



Prevalence of depression among patients with hypothyroidism

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿وَمَا أَرْسَلْنَا مِنْ قَبْلِكَ إِلَّا رَجَالًا نُوحِي إِلَيْهِمْ فَاسْأَلُوا أَهْلَ الذِّكْرِ إِنْ كُنْتُمْ لَا تَعْلَمُونَ﴾

صدق الله العظيم

سورة النحل, الآية 43

Abstract

Background:

The association between depression and thyroid function is well known. Both conditions express many similar symptoms, thus making the diagnosis and treatment difficult.

Aims:

To find the prevalence of depressive symptoms among patients with hypothyroid disease .

Patients and method :

A total of 50 patients diagnosed as hypothyroidism were evaluated using DSM-V criteria for depressive disorders.

Results:

Females constituted 84% of the sample. A total of 58% reported depression based on Dsm –V criteria. The most common symptoms were decrease energy , change appetite and weight , feeling of sadness , loss of interest , change of activity and over sleep .

Conclusions:

Depression is common among patients with hypothyroidism .

Keywords: depression, hypothyroid.

Introduction :

Reduced production of thyroid hormone is the central feature of the clinical state termed hypothyroidism. Permanent loss or destruction of the thyroid, through processes such as autoimmune destruction, referred to as Hashimoto disease, or irradiation injury, is described as primary hypothyroidism. [1,2]

Depression (major depressive disorder) is a common and serious medical illness that negatively affects patient feeling , the way he think and act. Fortunately, it is also treatable. Depression causes feelings of sadness and/or a loss of interest in activities once enjoyed. It can lead to a variety of emotional and physical problems and can decrease a person's ability to function at work and at home.[3]

Signs and symptoms common to both depression and hypothyroidism are given below.[4]

hypothyroidism	depression	both
Cold intolerance	Weight loss	Depressed mood
hyperlipidemia	Sleep disturbance	apathy
Brittle and dry hair	Decreased appetite	Emotional lability
Hair loss		Decreased appetite
Dry and thick skin		Increased sleep
Delayed reflexes		Weight gain
myxedema		Fatigue
Decreased basal metabolic rate		anergia
anemia		Poor concentration
menorrhagia		Memory complaint
goiter		Mental slowing
		Diminished libido
		delusions

Thyroid hormone (TH) has important actions in the adult brain. Varying degree of psychiatric symptoms/disorders is common in patients with thyroid dysfunction both hypo- and hyper-thyroidism.

Thyroid dysfunctions have been recognized to cause significant manifestations in mental health. They may lead to disturbances in emotions and cognition. Both increase and decrease in thyroid function can cause mood abnormalities. Vice versa, depression can also go hand in hand with subtle thyroid dysfunctions.[5]

Before prescribing any antidepressant, almost all doctors must go for the thyroid function tests. Even mild cases of hypothyroid state can cause depression.[6,7]

One of the most common mistakes which happen is that the concerned doctors fail to look for any psychiatric comorbidity in such patients. Many studies have revealed that there are significantly deranged levels of T3, T4, and thyroid-stimulating hormone (TSH) in patients of depression.[8,9] Mood and anxiety disorders have higher prevalence in patients with thyroid dysfunction.[10] Another study showed a prevalence of depression in 20.5% of the patients of hypothyroidism.[11]

Psychiatric manifestations usually appear first in cases of hypothyroidism. They form about 2–12% of the initial symptoms in about all of the reported cases. Initially, it starts with anxiety, memory lapses, progressive mental slowing, and speech deficits.[12,13]

TH has an effect on central nervous system (CNS) through the entire life. It regulates gene expression in myelination, differentiation of neuronal and glial cells, and neuronal viability and function. THs play a role in normal neurological development.

It stimulates the development of neuronal processes, axons, and dendrites, increases the rate of neuronal proliferation, and it acts as a time clock. THs effect on serotonin (5-hydroxytryptamine [5-HT]) is explained by desensitization of 5-HT_{1A} autoreceptor at the site of raphe nuclei which probably results in an increase in the release of serotonin from raphe neurons.[14,15,16].

Aims:

To find the prevalence of depressive disorders among patients with hypothyroid.

Patients and methods:

Design:

A cross-sectional study was conducted at Immamain alkadymain teaching hospital at baghdad city . The study was conducted for 4 months(1-11-2018) to (1-3-2019), After obtaining informed consent.

