

# Psychiatric morbidity and psychopathology in patients with hypothyroidism

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## Abstract

**Background:** Hypothyroidism is of great importance in psychiatric practice. Cognitive disturbances include the inability to concentrate, poor attention, bradyphrenia, calculation difficulties and difficulty in understanding complex questions. Hypothyroidism is a known cause of secondary depression. This study aims to evaluate the frequency of psychiatric disorders in patients with hypothyroidism and nature of psychiatric symptoms in patients with hypothyroidism. **Materials and methods:** 30 patients with hypothyroidism (cases) and 30 patients with hypothyroidism (controls) are recruited between Dec 2014-Jan 2015 from departments of Endocrinology and Medicine of Father Muller Medical College, Kankanady, Mangalore. Patients were recruited for the study after giving written informed consent and inclusion and exclusion criteria. Socio-demographic details were collected by a predesigned proforma and they were later assessed with MINI plus and CPRS for psychiatric morbidity and psychopathology respectively. **Results:** 30% of hypothyroidism and 10 % of hypertension patients had psychiatric comorbidity. Dysthymia was found to be common in hypothyroidism patients, followed by major depressive disorder, generalised anxiety disorder. Generalised anxiety disorder was common in hypertension patients. More psychopathology was seen in both cases and controls with psychiatric diagnosis than without. **Conclusion:** Depressive and anxiety disorders are found more commonly in hypothyroidism and hypertension patients and this study supports the existing literature.


**Keywords:** psychiatric comorbidity, hypothyroidism.

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## INTRODUCTION

Hypothyroidism is a lifelong chronic condition particularly prevalent in women and elderly. It is a common condition with an incidence that increases markedly with age, especially from middle age onwards. It is more common in women than men, in a ratio of approximately 8:1.<sup>1</sup> Hypothyroidism is of great importance in psychiatric practice.<sup>1</sup> Cognitive disturbances include the inability to concentrate, poor attention, bradyphrenia, calculation difficulties and difficulty in understanding complex questions.<sup>1</sup> Hypothyroidism is a known cause of secondary

depression. Almost all patients with hypothyroidism have some concurrent symptoms of depression.<sup>2</sup> Untreated hypothyroidism can result in psychosis, so called "myxedema madness". Clinical hypothyroidism is associated with frank neuropsychological and affective alterations and is considered one of the causes of so called "reversible dementia".<sup>3</sup> Though a number of studies have been reported from western world, there is paucity of recent Indian literature on psychopathology in hypothyroidism patients. Depressed affect has been reported as frequent association with hypothyroidism and a regular feature of early case series. Mild hypothyroidism is also more frequent in rapid cycling bipolar disorder, occurring in up to 25% of the cases.<sup>1</sup> In one study almost 40% of rapid or mixed episode bipolar patients were found to have subclinical hypothyroidism.<sup>(2)</sup> Untreated hypothyroidism can result in psychosis as reported in up to 5% of all hypothyroid patients.<sup>2</sup> Studies conducted showed an increased prevalence of psychiatric disorders in subclinical hypothyroidism patients when compared to euthyroid patients (45.7% vs 25.6%), mood disorder being the most frequent.<sup>4</sup> The prevalence of depressive symptoms based

on Becks scale among subclinical hypothyroidism patients was about 2-3 times higher than among euthyroid individuals (45.6%vs20.9).Anxiety was also frequent among subclinical hypothyroidism patients (87.0%vs60.5%).<sup>4</sup> The function of the hypothalamic-pituitary-thyroid axis is known to be associated with a number of psychiatric abnormalities, such as depressive disorder and anxiety disorder. More severe hypothyroidism can mimic melancholic depression and dementia.<sup>6</sup>

## MATERIALS AND METHODS

### Source of Data

This clinical investigation will be conducted in the departments of Psychiatry, Endocrinology and Medicine of Father Muller Medical College Kankanady Mangalore. This study will commence from December 2014 and will be completed by January 2014

### Methods of Collection of data

Population for the investigation will consist of patients suffering from hypothyroidism attending endocrinology and medicine outpatient department and inpatients in the department of endocrinology and medicine.30consecutive patients with diagnosis of hypothyroidism satisfying inclusion and exclusion criteria will form the sample of the study. 30 Patients diagnosed with essential hypertension attending medical outpatient department will be the population for control group. 30 consecutive patients with hypertension meeting inclusion and exclusion criteria will constitute the control group.

