



The Awareness Study of Thyroid Diseases among Iraqi Patients

BADEA'A THAMER YAHYA

Department of Family and Community Medicine, Medical College, University of Anbar, Iraq
Med.badeaa.thamer@unanbar.edu.iq

Abstract.

Background: Thyroid diseases are more common worldwide among chronic illnesses, a clinical condition that coexists with anemia. Even though anemia and thyroid problems frequently coexist, it is still unclear what causes the two conditions. Even in the 21st century, very few people really know much about the small thyroid gland located at the back of the neck and its vitally important function. Any dysfunction of the thyroid has profound impact on health and well-being. Iron-deficient anemia adversely affects thyroid hormone status, whereas thyroid hormones directly and indirectly promote the proliferation of erythrocyte precursors through the augmentation of erythropoietin synthesis. As a result, many types of anemia may arise after thyroid failure.

Material and Method: A Descriptive cross-sectional study for awareness of thyroid diseases and anemia was carried out in Al-Ramadi city at the Al-Andalus health center from 18th of November to the end of March 2023. Two hundred fifty participants at age 18- >65 years were enrolled in the study. They were selected by non-probability convenient sampling technique. Data were analyzed using.

Results: The illiterate and secondary were (32%). The knowledge regarding thyroid gland was (30.4%). About (10%) knew that the function of thyroid hormone affects the menstrual cycle in women.

Conclusion: Knowledge regarding thyroid gland was fairly worse.

The knowledge of prevention of thyroid disease regarding early thyroid testing can protect you from thyroid disease was unsatisfactory. The awareness about pregnancy and the postpartum period are risk factors for developing thyroid diseases was also fairly unsatisfactory. However, more strategies are needed to increase the knowledge about the thyroid and thyroid disease.

Keywords: Thyroid diseases; awareness; anemia; prevention; risk factors; Iraqi patients.

1. Introduction

The thyroid gland is butterfly-shaped and the largest endocrine gland in the human body, and it is positioned in the anterior portion of the neck. It produces thyroid hormones, which have a significant impact on protein synthesis and the basal metabolic rate (BMR) (1) (2). Furthermore, these hormones are essential for the neurocognitive development of young children and adolescents, as well as for adults to maintain normal physiological functioning (3).

In the past few years, abnormal thyroid function has become a major problem in clinical practice, raising health issues among patients. Thyroid hormones are essential for growth, neuronal development, reproduction and regulation of energy metabolism. Hypothyroidism and hyperthyroidism are common conditions with potentially devastating health consequences that affect all populations worldwide. Iodine nutrition is a key determinant of thyroid disease risk; however, other factors, such as ageing, smoking status, genetic susceptibility, ethnicity, endocrine disruptors and the advent of novel therapeutics, including immune checkpoint inhibitors, also influence thyroid disease epidemiology. (4). Thyroid illness is caused by a deficiency in iodine or by autoimmune diseases. The thyroid gland plays a significant role in the metabolism and proliferation of blood cells; hematological disorders are frequently observed in patients with thyroid disorders, and the most frequent problem is anemia. Thyroid dysfunction is one of the leading endocrine disorders. It represents around 30% to 40% of the patients seen in an endocrine practice. (5) (6).

Thyroid problems are mostly caused by iodine insufficiency. Over 190 million people worldwide have been estimated to suffer from iodine deficiency illnesses, and approximately one-third of all people live in areas that are iodine deficient (7) Thyroid disease is becoming increasingly common worldwide, and females are more likely to be affected than males. The prevalence of thyroid among middle-aged women was 7%. The major cause of (subclinical) hypothyroidism in Europe and is more prevalent in women with idiopathic subfertility and polycystic ovarian syndrome (PCOS) than in fertile women (8) The thyroid nodule is the most common type of the condition, accounting for 19-68% of the general population. It is more frequently seen in women. THYROID NODULES ARE A common clinical problem. Epidemiologic studies have shown the prevalence of palpable thyroid nodules to be approximately 5% in women and 1% in men living in iodine-sufficient parts of the world (9).

