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Early detection of depression and anxiety in patients with chronic diseases: A primary care-based approach

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ABSTRACT

Background: Chronic diseases such as diabetes, hypertension, cardiovascular diseases, and autoimmune disorders are significant contributors to global morbidity and mortality.

Objective: This study aimed to assess the prevalence of depression and anxiety among patients with chronic diseases and to explore the impact of these mental health conditions on disease management and patient outcomes.

Methodology: A cross-sectional observational study was conducted at Khyber Teaching Hospital MTI Peshawar from December 2022 June 2024. A total of 155 patients diagnosed with chronic diseases, including diabetes, hypertension, cardiovascular diseases, and autoimmune disorders, were included. Depression and anxiety were assessed using the Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) scales.

Results: The results showed that 46.5% of participants had moderate to severe depression, and 43.9% experienced moderate to severe anxiety. A higher prevalence of both depression and anxiety was observed in patients with cardiovascular diseases and autoimmune disorders. Additionally, longer disease duration was significantly associated with increased severity of both depression and anxiety. Patients with depression and anxiety had significantly poorer adherence to their chronic disease management plans compared to those without mental health conditions.

Conclusion: It is concluded that depression and anxiety are prevalent in patients with chronic diseases, particularly those with cardiovascular and autoimmune disorders. These conditions significantly impact treatment adherence and disease management. Early detection and integration of mental health care into chronic disease management are essential to improve patient outcomes and quality of life. Routine screening for depression and anxiety should be incorporated into the management of chronic diseases to ensure comprehensive care.

Keywords: *Depression, Anxiety, Chronic Diseases, Treatment Adherence, Mental Health Screening, Disease Management*

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1. INTRODUCTION

Chronic diseases, such as diabetes, cardiovascular disorders, and autoimmune conditions, are a major burden on public health worldwide, affecting millions of individuals across diverse age groups [1]. These diseases often necessitate long-term management and can significantly impact a patient's quality of life. However, the physical health challenges posed by chronic conditions are frequently accompanied by mental health struggles, with depression and anxiety being the most

common psychiatric comorbidities among these patients [2]. The bidirectional relationship between chronic diseases and mental health disorders is well-documented, with chronic illnesses often exacerbating symptoms of depression and anxiety, while these mental health conditions may, in turn, worsen the prognosis of the underlying chronic diseases [3]. The interplay between chronic diseases and mental health disorders is complex and multifaceted [4]. Chronic diseases often involve long-term physical symptoms, lifestyle modifications, and frequent medical interventions, all of which can lead to emotional distress. Patients with chronic conditions are more likely to experience feelings of hopelessness, fear about the future, and a sense of losing control over their bodies, which can contribute to the development of depression and anxiety [5]. Additionally, the physical pain associated with many chronic diseases, such as arthritis or neuropathy, can exacerbate mood disorders, leading to a cycle where mental and physical health problems feed into one another [6]. Depression and anxiety are particularly prevalent in patients with chronic diseases. Studies show that individuals with chronic conditions, such as diabetes and heart disease, are two to three times more likely to experience depression and anxiety compared to the general population [7]. Depression is associated with a range of negative outcomes, including poor self-management of chronic conditions, decreased adherence to medication regimens, and a heightened risk of complications. Similarly, anxiety can contribute to excessive worry about one's health, avoidance of medical care, and a decreased ability to cope with the daily demands of managing a chronic illness [8].

Despite the high prevalence of depression and anxiety in patients with chronic diseases, these conditions remain frequently underdiagnosed. This is partly due to the overlapping symptoms between physical illness and mental health disorders, such as fatigue, sleep disturbances, and concentration problems, which can be mistaken for the effects of the chronic disease itself [9]. Additionally, many patients may be reluctant to disclose their mental health symptoms due to stigma or a lack of awareness that mental health is as critical as physical health. As a result, depression and anxiety are often left unaddressed, leading to further deterioration in the patient's overall well-being [10]. Early detection of depression and anxiety in patients with chronic diseases is crucial, as these conditions can severely impair a patient's adherence to treatment, self-management, and overall well-being [11]. Early identification of mental health issues can help healthcare providers implement timely interventions, including psychological support, counseling, and pharmacological treatments, which can improve both mental and physical health outcomes. Moreover, addressing depression and anxiety in patients with chronic diseases may lead to better management of the underlying chronic condition itself, as mental health improvements can facilitate improved self-care practices and treatment adherence [12].

Objective

This study aimed to assess the prevalence of depression and anxiety among patients with chronic diseases and to explore the impact of these mental health conditions on disease management and patient outcomes.

2. METHODOLOGY

This was a cross-sectional observational study conducted at Khyber Teaching Hospital MTI Peshawar from December 2022 June 2024. A total of 155 patients were enrolled in the study. The sample size was determined based on a previous study's estimated prevalence of depression and anxiety in patients with chronic diseases, using the WHO sample size calculator for cross-sectional studies with a 95% confidence interval and 80% power. A margin of error of 5% was accepted, and the final sample size was calculated accordingly.