### Sample

Following are the inclusion and exclusion criteria for sample

### Inclusion Criteria

1. Patients diagnosed to have hypothyroidism in endocrinology outpatient department
2. Age 18-60 years
3. Both males and females
4. Patients consenting for study

### Exclusion Criteria

1. Patients with other significant medical co morbidities like hypertension, diabetes mellitus, chronic renal failure and other chronic debilitating medical conditions
2. Patients with known primary psychiatric disorders

### Control

Following are the inclusion and exclusion criteria for control

### Type of Study

This is an observational, descriptive, cross-sectional, case control, comparative clinical study

### Tools for Assessment

1. Mini International Neuropsychiatric Interview Plus (MINI Plus).<sup>7</sup>
2. Comprehensive Psychopathological Rating Scale(CPRS).<sup>8</sup>

### Procedure

The institutional ethical committee clearance will be obtained. The design and nature of the clinical study will be explained to all the patients. Informed consent will be obtained from all the patients. All the patients in the sample and the control group (n=60) will be subjected to thorough physical and mental state examination within one week of the first contact with the investigator. Psychiatric morbidity and Psychopathology is assessed in the patients and control group by Mini International Neuropsychiatric Interview plus (MINI Plus) and Comprehensive psychopathological rating scale (CPRS) respectively.

## RESULTS

Table 1

		Count	Column N %
Age	18-30	7	25.0%
	31-40	7	25.0%
	41-50	10	35.7%
	51-64	4	14.3%
Sex	Male	0	0.0%
	Female	28	100.0%
Hypothroidism Religion	Hindu	13	46.4%
	Muslim	6	21.4%
	Christian	9	32.1%
	Other	0	0.0%
Caste	Dominant	7	25.0%
	Backward	18	64.3%
	Scheduled	3	10.7%
Education	Illiterate	1	3.6%
	Primary School	8	28.6%

	Middle School	10	35.7%
	High School	3	10.7%
	+2/Predegree	3	10.7%
	Degree	3	10.7%
	Postgraduate	0	0.0%
	Professional		
	Degree/Higher Education	0	0.0%
	Other	0	0.0%
Marital Status	Unmarried	3	10.7%
	Married	25	89.3%
Occupation	Unskilled Labourer	11	39.3%
	Skilled Labourer	15	53.6%
	Govt Employee	0	0.0%
	Private Employee	2	7.1%
	Self Employment	0	0.0%
	Business	0	0.0%
	Professional	0	0.0%
Location Of Residence	Others	0	0.0%
	9	10	35.7%
	Urban	9	32.1%
Type Of Family	Rural	19	67.9%
	Others	0	0.0%
SESS CATEGORY	Nuclear	26	92.9%
	Joint	2	7.1%
	Extended	0	0.0%
Clinical Data	Others	0	0.0%
	2	4	14.3%
	3	21	75.0%
Cprs Reported	4	3	10.7%
	Hypothyroidism	28	100.0%
	0	19	70.4%
	4	1	3.7%
	5	5	18.5%
CPRS Observed	6	1	3.7%
	7	1	3.7%
	0	19	70.4%
	2	4	14.8%
	3	3	11.1%
	4	1	3.7%

**Table 2**

		Count	Column N %
<b>Hypertension</b>	Age	18-30	1 3.1%
		31-40	7 21.9%
		41-50	6 18.8%
		51-64	18 56.3%
	sex	Male	22 68.8%
		Female	10 31.3%
	Religion	Hindu	18 56.3%
		Muslim	6 18.8%
		Christian	8 25.0%
	Caste	Other	0 0.0%
		Dominant	7 21.9%
		Backward	25 78.1%
	Education	Scheduled	0 0.0%
Illiterate		1 3.1%	
	Primary School	9 28.1%	

