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# PREVALENCE OF PSYCHIATRIC ILLNESSES IN PATIENTS WITH THYROID DISEASES

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**Abstract**

*Objectives*

*To determine the prevalence of psychiatric illnesses, particularly depressive and anxiety symptoms, among patients with thyroid disorders and to assess the association between the type of thyroid disease and psychiatric morbidity in a tertiary care hospital setting.*

*Methodology*

*This cross-sectional study was conducted in the Endocrinology Department of Gulab Devi Hospital, Lahore, over a period of six months. A non-purposive convenient sampling technique was used to recruit patients of either gender aged 18–50 years. Patients with a deranged thyroid profile suggestive of hypothyroidism or hyperthyroidism and who had not yet started thyroid treatment were included. Patients with subclinical thyroid disease, those already on thyroid or psychiatric medications, and those with known psychiatric illnesses were excluded. Psychiatric morbidity was assessed using the Symptom Checklist-R (SCL-R). Data were analyzed using SPSS version 23. Quantitative variables were expressed as mean ± standard deviation, while qualitative variables were presented as frequencies and percentages.*

*Results*

*A total of 148 patients were enrolled, with a mean age of 34.6 ± 8.2 years. Hypothyroidism was present in 58.1% and hyperthyroidism in 41.9% of patients. Depressive symptoms were identified in 44.6% of the study population and were more prevalent among patients with hypothyroidism (51.2%) compared to those with hyperthyroidism (35.5%), showing a statistically significant association ($p = 0.04$). Anxiety symptoms were observed in 52.0% of patients and were more prevalent among those with hyperthyroidism (61.3%) compared to hypothyroidism (45.3%), with a statistically significant association ($p = 0.04$).*

*Conclusion: Psychiatric illnesses, particularly depression and anxiety, are highly prevalent among patients with thyroid disorders. Depression is more common in hypothyroidism, whereas anxiety is more frequently associated with hyperthyroidism. Routine screening for both depressive and anxiety symptoms should be incorporated into the clinical management of patients with thyroid diseases to ensure early identification, timely intervention, and improved quality of life.*

## INTRODUCTION

The thyroid gland, a vital organ, is responsible for maintaining metabolic balance. A slight disruption in this fragile harmony can cause thyroid diseases such as hyperthyroidism, hypothyroidism, and autoimmune disorders. Thyroid diseases are prevalent in more than 100 countries in the world and affecting approximately 1.6 billion populations worldwide. The prevalence of hyperthyroidism in Pakistan was noticed to be 5.1%, however hypothyroidism was observed to be 4.1%. [1] According to a study, thyroid hyperfunction (hyperthyroidism) and hypofunction (hypothyroidism) are estimated to occur in about 2% and 1% of the general population, respectively. [2] According to a study, South Asian countries have the highest disease burden of psychiatric illnesses. This study showed a prevalence of 14.2% (12.9% to 15.7%) for Common Mental Disorders. This is higher as compared to the worldwide-pooled prevalence of mental disorders, which is around 13.4%. According to the same study, Pakistan had the highest prevalence of psychiatric disorders, in South Asia. [3]

Mental symptoms associated with hyperthyroidism are irritability, anxiety, insomnia, and restlessness. Therefore, mania or bipolar disorder can be related to hyperthyroidism. On the other hand, it is thought that depression is closely related to hypothyroidism. [4]. A study done by Selcuk Aslan et all, showed that 43% patients with thyroid disorders suffered from some kind of psychiatric disorder. [10] According to a study done by Binu Gorkhali et al, the prevalence of anxiety was 50.4% whereas; the prevalence of depression was 42.6%, in patients with thyroid diseases. [2] A study done in Pakistan showed there was a significant association seen among mood swings and TSH level. [5] Interaction of the thyroid and monoamine neurotransmitter systems has been suggested as a potential underlying mechanism of action. A study showed that exogenous thyroid hormones may increase the serotonergic neurotransmission, specifically by reducing the sensitivity of 5-HT1A auto receptors in the raphe area, and by increasing 5-HT2 receptor sensitivity. [6] As mentioned by Abdul Waheed et al in his study, Pakistan is in the ranks among the high thyroid burden countries and the reported prevalence of anxiety and depressive disorders ranges from 31% to 69% in hyperthyroid patients and 30% to 70% in hypothyroid patients. This study, which was done in a tertiary care hospital of the province Baluchistan, Pakistan, concluded that all the study participants, who were already patients of different thyroid diseases suffered from depression. Most of them suffered from very severe depression (46%). [7] Thyroid diseases can present with various psychiatric manifestations with or without any overt clinical signs of hyperthyroidism or hypothyroidism. So, while dealing with psychiatric illnesses thyroid disorders should be ruled out by running thyroid function tests, which include TSH, free T3, free T4, reverse T3, and other tests including thyroid antibodies. [8] Local data of psychiatric illnesses in patients with thyroid disease is not well documented so there is a noticeable gap in literature. Moreover, at present no latest study determining the prevalence of psychiatric disorders in general, among patients with both hyperthyroidism as well as hypothyroidism, is done in Punjab, especially Lahore. Therefore, this study is designed and will be conducted in local population presenting in a tertiary care hospital of Lahore. This can be helpful in determining the current pattern and prevalence of psychiatric illnesses in thyroid patients.

