence of

Corresponding Author: Sanjana Palakodeti, Research & Development Coordinator, IWill, 603 Rainbow Apartments, Sector 43 Gurugram, Haryana, ePsyClinic

E-mail: sanjana.p@iwilltherapy.io

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depression in India increased from 2,577 cases per lakh population to 3,478 cases per lakh population, while the prevalence of anxiety increased from 3,013 cases per lakh population to 4,063 cases per lakh population. [4]. These conditions have far-reaching consequences, not only for the individuals affected, but also for society as a whole by affecting quality of life, productivity, and healthcare costs.

To understand the prevalence, several studies have examined gender differences in depression and anxiety disorders.

Psychiatric epidemiology widely documents women's higher likelihood of developing anxiety disorders throughout life. [2]Several studies suggest that the clinical presentation of men and women with anxiety disorders may differ. Women with anxiety disorders tend to report more severe anxiety symptoms and experience higher levels of impairment than do men with anxiety disorders. [3]

Studies have explored why women experience more anxiety than men, attributing it to differences in brain chemistry and hormone fluctuations. Hormonal changes throughout a woman's reproductive events have been associated with anxiety. Beyond biological factors, women and men experience and react to life events differently. Women are more prone to stress, heightening their anxiety. Additionally, women faced with life stressors are more likely to ruminate about them, which can increase their anxiety, while men engage more in active, problem-focused coping. [12]

A study conducted in the United States suggested a total of 19.0% of women experienced anxiety symptoms in the past 2 weeks that were either mild, moderate, or severe, compared with 11.9% of men[15].

The fact that the increased prevalence of depression correlates with hormonal changes in women, particularly during puberty, before menstruation, following pregnancy, and at perimenopause, suggests that female hormonal fluctuations may be a trigger for depression. [1] Apart from these factors, attention has also been drawn towards emotional attunement. Women seem to be more emotionally attuned than men, which helps them recognize whether they may be dealing with depression.

The extensiveness of depression and anxiety by age also plays an important role. Anxiety appears most common among young adults and has increased more rapidly among 18 to 25-year-olds than among any other age group. [7]

A study mentioned that the rate of individuals reporting symptoms of major depression in the last 12 months increased by 63% in young adults aged 18 to 25 from 2009 to 2017 (from 8.1% to 13.2%). [11]

Epidemiologic surveys consistently find lower current and lifetime anxiety disorder prevalence in older adults[5]. Those aged 18 to 29 (34.3%) and 30 to 44 (34.9%) have significantly greater depression diagnosis rates in their lifetime than those older than 44.[17] Emerging adulthood, a critical period marked by life transitions, generates stress and psychological distress due to heightened instability. Young people navigate relationships and job changes before making lasting decisions, contributing to instability, uncertainty, and mental health risks. [10] Lifetime depression and anxiety rates are climbing fast.

Thus, to understand anxiety and depression prevalence, symptom severity and their relationship with age and gender, we conducted a study and analyzed data from 136 participants using GAD-7 and PHQ-9. These insights can guide the development of targeted interventions, enhancing the lives of those struggling with anxiety and depression.

Materials and Methods

A collaborative initiative to administer GAD-7 and PHQ-9 involved the partnership of IWill, a prominent digital and AI healthcare company from India, with the Central Health Education Bureau (CHEB), a technical unit under the Directorate General of Health Services within the Ministry of Health and Family Welfare (MoH & FW). This study was conducted in the Talkatora Stadium, New Delhi, from 5th-10th October 2023.

A total of 136 individuals, both males and females, aged 18 years or older, participated in this study to complete two standardized assessment tools: GAD-7 and PHQ-9.

Materials

- Patient health questionnaire (PHQ-9)

  Self-report with nine items corresponding to depression criteria in the Diagnostic and Statistical Manual of Mental Disorders. Total scores range from 0 to 27.

- **Generalized anxiety disorder scale (GAD-7)**

  The Self-report with seven items corresponding to DSM criteria for anxiety. Scores range from 0 to 21.

The PHQ-9 and GAD-7 have strong internal and test-retest reliability and construct and factor-structure validity. [8]

Methods:

Informed consent was obtained from each participant prior to their participation in the research study. Participants responded to the PHQ-9 and GAD-7 questionnaires in a self-report format.