	Middle School	6	18.8%
	High School	6	18.8%
	+2/Predegree	6	18.8%
	Degree	4	12.5%
	Postgraduate	0	0.0%
	Professional	0	0.0%
	Degree/Higher Education	0	0.0%
	Other	0	0.0%
Marital Status	Unmarried	1	3.1%
	Married	31	96.9%
Occupation	Unskilled Labourer	15	46.9%
	Skilled Labourer	15	46.9%
	Govt Employee	0	0.0%
	Private Employee	1	3.1%
	Self Employment	0	0.0%
	Business	0	0.0%
Location of residence	Professional	0	0.0%
	Others	0	0.0%
	9	1	3.1%
	Urban	11	34.4%
Type of Family	Rural	21	65.6%
	Others	0	0.0%
	Nuclear	30	93.8%
	Joint	2	6.3%
SESS CATEGORY	Extended	0	0.0%
	Others	0	0.0%
	2	3	9.4%
Clinical Data	3	25	78.1%
	4	4	12.5%
cprs reported	Hypertension	32	100.0%
	0	30	93.8%
CPRS observed	4	2	6.3%
	0	30	93.8%
	2	1	3.1%
	3	1	3.1%

### Socio-demographic variables

Age of most of the hypothyroid patients in the study was between 41-50 years and hypertension group was between 51-64. All the subjects in the hypothyroid group were females and hypertension had both males and

hypertension had both males and females. Other variables like religion, caste, education, marital status, occupation, location of residence, type of family and SESS category did not vary much between the two groups.

### Data regarding psychiatric morbidity

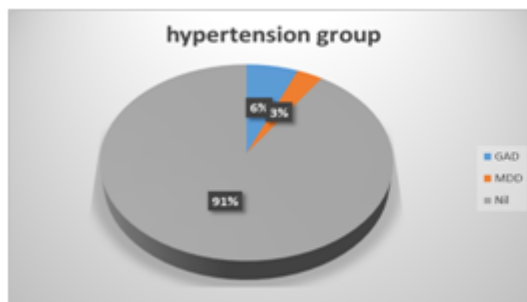


Figure 1

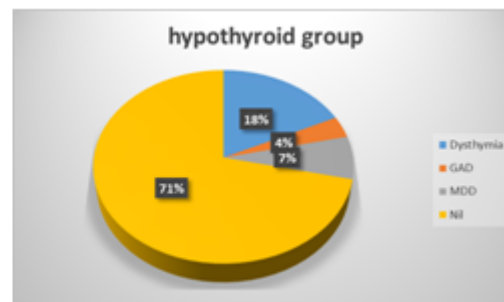


Figure 2

Table 3

Psychiatric Diagnosis In Hypothyroidism Group	Dysthymia	5	17.9%
	GAD	1	3.6%

MDD	2	7.1%
Nil	20	71.4%

Table 4

PSYCHIATRIC DIAGNOSIS IN HYPERTENSION GROUP	GAD	2	6.3%
MDD	1	3.1%	
Nil	29	90.6%	

Its shown in our results that psychiatric morbidity is present in up to 29% of hypothyroid patients and 9% of hyper tension group.

#### Type of psychiatric disorders in cases and controls

In cases dysthymia, major depressive disorder (MDD) and generalised anxiety disorder (GAD) was seen. Whereas in controls GAD and MDD was seen.

#### CPRS

Regarding psychopathology it was noticed in the present study that hypothyroidism had more severe psychopathology when compared to hypertension group.

#### Relationship between sociodemographic and clinical variables with psychiatric morbidity in cases and controls

It was found in the present study that sociodemographic and clinical variables did not have any impact on psychiatric morbidity in cases and controls.

