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Saudi community knowledge levels regarding hypothyroidism risk factors

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Thyroid hypothyroidism is common in Saudi Arabia, and many patients living without diagnosis due to mild symptoms. Therefore, the present study aimed to assess the Saudi community's knowledge levels regarding hypothyroidism risk factors. This research elaborated during a cross-sectional survey, conducted in Hail Region, Northern Saudi Arabia. Out of the targeted population, 900 individuals have responded. A purposeful questionnaire was designed to obtain data regarding community knowledge and attitude towards hypothyroidism risk factors. On asking the participants "Hypothyroidism is a medical condition due to low thyroid hormone levels", the majority of them answered "Yes" 72%. On asking the participants "Iodine deficiency in the diet may lead to hypothyroidism", the majority of them answered "Don't know" 54%. On asking the participants "Certain medications may increase the risk for developing hypothyroidism", about 46% answered "Yes". On asking the participants "Women are at greater risk for developing hypothyroidism and should be tested at regularly" about 45.4% of the participants strongly agree. The overall knowledge of the Saudi community about hypothyroidism risk factors is poor, with a relatively poor attitude towards factors related to the etiology of hypothyroidism. Strategies at community levels for hypothyroidism control is needed in Saudi Arabia.

Keywords: hypothyroidism, thyroid hormones, Saudi Arabia, risk factors

INTRODUCTION

Introduction

Thyroid hormone deficiency usually results in a disorder known as hypothyroidism, which has a diverse clinical impact ranging from mild signs to potentially fatal disease if untreated. The clinical manifestations widely vary according to age, sex, and other factors. The most frequent adult's symptoms include fatigue, weight gain, and change in voice, cold intolerance, lethargy, constipation, and dry skin (Chaker et al. 2017). Thyroid hormones include Triiodothyronine (T3), Thyroxine (T4), and Thyroid-stimulating hormone (TSH) (Luo et al. 2017), their low levels often results in hypothyroidism. The most common risk factors for acquiring hypothyroidism include iodine deficiency in nutrition, smoking, aging, endocrine disorders, genetic susceptibility, ethnicity (Taylor et al. 2018), and Hashimoto's disease (chronic autoimmune thyroiditis) (Chiovato et al. 2019). Women are more

common at risk of developing hypothyroidism than men, and disease represents the second most endocrine disorder among women (Dunn and Turner, 2016). Whether the hypothyroidism is primary or secondary or tertiary oral levothyroxine is of choice treatment (Eghtedari and Correa, 2020)[6].

Hypothyroidism is prevalent in Arabian Gulf countries, but most of the patients are living with the disease without seeking the diagnosis. Within the Gulf Cooperation Council (GCC), Saudi Arabia harbors the upper prevalence rates of hypothyroidism cases (Tanriverdi et al. 2019). Therefore, the present study aimed to assess the Saudi community's knowledge levels regarding hypothyroidism risk factors.

MATERIALS AND METHODS

This research elaborated during a cross-sectional survey, conducted in Hail Region, Northern Saudi Arabia, during the period from October 2019 to March 2020. Out of the targeted population, 900 individuals have responded. The respondents were included in the study regardless of their age, sex, or other demographical characteristics.

A purposeful questionnaire was designed to obtain data regarding community knowledge and attitude towards hypothyroidism risk factors. Beside demographical characteristics, information about hypothyroidism was collected through questions included; *Hypothyroidism is a medical condition due to low thyroid hormones levels, Iodine deficiency in the diet may lead to hypothyroidism, Certain medications may increase the risk for developing hypothyroidism, Women are at greater risk for developing hypothyroidism and should be tested at regularly, People over 35 years old should be tested regularly for hypothyroidism, Pregnant women should be tested regularly for hypothyroidism, People with a family history of hypothyroidism* should be *tested regularly for hypothyroidism.*

The obtained data were analyzed using Statistical Package for Social Science (SPSS) software to obtain frequencies, cross-tabulations, and percentages.

Each participant has consented before inclusion in the study. Moreover, the study was approved by the Ethical Committee at the College of Medicine, University of Ha'il, Saudi Arabia.

RESULTS

Out of the 900 participants in this study, 731/900(81%) were females and 169/900(19%) were males. The majority of participants were age 18-25 years representing 347/900(38.6%) followed by age groups 36-45, and >45 years representing 214/900(23.8%), and 161/900(18%), respectively, as indicated in Table 1, Fig 1.

