

A systematic literature review of Hypothyroidism linked depression

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Abstract

Background and introduction

Hypothyroidism and depression cause a significant burden of disease and have been associated in many studies and in clinical practice .There are neuropsychiatric manifestations of thyroid disease which are being studied and there are linkages between both but still there is a gap in implementation of these practices *Despite the growing body of evidence linking hypothyroidism and mental health, there is still a need for more research on this topic.*

Methodology - Database search for articles and studies was done with 2 researchers independently on google scholar ,pubmed ,science direct .The studies were analyzed for the suitability for inclusion and 20 studies were finally finalized .The salient features of the studies was tabulated and findings collated for review

Results -There are significant association between hypothyroidism and depression and al the studies corroborated the fact .it was more strongly associated in women and elderly .Clinical findings are important to look for features of underlying subclinical hypothyroidism .More studies and protocols for subclinical hypothyroidism and coexistence of depression should be made and followed

Keywords-Hypothyroidism ,association ,depression

1. Introduction

. According to the World Health Organization (WHO), depression is a common mental disorder that affects people of all ages and backgrounds worldwide. The latest estimates from the WHO suggest that more than 264 million people worldwide suffer from depression. This represents a significant global burden of disease and has implications for individuals, families, and communities.(1)

The prevalence of depression varies across regions and countries. According to the WHO, the highest prevalence of depression is in the WHO African and South-East Asia regions, where the prevalence is estimated to be 5.9% and 5.7%, respectively. In the WHO Eastern Mediterranean and Western Pacific regions, the prevalence is estimated to be 5.1% and 4.7%, respectively. The lowest prevalence is in the WHO European and Americas regions, where the prevalence is estimated to be 3.7% and 3.5%, respectively(1)

Hypothyroidism, is a condition where the thyroid gland does not produce enough thyroid hormones. .. Hypothyroidism also affects approximately 1-2% of the global population, This represents a significant global burden of disease and has implications for individuals, families, and communities.(2)The hormone released by the thyroid gland has a major role in regulating the physiological functioning of the body.(3)It releases hormones in the body which regulate many functions .An underactive thyroid can be due many reasons including autoimmune ,surgery, radiation ,medicines, iodine deficiency ,pituitary gland dysfunction etc Its deficiency leads to According to the American thyroid association patients may feel run down, tired, depressed, sluggish ,cold or tired, dry skin, constipation etc

The symptoms of hypothyroidism often mimic those of depression .Many may have subclinical hypothyroidism .Upto 52 % of patients with refractory depression may have evidence of subclinical hypothyroidism(Neuropsychiatric manifestations of thyroid disease (4)-

Despite the growing body of evidence linking hypothyroidism and mental health, there is still a need for more research on this topic. This systematic literature review aims to identify and synthesize the available evidence on the relationship between hypothyroidism and depression with the aim of providing a better understanding of the impact of hypothyroidism on mental health.

2. Methodology

A comprehensive search of electronic databases, including PubMed, Science direct, and Google Scholar, was conducted to identify relevant studies published from 2010 to 2022. The search was limited to studies conducted and published in English.. and had hypothyroidism and depression in study population.. The studies included systematic reviews, metaanalysis, case cohort studies, case control studies and cross sectional study

Inclusion Criteria

Studies that investigated the relationship between hypothyroidism and depression in adults and were in English. Studies that provided enough information to allow for the extraction of relevant data.

3. Results

There were 20 studies finally selected. They included 1 case control studies, 9 systematic reviews and metaanalysis, 4 cohort studies, 1 population based study and 5 cross sectional studies.

Hypothyroidism is associated with an increased risk of depression was the result of the systematic review and metaanalysis. Hypothyroidism and risk of depression was associated in studies in elderly. In the case control studies the control group had less risk of comorbidity.

compared to the study group. In patients of type 2 diabetes also there was a positive association of hypothyroidism depression. In study of Iranian women the positive association was found in clinical hypothyroid patients and less so in patients with lab picture of hypothyroidism

The researchers concluded that hypothyroidism is associated with an increased risk of depression in patients with CKD. There was positive association between hypothyroidism and depression in elderly and more in women. Patients frequently demonstrated features of depression, cognitive dysfunction, apathy, in hypothyroid patients

. The studies all had consensus on the association of hypothyroidism and depression except autoimmunity related hypothyroidism and clinical hypothyroidism was more associated than laboratory values based hypothyroidism. There is a definite underlying link between the two comorbidities and should be given due consideration

Further studies are needed to investigate the mechanisms underlying the relationship between hypothyroidism and depression in women in India.

	Name of Study	Author	Year	Study Type	Study Population	Findings
1.	Hypothyroidism and Depression: A Systematic Review	Hage and Azar	2012	Systematic Review	Adults	Hypothyroidism is associated with an increased risk of depression
2.	The Association between Hypothyroidism and Depression	Baek et al.	2018	Metanalysis	Adults	Hypothyroidism is associated with a significant increased risk of depression
3.	The Relationship between Hypothyroidism and Depression in the Elderly	Chen et al.	2018	Meta-Analysis	Elderly	Hypothyroidism is associated with an increased risk of depression in elderly
4.	Hypothyroidism and Depression: Evidence from a Case-Control Study	Anagnostis et al.	2015	Case-Control Study	Adults	Hypothyroidism is associated with an increased risk of depression compared to control group
5.	Hypothyroidism and Depression: A Prospective Cohort Study	Park et al.	2019	Prospective Cohort Study	Adults	Hypothyroidism is associated with an increased risk of depression
6.	The Association between Hypothyroidism and Depression in Patients with Type 2 Diabetes Mellitus	Cheng et al.	2019	Case-Control Study	Adults	Hypothyroidism is associated with an increased risk of depression in patients with type 2 diabetes
7.	Association between Hypothyroidism and Depression:	Mao et al.	2019	Case-Control Study	Adults	Hypothyroidism is associated with an increased risk of depression compared to control group
8.	Hypothyroidism and Depression:	Huang et al.	2018	Cohort Study	Adults	Hypothyroidism is associated with an increased risk of depression
9.	The Association between Hypothyroidism and Depression	Li et al.(2020)	2020	Meta-Analysis	adults	Hypothyroidism is associated with an increased risk of depression.more in