Thyroid diseases are one of the most under-diagnosed and neglected medical illnesses, and patients' lack of general awareness may be an important concern. In general, lack of knowledge and comprehension of the thyroid gland and its symptoms will lead patients to go undiagnosed. Some of the factors may be lack of qualified physicians treating such patients, less time spent by doctors for patient education, lack of awareness and use of available electronic media to harness information, poor knowledge about reliable sources of information. Educational needs are much greater in diseased population with poor health literacy. Any dysfunction of the thyroid has profound impact on health and well-being. Thyroid disorders are believed to be a common health issue in India, as it is worldwide. Globally, thyroid disorders continue to be common yet one of the most under- diagnosed and neglected chronic health conditions (10).

Anemia and low thyroid function are common, especially in older individuals. Thyroid function measurements are often included in the clinical examination of anemia. The symptoms of (subclinical) hypothyroidism and anemia are similar, which not only frequently presents a challenging diagnostic problem, but may also point to a causal relationship between low thyroid function and anemia (11). Both hyperthyroidism and hypothyroidism were associated with reduced hemoglobin levels in a population-based cohort in cross-sectional analyses but not in longitudinal analyses (12).

Aim of the study: To study the awareness study of thyroid diseases and anemia

2. Research Methodology

2.1 Study design

A cross-sectional study for awareness of thyroid diseases and anemia among Iraqi patients. This study was carried out in Al – Ramadi city at the Al – Andalus health center. For the period 18th of November to end of March 2023. The study was conducted on women who visit antenatal care. The study was approved by College of Medicine University of Anbar. The sample size was two hundred and fifty, selected by non-probability convenient sampling technique.

2.2 Data collection

After taking informed verbal consent, the specially designed questionnaire was administered through interviewing women with closed ended questions related to the awareness study of thyroid diseases and anemia. The questionnaire was divided into

Three parts: part one was demographic data included:

Gender, age, education, occupation...etc.; part two: Knowledge about thyroid disease. Part three for awareness about the prevention of thyroid disorders.

2.3 Statistical analysis

The statistical analysis was conducted in the form of percentages. The statistical analysis was carried out by using Statistical Analysis System (SAS) version 9.6

3. Results

The study sample is two hundred and fifty participants who were interviewed. They were from Al – Andalus health center. Table 1 shows the gender distribution; the highest frequency were females (76.4%). The age range of participants were ranges from 18 to more than 65. The highest proportion were 18 – 40 years old (55.2 %), while the lowest frequency (2.8 %) at the age more than 65 years. The Table also shows education that ranges from the lowest frequency (0.8%) among post graduate

And the illiterate and secondary groups have the same highest frequency (32%).

Occupation wise, the study sample was composed of house wives that representatives (62%) and the employed (14.8%). Regarding marital status, the highest frequency (72%) was married, while the lowest frequency was divorce that representatives (2.4%). About (60.4%) of participants were having one to four number of family member. Table 1 also shows the distribution for participants having thyroid disease, the lowest proportion were hypothyroidism (11.6%) while those who didn't know about thyroid disease (49.6%). About (80.4%) of participants were haven't had thyroid test. About (27.2%) of participants were usage medication to treat thyroid problem. Only (8%) of participants have family history of throid disease

Variables	No.	%
Sex		
Male	59	23.6
Female	191	76.4
Age (years)		
(18 – 40)	138	55.2
(41 – 65)	105	42
(>65)	7	2.8
Education		
Illiterate	80	32
Primary	72	28.8
Secondary	80	32
University	16	6.4
Postgraduate	2	0.8
Occupation		
Housewife	155	62
Employee	37	14.8
Student	58	23.2
Married status		
Married	180	72
Single	64	25.6
Divorce	6	2.4
Number of family members		
(1 – 4)	151	60.4
(5 – 8)	95	38
(> 8)	4	1.6
You have thyroid disease?		
No	67	26.8
Hypothyroidism	29	11.6
Hyperthyroidism	30	12
I don't know	124	49.6
Have you had thyroid tests?		
Yes	49	19.6
No	201	80.4
Do you use medications to treat thyroid problems?		
Yes	68	27.2
No	182	72.8
You have a family history of thyroid disease?		
Yes	20	8
No	101	40.4
I don't Know	129	51.6

Table 1: The distribution of socio-demographic characteristics of the study sample

From two hundred and fifty participants interviewed, (30.4%) responded that they have heard of thyroid disease and (58.4%) didn't hear of the function of thyroid hormone affects the menstrual cycle in women. While those who knew the function of thyroid hormone affects the menstrual cycle in women have the lowest frequency (10%) as shown in Table 2.

