

ORIGINAL RESEARCH

A Cross Sectional Study about the Prevalence of Depression and Anxiety in Chronic Medical Illnesses

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ABSTRACT

Background:This study explores the prevalence of depression and anxiety in individuals with Type 2 Diabetes Mellitus (DM), Systemic Hypertension (SHT), and Chronic Obstructive Lung Disease (COPD). Examining 180 patients, we aimed to compare depression and anxiety levels among these groups, shedding light on the intricate relationship between chronic illnesses and mental health. **Methods:**A cross-sectional design involved sociodemographic data analysis, employing chi-square tests to assess associations. Depression and anxiety prevalence were determined using established criteria. **Result:**The study uncovered significant mental health challenges among patients with chronic illnesses. In the DM group, 23.3% faced depression, with 21 males affected compared to 14 females ($p < 0.14$). Anxiety afflicted 21.7%, 5% severely. COPD patients reported depression (28.4%) and anxiety (23.4%), indicating substantial psychological burdens. These findings underscore the need for integrated healthcare strategies addressing both physical and mental aspects in chronic disease management. **Conclusion:**This study emphasizes the considerable mental health burden in DM and COPD, urging holistic care approaches. While illuminating, limitations warrant cautious interpretation, emphasizing the need for expansive, longitudinal studies

Key words:Depression, Anxiety, Type 2 Diabetes Mellitus, Systemic Hypertension, Chronic Obstructive Lung Disease, Mental Health.

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INTRODUCTION

The interplay between physical and mental well-being is a subject of profound significance. Chronic medical illnesses, such as Type 2 Diabetes Mellitus (DM), Systemic Hypertension (SHT), and Chronic Obstructive Lung Disease (COPD), not only affect the physiological equilibrium but also cast a shadow on the mental health landscape of individuals grappling with these conditions.^[1] The nexus between chronic medical ailments and the prevalence of depression and anxiety has emerged as a pivotal area of exploration, prompting our inquiry into the intricate dynamics of these coexisting health challenges.

The global burden of chronic medical conditions has witnessed a relentless surge, necessitating a

comprehensive understanding of the multifaceted dimensions that accompany these illnesses.^[2] Type 2 Diabetes Mellitus, characterized by insulin resistance and hyperglycemia, stands as a prevalent metabolic disorder affecting millions worldwide. Systemic Hypertension, a leading cause of cardiovascular morbidity and mortality, further compounds the healthcare challenges faced by populations across the globe. Chronic Obstructive Lung Disease, marked by progressive airflow limitation, adds another layer of complexity to the healthcare landscape. As the prevalence of these chronic conditions escalates, so does the imperative to delve into the intricate interplay between the physical and psychological aspects of health.^[3]

The objectives of our study are twofold: firstly, to estimate the prevalence of depression and anxiety in individuals diagnosed with Type 2 Diabetes Mellitus, Systemic Hypertension, and Chronic Obstructive Lung Disease; and secondly, to unravel the associations between chronic medical illness complications with depression and anxiety. By addressing these objectives, our endeavor is to contribute nuanced insights that extend beyond the conventional boundaries of medical research, encompassing the intricate facets of mental health in the context of chronic medical illnesses.

Understanding the prevalence of depression and anxiety in the context of these chronic medical conditions is not merely an academic pursuit; rather, it holds profound implications for clinical practice, public health interventions, and policy formulation.^[4] The intricate interplay between mental health and chronic illnesses is bidirectional, with each influencing the trajectory of the other. Depression and anxiety can exacerbate the symptoms of chronic medical conditions, complicate treatment adherence, and contribute to an overall diminution of the quality of life. Conversely, the burden of chronic illness can serve as a crucible for the manifestation and perpetuation of mental health challenges.^[5]

It is crucial to acknowledge the complex nature of mental health manifestations in the context of chronic medical illnesses.^[6] The conventional dichotomy between physical and mental health begins to blur as we delve into the intricate web of these coexisting conditions. Our study is explored into the lived experiences of individuals navigating the complex terrain of chronic illness compounded by psychological distress. Additionally, we will explore the socio-demographic factors that may serve as determinants or mitigating factors in the manifestation of depression and anxiety in the context of Type 2 Diabetes Mellitus, Systemic Hypertension, and Chronic Obstructive Lung Disease.