On asking the participants **"***Hypothyroidism is a medical condition due to low thyroid hormone levels***",** the majority of them answered "Yes" 645/900(72%) including 528/731(72%) females and 117/169(69%) males.
On asking the participants **"***Iodine deficiency in the diet may lead to hypothyroidism***",** the majority of them answered "Don't know" 486/900(54%) including 396/731(54%) females and 90/169(53%) males. However, 311/900(35%) answered: "Yes" (248/731(34%) were females and 63/169(37%) were males).
On asking the participants **"***Certain medications may increase the risk for developing hypothyroidism***",** the majority of them answered "Yes" 412/900(46%) including 322/731(44%) females and 90/169(53%) males. (See Table 2, Fig 2).

Table 1: Distribution of the participants by gender, age, and education.

Category	Variable	Females	Males	Total
Age				
	≤18 years	16	3	19
	18-25 years	291	56	347
	26-35	125	34	159
	36-45	164	50	214
	≥45+	135	26	161
	Total	731	169	900
Education level				
	Basic education	122	27	149
	Undergraduate	544	113	657
	Postgraduate	19	22	41
	Other	46	7	53

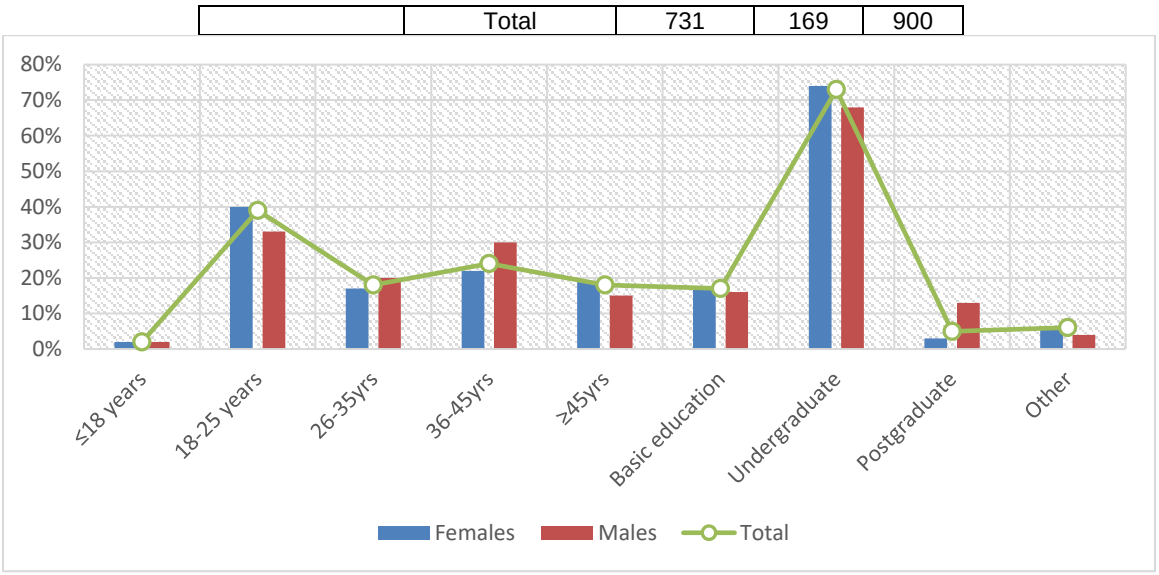

Figure 1: The participants by age and education within the entire gender group

Table 2: Distribution of the participants by gender, knowledge about hypothyroidism risk factors

Category	Variable	Females (n=731)	Males (n=169)	Total (n=900)
Hypothyroidism is a medical condition due to low thyroid hormones levels				
	Yes	528	117	645
	No	33	3	36
	Don't know	170	49	219
Iodine deficiency in the diet may lead to hypothyroidism				
	Yes	248	63	311
	No	87	16	103
	Don't know	396	90	486
Certain medications may increase the risk of developing hypothyroidism				
	Yes	322	90	412
	No	65	13	78
	Don't know	344	66	410

