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ORIGINAL ARTICLE

General Public Awareness About Symptoms And Risk Factors Of Some Thyroid Diseases In KSA, Riyadh 2019

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ABSTRACT

Background: Thyroid disorders can range from a small, harmless goiter (enlarged gland) that needs no treatment to life-threatening cancer. The most common thyroid problems involve abnormal production of thyroid hormones. The worldwide prevalence of thyroid disease in the Saudi population is 30%. Since thyroid hormones are metabolically active in most of the organs, any impairment in their function could affect the quality of life. Previous studies suggest limited awareness about this disease among Saudi general population. Hence, this study aimed at assessing the level of awareness regarding thyroid diseases among a random representative sample of general public living in Riyadh, Saudi Arabia during the year 2019.

Methodology: A cross-sectional study involving random sampling technique was conducted during the year of 2019. The samples included 273 adult subjects (Aged between 18 and 50 years).

Results: The majority (56%) of the respondents had a moderate knowledge about clinical characteristics of thyroid diseases, 45.4% of respondents had a moderate level of awareness regarding prevention of thyroid diseases, while the majority (69.8%) had poor knowledge of risk factors of thyroid diseases. Most of the respondents had a moderate level of knowledge regarding the thyroid diseases (66.3%) and they belonged to the low economic status group. Majority of the participants who had a moderate level of awareness regarding the thyroid diseases had a university level of education (43.2%).

Conclusion: Most of the participants had poor knowledge regarding risk factors and prevention of thyroid diseases, the majority of participants had moderate knowledge regarding the prevention and clinical characteristics of thyroid diseases. There was no statistically significant relationship between economic status, education level, and the level of awareness regarding thyroid diseases among the general public of Saudi Arabia.

Keywords: Kingdom of Saudi Arabia, primary health care, the ministry of education.

Introduction

The thyroid gland is a butterfly-shaped largest endocrine comprised of two lobes located on the trachea, in the anterior side of the neck. The primary function of the endocrine system is controlled by hormones within the organism [1]. Thyroid diseases are the most prevalent of medical conditions and hyperthyroidism is the most common type of thyroid dysfunction [2]. One of the most common tests used to evaluate and screen thyroid disorders is a "thyroid function test panel." According to the American Thyroid Association, all adults must be screened for thyroid disorders and the serum thyrotrophic concentration should be measured every 5 years for those who are at the age of 35 years or above. The

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physiological thyroid gland is very important for brain development, including neurocognitive development, growth, and development during childhood and adolescence. Production of thyroid hormone by thyroid will be impaired in case of hypothyroidism. There are two types of hypothyroidism: (1) Primary (abnormality in the thyroid gland itself) or secondary/central (hypothalamic or pituitary disease). Among hypothyroidism cases, 99% of the cases usually are diagnosed as primary hypothyroidism. One of the terminologies that are used to define the grade of primary hypothyroidism is "subclinical hypothyroidism." Evaluation involves thyroid-stimulating hormone concentration in spite of normal serum free thyroxin (T4) and triiodothyronine concentrations. The condition which results in abnormal or high levels of thyroid hormone by the thyroid gland is called hypothyroidism. Excessive thyroid hormone levels in the body are known as thyrotoxicosis [3]. Thyroid diseases are very common in India comparing to other countries in the world. However, awareness about this disease among the Indian population was found to be very low [4]. Hypothyroidism could be primary or secondary, about 99% of hypothyroidism cases are primary, and the prevalence of hypothyroidism in the world is between 1% and 2% and is 10 times more in women than men [5]. Iodine is important for the human body and required for thyroid hormones synthesis, iodine deficiency leads to functional and development abnormality [6]. Also, thyroid hormones are metabolic active various organs; any impairment in their function could affect the quality of life. Previous studies suggest limited awareness about this disease among Saudi general population. One of the most important factors to maintain normal thyroid function and its anatomical structure is the adequate level of iodine in the body. The impact of advanced iodine deficiency in the community emerges as the result of thyroid function disorders such as goiter, hyperthyroidism, cretinism, decreased fertility rate, increased infant mortality, and mental retardation [7].

