Original Article

Prevalence and Determinants of Depression among Hypothyroidism Patients in Aseer Region, Southern Saudi Arabia

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Abstract

Background: Neuropsychiatric disorders constitute about 14% of the total worldwide burden of morbidity. Depression, as the commonest chronic neuropsychiatric illness, could cause a low quality of life. As depression is always linked to changes in the hypothalamic-pituitary-thyroid (HPT) axis, studies proved its significant relation with evident hypothyroidism. **Aim:** The present study intended to measure the prevalence and predictors of depression among patients with hypothyroidism in the Aseer region, southern Saudi Arabia. **Methods:** A descriptive, cross-sectional study was carried out for three months during the period from 15th March 2019 to 15th June 2019, to estimate the prevalence of depression among hypothyroid patients attending endocrinology clinics in Armed Forces Hospital. Data were collected using a direct interview questionnaire which covered patients' personal, clinical, and medication data. Depression assessment was done based on the Patients Health Questionnaire (PHQ-9). **Results:** The current study included 395 patients aged between 18 and 80 years old with a mean age of 40±13 years old, from which, 321 (81.3%) cases were females. Depression was recorded among 341 hypothyroid cases (86.3%) whose 33.7% had a major depressive disorder. **Conclusion:** In conclusion, the current study strengthened the clue of the association between hypothyroidism and depression disorders. The majority of cases had depression symptoms which might be severe in some of them. More studies are needed with a large scale sample to keep the foot in this ambiguous association.

Keywords: Depression, Hypothyroidism, Depressive disorders, Thyroid hormones, Psychological disorder, Predictors, Mood changes, Thyroid profile

Introduction

Hypothyroidism which is called underactive thyroid or low thyroid is an endocrinal disorder that is characterized by a defect in the production of enough thyroid hormone by the thyroid gland [1-3]. Hypothyroidism is presented by many symptoms including the poor ability to tolerate cold, a feeling of tiredness, constipation, psychological disturbance, and weight gain [4-6]. Few cases with hypothyroidism had a swelling of the front part of the neck due to goitre [7]. An untreated hypothyroidism during pregnancy can lead to delays in growth and intellectual development in the baby or congenital iodine deficiency syndrome [6].

Depression is a condition characterized by low mood and lack of desire for activity [8, 9]. Depression disorder can affect many human aspects including a person's thoughts, behavior, motivation, feelings, and well-being perception [10, 11]. It could feature unhappiness, troubles in rationality, and attention with a significant change in appetite and sleeping hygiene [12]. Depression may yield spirits of sadness and uselessness which may end with suicidal thoughts. The basic manifestation of depression is known as anhedonia, which means loss of concern and preference in some actions that habitually carry happiness to persons [13, 14].

It was reported that there is a link between thyroid hormone roles and psychiatric illnesses, mainly mood disorders. This association was reported for about two centuries. In 1825, Parry noticed the greater occurrence of nervous affectations among cases with thyroid disorders. Besides, Asher in 1949 initiated the medical term "myxedema madness" to refer to

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the psychological state of cases of hypothyroidism [15]. Many factors stand behind emerging depression in hypothyroid patients, among which is the presence of comorbidity, personal characteristics, stressful life events, and the quantity of thyroid-stimulating hormone (TSH) [16].

To the best of the authors' knowledge, the studies conducted to estimate the frequency of depression in hypothyroid gland disorders cases worldwide, and especially in Saudi Arabia are few [17]. The present study aimed to measure the prevalence and pattern of depression among patients with hypothyroidism in the Aseer region, southern Saudi Arabia.

Methodology

A descriptive, cross-sectional study, carried out for three months during the period from 15th March 2019 to 15th June 2019, to estimate the prevalence rate of depression in hypothyroid disorder cases attending endocrinology clinics in The Armed Forces Hospital which is the main tertiary hospital in Khamis Mushait city in Aseer provenance, the southern region of Saudi Arabia. Young patients (below 18 years old) and those with a past or family history of psychiatric disorder, cancers, or end-stage diseases were excluded. Data were collected using a direct interview questionnaire which covered patients' personal, clinical, and medication data. Depression assessment was done based on the Patients Health Questionnaire (PHQ-9) which is a valid screening tool for screening and monitoring mood disorders. The tool recorded a sensitivity of 61% and specificity of 94%. PHQ-9 includes 9 queries with answers ranging from 0 (never practiced before) to 3 (practiced almost daily), that finally, the patient will have a total score out of 27. The depression severity is classified as no, mild, moderate, moderately severe, and severe [17]. An authenticated Arabic form of PHQ-9 was used [18].