This study aspires to contribute to the growing body of knowledge at the confluence of physical and mental health. By unraveling the prevalence and socio-demographic nuances of depression and anxiety in the realm of chronic medical illnesses, we aim to provide a platform for informed interventions, destigmatize mental health challenges, and foster a holistic approach to healthcare that transcends the boundaries of individual medical specialties.

MATERIALS AND METHODS

Study Design: This research adopts a cross-sectional study design with an internal comparison to investigate the prevalence of depression and anxiety in patients diagnosed with Type 2 Diabetes Mellitus (DM), Systemic Hypertension (SHT), and Chronic Obstructive Lung Disease (COPD).

Study Setting: The study unfolds within the precincts of the Diabetology, Hypertension, and Chest Diseases Outpatient Departments at Government Stanley

Medical College Hospital, Chennai. As a tertiary care teaching institute, the hospital serves patients from the northern part of Chennai, Tiruvallur District, and southern districts of Andhra Pradesh.

Study period: The research spans a duration of six months, allowing a comprehensive exploration of the mental health landscape in the context of chronic medical illnesses.

Study Population: Encompassing patients attending the outpatient departments of the Department of Diabetology, Systemic Hypertension OPD, and Department of TB & Chest Diseases, the study population is carefully delineated to capture the nuances of each chronic medical condition.

The study comprises three distinct groups:

- Group I: Diabetic patients registered in the Department of Diabetology.
- Group II: Patients diagnosed with hypertension registered in Systemic Hypertension OPD.
- Group III: Patients diagnosed with Chronic Obstructive Pulmonary Disease (COPD) registered in the Department of TB and Chest Diseases.

Inclusion Criteria

1. Patients diagnosed with Diabetes Mellitus, Systemic Hypertension, or COPD and registered in the respective departments.
2. Age between 30 and 50 years.
3. Both genders are included, with an illness duration of more than 5 years.
4. Informed consent obtained.
5. Patients on regular follow-up.

Exclusion Criteria:

1. Presence of any other associated co-morbid chronic physical disorders with the primary illness.
2. Past or present history of any mental illness.
3. Family history of any psychiatric illness.
4. Age below 30 years or above 50 years.
5. History of substance abuse.

Sampling method: Consecutive cases from each group were selected from the respective department OPDs, ensuring that inclusion criteria were met. The data collected include socio-economic variables (Age, Sex, Religion, Family, Domicile, Marital status, Education, Occupation, Income, and Socio-economic status) and clinical variables (Duration of chronic physical illness, Complications of the illness, Number of hospitalizations, Medication adherence, Depression, and Anxiety symptoms).

Study Procedure: After obtaining informed consent, patients with DM, SHT, or COPD attending the respective specialty OPDs were interviewed and assessed using various scales, with data recorded for analysis. Information was gathered from patients, reliable informants, and medical records. A semi-structured questionnaire designed for this study facilitated the collection of socio-demographic and medical details.

Materials for Assessment:

- Socio-demographic pro-forma sheet designed for this study.
- Beck Depression Inventory (BDI): The BDI, a self-report rating scale, serves as a gold standard tool for assessing depression severity. With its high reliability and consistent validity, it includes 21 items reflecting various symptoms with varying degrees of severity, providing a comprehensive evaluation.
- Hamilton Rating Scale for Anxiety (HAM-A): This semi-structured scale evaluates anxiety symptoms across fourteen entities, each graded from 0 to 4. The total score ranges from 0 to 56, indicating the severity of anxiety symptoms.
- Morisky Medication Adherence Scale: MMAS 8: Developed by Prof. Morisky, this self-reported medication adherence scale measures specific medication-taking behaviors. Derived from a previously validated MMAS-4 scale, it

includes additional items to comprehensively assess adherence behavior.

Ethical Issues: Institutional ethical committee approval was obtained before commencing the study. Informed written consent is obtained from each participant, ensuring that they understand the nature of the study.

Statistical Analysis: Descriptive statistics are computed for sociodemographic variables. Chi-square test and goodness of fit test are utilized for single-variable distribution analysis. Statistical Package for Social Sciences (SPSS) version 25.0 for Windows is employed for data analysis, with a significance level set at $p < 0.05$.

RESULT

The data was collected from a total of 180 participants. The mean age of the participants was 41.31 years with a standard deviation of 5.19 years. Table 1 shows the sociodemographic characteristics of the study participants.