Subjects and Methods

A cross-sectional study was conducted based on primary health centers, involving random sampling technique during the year of 2019. The samples included 273 adult subjects, including male and females residing in Riyadh city, Saudi Arabia (Age of 18–50 years). Medical personnel's were excluded from the study to avoid study bias. The pre-tested pre-coded self-administered questionnaire that covers general public awareness about thyroid disorders regarding risk factors, prevention, and clinical characteristics was used for the study. The questionnaires were subjected to probe before data collection to test for its reliability and validity. Data analysis was done using the Statistical Package for the Social Sciences software version 23 and Microsoft Excel to generate tables and charts. Chi-square test was used to determine statistical significance with a *p*-value of 0.05 considered as significant. Informed consent was obtained from each participant before data collection, emphasizing on the right of the participant to withdraw from the study at any point in time.

Results

Table 1 shows demographic details of 273 study subjects (55.7% were female and 44.3% were males). Among the total participants, 65.2% had a university level of education. Furthermore, 70% of study respondents were with a low monthly income. Regarding the age; the range of participants belonging to the age group of 18–30 years was 48.7%, 31–40 years was 28.2%, 41–50 years was (15.8%), and 51+ was 7.3%. Regarding marital status,

Table 1. *Demographic data.*

Age	Frequency	Percent
18–30	133	48.7
31–40	77	28.2
41–50	43	15.8
50+	20	7.3
Total	273	100.0
Gender		
Male	121	44.3
Female	152	55.7
Total	273	100.0
Marital status		
Married	156	57.1
Single	87	31.9
Divorced	18	6.6
Widow/Widowed	12	4.4
Total	273	100.0
Employment status		
Employed	156	57.1
Self-employed	36	13.2
Retired	28	10.3
Student	33	12.1
Unemployed	20	7.3
Total	273	100.0
Education level		
University	178	65.2
Secondary	65	23.8
Primary	19	7.0
Illiterate	11	4.0
Total	273	100.0
Residence		
North	85	31.1
South	53	19.4
East	105	38.5
West	30	11.0
Total	273	100.0

n = 273.

Table 2. *Level of awareness regarding risk factors of thyroid diseases.*

Which one of the following is a risk factor of thyroid diseases?		
	Frequency	**Percent**
Smoking	49	17.9
Radiation exposure	15	5.5
Insufficient dietary iodine	56	20.5
Pregnancy/post-partum period	16	5.9
The family history of thyroid diseases	49	17.9
All of them	88	32.2
Total	273	100.0
Do you think excess iodine is a risk factor of thyroid diseases?		
	Frequency	**Percent**
No	69	25.3
I don't know/not sure	80	29.3
Yes	124	45.4
Total	273	100.0
Is being a female considered a risk factor for thyroid diseases?		
	Frequency	**Percent**
No	137	50.2
I don't know/not sure	58	21.2
Yes	78	28.6
Total	273	100.0

n = 273.

Table 3. *Level of awareness regarding risk factors of thyroid diseases.*

Determination of the level of awareness about risk factors of thyroid diseases		
	Frequency	**Percent**
0-1 poor	190	69.8
2 Moderate	67	24.4
3 Good	16	5.8
Total	273	100.0

n = 273.

57.1% were married, 31.9% were single, 6.6% were divorced, and 4.4% were widow/widower. Employment status: 57.1% were employed, 7.3% were unemployed, 13.3% were self-employed, 12.1% were students, and 10.3% were retired. About the education level, 65.2% of the participants had a university level of education, 23.8% had a secondary level, 7% had a primary level, and 4% were illiterate. All participants were from Riyadh, Saudi Arabia. Among the subjects residing in Riyadh, 31.1% live in the north, 19.4% live in the south, 38.5% live in the east, and 11% live in the west region of Riyadh.

