

A Cross-Sectional Saudi Study on Thyroid Illness Awareness and Knowledge

Mohammed Saaban Alshehri¹, Abubaker Ibrahim Al-shamrani², Luluh Mohammed Alrusayyis³, Rakan Hussain Alsharyah⁴, Mana Mohammed Al alaji⁵, Saleh Hudaiban Althaiban⁶, Ali Hudaiban Althaiban⁷, Abdullah Hudaiban Althaiban⁸, Mana Hussain Mana Alzamanan⁹, Mohammed Ibrahim Mohammed hayjan¹⁰, Abdullah Ali Mohsen Moafa¹¹, Abdulatif arif Ibrahim hadadi¹², Meshal Ali Rajhi¹³

^{1,2,3,4,5,6,7,8,9,10,11,12,13} Ministry of Health

ABSTRACT

Background: Thyroid problem is a highly prevalent medical condition that is generally recognized and prevalent worldwide. Individuals may experience adverse consequences as a result of their limited understanding of symptoms and risk factors. The purpose of this article is to assess the level of awareness and understanding among the general people in the Kingdom of Saudi Arabia (KSA) regarding thyroid problems.

Methodology: A cross-sectional online survey was done among the general public of Saudi Arabia using a pre-designed online questionnaire. The survey consisted of many sections that included questions requiring responses of 'yes', 'no', or 'I don't know'. The statistical software package utilized for all statistical studies was SPSS version 21. The findings of the study encompassed a total of 2362 individuals, with 53% representing the female population and 47% representing the male population. A total of 40.7% of the individuals included in the study fell between the age range of 21 to 30 years. The majority of participants (97.7%) reported prior knowledge of the thyroid gland. In the study, it was found that 30.9% of the participants had a high level of knowledge regarding thyroid glands, while 50.8% exhibited a moderate level of knowledge, and 18.9% shown a poor level of knowledge. A noteworthy correlation was observed between comprehension of thyroid disease and both gender and age.

Conclusion: The level of understanding among the general people in Saudi Arabia regarding thyroid problems was found to be quite low in comparison to global statistics. It is recommended that health authorities organize health education events of greater efficacy in order to enhance the understanding of thyroid disorders among the general population and caregivers. These events should emphasize the need of early detection and proper management of such conditions.

KEYWORDS: Thyroid, Disorders, Knowledge, Awareness, Saudi Arabia

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1. INTRODUCTION

The thyroid gland, located at the cervical region, plays a pivotal role in performing various essential functions. Thyroid dysfunction is the prevailing medical issue, with hyperthyroidism emerging as the predominant manifestation of this condition (Muthukumar & Mohanraj, 2019). The prevalence of thyroid dysfunction among women is globally substantial and has an upward trend with advancing age. Postmenopausal and elderly women have heightened susceptibility to thyroid dysfunction-associated comorbidities and mortality, as highlighted by Shrestha and Shrestha (2021). The prevalence of thyroid problem is high, making it one of the most common endocrine disorders,

second only to diabetes (Aladwani et al., 2019).

Thyroid diseases are prevalent medical illnesses on a global scale, with a reported risk of occurrence in over 110 countries and affecting around 1.6 billion individuals (Alyahya et al., 2021). The extent of symptom intensity in thyroid disorders is contingent upon the efficacy of thyroid gland functioning. Thyroid diseases encompass a range of problems that can be attributed to either dysfunction of the thyroid gland itself (primary) or external influences (secondary). These disorders manifest as either hyperthyroidism or hypothyroidism (Abdulrahman, 2018). The primary risk factor exhibits regional variation and is predominantly influenced by the availability of dietary iodine. It is noteworthy that

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approximately one-third of the global population resides in regions characterized by insufficient iodine levels (Alamri et al., 2020). According to the World Health Organization (WHO) in 2007, a staggering number of more than 190 million individuals are afflicted with iodine deficiency disorders. Hypothyroidism, which is the most commonly observed form of thyroid malfunction, exhibits a prevalence rate of 4 to 5% among individuals residing in developed nations. According to a recent study by Issa et al. (2021), it has been shown that over 12% of the population in the United States experiences thyroid dysfunction at some point in their lifetime. As a result, it is recommended that individuals who are 35 years of age or older undergo regular examinations to detect and diagnose thyroid problems. In a study conducted by Alyahya et al. (2021), it was determined that the level of information pertaining to risk factors and preventive measures for thyroid diseases among the general population in Saudi Arabia was found to be inadequate in 2019.

