Medical Science

pISSN 2321–7359; eISSN 2321–7367

Population awareness and knowledge of thyroid diseases signs, symptoms and risk factors in Taif Saudi Arabia

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To Cite:
Abozaid H, Albaqami RS, Aljuaid HM, Alotaibi EH, Althagafi AS, Alghamdi HA. Population awareness and knowledge of thyroid diseases signs, symptoms and risk factors in Taif Saudi Arabia. Medical Science 2022; 26:ms464e2499.
doi: https://doi.org/10.54905/disssi/v26i129/ms464e2499

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Peer-Review History
Received: 03 October 2022
Reviewed & Revised: 08/October/2022 to 06/November/2022
Accepted: 08 November 2022
Published: 14 November 2022

Peer-review Method
External peer-review was done through double-blind method.

URL: https://www.discoveryjournals.org/medicalscience

ABSTRACT

Background: There have been many studies from different parts of the world that assess the awareness of thyroid disorders. The studies done in Saudi Arabia revealed a good overall knowledge. To assess Taif population awareness and knowledge about thyroid disorder and if there is a correlation between the awareness & awareness knowledge of thyroid disorders with nationality, age, gender, social status, residency, education level, employment and income. *Methods:* The general population in Taif city, Saudi Arabia was the target of this cross sectional survey. Males and females of various age groups (18-65 years), both Saudi and non-Saudi, were included in the sample. Health workers and medical students were excluded from our research. An Arabic language version of a self administered questionnaire was utilized to acquire data. *Results:* Our study included 911 respondents, 86.5% of them were females, 63.6% aged 18-30 years and 74.8% have university education. Only about 14% of the studied populations have poor knowledge about thyroid diseases, and about 21% have average knowledge, and about 65.3% of them have high knowledge. The level of knowledge regarding thyroid disorders is significantly influenced by gender (p-value = 0.002). Age, country had no discernible effects on participants' awareness of thyroid diseases, according to our study (p values = 0.027, 0.229, 0.0169 and 0.29, respectively). *Conclusion:* Only small percentages of the Taif population have poor knowledge about thyroid diseases. We also recommend conducting large services to measure the awareness level of the public in Saudi Arabia about these important disorders.

Keywords: Thyroid disorders, awareness, knowledge, High Altitude, hypothyroidism, hyperthyroidism, Saudi Arabia.

1. INTRODUCTION

Thyroid disease are geographically wide spread (Rai et al., 2016). 30-40% of patients presented to endocrinology clinics have thyroid dysfunction (Afrin et

al., 2018). It is appraised that 1.6 billion people around the world are at risk of hypothyroidism and hyperthyroidism (Aljabri et al., 2019). In accordance with research carried out in Quebec, Canada, one out of every ten Canadians has thyroid illness. These patients have unexplained causes of thyroid abnormalities and about half of all thyroid disease cases are ignored (Stoll et al., 2019). Thyroid disease affects women far more commonly than it does men, however the reasons for this are yet unknown (Gessl et al., 2012). Regarding simplicity of diagnosis, accessibility to medical care and relative visibility of even tiny thyroid swellings of the thyroid provides to the treating physician, thyroid illnesses vary from other diseases. Early diagnosis & treatment remain the corner stone of management (Anil & Yuvraj, 2019). The thyroid disorder includes Hypothyroidism and hyperthyroidism. Hypothyroidism is a medical disorder caused by insufficient amounts of one or both thyroid hormones in blood. (Gessl et al., 2012) an increased TSH level and a low amount of serum free T4 suggest primary hypothyroidism Patients with hypothyroidism generally present with a constellation of signs and symptoms that may consist of depression, forgetfulness, dry skin, hair loss, lethargy and constipation (Unnikrishnan & Menon, 2011). Not every patient will have all of these signs and symptoms and many of them may be subdued in people with mild hypothyroidism. Physical findings are also non specific (Unnikrishnan & Menon, 2011).