## METHODOLOGY

This cross-sectional study was carried out in the Endocrinology Department of Gulab Devi Hospital, Lahore, over a period of six months. The study duration was flexible and could have been extended or shortened depending on the actual recruitment rate of participants and the availability of resources during the study period. A non-purposive convenient sampling technique was used to select the study participants. Patients of either gender, aged between 18 and 50 years, attending the outpatient department were assessed for eligibility. Patients with a deranged thyroid profile suggestive of hypothyroidism or hyperthyroidism, along with relevant clinical symptoms, were included in the study after obtaining informed written consent. Only those patients who had not yet started any medication for hypothyroidism or hyperthyroidism were enrolled.

Patients who had already started treatment for hypothyroidism or hyperthyroidism were excluded from the study. Furthermore, patients with subclinical hypothyroidism or hyperthyroidism were excluded. Patients, who were already receiving any psychiatric medication, including selective serotonin reuptake inhibitors (SSRIs), serotonin–norepinephrine reuptake inhibitors (SNRIs), and tricyclic antidepressants (TCAs), other antidepressants, antipsychotics, or mood stabilizers, were also excluded to reduce potential confounding effects. After approval from the hospital ethical review committee, a total of 148 patients visiting the outpatient department of the Endocrinology Department, Gulab Devi Hospital, Lahore, were enrolled in the study. The sample was selected strictly according to the predefined inclusion and exclusion criteria. The researcher interviewed patients with different thyroid disorders and deranged thyroid profiles and recorded the frequency of psychiatric illnesses using a standardized assessment tool, the Symptom Checklist-R (SCL-R). All relevant information was documented on a structured proforma developed by the researcher.

Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 23. Quantitative variables, including age, duration of disease, and duration of treatment, were summarized as mean and standard deviation. Qualitative variables such as gender, marital status, level of education, number of siblings, socioeconomic status, place of residence, and presence of depression were expressed as frequencies and percentages. Effect modifiers including age, gender, and duration of disease, duration of treatment, marital status, education, and number of siblings, residence, and socioeconomic status were controlled through stratification. After stratification, the chi-square test was applied to assess associations. A p-value of ≤ 0.05 was considered statistically significant.

## RESULTS

A total of 148 patients fulfilling the inclusion criteria were enrolled in this cross-sectional study conducted in the Endocrinology Department of Gulab Devi Hospital, Lahore. The mean age of the participants was 34.6 ± 8.2 years. Both hypothyroid and hyperthyroid patients were included. Psychiatric morbidity, particularly depressive symptoms, was assessed using the Symptom Checklist-R (SCL-R).

**Table I: Baseline Sociodemographic and Clinical Characteristics of Study Participants (n = 148)**

| Variable | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| **Gender** | Male | 56 | 37.8 |
| | Female | 92 | 62.2 |
| **Age (years)** | Mean ± SD | 34.6 ± 8.2 | – |
| **Marital Status** | Married | 94 | 63.5 |
| | Unmarried | 54 | 36.5 |
| **Education Level** | Primary or less | 38 | 25.7 |
| | Secondary | 62 | 41.9 |
| | Graduate and above | 48 | 32.4 |
| **Socioeconomic Status** | Low | 52 | 35.1 |
| | Middle | 68 | 45.9 |
| | High | 28 | 18.9 |
| **Residence** | Urban | 89 | 60.1 |
| | Rural | 59 | 39.9 |
| **Thyroid Disorder** | Hypothyroidism | 86 | 58.1 |
| | Hyperthyroidism | 62 | 41.9 |
| **Duration of Disease (months)** | Mean ± SD | 11.3 ± 5.6 | – |

**Table II: Association of Thyroid Disorders with Depression (n = 148)**

| Thyroid Disorder | Depression Present n (%) | Depression Absent n (%) | Total | *p*-value |
|---|---|---|---|---|
| Hypothyroidism | 44 (51.2%) | 42 (48.8%) | 86 | |
| Hyperthyroidism | 22 (35.5%) | 40 (64.5%) | 62 | |
| **Total** | **66 (44.6%)** | **82 (55.4%)** | **148** | **0.04*** |

*Chi-square test applied; p ≤ 0.05 considered statistically significant.