Table 2 indicates that 17.9% of the participants were aware of smoking as a risk factor of thyroid diseases while 5.5% were aware of radiation exposure, 20.5% were aware of insufficient dietary iodine, 5.9% were aware of the pregnancy/postpartum period, 17.9% were aware of the family history of thyroid diseases, and 32.2% were aware of all of the above mentioned. Regarding the awareness of excess iodine, 25.3% of the participants answered by no and 29.3% answered by I don't know, and 45.4% answered by yes. Among the females, 50.2% of the participants answered by no, 21.2% answered by I don't know, and 28.6% answered by yes.

Table 3 revealed that 69.8% of the participants had poor knowledge regarding risk factors of thyroid diseases, while 24.4% had moderate knowledge and 5.8% had good knowledge.

Table 4 shows the level of awareness regarding the clinical picture of thyroid diseases, 25.3% of the participants answered that feeling cold and weight gain is a common symptom of having hypothyroidism while 19.8% answered by I don't know and 54.9% answered by yes. Among the total, 24.5% of the participants answered that feeling hot and weight loss is a common symptom of having hyperthyroidism while 27.1% answered by I don't know and 48.4% answered by yes. Furthermore, 17.9% of the participants thought that the neck lump cannot be a clinical picture of thyroid diseases while 17.6% answered by I don't know and 64.5% answered by yes. Also, 30% of the participants thought that fatigue is a clinical picture of thyroid diseases while 7.7% thought

Table 4. *Level of awareness regarding the clinical picture of thyroid diseases.*

Feeling cold and weight gain is a common symptom of having hypothyroidism?		
	Frequency	**Percent**
No	69	25.3
I don't know/not sure	54	19.8
Yes	150	54.9
Total	273	100.0
Feeling hot and weight loss is a common symptom of having hyperthyroidism?		
	Frequency	**Percent**
No	67	24.5
I don't know/not sure	74	27.1
Yes	132	48.4
Total	273	100.0
Do you think the neck lump can be a clinical picture of thyroid diseases?		
	Frequency	**Percent**
No	49	17.9
I don't know/not sure	48	17.6
Yes	176	64.5
Total	273	100.0
Which of the following is a clinical picture of thyroid diseases?		
	Frequency	**Percent**
Fatigue	82	30.0
Diarrhea, constipation or pain of stomach	21	7.7
Bulging eyes	46	16.8
All of them	124	45.4
Total	273	100.0

n = 273.

Table 5. *Level of awareness regarding the clinical picture of thyroid diseases.*

Determination the level of awareness about clinical picture of thyroid diseases		
	Frequency	**Percent**
0-1 poor	82	30
2-3 Moderate	153	56
4 Good	38	14
Total	273	100.0

n = 273.

that diarrhea, constipation, or pain of stomach are clinical pictures of thyroid diseases, 16.8% thought that bulging eyes are clinical picture of thyroid diseases and 45.4% thought that all of the clinical pictures which are listed above are clinical pictures of thyroid diseases.

Table 5 revealed that 30% of the participants had poor knowledge regarding the clinical picture of thyroid diseases, while 56% had moderate knowledge and 14% had good knowledge.

Table 6 shows the level of awareness regarding the prevention of thyroid diseases. Among the total, 24.2% thought that being away from soy food is not one of a preventive way for thyroid diseases in women, while 44.3% of them answered by I don't know and 31.5% answered by yes. Majority of respondents (79.5%) thought that early thyroid function tests can prevent the complication of thyroid diseases while 10.6% of them answered by no and 9.9% answered by I don't know. Majority of respondents (71.8%) thought that well-balanced diet is essential to prevent thyroid diseases while 15.0% answered by I don't know and 13.2% answered by no.