A study conducted by Alqahtani (2021) in the Department of Surgery yielded the following results: The study encompassed a sample size of 1560 individuals from Saudi Arabia. A total of 741 individuals were identified as male, accounting for 47.5 percent of the sample, while 819 individuals were identified as female. The demographic analysis reveals that a significant proportion of the participants, specifically 31.3% (n=489), fell between the age range of 31 to 40. Furthermore, a substantial number of individuals, accounting for 63.3% (n=987), had attained a college education. The majority of respondents had a moderate level of overall knowledge (n=647, 41.5%). There was a statistically significant correlation observed between general knowledge and variables such as age, gender, and educational level. The statistical significance level was found to be less than 0.001.

The study conducted by Saleh and Munji (2021) was published in the Diwan Health Complex-Muscat. The findings revealed that a significant majority (95%) of the participants who participated in the study had no prior knowledge or understanding of thyroid diseases. Thyroid ailment education and awareness are low following diagnosis. In addition to their routine medical consultations, a significant proportion of individuals diagnosed with thyroid disorders, specifically 76%, indicated a lack of access to counseling or awareness sessions. Furthermore, an overwhelming majority of these patients, specifically 91.33%, reported not obtaining any written materials pertaining to their specific thyroid disease. Based on the responses of 62.22% of individuals diagnosed with thyroid conditions, it is seen that the health complex does not exhibit any discernible physical manifestations of thyroid disease. In a study conducted by Mohamed et al. (2020), it was shown that 51.7% of female participants exhibited a high level of knowledge, whereas 48.3% had a low level of knowledge. In the context of Klang, it is observed that 51.8% of women possess good knowledge, while the remaining 48.2% of

women do not exhibit the same level of knowledge. In the context of Shah Alam, it was observed that 10.2% of women exhibited low levels of awareness, while the remaining 89.8% of women shown high levels of awareness. In the region of Klang, a significant majority of women, specifically 85.1%, exhibit a commendable level of awareness, while a smaller proportion, namely 14.9%, demonstrate a suboptimal level of knowledge.

There is a limited body of research in Saudi Arabia that examines the level of public awareness regarding the diagnosis of thyroid problems. Therefore, the objective of this study is to assess the level of knowledge among the Saudi Arabian population regarding the symptoms, risk factors, and preventive strategies associated with thyroid problems.

2. MATERIALS AND METHODS

Study design

The present observational cross-sectional study was conducted in Saudi Arabia over a period spanning from February 2022 to November 2022.

Inclusion and Exclusion criteria

The inclusion criteria encompass individuals of both genders, specifically males and girls, within the age range of 18 to 65 years residing in Saudi Arabia. The exclusion criteria encompass anyone within the Saudi population who are below the age of 18 and above the age of 65.

Sample size

The sample size will estimate to be at least 384 participants, using the Qualtrics calculator with a confidence level of 95% and margin error determine as 5%. The Sample size was appraised by the formula: $n = P(1-P) * Z\alpha^2 / d^2$ with a confidence level of 95%; n: Calculated sample size

Z: The z-value for the selected level of confidence (1- α) = 1.96. P: An estimated prevalence of knowledge

Q: (1 - 0.50) = 50%, i.e., 0.50

D: The maximum acceptable error = 0.05.

So, the calculated minimum sample size was: $n = (1.96)^2 * 0.50 * 0.50 / (0.05)^2 = 384$.