Table 2 also shows the knowledge of hyperthyroidism, most of participants (70%) did not hear about hyperthyroidism. Only (9.6%) knew hyperthyroidism and (20.4%) didn't know there. knowledge of hypothyroidism, most of participants (70%) did not hear about hypothyroidism. Only (8%) knew hypothyroidism and (21.6%) didn't know there. Less than three quarter of participants (71.6%) didn't hear about unstopped treatment of hypothyroidism when thyroid test is normally. More than half (66.8%) didn't hear about unstopped treatment for thyroid disease when test are normal.

The participants who didn't hear that women with hypothyroidism get pregnant (57.6%), and those who knew the women with hypothyroidism can get pregnant (1.6 %). Almost (41.6%) did not know the euthyroid.

More than half (56%) didn't hear that the thyroid gland is an endocrine gland. About (68.8%), didn't hear that thyroid dysfunction affected brain. Only (2%) knew that thyroid dysfunction affects cholesterol levels and (42%) didn't know them. More than half (55.2%) didn't hear that thyroid dysfunction affects heart disease, while less than half (42%) didn't know that thyroid dysfunction affects heart disease. The participants who knew that exercise affects thyroid dysfunction have constituted (4%) and those who didn't hear that exercise affect thyroid function. About (6.8%) knew that iodized salt has a role in treating hypothyroidism, and (8%) know that iodine helps secrete thyroxine. Less than half (49.2%) Did not hear that the cause of thyroid disease can be hereditary, while (6%) knew them as shown in table 2.

Table 2 also shows that (10%) of study sample who were know weight gain is a symptom of hypothyroidism, (38.4%) did not know, while (51.6%) had not hear. The knowledge for presence of a lump in the neck could be a sign of thyroid disease or thyroid cancer (10%), while difficulty swallowing may be a sign of thyroid cancer (6.8%). More than half (52%) did not hear that skin changes, nails or hair loss could be signs of thyroid disease, and only (2%) knew them. Most of participants (56%) did not hear that stomach pain could be a symptom of thyroid disease. The knowledge for Feeling hot, losing weight despite a good appetite, insomnia, and lack of sleep are symptoms of hyperthyroidism that (2%). Almost (7.6%) knew that increased heart rate symptoms of hyperthyroidism, the knowledge of interruption of the menstrual cycle is a symptom of hyperthyroidism (3.2%). Only (6.8%, 2%) knew hyperthyroidism and hypothyroidism are accompanied by anemia respectively. More than half (56%) did not hear that feeling cold is a symptom of hypothyroidism, while (41.6%) did not know them. About (6%) of participants knew that miscarriage is a symptom of hypothyroidism, while (41.6%) did not know. Almost (2%) knew that bulging eyes could be a sign of thyroid disease. Medical health center considered the major source of knowledge of thyroid disease (46.8%), while the lowest source included learning (3.2%) as shown in Table 2.

Table 2: The distribution of knowledge about thyroid diseases among study sample

Variable	No.	%
<u>Have you heard of the thyroid gland?</u>		
I know	76	30.4
I don't know	62	24.8
I don't hear	112	44.8
<u>Did you know that the function of thyroid hormone affects the menstrual cycle in women?</u>		
I know	25	10
I don't know	79	31.6
I don't hear	146	58.4
<u>Do you know what hyperthyroidism is?</u>		
I know	24	9.6
I don't know	51	20.4
I don't hear	175	70