These results might be reduced BP with bradycardia, nonpitting edema, widespread hair loss (particularly along the outer 1/3 of the brows), dry skin and a reduced relaxing phase of responses (Biondi et al., 2018). However, the definition of hypothyroidism Subclinical is a (TSH): Serum thyroid stimulating hormone, concentration above the statistically defined upper limit of the orientation range and the serum free thyroxine within the reference range (Unnikrishnan & Menon, 2011) and because the symptoms of hypothyroidism develop slowly and are not always visible, a huge majority of thyroid patients go undiagnosed (Gaitonde et al., 2012). In the other hand, Hyperthyroidism is definite as a low TSH level along with a high free T4 level. The two most frequent disorders associated with hyperthyroidism are Toxic nodular goiter and Graves' disease.

Hyperthyroidism can cause palpitations, anxiety, tremors, sleep disturbances, weight loss and heat sensitivity (Canaris et al., 2013). Taif city, it's a city of Saudi Arabia and considered high altitude area because it is the elevation is 2,000 meters above sea level. In high altitude areas, the hypoxia changes the level of thyroid hormones T3 & T4 (Alhawiti et al., 2018). Thus according to this research, high altitude places create hypoxia, which must be compensated for by mild hyperthyroidism (Barnholt et al., 2006).

According to a study of 273 adult participants conducted in Riyadh, the majority of the participants have a poor awareness of thyroid disease risk factors and prevention. On the other hand, participants had a good awareness of thyroid disease clinical characteristics. They found no statistically significant association between economic position and educational level (Castilho et al., 2003). Furthermore, a study was conducted In Riyadh 2018 a questionnaire was used to determine the awareness of thyroid disorders among residents of Riyadh, the central region of Saudi Arabia. Overall, there were 870 participants, with 297 (34.1%) males and 573 (65.9%) females. The study discovered that just 6.6% of individuals had no idea what the thyroid gland was, whereas 93.4% selected particular replies made about the thyroid at various degrees of understanding (Khalifa et al., 2019).

Another study conducted in the eastern province also used online questionnaires to evaluate the knowledge of residents in the eastern province about the manifestations of thyroid disorders and risk factors. It was observed that about half of the respondents had low awareness (Abdulrahman Ibrahim et al., 2018). An online questionnaire was used in a previous study in 2019 to measure Saudi people's awareness of thyroid problems and it was observed that 57 percent of respondents had good understanding (Alyahya et al., 2021) in June 2020 a study to examine the awareness of thyroid problems among the ladies of Jalandhar, Punjab**.** The data was obtained from 200 women using a well structured questionnaire and the study clearly showed that the majority of the respondents were unaware of Thyroid symptoms and preventive measures (Alqahtani & Alqahtani, 2021).

According to a Nepal study of 423 women, 49% of women had insufficient knowledge about thyroid disease. But, better income and a family history of thyroid illness were all linked to a higher knowledge score. Illiteracy and low income were linked to lower knowledge scores (Kansra & Awasthi, 2020). Additionally, another study was conducted in India in 2019 that used a questionnaire to determine the prevalence, knowledge and awareness of thyroid disorders among the population of young adult women. About 82.6% of participants responded that they were aware of the thyroid disorder, while 17.4% said they were not (Singh et al., 2019). In September 2014 a cross sectional paper was done in 4 different areas of Indore which showed that 250 women in the age group 18-50. Only 49.20% of females were aware of hyperthyroidism & hypothyroidism and 25.2% were checked for thyroid screening. In general, women have insufficient knowledge of the thyroid gland and related diseases (Muthukumar & Mohanraj, 2019).

An online survey of the Side Effects Questionnaire and Hyperthyroidism Symptoms and Clinical Tests, consisting of tenquestions assessing the awareness of hyperthyroidism between dental students from a private dental school in India, shows that most of the students consider TSH-T3 & T4 are crucial in the diagnostic of hyperthyroidism, thus according 83% of respondents (Rai et al., 2016). In Selangor 288 female amongst the ages of (18–55) were chosen at random to measure their awareness about thyroid problems and 48.3% (71) of them were found to have insufficient awareness (Hafeez et al., 2020). With all this Percentage that

indicate of very low level of awareness & knowledge of thyroid diseases and no study yet assessed the awareness of residents in Taif city about thyroid disorders.

Our study objective was to assess Taif population awareness and knowledge about thyroid disorder and if there is a correlation between the knowledge and awareness of thyroid disorders with nationality, age, gender, social status, residency, education level, employment and income.