Sample:

a total of 50 patients were randomly selected, those fulfilled the inclusion and exclusion criteria, were recruited for the study. All patients were referred from endocrine department.

Inclusion criteria:

- Patients who gave informed consent.
- Patients with known case of hypothyroidism.
- Age above 18.

Exclusion criteria:

- Patients with a history of depressive disorder before being diagnosed as Hypothyroid.
- Patients with other psychiatric disorders .
- Patients with comorbid chronic medical illness except hypothyroidism.

The objectives of the study were explained to all patients . informed consent was obtained from the patients. The patients were assessed using the following tools:

- personal information of the patients was obtained using a semi-structured proforma specially designed for the study.
- DSM-V criteria were used to detect presence of depression.(see the appendix)

Results :

Personal history shows a total of 84% female constituted the study sample (table 2), Majority of the patients were within the age range of 30–40 years 44% (table1), most of the patients 68% are married (table3), 78% were above the level of primary school (table 4). The most common symptoms were decrease energy 90% , change appetite and weight 82% , feeling of sadness 70%, loss of interest 70%, change of activity 62% and over sleep 60% (table5). of the 50 patients that were included in the study 29(58%) patient were positive for the criteria (table 6). Majority of male and female patients that were positive for the criteria were within the age of 30-40 years(table 7).

Table(1) : age distribution of patients:

age	male	female	total
20-30	2(4%)	9(18%)	11(22%)
30-40	4(8%)	18(36%)	22(44%)
40-50	2(4%)	15(30%)	17(34%)
Total number	8(16%)	42(84%)	50(100%)

Table (2) : gender distribution of the patients:

gender	Number of patients
male	8(16%)
Female	42(84%)
total	50(100%)

Table (3): The marital state of the patients :

Marital state	Male	female	total
Single	3(6%)	12(24%)	15(30%)
Married	5(10%)	29(58%)	34(68%)
Divorced	0(0%)	1(2%)	1(2%)
Total number	8(16%)	41(82%)	50(100%)

Table (4): Level of education of the patients :

level	male	female	total
Not educated	0 (0%)	0(0%)	0(0%)
Primary school	3(6%)	8(16%)	11(22%)
Secondary school	2(4%)	19(38%)	21(42%)
graduated	3(6%)	10(20%)	13(26%)
Post graduate	0(0%)	5(10%)	5(10%)

Table (5): DSM-V criteria results and its distribution among male and female.

criteria	male	female	total
Feeling of sadness	7	28	35
Felling of worthless	4	15	19
Loss of interest	7	28	35
Difficult thinking	7	19	26
Decrease energy	7	38	45
Change appetite and weight	5	36	41
oversleep	6	24	30
Thought of death ,suicide	1	8	9
Change of activity	6	26	32

Table (6) : gender distribution of patients that fulfil the DSM-V criteria :

Dsm-v criteria	male	female	total
positive	5(62%)	24(69%)	29(58%)
negative	3(38%)	18(31%)	21(42%)

Table (7): age distribution of male and female patients with positive DSM-V :

age	Male +	Female +	total
20-30	1	8	9
30-40	3	10	13
40-50	1	6	7

Discussion:

In our study, the major share of patients (n = 22) was of the age group 30-40 years. Of which, 18 were female and 4 were male. This suggests the prevalence of hypothyroidism is more common in females of older age group. These findings are similar to the results of the study conducted by Redmond [17] in 2002 and Chaudhary et al.[18] in 2014.

According to our study (58%) of the patients were positive for depression, Similarly, Pies [19] in 1995 and Chaudhary et al.[20] in 2014 had reported similar findings, stating that depression was prevalent in 28–50% and 63% of the sample size, respectively. Saltevo et al.[21] had suggested a much lower prevalence of depression in such population (males – 12.5% and females – 17.5%).

Persons with hypothyroidism are at a risk of depression and have also been suggested by several authors.[22,23,24,25] Hence, our study also is in concordance with the previous data regarding the comorbidity of depression and hypothyroidism as 58%.