Method for data collection and instrument (Data collection Technique and tools)

The study employed a self-administered electronic questionnaire that encompassed many socio-demographic factors, including geographic location, gender, age, and educational attainment. The participants were queried regarding their general understanding of the thyroid gland, as well as their awareness of the symptoms associated with hypothyroidism and hyperthyroidism. Additionally, they were asked about the symptoms and risk factors that may indicate the presence of thyroid disease, as well as the risk factors associated with thyroid cancer. Furthermore, inquiries were made regarding the various investigations and treatment options available for thyroid-related conditions. The

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questionnaire consisted of 25 questions designed to assess participants' overall knowledge, with responses categorized as 'yes,' 'no,' or 'I don't know.' The assessment of overall knowledge is determined by the number of correct responses. Specifically, a score of less than 10 correct answers indicates a level of knowledge that can be classified as 'poor'. A score of 10 to 19 correct answers indicates a level of knowledge that can be classified as 'moderate'. Finally, a score of more than 19 correct answers indicates a level of knowledge that can be classified as 'good'.

Pilot test

The survey was administered to a sample of 20 participants who were requested to complete it. The purpose of conducting this activity was to assess the ease of use of the questionnaire and determine the practicality of the research endeavor. The data obtained from the pilot project was omitted from the final dataset of the study.

Analyzes and entry method

The statistical software package utilized for all statistical analyses in this study was SPSS version 21, developed by

IBM Corporation, located in Armonk, New York. The contributors were knowledgeable about the fact that their involvement was completely voluntary. Prior to inputting the data, the questionnaires were thoroughly examined to ensure that they were both comprehensive and accurate. In the survey, every participant was requested to offer informed consent, and no personal identities were documented on the forms. The confidentiality of all personal information belonging to the participants was maintained.

3. RESULTS

The research encompassed a total of 2362 individuals, with 53% identifying as female and 47% identifying as male. A total of 40.7% of the participants fell within the age range of 21 to 30 years, while 19.4% of the participants fell within the age range of 31 to 40 years. A majority of the participants, specifically 71%, possessed a bachelor's degree. According to Table 1, a significant proportion of the study participants, specifically 27.4%, reside in the southern region of the kingdom, whereas 22.2% are located in the western region.

Table 1 Socio-demographic characteristics of participants (n=2362)

Parameter	No.	%	
Gender	Male	1109	47.0
	Female	1253	53.0
Age	18-20	262	11.1
	21-30	962	40.7
	31-40	459	19.4
	41-50	414	17.5
	51-60	216	9.1
	More than 60	49	2.1
Occupation	Less than high school	53	2.2
	High school	449	19.0
	Bachelor's degree	1677	71.0
	Higher than bachelor's degree	183	7.7
Region	Southern	648	27.4
	Eastern	445	18.8
	North	281	11.9
	Western	525	22.2
	Central	463	19.6

According to the data shown in Table 2, a significant majority of participants (97.7%) reported prior knowledge of the thyroid gland. A majority of individuals, specifically 59.1%,

has knowledge on the role of the thyroid gland in promoting growth among

Table 2. Knowledge of participants of thyroid-gland (n=2362)

Parameter	Yes	No	Don't know
Heard of the thyroid-gland	2308 97.7%	54 2.3%	0 0%
Thyroid	1946 82.4%	115 4.9%	301 12.7%
One of the functions of the thyroid-gland is to stimulate-growth in children	1396 59.1%	260 11.0%	706 29.9%
The functions of the thyroid- gland are metabolism	1616 68.4%	143 6.1%	603 25.5%

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Regarding the participants' awareness of symptoms associated with thyroid illnesses, it was found that 82.2% of the respondents correctly identified weight increase without a corresponding change in appetite as a sign indicative of hypothyroidism, as shown in Table 3. A total of 41.1% of respondents indicated that constipation is a recognized symptom associated with hypothyroidism. According to the findings, a majority of participants (61.5%) indicated that symptoms such as dry skin and hair loss are associated with hypothyroidism. According to the findings, a majority of respondents (57%) indicated that palpitations are indicative

of hyperthyroidism. According to the findings, a majority of respondents (59.6%) indicated that excessive perspiration is a prevalent symptom associated with hyperthyroidism. According to the findings, a significant proportion of individuals, specifically 56.9%, indicated that experiencing weight loss accompanied by increased appetite is indicative of hyperthyroidism. According to the findings, a majority of participants, specifically 55.9%, indicated that anxiety and insomnia are commonly observed symptoms associated with hyperthyroidism.