2. MATERIALS AND METHODS

This study was a cross sectional study and was approved by the Ethics Research community at the College of Medicine, Taif University with HAO-02-T-105 number with from October 2021 to May 2022 duration. It was conducted among 1340 participants from Taif Saudi Arabia, selected randomly. Saudi& (non-Saudi) males and females of various ages (18-65 years) comprised the representative sample. Health workers and medical students were excluded from our research.

To collect data, a self administered online questionnaire translated into Arabic was used to gather information. We take the questionnaire from other research planned based on literature review. Afterward, the previous questionnaire was reviewed and validated by experts and pilot testing to ensure its reliability and validity and no modification was done on the questionnaire. The survey asks about demographical information, symptoms of various thyroid illnesses, risk factors, diagnostic procedures and therapies (37) questionnaire of basic understanding were asked. The level of knowledge score was founded on the total number of correct answers, as follows: $\leq$13 correct correspond to 'poor' knowledge; 14-26 correct answers correspond to 'moderate' knowledge; and $\geq$27 correct answers correspond to 'high' knowledge. In contrast, there were 10 inquiries on the dangers of thyroid conditions and thyroid cancer, which also answered as 'yes', 'no', or I don't know. The level of knowledge was score founded on the total number of correct follows: $\leq$ 3 correct answers correspond to 'poor' knowledge; 4-6 correct answers correspond to moderate knowledge; and $\geq$7 correct answers correspond to ' high ' knowledge (Alyahya et al., 2021).

Sample size was calculated by using raosoft sample size calculator software by the web site http://www.raosoft.com/samplesize.html. The required sample size was estimated at 95% confidence level, total population size 1,750,000, margin of error ±5% and an assume prevalence of 50%. The required minimum sample size was 385. We included all Taif population male or female aged from 18 to 65 in all educational level, Saudi or non Saudi nationality, and we excluded who aged more than 65 or less than 18 years old, who refuses to participate in the study, had thyroid diseases, medical student or health care worker. In our study the study population was all Taif residents Saudi and non Saudi males or females of different age groups in different of region and area of Taif city and the study sample was chosen from the population of Taif and it was collected by using simple random sampling technique, we used social media plat form (WhatsApp) to send the questionnaire to multiple groups chat randomly and we collected more than (1000) responses by using WhatsApp only in with the help of 10 data collectors. Medical students, health care workers and who diagnosed with thyroid diseases were excluded. Consent was obtained after the participants brief demonstrate about the research intent and ask for their willingness to participate in the study.

Data was recorded in data sheet and coded for further statistical analysis. Study Area that we focused on is Taif which consider being high altitude area because it is 2000 meter above sea level. In high altitude areas, the hypoxia changes the level of thyroid hormones T3 & T4. Dependent variable was level of awareness and knowledge in Taif population in the other hand the independent variables was participant nationality, age, gender, social status, residency, education level, employment and income.

SPSS version 21 was applied to enter and analyze the data for descriptive analysis, mean and standard deviation was estimated for quantitative variables like age of the participant and score of awareness. Frequency/ percentage was computed for categorical variables like gender, Frequency / percentage was shown in bar charts, mean and standard deviations was displayed using tables. For comparing qualitative variables, the chi square test was used. P-values < 0.05 will be considered significant. Participants were informed that participation is entirely voluntary. Inform consent was provided in the survey for each participant and all the participants' personal information was keep confidential. No Budget needed for this research.

3. RESULTS

The study included 911 respondents, 86.5% of them were females and 13.5% were males, almost more than half of the participants (63.6%) aged between 18-30 years, 16.2% aged 41-50, 14.8% aged 31-40 and only 5.4% more than 50 years old. The Saudi respondent 97.7% and 3.3 was non Saudi participant. 74.8% have university education (Table 1).

Table 1 Shows the socio-demographic data of the respondents (n=911).