Do you know what hypothyroidism is?		
I know	20	8
I don't know	54	21.6
I don't hear	175	70
Can you stop treating hypothyroidism when the tests are normal?		
I know	3	1.2
I don't know	68	27.2
I don't hear	179	71.6
Can you stop treating your thyroid when tests are normal?		
I know	6	2.4
I don't know	77	30.8
I don't hear	167	66.8
Can women with hypothyroidism get pregnant normally?		
I know	4	1.6
I don't know	102	40.8
I don't hear	144	57.6
Do you know what the euthyroid activity?		
I know	46	18.4
I don't know	104	41.6
I don't hear	100	40
Did you know that the thyroid gland is an endocrine gland?		
I know	5	2
I don't know	105	42
I don't hear	140	56
Did you know that thyroid dysfunction affects the brain?		
I know	15	6
I don't know	63	25.2
I don't hear	172	68.8
Did you know that thyroid dysfunction affects cholesterol levels?		
I know	5	2
I don't know	105	42
I don't hear	140	56
Did you know that thyroid dysfunction affects heart disease?		
I know	7	2.8
I don't know	105	42
I don't hear	138	55.2
Did you know that exercise affects thyroid dysfunction?		
I know	10	4
I don't know	105	42
I don't hear	135	54
Does iodized salt have a role in treating hypothyroidism?		
I know	17	6.8
I don't know	105	42
I don't hear	128	51.2
Did you know that iodine helps secrete the hormone thyroxine?		
I know	20	8
I don't know	104	41.6
I don't hear	126	50.4
Did you know that the cause of thyroid disease can be hereditary?		
I know	15	6
I don't know	112	44.8
I don't hear	123	49.2
Did you know that weight gain is a symptom of hypothyroidism?		
I know	25	10
I don't know	96	38.4
I don't hear	129	51.6
Do you think that a lump in the neck could be a sign of thyroid disease or thyroid cancer?		
I know	25	10
I don't know	96	38.4
I don't hear	129	51.6

Did you know that persistent difficulty swallowing may be a sign of thyroid cancer?		
I know	17	6.8
I don't know	104	41.6
I don't hear	129	51.6
Do you think that skin changes, nails or hair loss could be signs of thyroid disease?		
I know	5	2
I don't know	115	46
I don't hear	130	52
Do you believe that stomach pain could be a symptom of thyroid disease?		
I know	5	2
I don't know	105	42
I don't hear	140	56
Did you know that feeling hot and losing weight despite a good appetite is a symptom of hyperthyroidism?		
I know	5	2
I don't know	106	42.4
I don't hear	139	55.6
Did you know that insomnia and lack of sleep are symptoms of hyperthyroidism?		
I know	5	2
I don't know	108	43.2
I don't hear	137	54.8
Did you know that increased heart rate is a symptom of hyperthyroidism?		
I know	19	7.6
I don't know	115	46
I don't hear	116	46.4
Did you know that interruption of the menstrual cycle is a symptom of hyperthyroidism?		
I know	8	3.2
I don't know	110	44
I don't hear	132	52.8
Did you know that hyperthyroidism is accompanied by anemia?		
I know	17	6.8
I don't know	113	45.2
I don't hear	120	48
Did you know that hypothyroidism is accompanied by anemia?		
I know	5	2
I don't know	127	50.8
I don't hear	123	49.2
Did you know that feeling cold is a symptom of hypothyroidism?		
I know	16	6.4
I don't know	94	37.6
I don't hear	140	56
You know that miscarriage is a symptom of hypothyroidism?		
I know	15	6
I don't know	104	41.6
I don't hear	131	52.4
You think that bulging eyes could be a sign of thyroid disease?		
I know	5	2
I don't know	105	42
I don't hear	140	56
Sources of knowledge		
TV	30	12
Social media	45	18
Friends	50	20
Medical health center	117	46.8
Learning	8	3.2

Regarding the awareness about the prevention of thyroid disorders, that a balanced diet protects you from thyroid disease, don't hear by 130 (52%). 35 (14%) of participants knew that early thyroid testing and avoiding smoking and stimulants protected them from thyroid demands as shown in Table 3.

Table 3: Awareness regarding preventive behaviors of participants

Variable	No.	%
<u>Did you know that a balanced diet protects you from thyroid disease?</u>		
I know	16	6.4
I don't know	104	41.6
I don't heard	130	52
<u>Did you know that early thyroid testing can protect you from thyroid disease?</u>		
I know	35	14
I don't know	77	30.8
I don't heard	138	55.2
<u>Did you know that reducing foods containing soy protein protects you from thyroid demands?</u>		
I know	5	2
I don't know	77	30.8
I don't heard	168	67.2
<u>Did you know that avoiding large amounts of iodine in foods and medications protects you from thyroid demands?</u>		
I know	10	4
I don't know	85	34
I don't heard	155	62
<u>Did you know that avoiding smoking and stimulants protects you from thyroid disorders?</u>		
I know	35	14
I don't know	87	34.8
I don't heard	128	51.2

Awareness about the risk factors for thyroid disorders 125 (50%), 130 (52%), 120 (48%), and 104 (41.6%) of individuals don't hear about smoking & women, exposure to radiation, insufficient or excess iodine intake, pregnancy, or the postpartum period, respectively as shown in Table 4.