A quantitative, correlational design used standardized tools to measure anxiety and depression prevalence, symptom severity, and their age-gender relationship. Data was collected, processed, and analyzed using Microsoft Excel, with charts and graphs aiding in result interpretation.

Before analysis, responses underwent outlier checks, addressing potential errors. Outliers were reviewed for validity, and necessary actions were taken, such as corrections or removal.

The tool used for data analysis was Microsoft Excel. Charts and graphs were created to visualize and present the data, assisting in result evaluation.

Results and Discussion

We had a total of **136** respondents in our study

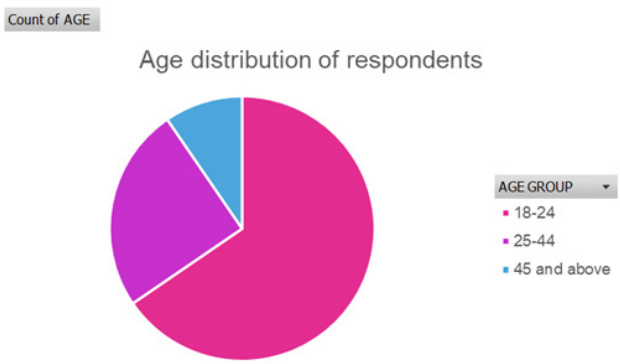

Figure 1: Age distribution of respondents

Figure 1 revealed that almost two-thirds, specifically **65.4**%, of participants belonged to the age group of 18-24, while around **25**% fell within the 25-44 age bracket. The remaining **9.6**% were aged 45 and above.

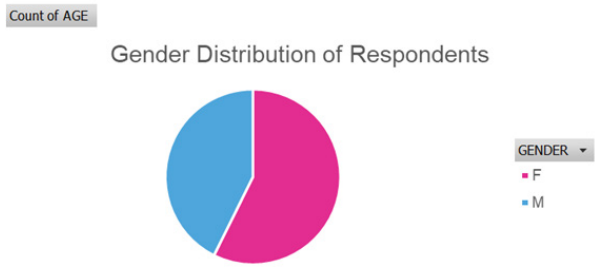

Figure 2: Gender distribution of respondents

Gender-wise, our research maintained a balanced representation, with **42.6**% males and **57.4**% females. (Figure 2)

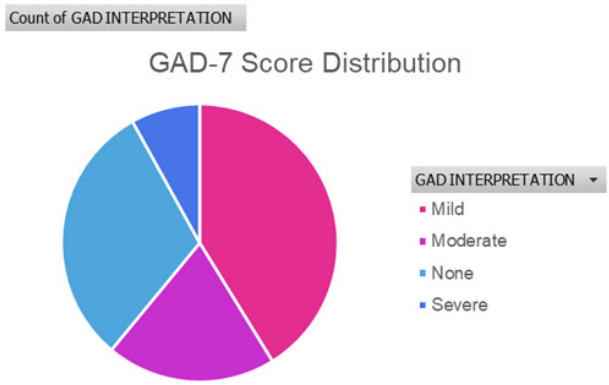

Figure 3: GAD-7 Score Distribution

GAD-7 analysis (Figure 3) revealed over 41% with mild anxiety, indicating a sizable portion experiencing prevalent but manageable anxiety. Around 31% showed no symptoms, and around one-fifth presented a moderate degree, underscoring the importance of addressing this intermediate category; 8.1% experienced severe anxiety.

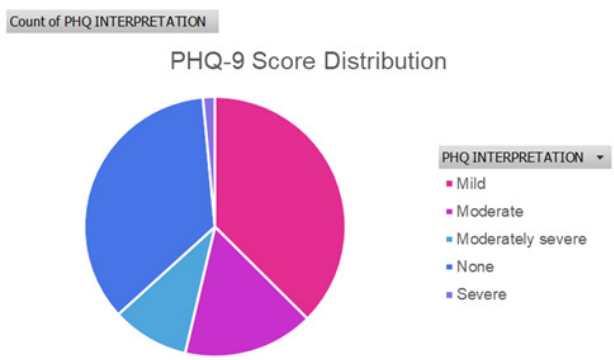

Figure 4: PHQ-9 Score Distribution

In PHQ-9 results (Figure 4), 35.5% revealed no symptoms, signifying a substantial segment with favorable mental health. About 37% showed mild symptoms, emphasizing that even lower-severity issues require addressal. Just above 16% exhibited a moderate degree of depressive symptoms, while 9.7% faced moderately severe symptoms, and 1.5% exhibited severe symptoms.