Parameter		No	%
Gender	Male	123	13.5
	Female	788	86.5
Age	18-30	579	63.6
	31-40	135	14.8
	41-50	148	16.2
	More than 50	49	5.4
Nationality	Saudi	881	96.7
	Non Saudi	30	3.3
Marital status	Single	542	59.5
	Married	341	37.4
	Divorced	20	2.2
	Widower	8	.9
Education level	Primary	9	1.0
	Intermediate	31	3.4
	Secondary	162	17.8
	University	681	74.8
	Postgraduate	28	3.1
Average income (Monthly)	Less than 5,000 SAR	598	65.6
	5,000 -10,000 SAR	142	15.6
	More than 10,000 SAR	171	18.8
Occupational status	Officer	224	24.6
	Unemployed	258	28.3
	Student	429	47.1
Place of residence	Outside the city of Taif	138	15.1
	Residents of Taif	773	84.9

Table 2 shows the information of the participants in our study in terms of their awareness of hyperthyroidism and hypothyroidism symptoms, risk factor affecting it and how to diagnose and treat it as well**.** 79.8% choosein the front of the neck when asking about the location of the location of the thyroid gland and 20.2% of participant choose, I don't know. 66.8% of responder believed the TF helps with metabolism and 42.3% says yes when asking about the regulating the heart beat.

Table 2 Knowledge of participants of thyroid diseases (n=911).

Parameter			No	Percent
where the thyroid gland is located	In the front of the neck		727	79.8
	I do not know		184	20.2
	Yes	No	I do not know	
Thyroid function (helps with metabolism)	609 66.8%	55 6.0%	247 27.1%	
Thyroid function (regulating the heart beat)	385 42.3%	186 20.4%	340 37.3%	
Thyroid function (helps in the growth & development of the nervous system of children)	394 43.2%	99 10.9%	418 45.9%	
Do you know the meaning of lazy thyroid gland?	624 68.5%	287 31.5%	0 0%	
Identify the symptoms of lazy	522	96	293	

thyroid (feeling cold)	57.3%	10.5%	32.2%
Identify the symptoms of lazy thyroid (constipation)	277 30.4%	209 22.9%	425 46.7%
Identify symptoms of hypothyroidism (weight gain)	732 80.4%	48 5.3%	131 14.4%
Identify the symptoms of lazy thyroid gland (dry skin & hair loss)	589 64.7%	69 7.6%	253 27.8%
Identify the symptoms of lazy thyroid (feeling depressed and lazy)	722 79.3%	29 3.2%	160 17.6%
Identify the symptoms of lazy thyroid (irregular menstruation)	584 64.1%	62 6.8%	265 29.1%
Identify Symptoms of Lazy Thyroid (Abortion)	256 28.1%	165 18.1%	490 53.8%
Identify the symptoms of lazy thyroid (Congenital hypothyroidism: Mental retardation and slowed growth)	360 39.5%	121 13.3%	430 47.2%
Do you know the meaning of hyperthyroidism?	513 56.3%	398 43.7%	0 0%
Recognize the symptoms of hyperthyroidism (stress, sleeplessness and anxiety)	593 65.1%	40 4.4%	278 30.5%
Identify symptoms of hyperthyroidism (heart palpitations)	515 56.5%	86 9.4%	310 34.0%
Identify symptoms of hyperthyroidism (sweating more than usual)	539 59.2%	55 6.0%	317 34.8%
Identify symptoms of hyperthyroidism weight loss despite increased appetite	536 58.8%	95 10.4%	280 30.7%
Identify symptoms of hyperthyroidism (hair loss)	513 56.3%	75 8.2%	323 35.5%
Identify symptoms of hyperthyroidism (changes in the menstrual cycle)	470 51.6%	81 8.9%	360 39.5%
What are the symptoms that indicate thyroid disease? (Presence of a lump/turn or in the front of the neck]	653 71.7%	38 4.2%	220 24.1%
What are the symptoms that indicate thyroid disease? (Difficulty in swallowing and breathing)	465 51.0%	108 11.9%	338 37.1%
What are the symptoms that indicate thyroid disease? [change in voice]	367 40.3%	167 18.3%	377 41.4%
What of the subsequent elements may increase the rate of thyroid disease? (Iodine deficiency)	492 54.0%	41 4.5%	378 41.5%
What of the subsequent elements may increase the rate of thyroid disease? (more in the elderly)	318 34.9%	167 18.3%	426 46.8%
What of the subsequent elements	530	61	320