Table 3 Knowledge of participants of symptoms of thyroid diseases (n=2362)

Parameter	Yes	No	Don't know
Weight gain with no change in appetite is a symptom of hypothyroidism	1941 82.2%	117 5.0%	304 12.9%
Constipation is a symptom of hypothyroidism	970 41.1%	343 14.5%	1049 44.4%
Dry skin and hair loss are symptoms of hypothyroidism	1452 61.5%	171 7.2%	739 31.3%
Feeling cold is a symptom of hypothyroidism	1386 58.7%	235 9.9%	741 31.4%
Palpitations are a symptom of an over-active thyroid-gland	1347 57.0%	196 8.3%	819 34.7%
Excessive sweating is a symptom of hyperthyroidism	1408 59.6%	169 7.2%	785 33.2%
Although the percentage of weight from high appetite is a symptom of hyperthyroidism	1549 65.6%	246 10.4%	567 24.0%
Anxiety and insomnia are symptoms of hyperthyroidism	1320 55.9%	189 8.0%	853 36.1%

According to the data shown in Table 4, a significant proportion of participants (63.9%) reported that swelling in the thyroid gland was associated with the development of thyroid disease. A significant proportion of participants, specifically 58.8%, recognized iodine deficiency as a risk factor for thyroid illness. The prevalence of goiter was shown to be associated with smoking in 49.9% of cases, as indicated in Figure 1. The prevalence of thyroid disease was shown to be associated with old age, with 42.5% of individuals in the study reporting this as a risk factor. A study found that 55.3% of individuals indicated childhood exposure to radiation as a

risk factor for thyroid cancer. A study found that 61.9% of individuals with a family history of thyroid cancer were identified as having an increased risk for developing thyroid cancer. A study found that goiter was identified as a risk factor for thyroid cancer in 58.5% of cases.

Of all participants, 38.6% had a thyroid test before. 75.4% reported that some thyroid-diseases need surgical intervention. 46.2% reported that radio-active-iodine is a treatment-option for thyroid disorders. 69% reported that daily diet affects thyroid function (Table 5).

Table 5. Knowledge of participants of treatment of thyroid diseases (n=2362)

Parameter	Yes	No	Don't know
Had a thyroid test before	912 38.6%	1450 61.4%	0 0%
Some thyroid-diseases need surgical intervention	1781 75.4%	171 7.2%	410 17.4%
Radioactive iodine is a treatment option for thyroid disorders	1092 46.2%	171 7.2%	1099 46.5%
Daily diet affects thyroid function	1630 69.0%	191 8.1%	541 22.9%

Figure 2 shows that 30.9% of study contributors had good knowledge scores of thyroid glands while, 50.8% had moderate knowledge scores and 18.9% had low knowledge

score. A significant association was noted between understanding of thyroid- illness with both gender and age ($P < 0.05$) but not with occupation or residence region in the

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Kingdom (Table 6).

Table 4. Knowledge of participants of risk-factors of thyroid diseases (n=2362)

Parameter	Yes	No	Don't know
Swelling in the thyroid-gland cause thyroid disorder	1510 63.9%	317 13.4%	535 22.7%
Iodine deficiency is a risk-factor for thyroid-disease	1390 58.8%	157 6.6%	815 34.5%
Old age is a risk-factor for thyroid-disease	1005 42.5%	577 24.4%	780 33.0%
Exposure to radiation in childhood is a risk factor for thyroid cancer	1307 55.3%	196 8.3%	859 36.4%
Family-history of thyroid-cancer is a risk factor for thyroid cancer	1463 61.9%	203 8.6%	696 29.5%
Goitre is a risk factor for thyroid cancer	1382 58.5%	248 10.5%	732 31.0%

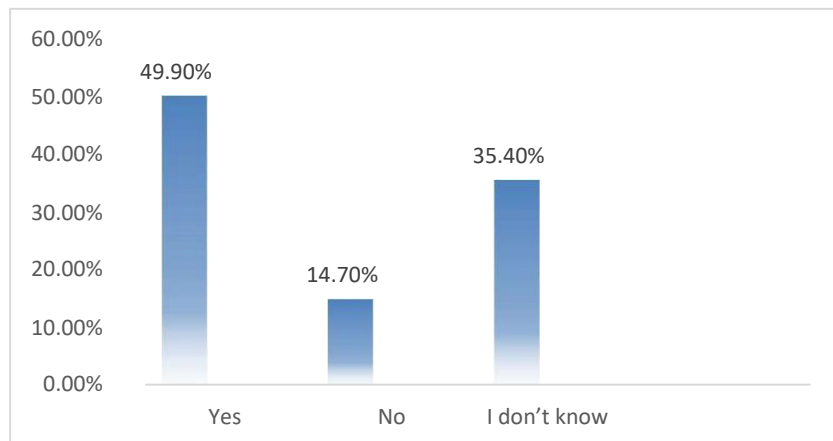


Figure 1. Knowledge of smoking as risk factor for thyroid glands among participants (n= 2362)