## DISCUSSION

The present investigator intends to study the frequency and nature of psychiatric morbidity in hypothyroidism in comparison with hypertension group. We have found that psychiatric morbidity was much higher in the hypothyroid group when compared to hypertension group. It was also found that the psychiatric morbidity was present in 29% of the hypothyroid group. Previous studies done in on the prevalence of psychiatric disorders in hypothyroid group have also found similar results.<sup>10</sup> It was also found in the study that dysthymia, MDD and GAD was seen among patients of hypothyroidism, this finding was replicated in the previous studies like that of David. *et al*<sup>1</sup>, Fabri *et al*<sup>2</sup>, Bono *et al*<sup>3</sup>, Almeida *et al*<sup>4</sup> and Aslan *et al*<sup>5</sup>.

#### Merits

- Study was done using MINI plus and CPRS tools which have good reliability
- Was done by a single rater
- Other medical comorbidities were excluded.

#### Demerits

- Cross sectional study
- Results cannot be generalized
- Specific rating scales could not be used.

## REFERENCES

1. Anthony David, Simon Heminger, Michael D Kopelman, Simon Iovestone, John D Mellers. Endocrine Diseases and Metabolic Disorders. In:Lishman's Organic Psychiatry,A Text book of Neuropsychiatry. 4th ed. Wiley Blackwell Publishing,West Sussex.2009;628-632
2. Ann Goebel Fabri,Gail Musen,Caitlin R Sparks et al.Endocrine and Metabolic Disorders.In:Textbook of Psychosomatic Medicine.Ed. James L.Levenson. The American Psychiatric Publishing, Washington.2005;501-502.
3. Bono G,Fancellu R,Blandini F et al.Cognitive and Affective status in mild Hypothyroidism and Interaction with L-Thyroxine Treatment.Acta Neurologica Scandinavica.2004;110(1)59-66
4. Almeida C, Brasil M, Costa A and Reis F et al. Subclinical hypothyroidism: Psychiatric disorders and symptoms. Revista Brasileira de Psiquiatria. 2007; 29(2):157-159.
5. Aslan S, Ersoy R, Kuruoglu A, Karakoc Aand Cakir N. Psychiatric symptoms and diagnoses in thyroid disorders: a cross-sectional study. International Journal of Psychiatry in Clinical Practice. 2005; 9(3):187-192.
6. Davis J and Tremont G. Neuropsychiatric aspects of hypothyroidism and treatment reversibility. Minerva Endocrinologica.2007; 32(1):49-65.
7. Sheehan D V, Janava J, Baker R, Sheehan K H, Knapp E, Sheehan M. Mini International Neuropsychiatric Interview English Version 5.0.0. University of Florida. Tampa. USA. 2003.
8. Asberg M, Montgomery SA, Perris C, Schalling D, Sedvall G. A Comprehensive Psychopathological Rating Scale. Acta Psychiatrica Scandinavica Supplement.1978;271:5-27
9. Molloy DW, Alemayehu E, Roberts R. Reliability of a standardized Mini Mental State Examination compared with the traditional Mini Mental State Examination. American Journal of Psychiatry.1991; 141(1):102-105.
10. Thvilum M, Brandt F, Almind D, Christensen K, Brix T, Hegedüs L. Increased Psychiatric Morbidity Before and After the Diagnosis of Hypothyroidism: A Nationwide Register Study. Thyroid. 2014; 24(5):802-808.
11. Placidi G, Boldrini M, Patronelli A, Fiore E, Chiovato L, Perugi G et al. Prevalence of Psychiatric Disorders in Thyroid Disease Patients. Neuropsychobiology. 1998; 38(4):222-225.
12. Gulseren S, Gulseren L, Hekimsoy Z, Cetinay P, Ozen C, Tokatlioglu B. Depression, Anxiety, Health-Related Quality of Life, and Disability in Patients with Overt and Subclinical Thyroid Dysfunction. Archives of Medical Research. 2006; 37(1):133-139.

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