may increase the rate of thyroid disease? (more in women)	58.2%	6.7%	35.1%
What of the subsequent elements may increase the rate of thyroid disease? (Obesity and diabetes mellitus)	479 52.6%	97 10.6%	335 36.8%
What of the subsequent elements may increase the rate of thyroid disease? (smoking)	331 36.3%	141 15.5%	439 48.2%
What of the subsequent elements may increase the rate of thyroid disease? (Family history of thyroid disease)	555 60.9%	84 9.2%	272 29.9%
What of the subsequent elements may increase the rate of thyroid disease? (pregnancy)	187 20.5%	230 25.2%	494 54.2%
What of the subsequent elements may increase the incidence of thyroid cancer? (Exposure to excessive radiation in childhood)	401 44.0%	97 10.6%	413 45.3%
What of the subsequent elements may increase the incidence of thyroid cancer? (Family history of thyroid cancer)	547 60.0%	62 6.8%	302 33.2%
What of the subsequent elements may increase the incidence of thyroid cancer? (Goitre)	550 60.4%	57 6.3%	304 33.4%
Which of the following tests may help diagnose thyroid disease? (Measuring the level of thyroid hormones in the blood)	678 74.4%	25 2.7%	208 22.8%
Which of the following tests may help diagnose thyroid disease? (TV X-ray of the neck)	460 50.5	123 13.5	328 36.0
Which of the following tests may help diagnose thyroid disease? (Taking a biopsy of the thyroid gland if there is a tumour)	572 62.8%	61 6.7%	278 30.5%
What are the treatment methods for different thyroid diseases? (grain)	673 73.9%	34 3.7%	204 22.4%
What are the treatment methods for different thyroid diseases? (surgery)	518 56.9%	88 9.7%	305 33.5%
What are the treatment methods for different thyroid diseases? (Radioactive iodine therapy)	346 38.0%	93 10.2%	472 51.8%

Figure 1 shows the knowledge level of the participants according to the score of knowledge. 65.3% have High level of knowledge, 21.0% have average level of knowledge and 13.7% have poor level of knowledge.

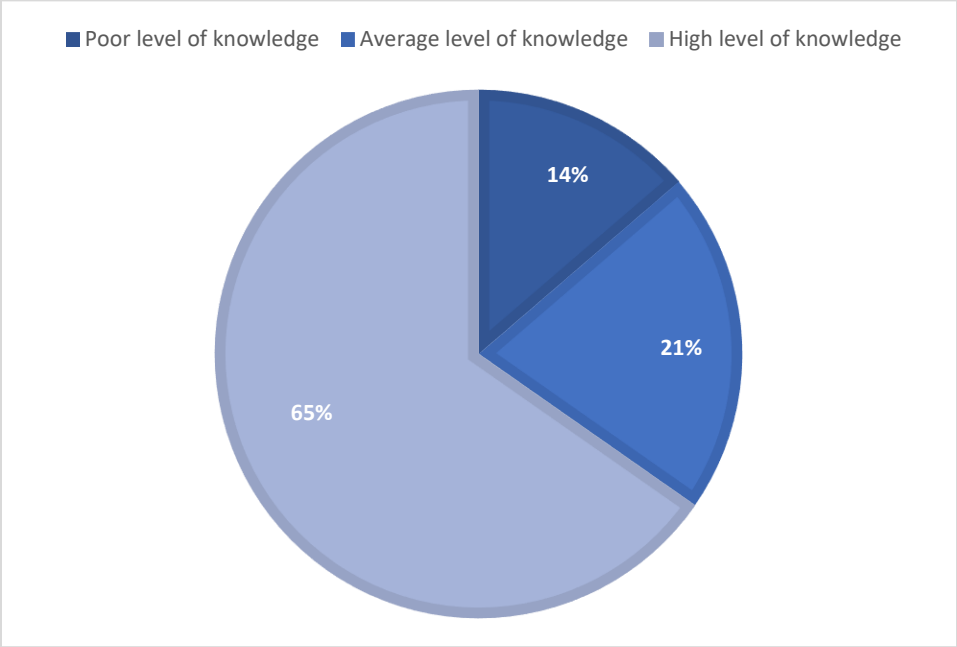

Figure 1 Knowledge level of the participants according to the score of knowledge (n=911).