Table 7 revealed that 32.2% of the participants had poor knowledge regarding prevention of thyroid diseases, while 45.4% had moderate knowledge and 22.4% had good knowledge.

Table 8 and 9 show the percentage of annual income, 69.96% of the participants had an annual income of

Table 6. *Level of awareness regarding prevention of thyroid diseases.*

Do you think being away from Soy food is one of a preventive way from thyroid diseases in women?		
	Frequency	**Percent**
No	66	24.2
I don't know/not sure	121	44.3
Yes	86	31.5
Total	273	100.0
Do you think early thyroid function tests can prevent the complication of thyroid diseases?		
	Frequency	**Percent**
No	29	10.6
I don't know/not sure	27	9.9
Yes	217	79.5
Total	273	100.0
Do you think a well-balanced diet is essential to prevent thyroid diseases?		
	Frequency	**Percent**
No	36	13.2
I don't know/not sure	41	15.0
Yes	196	71.8
Total	273	100.0

n = 273.

Table 7. *Level of awareness regarding prevention of thyroid diseases.*

Determination of the level of awareness about the prevention of thyroid diseases		
	Frequency	**Percent**
0-1 Poor	88	32.2
2 Moderate	124	45.4
3 Good	61	22.4
Total	273	100.0

n = 273.

Table 8. *Annual income.*

Annual income		
	Frequency	**Percent**
<120,000	191	70.0
120,000–200,000	62	22.7
>200,000	20	7.3
Total	273	100.0

n = 273.

less than 120,000 SAR (Saudi Arabian Riyal), while 22.71% had 120,000–200,000 SAR and 7.33% had an annual income more than 200,000 SAR. Regarding the relationship between economic status and level of knowledge of thyroid diseases, the majority of participants who had low level of knowledge of thyroid diseases (21.6%) were belonging to low economic status group (71.19%), remaining of participants who had low level of knowledge of thyroid diseases (18.64%) belonged to middle economic status group, and 10.17% were belonging to high economic status, and the majority of participants who had a moderate level of knowledge of thyroid diseases (66.3%) were belonging to low economic status (69.06%) group, remaining participants who had moderate level of knowledge 24.86% were belonging to middle economic status, and 6.08% were belonging to high economic status group, the majority of people who had a high level of knowledge of thyroid diseases (12.1%) were belonging to low economic status group (72.73%), remaining participants (18.18%) were belonging to middle economic status group, and 9.09% were belonging to high economic status. We found that there is no statistically significant relationship between economic status and level of knowledge of thyroid diseases.

Table 10 revealed that the majority of participants who had a low level of awareness of thyroid diseases (21.6%) had university level of education 61.02%, remaining participants (20.34%) had a secondary level of education,10.17% had the primary level of education, and 8.47% were illiterate. Regarding the participants who had a moderate level of awareness of thyroid diseases (66.3%), the majority had university level of education (65.19%), remaining participants (25.97%) had a secondary level of education, 6.63% had a primary level of education, and 2.21% were illiterate. Majority of participants in our study who had a high level of

Table 9. *Relation between economic status and level of knowledge of thyroid diseases.*

The relation between economic status and level of knowledge of thyroid diseases					
		<120,000 Low	120,000–200,000 Middle	>200,000 High	Total
Low 0–3	Frequency	42	11	6	59
	Percent	71.19	18.64	10.17	100
Moderate 4–7	Frequency	125	45	11	181
	Percent	69.06	24.86	6.08	100
High 8–10	Frequency	24	6	3	33
	Percent	72.73	18.18	9.09	100
Total	Frequency	191	62	20	273
	Percent	69.96	22.71	7.33	100

p-value = 0.07.