GAD-7

GAD7 Severity Analysis by Age:

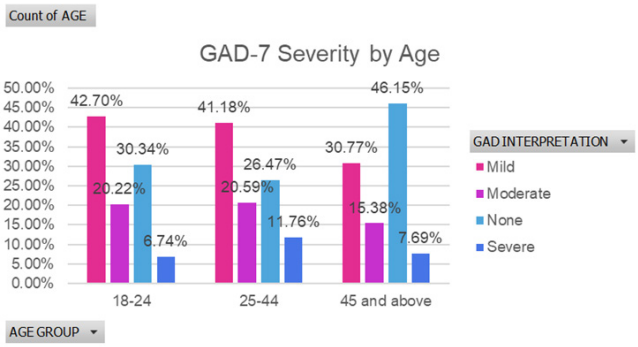

Figure 5: GAD-7 Severity by Age

The data *(Figure 5)* suggests that GAD-7 severity varies significantly with age. Younger individuals in the '18-24' age group exhibited higher proportions of 'Mild' and 'Moderate' symptoms, while older individuals in the '45 and above' age group showed the lowest levels of 'Moderate' and 'Severe' symptoms.This underscores age's critical role in anxiety severity, aligning with the 2023 Census Bureau Household Pulse Survey, where 50% of adults aged 18-24 reported anxiety symptoms compared to 33% in older age groups. [16] The '25-44' age group shows ahigher proportion of individuals experiencing 'Severe' symptoms. This indicates that individuals in their late twenties to mid-forties may face more intense anxiety, which could be attributed to career and life-related stressors.

The '45 and above' age group exhibits the highest proportion of individuals with Nosymptoms, suggestingreduced generalized anxiety with age, possibly due to increased life experience or better coping. Correspondingly, the 2018 Stress Study reported that 30% of individuals aged 55 and above reported "never" feeling overwhelmed or unable to cope in the past year, in stark contrast to the 7% reported by young adults aged 18-24. [14]

The 'Mild' category is the most common level of GAD-7 severity across age groups. This implies that mild anxiety symptoms are relatively common, even in the age group with the least prevalence of 'Moderate' and 'Severe' symptoms.

Tailoring interventions based on age could be beneficial. For example, for the '18-24' age group, programs addressing 'Mild' and 'Moderate' symptoms maybe favorable, while the '25-44' age group may require interventions focusing on 'Severe' symptoms. The third group could benefit from wellness and prevention initiatives. As suggested by a study on key influencing factors for anxiety among the elderly in China, relevant departments and policy-makers should implement targeted actions, such as health education, emotional care, and social engagement, to improve the health literacy of the elderly and mitigate the impact of negative emotions like anxiety, thus maintaining their psychological well-being. [9]

GAD7 Severity Analysis by Gender:

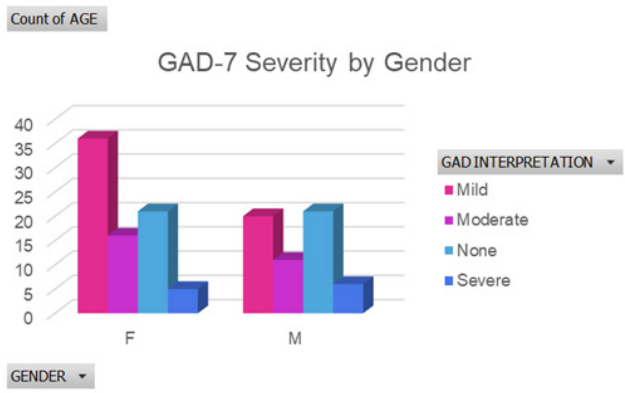

Figure 6: GAD-7 Severity by Gender

The data from *Figure 6* highlights gender disparities in GAD-7 severity. Females report higher 'Mild' and 'Moderate' symptoms, while males report higher levels of 'No anxiety' and 'Severe' symptoms.