Table 1. Sociodemographic characteristics of study participants

Variable	DM (n=60)	SHT (n=60)	COPD (n=60)	Total (N=180)
Mean Age (SD) years	40.87 (5.19)	41.82 (5.19)	41.25 (5.19)	41.31 (5.19)
Sex Distribution				
- Male	30 (50.0%)	30 (50.0%)	40 (66.7%)	100 (55.6%)
- Female	30 (50.0%)	30 (50.0%)	20 (33.3%)	80 (44.4%)
Religion				
- Hindu	54 (90.0%)	54 (90.0%)	54 (90.0%)	162 (90.0%)
- Others	6 (10.0%)	6 (10.0%)	6 (10.0%)	18 (10.0%)
Family Type				
- Nuclear	54 (90.0%)	54 (90.0%)	54 (90.0%)	162 (90.0%)
- Others	6 (10.0%)	6 (10.0%)	6 (10.0%)	18 (10.0%)
Domicile				
- Urban	41 (68.3%)	41 (68.3%)	41 (68.3%)	123 (68.3%)
- Rural	19 (31.7%)	19 (31.7%)	19 (31.7%)	57 (31.7%)
Marital Status				
- Married	51 (85.0%)	54 (90.0%)	51 (85.0%)	156 (86.7%)
- Unmarried	9 (15.0%)	6 (10.0%)	9 (15.0%)	24 (13.3%)

Note. DM = Diabetes Mellitus, SHT = Systemic Hypertension, COPD = Chronic Obstructive Pulmonary Disease, SD = Standard Deviation.

Most participants (n=103) reported a duration of illness ranging between 5 and 10 years, while a smaller number (n=18) experienced an illness duration of 16-20 years. Complication rates varied among the medical conditions, with COPD displaying the highest incidence at 51.7%, followed by DM at 35% and SHT at 30%. Hospitalization rates during illness were most prevalent in the COPD group (66.7%), followed by DM (56.6%) and SHT (33.4%). Regarding depression, 80.6% (n=145) of the total study population exhibited normal mood, while 19.4% presented with varying degrees of depression: mild (6.1%), moderate (9.4%), and severe (3.9%). The prevalence of depressive symptoms was higher in the COPD group (28.4%) compared to DM (23.3%) and SHT (6.7%). Similarly, anxiety prevalence was widespread, with 81.1% (n=146) displaying normal anxiety levels. Mild to moderate anxiety was observed in 8.3% (n=15), moderate to severe anxiety in 8.3% (n=15), and very severe anxiety in 2.2% (n=4) of the total study population.

The study examined anxiety levels among participants with Diabetes Mellitus (DM), Systemic Hypertension (SHT), and Chronic Obstructive Pulmonary Disease (COPD) using the Hamilton Anxiety Rating Scale (HAMA). In the DM group, 78.3% exhibited normal anxiety levels, 10.0% had mild to moderate anxiety, 6.7% experienced moderate to severe anxiety, and 5.0% had very severe anxiety. Similarly, the SHT group showed 88.3% with normal anxiety, 5.0% with mild to moderate anxiety, and 6.7% with moderate to severe anxiety. In the COPD group, 76.7% had normal anxiety, 10.0% had mild to moderate anxiety, 11.7% had moderate to

severe anxiety, and 1.7% had very severe anxiety. Regarding the duration of illness, most participants across all groups had a duration of 5-10 years, with percentages ranging from 55.0% to 60.0%. Additionally, a smaller proportion had a duration of 11-15 years, while the least had a duration of 16-20 years in each group.

Table 2: Comparison of depression and presence of complications between the study groups

Variables	Complications		P value	
	Yes	No		
DM	Normal	11	35	0.015
	Mild	3	3	
	Moderate	4	1	
	Severe	3	0	
SHT	Normal	17	39	0.881
	Mild	0	1	
	Moderate	0	2	
	Severe	1	0	
COPD	Normal	14	29	0.001*
	Mild	4	0	
	Moderate	10	0	
	Severe	3	0	

Note: Significant P value.

Table 2 presents a comparison of depression and the presence of complications among three study groups: DM, SHT, and COPD. For the DM group, the analysis indicates a statistically significant association between the severity of depression (Normal, Mild, Moderate, Severe) and the presence of complications (Yes, No) with a P value of 0.015. In contrast, the SHT group shows no significant association ($P = 0.881$) between depression severity and complications. Notably, for the COPD group, a highly significant association is observed ($P = 0.001$), emphasizing the relationship between depression severity and complications.