Data Analysis

After collecting the data, it was reviewed and entered into statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). Statistical analysis was carried out using a suitable test of significance. A P-value of less than 0.05 was considered to be statistically significant. Descriptive statistics were applied for all variables including demographic data, clinical data, and type of treatment and depression pattern. Univariate relations between patients' bio-clinical data and depression disorder, and between depression and coping with difficulties were tested using the Persons chi-square test.

Results

The current study included 395 patients aged between 18 and 80 years old, with a mean age of 40±13 years old, from which, 321 (81.3%) were females and 77.5% had received their treatment for hypothyroidism before the past two weeks. About 52% of the cases had received the treatment for more than 3 years and symptoms were the same after treatment among 60.8% of the cases (Table 1).

Regarding the prevalence of depression among the sampled hypothyroid cases, it was recorded that among 341 cases (86.3%), 33.7% had the major depressive disorder and 52.7% had other depression types (Figure 1). Regarding the severity and consequences of depression (Table 2), 26.7% of the cases had mild depression, 32.6% had moderate depression, and 40.8% had a severe degree of depression. As for coping with difficulties, 56.5% of the cases had some difficulties in coping ability.

Table 3 demonstrates the relationship between depression and patients' bio-demographic data. About 88% of the young aged cases had depression disorder compared to 84.7% of patients aged above 50 years without recorded statistical significance. As for gender, depression was recorded among 88.2% of the females compared to 78.4% of males with recorded statistical significance (P=.027). Besides, 91.4% of the cases who had persistent symptoms with treatment had depression disorder compared to 75.8% of those who did not have (P=.001). Receiving treatment and treatment duration had no significant association with depressive psychological status.

Discussion

Hypothyroidism is associated with depression. It was proved that certain thyroid disorders trigger disturbing illness and psychosomatic conditions. Depressive cases possess an increased prevalence of hypothyroidism and hypothyroidism cases to have an increased prevalence of depressive syndrome [19].

Both hypothyroidism and depression share some clinical features and so the term "brain hypothyroidism" was emerged to explain the mechanism of depression [20].

An incidence of about 20% of a raised level of antithyroid antibodies was reported in depression cases in numerous reports corresponding to 5–10% incidence in the overall community [21]. Thyroid hormones have been utilized as a helper to antidepressant treatment 40 years ago to accelerate clinical response to antidepressants (synergism) and to aggravate the medical effect among non-responders to antidepressants (augmentation) [22]. Despite numerous studies, the relationship between thyroid hormone level and depression remains questionable [23].

On the level of Saudi Arabia, and especially the southern region as a part, there's no available data regarding the relationship between depression and hypothyroidism as prevalence or even the association in-between these two conditions. Therefore, the current study aimed to provide relevant data that will enhance the treatment of depression and provide physicians with proper management in patients having hypothyroidism concomitant with depression. The

study revealed that the majority of hypothyroid patients had depressive disorder (more than 80%) and one-third of which had major depression which was severe among nearly half of the cases. Depression was more recorded among females at a young age with an active hypothyroid state. Logically, females at a young age had less coping ability regarding tolerating symptoms which reduced their activity that they needed more rest and lack of feeling luxury and all these were against their nature. It was proved that more than two-thirds of the cases of depression had the poor coping ability for faced troubles (Table 4).

During the last century, a researcher named Asher described the relation between hypothyroidism and absurdity in 14 clinical cases, and named it 'myxedema madness'. He completely reported that a melancholic state is demonstrable in Hypothyroidism that could easily be inversed with the use of thyroid hormones [24]. Bathla M. et al., 2016 [25] conducted a study and concluded that people with hypothyroidism reported a high incidence of psychiatric symptoms/disorders. This was a gender-based study and included anxiety and depressive manifestations, the commonest mood troubles recorded in males, and gastrointestinal physical manifestations which were common in females.

Additionally, many studies were conducted and failed to prove this relation between hypothyroid status and psychological or mood disturbance [26-29].

Another two types of research on geriatrics in the UK [30] and Australia (on males) [31] reported no relationship with depression in 5,857 and 3,932 respondents, correspondingly.

Clinicians previously noticed by experiencing the link between thyroid and depression. While cases with hypothyroidism typically exist with symptoms and signs of depression, hyperthyroidism manifested by numerous neuropsychiatric disorders comprises depression and anxiety.

Conclusions and Recommendations

In conclusion, the current study strengthened the clue of the association between hypothyroidism and depression disorders. The majority of cases had depression symptoms which might be severe in some of them. The highest magnitude was recorded among females at a young age with un-tolerated hypothyroid symptoms. Hypothyroid patients should be screened for psychological disorders routinely and periodically for early detection and management. More studies are needed with a large scale sample to keep the foot in this ambiguous association.