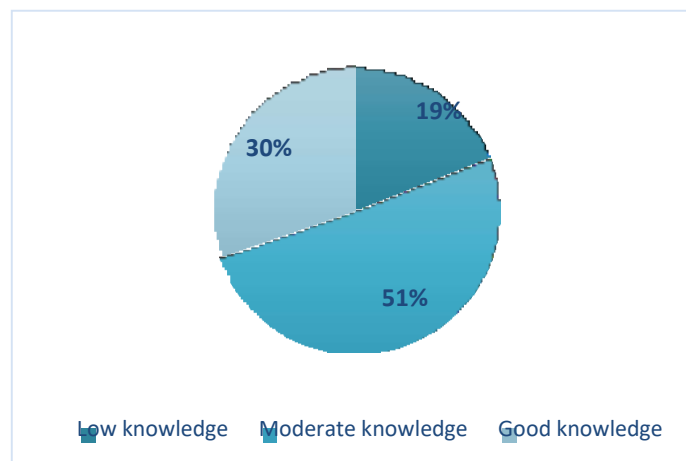


Figure 2. Knowledge scores of thyroid glands among participants (n= 2362)

Table 6. Knowledge of participants of thyroid diseases and its' association to socio-demographic characters of participants (n=2362)

		Knowledge score			Total (N=2362)	P value
		Poor knowledge	Moderated knowledge	Good knowledge		
Gender	Male	304 68.0%	504 42.0%	301 42.1%	1109 47.0%	0.001
	Female	143 32.0%	696 58.0%	414 57.9%	1253 53.0%	
	18 – 20	45 10.1%	158 13.2%	59 8.3%	262 11.1%	
	21 – 30	170	443	349	962	

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Age	31 – 40	38.0%	36.9%	48.8%	40.7%	0.001
		91	240	128	459	
	41 – 50	20.4%	20.0%	17.9%	19.4%	
		75	220	119	414	
	51 – 60	16.8%	18.3%	16.6%	17.5%	
		48	114	54	216	
More than 60	10.7%	9.5%	7.6%	9.1%		
	18	25	6	49		
Occupation	Less than high school	4.0%	2.1%	0.8%	2.1%	0.026
		15	24	14	53	
	High school	3.4%	2.0%	2.0%	2.2%	
		91	245	113	449	
	Bachelor's degree	20.4%	20.4%	15.8%	19.0%	
		307	851	519	1677	
Higher than a bachelor's degree	68.7%	70.9%	72.6%	71.0%		
	34	80	69	183		
Region	Southern	7.6%	6.7%	9.7%	7.7%	0.001
		106	344	198	648	
	Eastern	23.7%	28.7%	27.7%	27.4%	
		80	239	126	445	
	North	17.9%	19.9%	17.6%	18.8%	
		40	138	103	281	
Western	8.9%	11.5%	14.4%	11.9%		
	115	230	180	525		
		25.7%	19.2%	25.2%	22.2%	
		106	249	108	463	
	Central	23.7%	20.8%	15.1%	19.6%	

4. DISCUSSION

The thyroid gland is a glandular organ of the endocrine system situated in the anterior region of the neck, positioned anteriorly to the trachea. Thyroid disorders are widely recognized as the most prevalent endocrine diseases worldwide (Alzahrani et al., 2020). According to the World Health Organization (WHO) in 2007, a total of over 190 million individuals are affected by iodine deficient illnesses. Thyroid diseases can manifest in various ways, ranging from asymptomatic cases to the presence of a small goiter, hypothyroidism, hyperthyroidism, or thyroid cancer (Aladwani et al., 2019). According to a study conducted by Alzahrani et al. (2020), a significant proportion of persons, approximately 60%, globally remain unaware of their thyroid disease. The study was conducted in Saudi Arabia over a period spanning from July 2022 to February 2023, with a total of 384 participants included in the research sample.