The results of the study by Thvilum et al.[26] showed that the patients with hypothyroidism are at increased risk of being diagnosed with psychiatric disorders both before and after the diagnosis of hypothyroidism and being treated with antidepressants. Kalra and Balhara [27] had suggested that thyroxine replacement as a monotherapy fails to achieve total remission; whereas the STAR*D trial had suggested that if all fail, add some thyroid as an augmentation to antidepressant;[28] hence, a biopsychosocial-based intervention should be used for the patients treated for hypothyroidism as suggested by Brown et al.[29].

CONCLUSIONS:

This study found that depression is highly prevalent among patients with hypothyroidism and this goes with the results of other studies regarding this subject.

Recommendations:

- For endocrinologists: Any patient on treatment for hypothyroidism not improving or not able to attain pre-morbid lifestyle must be screened for depression symptoms using any of the rating scales and managed accordingly
- For psychiatrists: Any patient seeking treatment for depression, not responding to standard dosages of medication or requiring more than usual dosages of the psychotropic drugs, should be screened for the thyroid status.

Appendices:

Questionnaire

Name	
Age	
Gender	
Social state	
Education	
Residency	
Occupation	

DSM-V Criteria for Major Depressive Disorder (MDD)

Feeling of sadness	yes	no
Loss of interest and pleasure	yes	No
Feeling of worthless	yes	no
Difficulty in thinking or making decisions	yes	no

Decreased energy ,fatigue	yes	no
Change in appetite and weight	yes	no
Oversleep	yes	no
Thought of death ,suicide	yes	no
Change of activity	yes	no

Other physical disorders :

Other psychiatric illness :

Any other drugs :

DSM-V Criteria for Major Depressive Disorder (MDD)

- Depressed mood or a loss of interest or pleasure in daily activities for more than two weeks.
- Mood represents a change from the person's baseline.
- Impaired function: social, occupational, educational.
- Specific symptoms, at least 5 of these 9, present nearly every day:
 1. **Depressed mood or irritable** most of the day, nearly every day, as indicated by either subjective report.
(e.g., feels sad or empty) or observation made by others (e.g., appears tearful).
 2. **Decreased interest or pleasure** in most activities, most of each day.
 3. **Significant weight change (5%) or change in appetite.**

4. **Change in sleep:** Insomnia or hypersomnia.
5. **Change in activity:** Psychomotor agitation or retardation.
6. **Fatigue or loss of energy.**
7. **Guilt/worthlessness:** Feelings of worthlessness or excessive or inappropriate guilt.
8. **Concentration:** diminished ability to think or concentrate, or more indecisiveness.
9. **Suicidality:** Thoughts of death or suicide, or has suicide plan.

References:

1. Vaidya B, Pearce SH. Management of hypothyroidism in adults. *BMJ*. 2008;337:a801.
2. Almandoz JP, Gharib H. Hypothyroidism: etiology, diagnosis, and management. *Med Clin North Am*. 2012;96:203-221
3. Gold MS, Pottash AL, Extein I. Hypothyroidism and depression. Evidence from complete thyroid function evaluation. *JAMA*. 1981;245:1919–22. [PubMed]
4. Tremont G, Stern RA, Westervelt HJ, Bishop CL, Davis JD. Neurobehavioral functioning in thyroid disorders. *Med Health R*. 2003;86:318–22. [PubMed]
5. Wolkowitz OM, Rothschild AJ. *Psychoneuroendocrinology: The Scientific Basis of Clinical Practice*, American Psychiatric. 1st ed. Washington, DC, USA: American Psychiatric Publishing, Inc.; 2003. pp. 419–44.
6. Davidoff F, Gill J. Myxedema madness: Psychosis as an early manifestation of hypothyroidism. *Conn Med*. 1977;41:618–21. [PubMed]
7. Gold MS, Pottash AL, Extein I. Hypothyroidism and depression. Evidence from complete thyroid function evaluation. *JAMA*. 1981;245:1919–22. [PubMed]
8. Boral GC, Ghosh AB, Pal SK, Ghosh KK, Nandi DN. Thyroid function in different psychiatric disorders. *Indian J Psychiatry*. 1980;22:200–2. [PMC free article] [PubMed]
9. Saxena J, Singh PN, Srivastava U, Siddiqui AQ. A study of thyroid hormones (T3, T4& TSH) in

patients of depression. *Indian J Psychiatry*. 2000;42:243–6. [PMC free article] [PubMed]

10. Placidi GP, Boldrini M, Patronelli A, Fiore E, Chiovato L, Perugi G, et al. Prevalence of psychiatric

disorders in thyroid diseased patients. *Neuropsychobiology*. 1998;38:222–5. [PubMed]

11. Gupta S, Saha PK, Mukhopadhyay A. Prevalence of hypothyroidism and importance of cholesterol

estimation in patients suffering from major depressive disorder. *J Indian Med Assoc*. 2008;106:240–2.