Table 4 shows the relationship between Knowledge level of the participants and socio-demographic characteristics. It was discovered that sex significantly influences one's level of thyroid illness knowledge. In our study the degree of awareness of thyroid disease was also shown to be unaffected by age nationality, marital status, & educational level (p values = 0.027, 0.229, 0.0169 and 0.29 respectively). In our study we also have found that occupation has a significant effect on the degree of knowledge about thyroid diseases (p value = 0.003).

Table 4 Relationship between Knowledge level of the participants and socio-demographic characteristics (n=911)

		Score			Total (N=911)	P value
		Poor knowledge	Average knowledge	High knowledge		
Gender	Male	29	27	67	123	0.002
		23.2%	14.1%	11.3%	13.5%	
	Female	96	164	528	788	
		76.8%	85.9%	88.7%	86.5%	
Age	18 - 30	88	135	356	579	0.027
		70.4%	70.7%	59.8%	63.6%	
	31-40	16	23	96	135	
		12.8%	12.0%	16.1%	14.8%	
	41 - 50	16	20	112	148	
		12.8%	10.5%	18.8%	16.2%	
	More than 50	5	13	31	49	
		4.0%	6.8%	5.2%	5.4%	
Nationality	Saudi	121	181	579	881	0.229
		96.8%	94.8%	97.3%	96.7%	
	Non Saudi	4	10	16	30	
		3.2%	5.2%	2.7%	3.3%	
Marital status	Single	76	125	341	542	0.169
		60.8%	65.4%	57.3%	59.5%	
	Married	48	62	231	341	

		38.4%	32.5%	38.8%	37.4%	
	divorced	0	2	18	20	
		0.0%	1.0%	3.0%	2.2%	
	Widower	1	2	5	8	
		0.8%	1.0%	0.8%	0.9%	
Education level	primary	2	3	4	9	0.29
		1.6%	1.6%	0.7%	1.0%	
	Intermediate	7	2	22	31	
		5.6%	1.0%	3.7%	3.4%	
	secondary	30	41	91	162	
		24.0%	21.5%	15.3%	17.8%	
	university	85	140	456	681	
		68.0%	73.3%	76.6%	74.8%	
	Postgraduate	1	5	22	28	
		0.8%	2.6%	3.7%	3.1%	
Average income (Monthly)	Less than 5,000 SAR	95	139	364	598	0.003
		76.0%	72.8%	61.2%	65.6%	
	5,000-10,000 SAR	12	26	104	142	
		9.6%	13.6%	17.5%	15.6%	
	More than 10,000 SAR	18	26	127	171	
		14.4%	13.6%	21.3%	18.8%	
Occupational status	Officer	24	31	169	224	0.003
		19.2%	16.2%	28.4%	24.6%	
	Unemployed	32	60	166	258	
		25.6%	31.4%	27.9%	28.3%	
	Student	69	100	260	429	
		55.2%	52.4%	43.7%	47.1%	
Place of residence	outside the city of Taif	20	31	87	138	0.830
		16.0%	16.2%	14.6%	15.1%	
	Residents of Taif	105	160	508	773	
		84.0%	83.8%	85.4%	84.9%	

4. DISCUSSION

Thyroid disorders are one of the most under diagnosed and neglected medical conditions and the lack of awareness of the general patient can be a major problem (Khalifa et al., 2019). Prior research conducted in the central area of Saudi Arabia (KSA) in 2019 revealed a general lack of understanding in the region, despite the increasing frequency of the disease. Knowing about thyroid disorders can help many people with thyroid dysfunction who unaware of their problems. In general, lack of knowledge and comprehension of the thyroid gland and its symptoms will lead patients to go undiagnose (Abdulrahman Ibrahim et al., 2018).

In our study, we discovered that around 14% of the people under study had inadequate awareness of thyroid disorders, 21% had moderate knowledge, and 65.3% had strong knowledge, this is attributable to the fact that 74.8% of participants had a university education. On the other hand, a cross sectional community based study was conducted to evaluate the awareness of the thyroid gland, its function, its disorders, risk factors affecting thyroid disorders, among the general population of the eastern province of Saudi Arabia (WHO et al., 2014). Have found that approximately 45% of the studied population were classified as low knowledge, 41.2% were classified as average knowledge and the rest (14.2%) were classified as high knowledge, another study done in India, have revealed that the majority of respondents had inadequate information and erroneous beliefs about the thyroid gland and related illnesses (Awad et al., 2016).