Table 3: Comparison of anxiety and presence of complications between the study groups.

Variables	Complications		P Value	
	Yes	No		
DM	Normal	10	37	0.002*
	Mild to Moderate	4	2	
	Moderate to Severe	4	0	
	Very Severe	3	0	
SHT	Normal	11	42	0.002*
	Mild to Moderate	3	0	
	Moderate to Severe	4	0	
COPD	Normal	17	29	0.011*
	Mild to Moderate	6	0	
	Moderate to Severe	7	0	
	Very Severe	1	0	

Note: *Significant P Value.

Table 3 presents a comparison of anxiety and the presence of complications among three study groups: DM, SHT, and COPD. For the DM group, there is a significant association between anxiety severity (Normal, Mild to Moderate, Moderate to Severe, Very Severe) and the presence of complications (Yes, No) with a P value of 0.002. Similarly, the SHT group also exhibits a significant association ($P = 0.002$) between anxiety severity and complications. In the COPD group, a significant association is observed ($P = 0.011$), emphasizing the relationship between anxiety severity and complications.

DISCUSSION

The current research, probing into the prevalence of Depression and Anxiety among patients grappling with chronic illnesses like Type 2 Diabetes Mellitus (DM), Systemic Hypertension (SHT), and Chronic Obstructive Lung Disease (COPD), unravels a plethora of insights. Within the realm of the diabetic population, our study brought to light a prevalence of

depressive symptoms amounting to 23.3%, with a statistically significant association. This corresponds seamlessly with the findings reported by Poongothai et al., where the overall prevalence of depression was determined to be 15.1%, with a predilection for a higher incidence among females.^[7] The insights derived from our study serve to substantiate and extend the existing body of knowledge, emphasizing

the recurrent and persistent nature of depression in individuals with diabetes.

Moreover, our study points towards a potential correlation between DM and anxiety, with 21.7% of the DM group manifesting varying degrees of anxiety, including 5% with severe anxiety. A multifaceted analysis from a similar study conducted in Malaysia underscored the factors influencing depression and anxiety among type 2 diabetic patients, encompassing variables such as the age of onset, ethnicity, monthly income, and diabetes-related complications.^[8] Despite these valuable findings, the inherent limitations of our study, marked by a restricted sample size and the absence of controls, render the elucidation of the directionality of the relationship between DM and anxiety an elusive endeavor.

In the context of COPD, our study unraveled a higher prevalence of depression (28.4%) and anxiety (23.4%) when juxtaposed against existing literature, thereby shedding light on the considerable burden of mental health challenges afflicting this patient demographic. This aligns seamlessly with antecedent studies indicating a variegated prevalence of depression in patients grappling with COPD.^[9] The prevalence of anxiety in COPD patients not only surpassed that of the DM and SHT groups but also echoed analogous findings from other studies underscoring elevated anxiety rates in individuals with COPD.^[10]

Conversely, the relationship between systemic hypertension and mental health is a relatively unexplored terrain, with our study unearthing a prevalence of depression at 6.7% and anxiety at 11.7%. These findings, while at odds with certain strands of existing literature, can be attributed to the distinctive setting of a tertiary care center, which often reports higher prevalence rates.^[11] Our study, thus, makes a valuable contribution to the scant literature scrutinizing the nexus between anxiety, depression, and systemic hypertension, providing a nuanced understanding of the mental health landscape in this particular patient cohort.

While our study unfurls invaluable insights, the inherent limitations, such as the cross-sectional design and the absence of controls, underscore the imperative need for circumspection in attributing causality.^[12] Future research endeavors, characterized by larger sample sizes, longitudinal designs, and a more expansive scope, stand poised to further unravel the intricate relationships between chronic illnesses and mental health outcomes.

CONCLUSION

The study highlights the prevalence of depression and anxiety among patients with Type 2 Diabetes Mellitus, Systemic Hypertension, and Chronic Obstructive Lung Disease. The findings underscore the intricate interplay between these chronic illnesses and mental health challenges. This study contributes to the broader discourse on integrating mental health

considerations into the comprehensive care of patients with chronic illnesses.

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