Table 10. *Relation between educated and the illiterate regarding the level of awareness of thyroid diseases.*

The relation between educated and the illiterate regarding the level of awareness of thyroid diseases						
		University	Secondary	Primary	Illiterate	Total
Low 0–3	Frequency	36	12	6	5	59
	Percent	61.02	20.34	10.17	8.47	100
Moderate 4–7	Frequency	118	47	12	4	181
	Percent	65.19	25.97	6.63	2.21	100
High 8–10	Frequency	24	6	1	2	33
	Percent	72.73	18.18	3.03	6.06	100
Total	Frequency	178	65	19	11	273
	Percent	65.2	23.81	6.96	4.03	100

p-value = 0.076.

awareness of thyroid diseases (12.1%) had university level of education (72.73%), remaining participants (18.18%) had a secondary level of education, 3.03% had a primary level of education, and 6.06% were illiterate. We found that there is no statistically significant relationship between educated and illiterate regarding the level of awareness of thyroid diseases.

Discussion

Our result indicated that the majority of respondents had poor knowledge about the risk factors of thyroid diseases. Our result is in agreement with similar studies conducted in India [4]. The study recommends introducing effective practical health education which would address the underlying conditions such as smoking, radiation exposure, and insufficient dietary iodine whereby eventually lowering the prevalence of thyroid diseases. The majority of participants know that feeling cold and weight gain was a common symptom of having hypothyroidism. Majority of participants were aware that feeling hot and weight loss was a common symptom of having hyperthyroidism. Majority of participants knew the neck lump could be a clinical picture of thyroid diseases. Our result indicated that the majority of our participants knew the symptom of thyroid diseases and this goes in contrary with a study conducted in India 2011[4] which showed that the majority of respondents did not know about the symptoms of thyroid diseases. The difference might be because of their research [4] was conducted among uneducated patients of thyroid disease (Low doctor and patients' ratio) and our research was conducted within the general population. In our point of view, the continuation of conducting the same health behavior would decrease the complication of thyroid diseases. The majority of participants did not know that being away from soy food is one of a preventive way from thyroid diseases in women. Majority of respondents knew that the recommended early thyroid function tests can prevent the complication of thyroid diseases. Majority of participants knew that a well-balanced diet is essential to prevent thyroid diseases. Our result indicated that the majority of the participant had good knowledge about the prevention of thyroid diseases and this goes in contrary with other study which was conducted in South Africa 2005 [6] in which they showed that their participants had poor knowledge and this might be because of their study was already conducted among patients of hyperthyroidism who were admitted to the hospital at the time of the research and our research was conducted among general public. In our point of view, the continuation of conducting the same

health behavior would decrease the incidence of thyroid diseases. The majority of participants were belonging to low economic status group (less than 120,000 SAR) and those participants had a moderate level of awareness, the middle economic status participants (120,000–200,000 SAR) had a moderate level of awareness, and the high economic status participants (more than 200,000 SAR) had a moderate level of awareness. There was no statistical relationship between economic status and level of awareness of thyroid diseases. Our result goes in line with other research which was conducted in India in 2016 [2]. This study recommends that the Ministry of Health, Saudi Arabia should facilitate more effective health education program to raise the level of awareness of thyroid diseases. The majority of participants were educated (in different levels) and they had a moderate level of awareness of thyroid diseases and the minority of participants had also a moderate level of awareness of thyroid diseases. Also, this shows us that there is no statistical relationship between education level and awareness of thyroid diseases. Our result indicated that the majority of our participant had a moderate level of awareness and this goes in contrary with other research conducted in Bangladesh in 2016 [1] which shows that awareness of patients is affected by their educational level and family history of the disease.

Conclusion

Most of the participants had poor knowledge regarding risk factors and prevention of thyroid diseases, the majority of participants had moderate knowledge regarding prevention and clinical characteristics of thyroid diseases. There was no statistically significant relationship between economic status, education level, and the level of awareness regarding thyroid diseases among the general public of Saudi Arabia.

Conflict of interest
The authors declare that there is no conflict of interest regarding the publication of this article.

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Consent for publication
Informed consent was obtained from all the participants.

Ethical approval
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