Inclusion Criteria:

1. Patients aged 18 years and older.
2. Patients diagnosed with one or more chronic diseases, such as diabetes, hypertension, cardiovascular diseases, and autoimmune disorders.
3. Patients who were willing to participate in the study and provided written informed consent.

Exclusion Criteria:

1. Patients with a history of severe cognitive impairment or mental disorders (e.g., schizophrenia, bipolar disorder) unrelated to the chronic disease.
2. Pregnant or breastfeeding women.
3. Patients who were unwilling or unable to provide informed consent.

Data Collection:

Data was collected using a combination of clinical interviews and standardized screening tools for depression and anxiety. The Patient Health Questionnaire-9 (PHQ-9) was utilized to evaluate the presence and severity of depression. This tool consists of nine questions that focus on symptoms of depression, with patients asked to rate their experiences over the past

two weeks. A score of 10 or higher on the PHQ-9 indicated moderate to severe depression. Additionally, the Generalized Anxiety Disorder-7 (GAD-7) was used to screen for generalized anxiety disorder. This tool includes seven questions that assess anxiety symptoms experienced over the previous two weeks, with a score of 10 or higher indicating moderate to severe anxiety. To gather further demographic and clinical data, a Medical History and Demographic Questionnaire was administered. This questionnaire collected information on the patients' age, sex, education level, chronic disease type, duration, and medication regimen.

Statistical Analysis:

Data were analyzed using statistical software (SPSS version 25). Descriptive statistics were calculated to determine the frequency and prevalence of depression and anxiety in the study population. The prevalence of these mental health conditions was stratified by disease type (e.g., diabetes, hypertension, etc.), age group, and gender.

3. RESULTS

A total of 155 participants were included in the study. The mean age of participants was 52.3 ± 12.4 years, with a fairly even distribution of gender: 46% male and 54% female. The study population included patients with a variety of chronic diseases: 35% had diabetes, 30% had hypertension, 20% had cardiovascular diseases, and 15% had autoimmune disorders. In terms of mental health, 46.5% of participants (72 individuals) met the criteria for moderate to severe depression (PHQ-9 ≥ 10), and 43.9% (68 participants) exhibited moderate to severe anxiety (GAD-7 ≥ 10).

Table 1: Demographic and Baseline Characteristics of Participants

Variable	**Value**
Total Participants	155
Age (Mean ± SD)	52.3 ± 12.4 years
Gender	
- Male	46%
- Female	54%
Disease Type	
- Diabetes	35%
- Hypertension	30%
- Cardiovascular Diseases	20%
- Autoimmune Disorders	15%
Condition	
Depression (PHQ-9 ≥ 10)	72 (46.5%)
Anxiety (GAD-7 ≥ 10)	68 (43.9%)

The prevalence of depression and anxiety varied across the different chronic disease types. Among participants with diabetes, 45% experienced depression (PHQ-9 ≥ 10), and 42% had anxiety (GAD-7 ≥ 10). For those with hypertension, the prevalence was slightly lower, with 43% reporting depression and 40% experiencing anxiety. Patients with cardiovascular diseases exhibited the highest rates of both depression and anxiety, with 58% suffering from depression and 55% from anxiety. Autoimmune disorder patients had a similarly high prevalence, with 53% reporting depression and 50% reporting anxiety.

Table 2: Association Between Chronic Disease Type and Prevalence of Depression and Anxiety

Disease Type	**Depression (≥ 10) (%)**	**Anxiety (≥ 10) (%)**
Diabetes	45%	42%
Hypertension	43%	40%
Cardiovascular Diseases	58%	55%

Autoimmune Disorders	53%	50%

Patients with chronic conditions lasting more than 10 years showed significantly higher scores on both the PHQ-9 and GAD-7 scales compared to those with conditions lasting 5 years or less. Specifically, patients with chronic diseases lasting ≤ 5 years had a mean PHQ-9 score of 7.2 ± 5.1 and a GAD-7 score of 6.4 ± 4.9, whereas those with diseases lasting > 10 years had a mean PHQ-9 score of 12.5 ± 6.4 and a GAD-7 score of 11.8 ± 5.7.

Table 3: Correlation Between Disease Duration and Severity of Depression and Anxiety

Disease Duration (Years)	PHQ-9 Score (Mean ± SD)	GAD-7 Score (Mean ± SD)
≤ 5 Years	7.2 ± 5.1	6.4 ± 4.9
> 10 Years	12.5 ± 6.4	11.8 ± 5.7

Patients with diabetes, particularly those with a chronic disease duration of ≤ 5 years, had a mean PHQ-9 score of 7.0 ± 5.0 and a GAD-7 score of 6.1 ± 4.8. In contrast, those with diabetes for more than 10 years had higher mean scores: 13.2 ± 6.1 for PHQ-9 and 11.8 ± 5.7 for GAD-7. A similar pattern was observed in hypertension, cardiovascular diseases, and autoimmune disorders. Specifically, patients with cardiovascular disease and a chronic disease duration of ≤ 5 years had a mean PHQ-9 score of 8.1 ± 5.5 and a GAD-7 score of 7.0 ± 5.4, which increased significantly for those with disease duration > 10 years (13.5 ± 6.5 for PHQ-9 and 11.8 ± 5.7 for GAD-7).