The findings of our study indicate that 30.9% of participants exhibited high levels of knowledge on the thyroid gland, while 50.8% shown intermediate levels of knowledge, and 18.9% displayed low levels of knowledge. A study conducted in the city of Riyadh surveyed 870 participants, revealing that a mere 6.6% of individuals lacked knowledge regarding the thyroid gland. Additionally, 37.1% correctly identified the anatomical location of the gland as being situated in the front of the neck, while 24.4% recognized its significance in regulating metabolism and overall bodily processes (Abdulrahman, 2018). A cross-sectional study was conducted online, utilizing a survey, which comprised a random sample

of 1560 individuals from Saudi Arabia, comprising both men and women. The findings of the study revealed that a significant proportion (41.5%) of the respondents possessed a moderate level of general knowledge. Furthermore, 80.5% of the participants correctly identified the gland situated in the anterior neck, while 19.5% were unable to provide a response. According to Alqahtani (2021), a majority of individuals, specifically 66.3%, possess knowledge of the ability of the thyroid gland to enhance metabolism. Additionally, 44.2% of respondents indicated that the thyroid gland has a role in regulating heart beats, while 36.1% claimed its involvement in the growth and development of the fetal neurological system.

A cross-sectional study was conducted in the Eastern province of Saudi Arabia, involving 882 participants. The study revealed that the average knowledge score was 8.67. Among the participants, 44.7% were categorized as having poor knowledge, 41.2% had moderate knowledge, and 14.2% had high knowledge (Alhawiti et al., 2018). According to a study conducted in India, which yielded comparable findings to a prior investigation, a majority of the participants exhibited insufficient understanding and held misunderstandings regarding the thyroid gland and its associated illnesses (Rai et al., 2016). In contrast, the study conducted by Almuzaini et al. (2019) revealed that 42.68% of the participants exhibited inadequate awareness on thyroid illnesses, whereas 57.32% of the respondents had a good level of knowledge on the subject matter. The survey participants demonstrated a higher degree of awareness regarding the

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thyroid's classification as an endocrine gland (77.9%) and its impact on blood cholesterol levels in cases of malfunction (62.4%). Moreover, a significant proportion of participants, specifically 42.1%, demonstrated awareness that thyroid dysfunction is not a hereditary condition, as reported by Almuzaini et al. (2019).

Based on a survey conducted in Tabuk-City, it was found that 52% of the respondents exhibited a high level of knowledge, whilst 45% shown insufficient information. This aligns with the results of a study conducted in Riyadh, which explored the topic of thyroid gland and its associated illnesses (Alhawiti et al., 2018). A study conducted in Selangor, Malaysia, examined the knowledge level of 288 women regarding thyroid condition. The findings revealed that approximately 51.7% of the women possessed a decent level of knowledge, whereas 48.3% demonstrated low understanding (Mohamed et al., 2020). A total of 76.4% of women possessed knowledge of the nature of the "THYROID" as a gland lacking ducts within the human body. Conversely, 10.1% of women demonstrated awareness of this fact, while the remaining participants did not possess such knowledge. According to Mohamed et al. (2020), a significant proportion of individuals, specifically 13.5%, lack knowledge regarding the concept of "THYROID." Additionally, the study found that a majority of women, specifically 54.2%, acknowledged that thyroid disorders had an impact on brain development.

In relation to the understanding of symptoms associated with hypothyroidism and hyperthyroidism, it was found that 82.2% of the individuals participating in our study possessed information regarding the manifestation of weight gain without concurrent changes in appetite as a symptom of hypothyroidism. According to the findings, a significant proportion of individuals, specifically 41.1%, indicated that constipation is a recognized symptom associated with hypothyroidism. According to the findings, a majority of respondents (61.5%) indicated that dry skin and hair loss are commonly observed symptoms associated with hypothyroidism. According to the findings, a majority of individuals, specifically 57%, indicated that palpitations can be identified as a symptom associated with an overactive thyroid gland. According to the findings, a majority of respondents (59.6%) indicated that excessive perspiration is a recognized symptom associated with hyperthyroidism. According to the findings, a significant proportion of individuals, specifically 56.9%, indicated that experiencing weight loss accompanied by increased appetite is indicative of hyperthyroidism. According to the findings, a majority of participants, specifically 55.9%, indicated that symptoms such as anxiety and insomnia are associated with hyperthyroidism.