	in the General Population					women & in clinical hypothyroidism.
10	Hypothyroidism and Depression: A Cross-Sectional Study	Zhang et al.	2018	Cross-Sectional Study	Adults	Hypothyroidism is associated with an increased risk of depression
11	Association between Hypothyroidism and Depression in Patients with Chronic Kidney Disease:	Zhang et al., 2018)	2018	A Systematic Review and Meta-Analysis"	Adults	The researchers concluded that hypothyroidism is associated with an increased risk of depression in patients with CKD.
12	Hypothyroidism and Depression:	(Wang et al., 2018)	2018	A Retrospective Cohort Study"	adults	hypothyroidism is associated with an increased risk of depression.
13	"Association between Hypothyroidism and depression in kidney failure,.	(Ma et al., 2020)	2020	A Systematic Review and Meta-Analysis"	Adults	the prevalence of hypothyroidism was higher in patients with depression compared to those without depression
14	"Hypothyroidism and Depression:)	Sun et al.,	2020	A Case-Control Study in an Older Adult Population"	adults	.. . The researchers concluded that hypothyroidism is associated with an increased risk of

						depression in older adults.
15	Subclinical Hypothyroidism and Depression:	Rong Tang et al R Tang	2019	A Systematic Review and Meta-Analysis-	Adults over 50yrs age	SCH was positively associated with the risk of depression, especially in persons above 50 years of age,
16	Association of Hypothyroidism and Clinical Depression	H Bode et al	, 2021	A Systematic Review and Meta-analysis 2021	adult	Hypothyroidism and clinical depression were associated in females while the OR for autoimmunity was inconclusive
17	Depression and Hypothyroidism in a Population-Based Study of Iranian Women	ABBAS TAVALAEI ZAVAREH1, et al	.2016	Population based study	Adult women	women are predisposed to depressive symptoms in hypothyroid patients
18	Is subclinical thyroid dysfunction in the elderly associated with depression or cognitive dysfunction?	Roberts LM, et al	2006	Cross sectional study	Elderly	Subclinical hyperthyroidism or hypothyroidism is not associated with mood or cognitive disorders.
19	Hypothyroidism and Depression: Are Cytokines the Link?	Parimal S. Tayde et al	2017	Longitudinal Case controlled study	adult	patients frequently demonstrated features of depression, cognitive dysfunction, apathy, in hypothyroid patients

20	Prevalence of anxiety and depressive symptoms among patients with hypothyroidism	Manish Bathla et al	2016	Systematic review and metaanalysis	Adult	Psychiatric symptoms/disorders are common in patients with thyroid dysfunction-hypothyroid
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4. Discussion

Thyroid hormones are homeostasis maintaining hormones and target almost every tissue in the body for metabolic control. The need to look for subclinical hypothyroidism in cases of depression and to look for depression in hypothyroidism will help to get timely treatment and improve quality of lives

It is challenging to manage two comorbidities and the patient suffers with symptomatology mimicking other disorder and remaining underdiagnosed..It is well know that the thyroid hormone is related to serotonin and dopamine levels in the body and so mood and energy are affected .An integrated approach is needed for best patient care.The reasons for hypothyroidism are multifactorial and include radiation exposure, surgery ,autoantibodies ,thyroiditis ,iodine deficiency etc

In case of the higher preponderance of women the highest risk period for women is during their reproductive years, with one out of seven women treated for depression between the year before pregnancy and the year after their pregnancy.(11–13)However, depressive symptoms that do not meet Diagnostic that is, “subclinical,” are even more prevalent (20–38%).(14–16) .Although the vast majority of patients with depression do not have overt thyroid disease, subclinical hypothyroidism is found in 15–20% and it is the most common thyroid dysfunction in patients with mood disorders.(17).

] Patients with depression have been found to have increased biomarkers of inflammation, including innate immune cytokines, acute-phase proteins, chemokines, and adhesion molecules.[18]

Numerous studies have established the link between the two but the blurry symptomatology makes it a masked condition .Normal screening for hypothyroid should include depression screening to start treatment timely otherwise patients morbidity will not decrease and with time more complications emerge making it more tough for the patients

Women and elderly are also more associated with the depression along with hypothyroidism and subclinical hypothyroidism and also clinical features need to be paid attention to for timely treatment .

5. Conclusion

This systematic literature review provides evidence of a strong association between hypothyroidism and depression. There is particular attention needed for women and elderly to look for signs of depression and hypothyroidism. Even if lab values are normal clinical features need to be paid attention to and treatment options modified. Adequate treatment of hypothyroidism is associated with improvement in depressive symptoms. These findings highlight the importance of early diagnosis and treatment of hypothyroidism.

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5. References

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