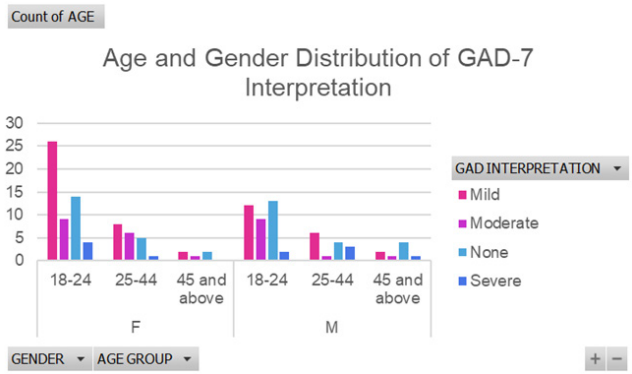

Figure 7: Age and Gender Distribution of GAD-7 Interpretation

Further analysis in Figure 7 shows the highest prevalence of mild anxiety in females aged 18-24, while males of the same age group have almost equal mild and no symptoms. Severe anxiety symptoms in the 18-24 age group are more likely in females.

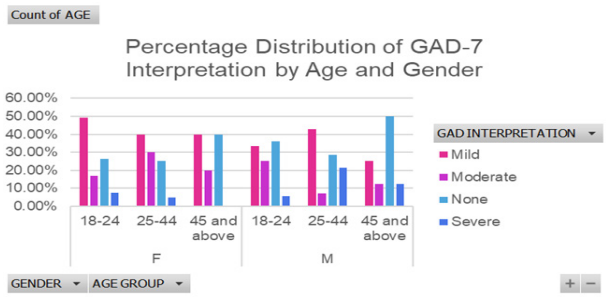

Figure 8: Percentage Distribution of GAD-7 Interpretation by Age and Gender

Figure 8 provides deeper insight into the data patterns. In females, the prevalence of mild anxiety is comparable between age groups "25-44" and "45 and above". However, the former group exhibits an elevated likelihood of experiencing moderate anxiety. Notably, as age increases, the prevalence of severe anxiety symptoms in females declines. Thisaligns with a 2019 CDC study on GAD-7 symptoms, noting a decrease in the percentage of adults experiencing mild, moderate, or severe anxiety symptoms with advancing age. Another study found declining late-life DSM-IV mood and anxiety disorders, especially in women[8]Possible reasons include cohort effects, healthy survivor bias, and diagnostic challenges in older adults. [15]

Conversely, in the male population, the trends diverge. Males aged 25-44 show a heightened likelihood of severe anxiety, with those aged 45 and above following closely. In contrast, males aged 18-24 display a relatively lower prevalence of severe anxiety. Additionally, males in the 25-44 age bracket exhibit higher incidences of mild anxiety, while those aged 45 and above are more likely to exhibit no symptoms.

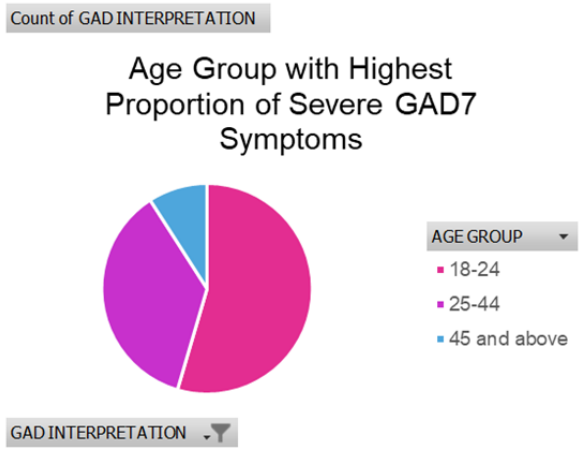

Figure 9: GAD-7 Age Group with the Highest Proportion of Severe GAD-7 Symptoms

In the broader context of the dataset analysis, it becomes apparent that the age group 18-24 exhibits the highest prevalence of severe GAD-7 symptoms. *(Figure 9)*

PHQ-9

PHQ-9 Severity Analysis by Age:

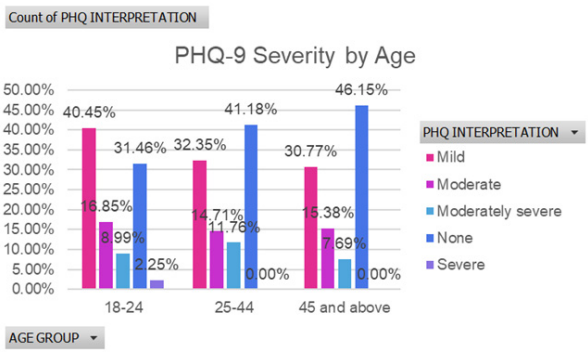

Figure 10: PHQ-9 Severity by Age

Figure 10 suggests that PHQ-9 severity varies significantly with age. Younger individuals in the '18-24' age group exhibit higher proportions of 'Mild' symptoms. The prevalence of mild depression decreases with increasing age. This highlights that age is a crucial factor in depression severity, especially in younger age groups. The '25-44' age group shows a relatively higher proportion of individuals experiencing 'Moderately Severe' symptoms.[6]

The '25-44' and '45 and above' age groups have high proportions with no depressive symptoms,

steadily increasing with age. This implies that, as individuals age, they may experience fewer depression symptoms, possibly due to increased life experience or better coping, as observed in anxiety.

'Mild' depression is common across all age groups, even in the group with the least 'Severe' symptoms, akin to anxiety patterns.

PHQ-9 Severity Analysis by Gender:

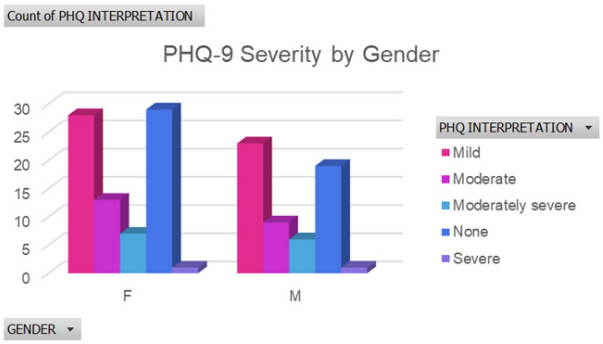

Figure 11: PHQ-9 Severity by Gender

The data *(Figure 11)* highlights variations in PHQ-9 severity based on gender. Females report higher levels of 'Mild' and 'Moderate' symptoms compared to males. Interestingly, a higher proportion of males show 'moderately severe' symptoms compared to females. This could be explained by the observation made in a 2015 study that females tend to be more attuned to subtle emotional changes and report higher levels of emotional experiences, particularly negative ones, compared to males. This results in a consistent reporting of mild to moderate depression across all age groups among females, leading to higher diagnosis rates. However, it has also been observed that as depression severity increases, gender differences become less pronounced. Overall, these findings suggest varying gender dynamics in the recognition and reporting of depression across different severity levels.[13]

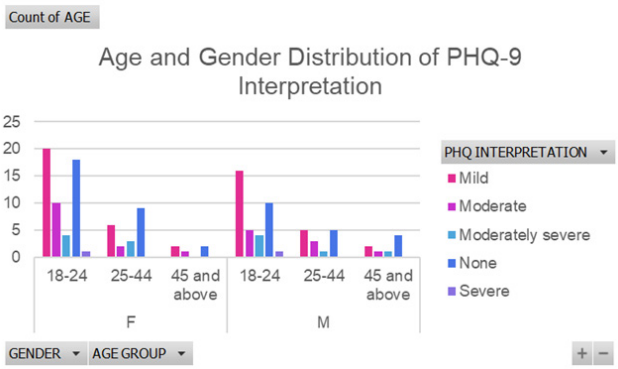

Figure 12: Age and Gender Distribution of PHQ-9 Interpretation

On further analysis *(Figure 12)*, males and females in the 18-24 age group exhibit the widespread presence of mild depression symptoms, with the latter having an almost equal prevalence of no depression symptoms. Severe depression symptoms are hardly seen beyond this age group.