In a recent study conducted among the Saudi population, it was shown that a significant proportion of participants were aware of the symptoms associated with hypothyroidism. Specifically, 77.9% of the respondents recognized weight

increase as a symptom, while 74.9% identified depression and fatigue as common manifestations. Additionally, a substantial number of participants, approximately 54.1%, reported experiencing feelings of coldness. A significant proportion of individuals, specifically 58.1%, experience the condition of dry skin and hair loss. Approximately 56.3% of individuals experience irregular menstrual cycles. The prevalence of constipation is reported to be 36.1%, whereas the incidence of abortion is estimated to be 29.1%. Mental retardation and growth failure are recognized clinical manifestations of hypothyroidism, with a prevalence rate of 28.5%. Moreover, the participants possess a comprehensive understanding of the symptoms associated with hyperthyroidism, including anxiety, sleeplessness, and stress. The individual is experiencing symptoms of palpitations and increased perspiration. Weight loss, along with heightened appetite and alterations in the menstrual cycle, has been identified as a symptomatic manifestation of hyperthyroidism (Alqahtani, 2021). A study conducted by Alyahya et al. (2021) in the Kingdom of Saudi Arabia (KSA) revealed that a significant proportion of respondents were aware of several symptoms associated with thyroid disorders. Fatigue was reported by 81.7% of the participants as a recognized indicator, while 70.9% acknowledged the presence of a neck lump. According to a study conducted by Alyahya et al. (2021), a significant proportion of participants, specifically 68.9%, believe that experiencing sensations of coldness and weight increase are prevalent indicators of hypothyroidism. Additionally, 63% of respondents associate feelings of heat and weight loss with the usual symptoms of hyperthyroidism. A recent study conducted in Riyadh revealed that a significant proportion of respondents shown a commendable level of awareness on hyperthyroidism. Specifically, 81% of participants correctly identified insomnia and lack of sleep as symptoms associated with this condition. Furthermore, 79.7% of respondents acknowledged that experiencing weight loss despite having a healthy appetite can be indicative of hyperthyroidism.

According to the study conducted by Almuzaini et al. (2019), Nevertheless, a smaller proportion of participants in the study conducted by Almuzaini et al. (2019) were able to identify the symptoms associated with hypothyroidism. In their study conducted in Tabuk city, Alhawiti et al. (2018) discovered that the respondents had a limited understanding of the symptoms associated with hyperthyroidism. Approximately half of the respondents were able to correctly identify the common manifestations of the disease. The least commonly recognized symptoms of hyperthyroidism were the intolerance to hot temperatures and menstruation abnormalities, with identification rates of 50.7% and 44.3% respectively. The survey participants exhibited a notable prevalence of symptoms associated with hypothyroidism, including weight gain (reported by 76% of respondents), fatigue and drowsiness (reported by 74.9% of respondents), and dryness of the skin and hair (reported by 64.2% of

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respondents). According to Alhawiti et al. (2018), In a study conducted by Mohamed et al. (2020) in Malaysia, it was observed that 60.1% of the cases reported experiencing insomnia and loss of sleep as symptoms of hyperthyroidism. Conversely, 20.5% of the cases responded negatively, indicating the absence of these symptoms. The remaining respondents, comprising 19.4% of the female participants, expressed uncertainty by selecting the response option "DON'T KNOW". The study found that 58.7% of participants were able to identify the symptoms of weight loss despite having a good appetite in individuals with hyperthyroidism. According to Mohamed et al. (2020), a significant proportion of cases, specifically 57.3%, see skin and hair dryness as indicative signs of hypothyroidism. Additionally, 55.6% of cases reported that a fast increase in weight is associated with hypothyroidism.