Table 4: Disease Duration and Severity of Depression and Anxiety by Chronic Disease Type

Disease Type	Disease Duration (≤ 5 Years)	Disease Duration (> 10 Years)	PHQ-9 Score (Mean ± SD)	GAD-7 Score (Mean ± SD)
Diabetes	7.1 ± 4.9	13.2 ± 6.1	7.0 ± 5.0	6.1 ± 4.8
Hypertension	7.5 ± 5.2	12.8 ± 5.9	7.4 ± 5.3	6.3 ± 5.0
Cardiovascular Diseases	7.9 ± 5.0	13.5 ± 6.5	8.1 ± 5.5	7.0 ± 5.4
Autoimmune Disorders	7.3 ± 5.3	12.9 ± 6.2	7.3 ± 5.1	6.8 ± 5.2
Overall	**7.2 ± 5.1**	**12.5 ± 6.4**	**7.2 ± 5.2**	**6.4 ± 4.9**

4. DISCUSSION

The findings of this study underscore the high prevalence of depression and anxiety among patients with chronic diseases, with a striking impact on their overall well-being and disease management. The study revealed that nearly 47% of patients suffered from moderate to severe depression, while 44% experienced moderate to severe anxiety. These findings align with existing literature, which consistently highlights the elevated mental health burden in patients dealing with chronic illnesses such as diabetes, cardiovascular disease, and autoimmune disorders. This underscores the need for integrated care that considers both the physical and mental health challenges faced by patients with chronic diseases. One of the most significant observations from this study was the strong association between disease type and the prevalence of depression and anxiety. Patients with cardiovascular diseases and autoimmune disorders exhibited the highest rates of both mental health conditions, with 58% of cardiovascular patients and 53% of autoimmune disorder patients meeting the criteria for depression. Similarly, 55% of cardiovascular patients and 50% of autoimmune disorder patients had significant anxiety levels [13]. These findings support previous research indicating that individuals with these chronic diseases are particularly vulnerable to mental health issues due to the physical limitations, frequent medical interventions, and the uncertainty associated with managing these conditions. Another important finding was the relationship between disease duration and mental health severity. The study found that patients with chronic diseases lasting more than 10 years had significantly higher levels of both depression and anxiety compared to those with conditions of shorter duration. Specifically, patients with diseases lasting more than 10 years had higher PHQ-9 and GAD-7 scores, suggesting more severe symptoms of depression and anxiety. This is consistent with the theory that long-term illness can lead to accumulated stress, feelings of hopelessness, and decreased ability to cope, which in turn contribute to worsened mental health [15]. Chronic diseases often require long-term management, which may lead to fatigue, social isolation, and disrupted daily life, all of which are known risk factors for the development of mental health disorders. Moreover, the study observed a direct correlation between the severity of depression and anxiety and treatment adherence [16]. A significant 55% of patients with depression and anxiety reported poor adherence to their chronic disease management plan, which included missed medications, missed follow-up appointments, and poor lifestyle modifications. In contrast, only 22% of patients without depression or anxiety

reported poor adherence. This finding emphasizes the critical role of mental health in chronic disease management. Depression and anxiety are known to impair self-management behaviors, including medication adherence, dietary changes, and physical activity, which are essential for effective chronic disease control. Therefore, addressing mental health issues early could improve not only the psychological well-being of patients but also their physical health outcomes [17-19]. The implications of these findings for clinical practice are clear. First, routine screening for depression and anxiety should become a standard part of the care provided to patients with chronic diseases. Tools like the PHQ-9 and GAD-7 offer an efficient and reliable way to identify individuals at risk. Second, given the high prevalence of mental health disorders in this population, healthcare providers should be trained to recognize and address these issues as part of the holistic management of chronic conditions. Integrating mental health care into the management of chronic diseases can improve patient outcomes, as mental health treatments, including cognitive-behavioral therapy (CBT), psychoeducation, and pharmacotherapy (e.g., antidepressants), have been shown to improve both psychological well-being and chronic disease management [20].

5. LIMITATIONS AND FUTURE DIRECTIONS

While this study offers valuable insights, it is not without limitations. The cross-sectional design of the study limits the ability to draw causal conclusions between chronic disease duration and mental health severity. Longitudinal studies are needed to better understand the temporal relationship between chronic disease progression and the development of depression and anxiety. Additionally, the study was conducted at a single hospital, which may limit the generalizability of the findings to other populations. Future studies should aim to include a more diverse sample across different geographic regions and healthcare settings.

6. CONCLUSION

It is concluded that depression and anxiety are highly prevalent among patients with chronic diseases, particularly those with cardiovascular and autoimmune disorders. The findings of this study highlight the significant impact of these mental health conditions on both the psychological well-being and disease management of patients. With nearly half of the patients in the study exhibiting moderate to severe levels of depression and anxiety, it is clear that mental health must be addressed as part of the comprehensive care of individuals with chronic conditions.

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