[PubMed]

12. Hall RC, Stickney S, Beresford TP. Endocrine disease and behaviour. *Integr Psychiatry*. 1986;4:122–

35.

13. Popkin MK, Mackenzie TB. Psychiatric presentations of endocrine dysfunction. In: Hall RC,

editor. *Psychiatric Presentations of Medical Illness*. New York: Spectrum Books; 1980. pp. 142–3.

14. Bauer M, Heinz A, Whybrow PC. Thyroid hormones, serotonin and mood: Of synergy and

significance in the adult brain. *Mol Psychiatry*. 2002;7:140–56. [PubMed]

15. Smith JW, Evans AT, Costall B, Smythe JW. Thyroid hormones, brain function and cognition: A brief

review. *Neurosci Biobehav Rev*. 2002;26:45–60. [PubMed]

16. Bernal J, Nunez J. Thyroid hormones and brain development. *Eur J Endocrinol*. 1995;133:390–8.

[PubMed]

17. Redmond GP. Hypothyroidism and women's health. *Int J Fertil Womens Med*. 2002;47:123–7. [PubMed]
18. Chaudhary R, Chabra S, Singla M, Mishra BP, Sharma A. Psychiatric morbidity among hypothyroid patients – A hospital based study. *Delhi Psychiatry J*. 2014;17:35–8.
19. Pies RW. Women, mood, and the thyroid. *Women Psychiatry Health*. 1995;4:4–10.
20. Saltevo J, Kautiainen H, Mäntyselkä P, Jula A, Keinänen-Kiukaanniemi S, Korpi-Hyövälti E, et al. The relationship between thyroid function and depressive symptoms-the FIN-D2D population-based study. *Clin Med Insights Endocrinol Diabetes*. 2015;8:29–33. [PMC free article] [PubMed]
21. Kvetny J, Ellervik C, Bech P. Is suppressed thyroid-stimulating hormone (TSH) associated with subclinical depression in the Danish General Suburban Population Study? *Nord J Psychiatry*. 2015;69:282–6. [PubMed]
22. Ittermann T, Völzke H, Baumeister SE, Appel K, Grabe HJ. Diagnosed thyroid disorders are associated with depression and anxiety. *Soc Psychiatry Psychiatr Epidemiol*. 2015;50:1417–25. [PubMed]
23. Cosci F, Fava GA, Sonino N. Mood and anxiety disorders as early manifestations of medical illness: A systematic review. *Psychother Psychosom*. 2015;84:22–9. [PubMed]
24. Blum MR, Wijsman LW, Virgini VS, Bauer DC, den Elzen WP, Jukema JW, et al. Subclinical thyroid dysfunction and depressive symptoms among elderly: A prospective cohort study. *Neuroendocrinology*. 2015 DOI: 10.1159/000437387. [Epub ahead of print] [PubMed]
25. Thvilum M, Brandt F, Almind D, Christensen K, Brix TH, Hegedüs L. Increased psychiatric morbidity before and after the diagnosis of hypothyroidism: A nationwide register study. *Thyroid*. 2014;24:802–8. [PubMed] [Google Scholar]
26. Kalra S, Balhara YP. Euthyroid depression: The role of thyroid hormone. *Recent Pat Endocr Metab Immune Drug Discov*. 2014;8:38–41. [PubMed] [Google Scholar]

27. Huynh NN, McIntyre RS. What are the implications of the STAR*D trial for primary care? A review and synthesis. *Prim Care Companion J Clin Psychiatry*. 2008;10:91–6. [PMC free article] [PubMed] [Google Scholar]

28. Brown BT, Graham PL, Bonello R, Pollard H. A biopsychosocial approach to primary hypothyroidism: Treatment and harms data from a randomized controlled trial. *Chiropr Man Therap*. 2015;23:24. [PMC free article] [PubMed] [Google Scholar].