On the other hand, research undertaken in (Riyadh Saudi Arabia) found that 57% of participants had an excellent level of understanding. Not just the general public may be unaware of thyroid diseases, also physicians as in (Askari et al., 2017). Study which was conducted on general practitioners in Iran which showed that GPs had an average knowledge score of 39.9% and the

correct responses rate to questions concerning the definition, pathophysiology, diagnosis, complications and treatment of thyroid disorders were (39.0%-39.3%-48.8%-34.3%-44.6%) respectively. A survey was under taken among women in a cosmopolitan metropolis in central India to measure their knowledge and awareness of thyroid problems concluded that females have inadequate knowledge of thyroid gland and associated disorders and they had misconception regarding thyroid disorders (Rai et al., 2016).

In Turkey, (Canaris et al., 2013) the knowledge, attitudes and practices of doctors on thyroid diseases and the need for iodine during pregnancy were investigated in a similar research. Thyroid issues during pregnancy were poorly under stood by physicians. Of these, 32.7% of family physicians and 73.1% of endocrinologists and 17.8% of obstetricians were knowledgeable of the appropriate TSH level during pregnancy (p 0.001). Another research that evaluated the knowledge, attitude and practice (KAP) of hypothyroidism in infertile women with the condition found that 72% of the participants had little understanding, 44% were very worried and 81% were taking modest precautions in their daily lives (Almuzaini et al., 2019). In our study we also have found that gender has significant effect on the degree of knowledge about thyroid diseases (p value = 0.002). Because a high proportion of the responses in our sample were from females and since thyroid disease affects females more than males, they are more likely to have a friend or relative who has thyroid disease. Comparing this survey to one done in Saudi Arabia, there was no discernible variation in knowledge levels between the sexes (Aladwani et al., 2019).

In our study we also have found that (age, nationality, marital status & educational level) has no significant effect on the degree of knowledge about thyroid diseases (p values = 0.027, 0.229, 0.0169, 0.29) respectively. On the other hand, the link was statistically significant (p0.001), according to an online survey based research study that assessed Saudi Arabia's citizenry's understanding about thyroid disorders (Ahmad et al., 2013). Another two local studies indicated that neither education level nor gender had a significant effect on knowledge in general (Carlé et al., 2006).

In our study we also have found that occupation has a significant effect on the degree of knowledge about thyroid disease (p value = 0.003). Almost half of the participants were students and the likelihood that they would study thyroid disease or came across a workshop or poster talk about thyroid disease at college is high, demonstrating that occupation has an effect on knowledge. Another study to assess the knowledge regarding hypothyroidism (thyroid disease) and its effects among adolescent girls in selected areas of pakala, revealed that there was significant association between the degree of knowledge and selected socio demographic factors such as mother's educational status, father's employment position and residency were significant at the $p<0.01$ level, as were some socio-demographic variables such as age in years. Mother's occupation, Family type, Monthly family income is significant at $p<0.05$. There wasn't a meaningful correlation between knowledge level and social characteristics like religion or educational level (Kalra et al., 2013).

Limitation of the study was Female responses were much higher than male responses and our study was limited to the Taif population; also, the questionnaire did not include any questions assessing physicians' level of knowledge in the early detection of thyroid disease.

5. CONCLUSION

There was a reasonable knowledge about thyroid diseases among Taif population. That just a small proportion of Taif residents are have poor Knowledge about thyroid disorders. But we recommend health education sittings to increase the awareness of the public in Saudi Arabia about this important issue. We therefore advise holding significant events to gauge the community's degree of knowledge about these serious disorders in Saudi Arabia.

Ethics statement

Ethical approval was obtained from the Research Ethical Committee at Faculty of Medicine in Taif University, Taif City, Saudi Arabia (Ethical approval number: ECM# HAO-02-T-105). Participants were informed that their participation is voluntary and filling the questionnaire indicates their consent to participate.

Funding

This study has not received any external funding.

Conflict of interest

The authors declare that there is no conflict of interests.

Data materials availability

Data that support the findings of this research are embedded within the manuscript

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