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Table 1. Bio-demographic Data of Patients with Hypothyroidism in Aseer Region, Saudi Arabia

Bio-demographic Data		No	%
Age in Years	< 30 years	90	22.8%
	30-	113	28.6%
	40-	94	23.8%
	50+	98	24.8%
Gender	Male	74	18.7%
	Female	321	81.3%
Used a Treatment for Hypothyroidism before the Past Two Weeks	No	89	22.5%
	Yes	306	77.5%
Duration of Treatment in Years	< 1 year	70	22.9%
	1-	51	16.7%
	2-	25	8.2%
	3+	160	52.3%
Symptoms Still Persistent after Treatment	No	120	39.2%
	Yes	186	60.8%

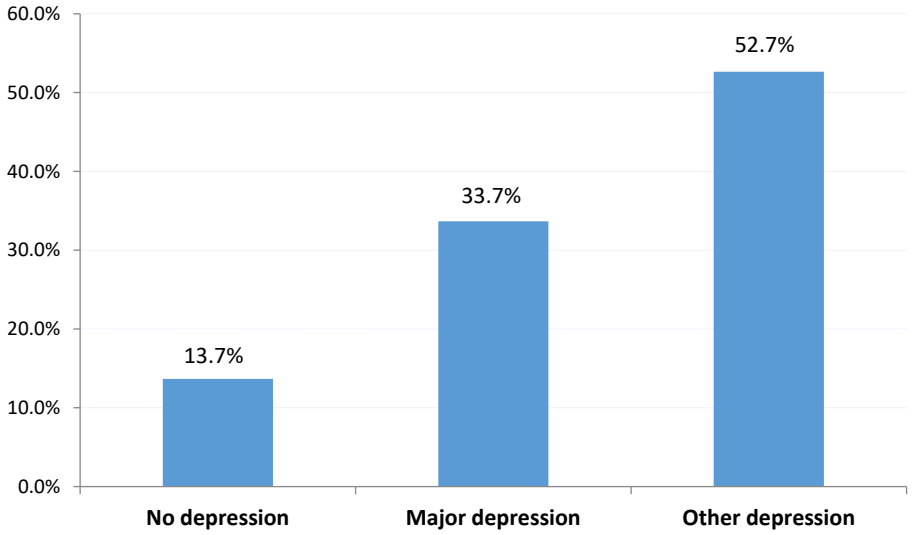

Figure 1. Prevalence of Depression among Patients with Hypothyroidism in Aseer Region, Saudi Arabia

Table 2. Severity and Effect of Depression among Patients with Hypothyroidism in Aseer Region, Saudi Arabia

Severity and Effect	No	%
Severity (n=341)		
Mild	91	26.7%
Moderate	111	32.6%
Moderately Severe	91	26.7%
Severe	48	14.1%
If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?		
Not difficult at all	172	43.5%
Somewhat difficult	145	36.7%
Extremely difficult	78	19.7%

Table 3. Distribution of Depression among Hypothyroid Patients by their Bio-demographic Data, Saudi Arabia

Bio-demographic Data		Depression				P-value
		Free (N=54)		Depression (N=341)		
		No	%	No	%	
Age in Years	< 30 years	11	12.2%	79	87.8%	.940
	30-	15	13.3%	98	86.7%	
	40-	13	13.8%	81	86.2%	
	50+	15	15.3%	83	84.7%	
Gender	Male	16	21.6%	58	78.4%	.027*
	Female	38	11.8%	283	88.2%	
Used a Treatment for Hypothyroidism before the Past Two Weeks	No	9	10.1%	80	89.9%	.267
	Yes	45	14.7%	261	85.3%	
Duration of Treatment in Months	< 1 year	7	10.0%	63	90.0%	.207
	1-	12	23.5%	39	76.5%	
	2-	3	12.0%	22	88.0%	
	3+	23	14.4%	137	85.6%	
Symptoms Still Persistent after Treatment	No	29	24.2%	91	75.8%	.001*
	Yes	16	8.6%	170	91.4%	

P: Pearson X^2 test
* P < 0.05 (significant)

Table 4. Effect of Depression on Patients Coping with Problems

Difficulty of Coping with Problems	Depression				P-value
	Free (N=54)		Depression (N=341)		
	No	%	No	%	
Not difficult at all	46	85.2%	126	37.0%	.001*
Somewhat difficult	5	9.3%	140	41.1%	
Extremely difficult	3	5.6%	75	22.0%	

P: Pearson X^2 test
* P < 0.05 (significant)