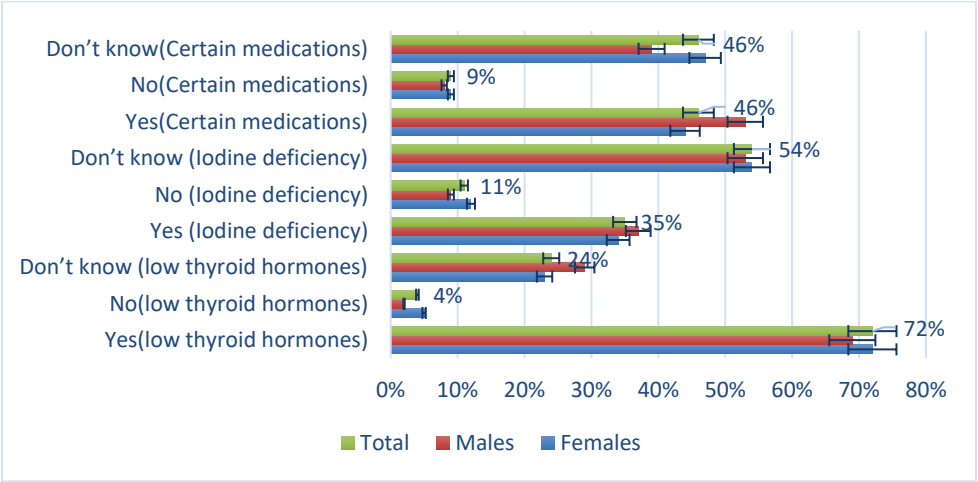

Figure 2: Description of the participants by knowledge about hypothyroidism risk factors within

the entire gender group

Table 3: Distribution of the participants by gender, attitude towards hypothyroidism risk factors

Category	Variable	Females (n=731)	Males (n=169)	Total (n=900)
Women are at greater risk for developing hypothyroidism and should be tested at regularly				
	Strongly Agree	345	64	409
	Agree	242	49	291
	May be	107	43	150
	Disagree	33	11	44
	Strongly disagree	4	2	6
People over 35 years old should be tested regularly for hypothyroidism				
	Strongly Agree	277	50	327
	Agree	249	57	306
	May be	161	50	211
	Disagree	36	10	46
	Strongly disagree	8	2	10
Pregnant women should be tested regularly for hypothyroidism				
	Strongly Agree	376	65	441
	Agree	214	54	268
	May be	113	42	155
	Disagree	25	6	31
	Strongly disagree	3	2	5
People with a family history of hypothyroidism should be tested regularly for hypothyroidism				
	Strongly Agree	320	57	377
	Agree	211	48	259
	May be	147	42	189
	Disagree	46	15	61
	Strongly disagree	7	7	14

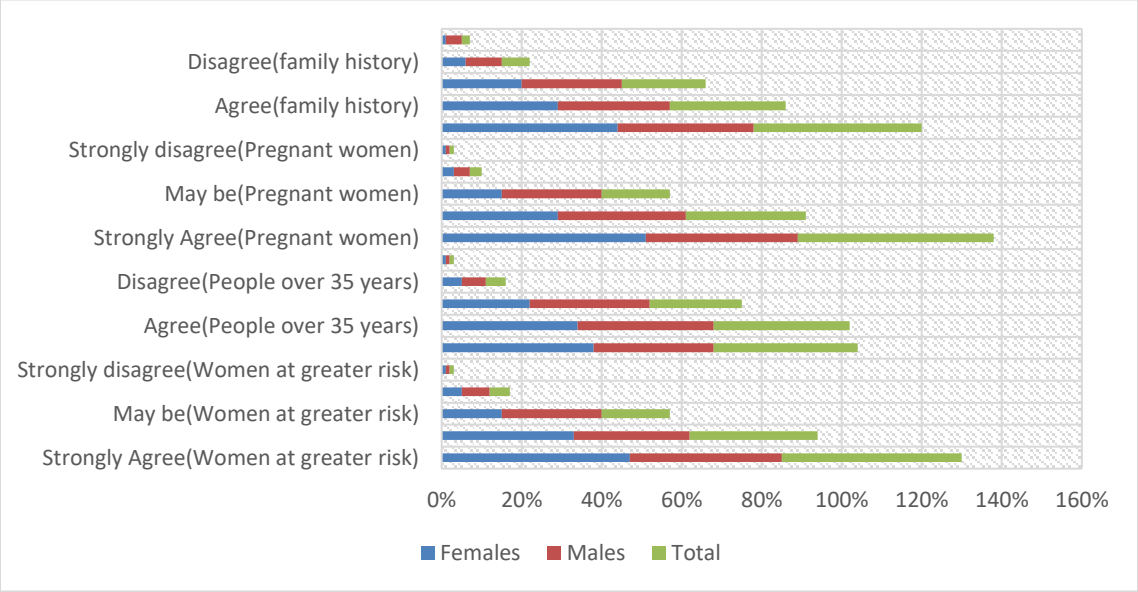

Figure 3: The participants by the attitude towards hypothyroidism risk factors within the entire gender group

Table 3, Fig 3, summarized the distribution of the participants by gender, attitude towards hypothyroidism risk factors. On asking the participants "*Women are at greater risk for developing hypothyroidism and should be tested at regularly*" The majority of the participants strongly agree 409/900(45.4%), hence, 50/900(5.6%) disagreed or strongly disagreed.