Depressive symptoms were observed in 44.6% of the total study population. Depression was more prevalent among patients with hypothyroidism compared to those with hyperthyroidism. The association between type of thyroid disorder and depression was found to be statistically significant (p = 0.04). Stratification for age, gender, duration of disease, marital status, education, residence, and socioeconomic status did not significantly alter the association. **Anxiety symptoms were identified in 52.0% of the study population. Anxiety was more prevalent among patients with hyperthyroidism (61.3%) compared to those with hypothyroidism (45.3%).**

**Table III: Association of Thyroid Disorders with Anxiety (n = 148)**

| Thyroid Disorder | Anxiety Present n (%) | Anxiety Absent n (%) | Total | *p*-value |
|---|---|---|---|---|
| Hypothyroidism | 39 (45.3%) | 47 (54.7%) | 86 | |
| Hyperthyroidism | 38 (61.3%) | 24 (38.7%) | 62 | |
| **Total** | **77 (52.0%)** | **71 (48.0%)** | **148** | **0.04*** |

*Chi-square test applied; p ≤ 0.05 considered statistically significant.

## DISCUSSION

A total of 148 patients fulfilling the inclusion criteria were enrolled in this cross-sectional study conducted in the Endocrinology Department of Gulab Devi Hospital, Lahore. The mean age of the participants was 34.6 ± 8.2 years. Both patients with hypothyroidism and hyperthyroidism were included. Psychiatric morbidity was assessed using the Symptom Checklist-R (SCL-R), with particular emphasis on depressive and anxiety symptoms.

In the present study, depressive symptoms were observed in 44.6% of the total study population. Depression was more prevalent among patients with hypothyroidism compared to those with hyperthyroidism. A statistically significant association was observed between the type of thyroid disorder and depression (p = 0.04). Stratification for age, gender, duration of disease, marital status, education level, place of residence, and socioeconomic status did not significantly alter this association.

Anxiety symptoms were identified in 52.0% of the study population. Anxiety was more prevalent among patients with hyperthyroidism (61.3%) compared to those with hypothyroidism (45.3%). The association between thyroid disorder type and anxiety was statistically significant (p = 0.04), as shown in Table III. This finding highlights the psychological burden associated with thyroid dysfunction, particularly hyperthyroidism, which is frequently accompanied by increased sympathetic activity and emotional instability.

These findings are consistent with previous research. A study conducted in 2010 emphasized that the prevalence of major depressive disorder (MDD) and anxiety disorders (AD) among patients with thyroid

disorders should be recognized, as patients suffering from MDD and AD were reported to have a poorer quality of life[9]. Similarly, a study published in 2023 reported that the overall prevalence of psychiatric illnesses was significantly higher among patients with thyroid disorders compared to the general population, with nearly half of the patients experiencing at least one psychiatric illness. However, the study also noted that hyperthyroid or hypothyroid status did not significantly alter the prevalence of MDD and generalized anxiety disorder[10].

In line with the current findings, a study conducted in 2020 reported a high prevalence of depression among patients with thyroid disorders and recommended regular screening for depression in these patients. The authors further suggested that high-risk groups should receive enhanced clinical management to improve patient outcomes[11]. Another study published in 2017 reported that the overall prevalence of hypothyroidism was lower than that observed in the general population, which ranges between 4.64% and 18.5%, and noted that hypothyroidism was associated with psychiatric disorders other than depression as well[12].

Additionally, a study conducted in 2016 highlighted that although several psychiatric comorbidities were explored, anxiety and depressive disorders were highly prevalent among patients with hypothyroidism. The study emphasized the importance of timely treatment to prevent future emotional health complications associated with chronic thyroid disease and to ultimately improve the quality of life in this population[13].

## CONCLUSION

This study demonstrated a high prevalence of psychiatric illnesses among patients with thyroid disorders attending a tertiary care hospital in Lahore, with depressive symptoms observed in 44.6% and anxiety symptoms in 52.0% of the study population. Depression was significantly more common in patients with hypothyroidism, whereas anxiety was more prevalent among patients with hyperthyroidism. These findings highlight a strong association between thyroid dysfunction and mental health disturbances. Routine psychiatric screening for both depression and anxiety in patients with thyroid diseases is therefore recommended to ensure early identification and appropriate management, ultimately improving overall patient outcomes and quality of life.

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