Understanding the risk factors associated with thyroid problems is a crucial component of knowledge in this field. In the present investigation, a notable proportion of participants, specifically 58.8%, recognized iodine deficiency as a risk factor for thyroid disease. A study found that smoking was identified as a risk factor for goiter in around 49.9% of cases. According to the findings, a significant proportion of individuals, specifically 42.5%, were identified as being at risk of developing thyroid disease due to advanced age. A study found that 55.3% of individuals indicated childhood exposure to radiation as a risk factor for thyroid cancer. A study found that 61.9% of individuals with a family history of thyroid cancer were identified as having an increased risk for developing thyroid cancer. A study found that goiter was identified as a risk factor for thyroid cancer in 58.5% of cases. According to Alqahtani (2021), a significant proportion of the participants exhibited little understanding on the risk factors associated with thyroid disorders and thyroid cancer, with 39.7% demonstrating low knowledge in this area. The survey results indicated that a significant proportion of the participants possessed high (24.9%) and moderate (35.4%) levels of knowledge. According to the findings of Alqahtani (2021), a majority of respondents (55.8%) correctly identified iodine deficiency as a risk factor for thyroid illnesses. Furthermore, the analysis revealed that a majority of instances, namely 58.4%, were associated with the female gender. Additionally, a significant proportion of cases, around 53.1%, exhibited a family history of thyroid disease. Other risk factors that were discovered include obesity and diabetes mellitus, accounting for 47.8% of cases, older age at 29.4%, and smoking at 27.8%. Furthermore, according to Alqahtani (2021), a study found that 37.5% of participants were aware of the potential risks associated with frequent exposure to radiation throughout childhood, while 49% were knowledgeable of the connection between a family history of thyroid cancer and the development of the disease. Additionally, 56.8% of participants recognized goiter as a risk factor for thyroid cancer. According to the findings of Alyahya et al. (2021), the risk factor that respondents shown

the highest level of awareness of was insufficient or excessive iodine consumption, which is known to be associated with thyroid illnesses, with a reported awareness rate of 61.3 percent. Following closely behind were pregnancy and the postpartum phase, with an awareness rate of 61.1 percent, and radiation exposure, with an awareness rate of 57.4 percent. Furthermore, it was shown that 40.5% of participants concurred that smoking poses a risk factor for thyroid problems.

In relation to the treatment options for various thyroid illnesses, it was found that 75.4% of the participants in our study indicated that surgical intervention is necessary for certain thyroid diseases. A total of 46.2% of respondents indicated that the utilization of radio-active iodine is a viable therapeutic approach for managing thyroid diseases. According to Alqahtani (2021), a significant proportion of cases, specifically 75.8%, expressed a preference for medication as a treatment option. Additionally, 52.9% of cases indicated a preference for surgery, while 38.3% favored radioiodine treatment.

The findings of our study revealed a statistically significant relationship between participants' awareness of thyroid problems and their gender and age. Alqahtani (2021) demonstrated a statistically significant association between overall knowledge and demographic variables such as age, gender, and education level ($p < 0.001$). In their study, Alyahya et al. (2021) found that certain variables were associated with statistically significant differences in respondents' knowledge levels. Specifically, being female ($p < 0.001$) and being a student ($p = 0.003$) were both significantly associated with higher knowledge scores. However, variables such as age group, nationality, marital status, educational level, and annual income did not demonstrate a significant difference in knowledge scores when compared to the overall score (all $p > 0.05$). In a study conducted by Alhawiti et al. (2018), it was shown that those with a high level of knowledge exhibited a considerably greater representation within the age group "20 – 35" compared to those with a low level of knowledge ($p = 0.01$).

5. CONCLUSION

The level of information regarding thyroid problems among the general public in Saudi Arabia was found to be quite low in comparison to international statistics. In order to enhance the comprehension of thyroid problems among the general population and their caregivers, as well as underscore the significance of early detection and appropriate management, it is recommended that health authorities organize more efficacious health education initiatives. Patients would exhibit greater adherence to medication, engage in more regular follow-up appointments, and effectively communicate pertinent information to their family and friends if they possessed a higher level of knowledge on their thyroid disease.

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RECOMMENDATIONS

It is recommended that more educational efforts be initiated in order to enhance awareness and information pertaining to thyroid problems.

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