On asking the participants "*People over 35 years old should be tested regularly for hypothyroidism*" The majority of the participants strongly agree 327/900(36.3%), hence, 56/900(6.2%) disagreed or strongly disagreed.

On asking the participants "*Pregnant women should be tested regularly for hypothyroidism*" The majority of the participants strongly agree 441/900(49%), hence, 36/900(4%) disagreed or strongly disagreed.

On asking the participants "*People with a family history of hypothyroidism should be tested regularly for hypothyroidism*" The majority of the participants strongly agree 377/900(42%), hence, 75/900(8.3%) disagreed or strongly disagreed.

DISCUSSION

Hypothyroidism is a common problem in Saudi Arabia, as many people living with mild thyroid without seeking any medical investigation until advanced manifestations appear. As a result, efforts towards raising knowledge about hypothyroidism deemed important. Before planning a particular program towards disease control and early management, evaluating the current situation is important. Consequently, the present study may be key for future activities towards hypothyroidism control in Saudi Arabia.

The vast majority of the respondents in the present study were females, and it was well-known that hypothyroidism is more common among women, particularly among patients with sub-clinical hypothyroidism (Tanriverdi et al. 2019).

On asking the participants **"***Hypothyroidism is a medical condition due to low thyroid hormone levels***",** the majority of them answered "Yes" 72%. This knowledge level was relatively similar among both genders. Hypothyroidism is usually manifested by biochemical estimation of thyroid hormone that low levels associated with varied manifestations and etiological factors (Patil et al. 2020).

On asking the participants **"***Iodine deficiency in the diet may lead to hypothyroidism***",** the majority of them answered "Don't know" 54%. This indication of low knowledge about this important hypothyroidism risk factor. Iodine is one of the most important constituents of T3 and T4 thyroid hormones, and its deficiency often results in hypothyroidism. Geographical areas with low nutrients contents of iodine characterized by an epidemic of hypothyroidism the prime cause of goiter (Babiker et al. 2020).

On asking the participants **"***Certain medications may increase the risk for developing hypothyroidism*", about 46% answered "Yes". Several drugs were reported as leading to hypothyroidism including some cancer treatment and immune-regulatory drugs (Agrawal et al. 2020).

On asking the participants "*Women are at greater risk for developing hypothyroidism and should be tested at regularly*" about 45.4% of the participants strongly agree. Recent studies showing that hypothyroidism is more common in women, particularly the mild forms of the diseases (Wu et al. 2019; Ylli et al. 2019).

On asking the participants "*People over 35 years old should be tested regularly for hypothyroidism*" about 36.3% of the participants strongly agree. Studies have suggested that thyroid dysfunction is increasing with aging (Bensenor et al. 2012; Duntas and Yen, 2019).

On asking the participants "*Pregnant women should be tested regularly for hypothyroidism*" around 49% of the participants strongly agree. Hypothyroidism is commonly experienced among pregnant women (Kiran et al. 2019). It was reported that subclinical hypothyroidism affects 15% of the pregnant ladies (Cigrovski et al. 2020).

On asking the participants "*People with a family history of hypothyroidism should be tested regularly for hypothyroidism*" Approximately 42% of the participants strongly agree. It was reported that congenital hypothyroidism is associated with dyshormonogenesis especially in the presence of a family history of congenital hypothyroidism (Santos-Silva et al. 2019; Natash and Badiger, 2019).

Although the present study has opened a door for future research in this field in Saudi Arabia, it has some limitations including its cross-sectional setting, sex imbalance, the vast majority of participating females were at a relatively younger age.

CONCLUSION

The overall knowledge of the Saudi community about hypothyroidism risk factors is poor, with a relatively poor attitude towards factors related to the etiology of hypothyroidism. Strategies at community levels for hypothyroidism control are needed in Saudi Arabia.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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AUTHOR CONTRIBUTIONS

FSA: Conception, administration, analysis, drafting, approval of the final version.
-SHA: Conception, design, data acquisition, practical part, approval of the final version.
-GMA: Conception, analysis, drafting, practical part, approval of the final version.
-MAA: Conception, design, data acquisition, approval of the final version.
-HTA: Conception, analysis, drafting, approval of the final version.
-GFA: Conception, analysis, drafting, approval of the final version.
- AMA: Conception, analysis, drafting, approval of the final version.
-HGA: Consultation, analysis, drafting, approval of the final version.

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