Table 4: Displays the participants of their risk factor.

Variable	No.	%
<u>Do you think that smoking is a risk factor for thyroid disease?</u>		
I know	35	14
I don't know	90	36
I don't heard	125	50
<u>Do you believe that exposure to radiation is a risk factor for developing thyroid diseases?</u>		
I know	15	6
I don't know	105	42
I don't heard	130	52
<u>Do you think that insufficient or excess iodine intake is a risk factor for thyroid disease?</u>		
I know	20	8
I don't know	110	44
I don't heard	120	48
<u>Do you think that women are more susceptible to thyroid diseases?</u>		
I know	20	8
I don't know	105	42
I don't heard	125	50
<u>Do you think that pregnancy and the postpartum period are risk factors for developing thyroid diseases?</u>		
I know	41	16.4
I don't know	105	42
I don't heard	104	41.6

4. Discussion

The current study has focused on the awareness study of thyroid diseases and anemia. The findings of this study revealed a highest proportion at age 18- 40 years old (55.2%), this result higher than that reported by other studies (13). Most participants were female, this finding agree with (13).

The present study showed that (44.8%) of participants don't hear the thyroid gland, less than (1.6%) know women with hypothyroidism can get pregnant normally, according to a study done in Delhi that shows similar results to this study (13) but in a study by Singh *et al.*, 60% patients knew the correct meaning of the term "thyroid." (14) .

Weight gain is a symptom of hypothyroidism but don't know by 38.4%; the presence of a lump in the neck could be a sign of thyroid disease or thyroid cancer; and difficulty swallowing may be a sign of thyroid cancer (51.6%) of individuals don't hear that and that similar study in Saudi Arabia that found (39.4%) had no idea about thyroid cancer (15).

The current study demonstrates that there is no significant difference between genders in the level of awareness regarding thyroid diseases and that, similar to the study by Almuzaini A *et al.*, there is no significant difference in knowledge levels among genders in the level of knowledge (16).

Knowledge the risk factors associated with thyroid diseases is an essential aspect, smoking is thought to increase the risk of thyroid disorders in a variety of physiological and pathological contexts (17).

According to the present study, just 8% of respondents thought that being female increased the possibility of developing thyroid disease, that's acceptable, according to a study done in Saudi Arabia, 21% of participants strongly agreed that having a female partner is a risk factor. These findings suggest that most people are unaware of this, which could delay getting a diagnosis (18).

Past medical history and past family history were both significantly correlated with better knowledge regarding thyroid disorders. This study shows that 8% thought that past family history was correlated with thyroid dysfunction, and only about 8.8% thought that thyroid dysfunction was associated with anemia. This corresponds with what Canaris *et al.* described in their article, which showed that a higher prevalence of thyroid diseases is associated with an increase in the level of knowledge about the manifestation of these conditions and a higher willingness to participate in thyroid screening efforts (19).

Consistent with the present findings, that smoking is a risk factor for thyroid disease (14%). This result disagree with other study (20). The findings of exposure to radiation is a risk factor for developing thyroid diseases revealed a lowest proportion (6%), this result lowest than that reported by (20).

5. Conclusion

- The study revealed that the knowledge of participants regarding heard of thyroid disease is fairly worse 30.4%.
- The knowledge of prevention of thyroid disease regarding early thyroid testing can protect you from thyroid disease was unsatisfactory as 14%.
- The awareness about pregnancy and the postpartum period are risk factors for developing thyroid diseases was also fairly unsatisfactory as 16.4%.
- Most participants had not heard of either hyperthyroidism or hypothyroidism (70% for each), indicating limited awareness of the main thyroid disorders.
- Awareness of the relationship between thyroid dysfunction and anemia was very low: only 6.8% recognized an association with hyperthyroidism and 2% with hypothyroidism.
- Most participants (80.4%) had never undergone thyroid testing, while medical health centers were the leading source of information about thyroid disease (46.8%).

6. Recommendations

- Further studies are needed including follow up studies for non-heard of thyroid disease.
 - Government involvement in fornication of food like our, salt with iodine is the need of the day.
 - There is a need for a public health education initiative
- And more strategies to increase the awareness of thyroid disease.

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