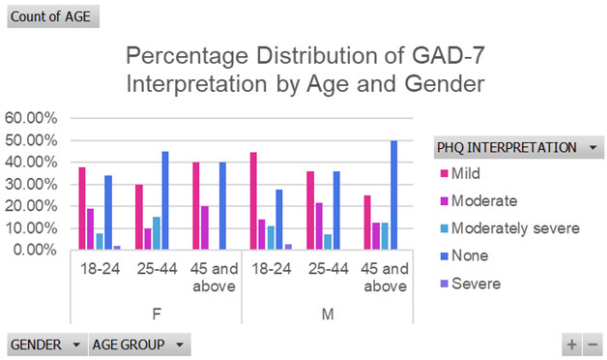

Figure 13: Percentage Distribution of GAD-7 Interpretation by Age and Gender

Figure 13 offers a deeper perspective of underlying data patterns. Amongst females, it is evident that the prevalence of mild and moderate depression is higher among those aged 45 and above. However, the 18-24 age group among females exhibit an elevated likelihood of experiencing severe depression. Notably, the prevalence of mild and moderate depressive symptoms shows a dip among those aged 25-44, while the prevalence of moderately severe depression increases in the same age group.

Contrastingly, within males, a different pattern emerges. Males aged 18-24 show a higher likelihood of experiencing mild depression, with percentages falling as age increases, akin to the pattern seen on GAD-7. The proportion reporting 'No Symptoms' also increases with age. However, males of the age bracket 25-44 seem to have a higher chance of experiencing moderate depression. A leading hypothesis attributes gender-related depression rate differences to underdiagnosis in men. Reasons include men being less likely to recognize depression and pushing aside depressive thoughts or feelings rather than consciously facing them, while those who do, are often reluctant to ask for mental health assistance.

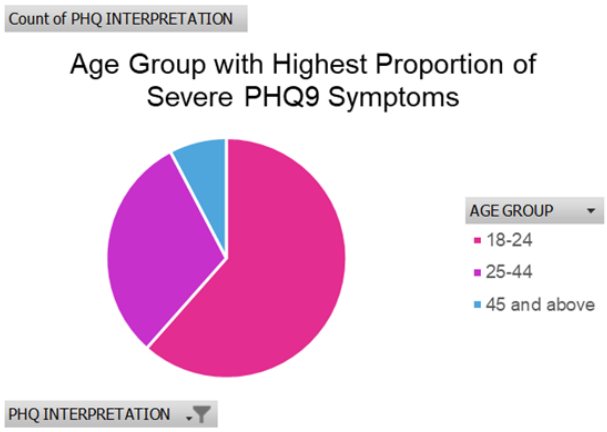

Figure 14: PHQ-9 Age Group with Highest Proportion of Severe GAD-7 Symptoms

In Figure 14, the age group 18-24 seems to have the highest prevalence of severe depression among both genders.

Our study had the following limitations: Limited sample size and demographic variables, and single assessment time point.

Conclusion

The analysis of GAD-7 and PHQ-9 severity across age groups and genders reveals crucial mental health patterns. A notable correlation exists between age and anxiety or depression severity, with the '18-24' age group consistently reporting the highest prevalence of severe symptoms.

Gender disparities further highlight mental health nuances, with females reporting more mild and moderate symptoms, while males exhibit a higher proportion of moderate and severe symptoms in depression. This emphasizes the need for tailored mental health interventions, considering both age and gender dynamics.

Practical implications include addressing severe symptoms for the '18-24' age group, while the '25-44' age group may benefit from interventions focusing on both severe anxiety and depression. The '45 and above' group, with lower symptom prevalence, could benefit from wellness and prevention initiatives.

It is worth noting that these variations may also be influenced by social factors, warranting further exploration. These observations emphasize the need for mental health policies and interventions that address the distinctive challenges of particular demographic groups.

The identified patterns can guide targeted interventions and policy-making aimed at promoting psychological well-being. Recognizing mental health complexity emphasizes the significance of nuanced approaches for varying stages of life.

The next steps could focus on professional help for reducing symptoms, particularly for participants with moderate and severe symptoms. Given the limited sample size, expanding participants for the study would be the next logical step.

Ethical Clearance: Taken from internal ethical committee at IWillePsyClinic on 2nd September 2023. Ref no: Epsy/021023/R&D/Pub/25

Source of Funding: Self

Conflict of Interest: Nil

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