



Research Article

ISSN : 2277-3657
CODEN(USA) : IJPRPM

Assessment of Saudi people's Knowledge about Hypothyroidism Treatment Usage

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ABSTRACT

Background: As adjusting the treatment dose for hypothyroidism based on several factors requiring continuous rigorous assessment, the current study aimed to assess of Saudi people's knowledge about hypothyroidism treatment usage. *Methodology:* This is a cross-sectional study, piloted in Hail Region, Northern Saudi Arabia. In this study, 900 respondents were randomly involved in the study irrespective of their age, sex, or other demographical characteristics. *Results:* The present study investigated 900 participants of whom 272/900(30.2%) were patients with hypothyroidism. Of the 900 participants, 730/900 (81%) were females and 170/900 (19%) were males, giving males' females' ration of 1.00: 4.29. of the 272 patients with hypothyroidism, 250/730 (34%) were females and 22/170 (13%) were males. *Conclusion:* Hypothyroidism is prevalent in Northern Saudi Arabia. Raising community awareness towards hypothyroidism is essential for better control of the diseases. Healthcare providers should inspire their patients to adjust the treatment does as prescribed without cessation.

Key words: *hypothyroidism, Thyroid hormones, Thyroid hormones, Saudi Arabia.*

INTRODUCTION

Hypothyroidism is a medical condition resulting from thyroid dysfunction mostly associated with low levels of thyroid hormones [1-3]. Thyroid hormones include thyroid-stimulating hormone (TSH), triiodothyronine (T3), and thyroxine (T4) [4, 5]. The most common causes of hypothyroidism are iodine deficiency, autoimmune disease (Hashimoto thyroiditis), and congenital disorders [6-9].

Hypothyroidism has a wide range of symptoms ranging from mild symptoms or no signs to severe clinical manifestations [10]. Consequently, many patients with mild symptoms are living without diagnosis and treatment. Several symptoms have been well documented to be linked to hypothyroidism comprising fatigue, lethargy, weight gain, and change in voice, constipation, cold intolerance, and dry skin. These manifestations may greatly differ according to sex, age, etc. [11].

However, the diagnosis of hypothyroidism is essential before the use of optimal thyroid hormone replacement. A combination of free (T4) levels with accompanying symptoms are the best for achieving accurate diagnosis and better replacement monitoring [12]. Oral levothyroxine is the most frequent treatment for hypothyroidism

(primary, secondary, or tertiary) [13]. The preliminary treatment by levothyroxine may differ impressively and may be influenced by residual retained thyroid function, body weight, and TSH levels. Thus adjusting the treatment dose based on several factors requiring continuous rigorous assessment [14]. Therefore, the current study aimed to assess Saudi people's knowledge about hypothyroidism treatment usage.

MATERIALS AND METHODS

This is a cross-sectional study, piloted in Hail Region, Northern Saudi Arabia, during the period from October 2019 to March 2020. Out of the addressed population, 900 persons have responded to participate in the study. The respondents were randomly involved in the study irrespective of their age, sex, or other demographical characteristics.

A purposeful questionnaire was designed to get data about community knowledge and attitude towards hypothyroidism treatment usage. Beside demographical characteristics, information regarding hypothyroidism was composed over questions included; *Treatment for hypothyroidism should be initiated after physician consultation only*, *Do you take hypothyroidism medication daily?*, *Do you use to miss some doses of your medication*, *Do you take your medications 30-60 minutes before breakfast on empty stomach*, *Do you take thyroid medications in combination with other medications*, *As advised by your doctor do you get your TSH tested regularly?*, *Do you use to look for information regarding hypothyroidism on the internet?*, *Do you use to ask your doctor for more information(counseling) on how to manage the disease.*

RESULTS

The present study investigated 900 participants of whom 272/900 (30.2%) were patients with hypothyroidism. Of the 900 participants, 730/900 (81%) were females and 170/900 (19%) were males, giving males' females' ration of 1.00: 4.29. of the 272 patients with hypothyroidism, 250/730 (34%) were females and 22/170 (13%) were males. The majority of patients were aged 36-45 years followed by >45yrs, and 26-35 years, representing 89/272(33%), 78/272 (29%), and 60/272 (22%), respectively. Most patients were with university level of education followed by secondary education constituting 175/272 (64%) and 56/272 (21%) in this order, as indicated in Table 1, Fig 1.

Table 1. Distribution of the study population by thyroid condition and demographical characteristics

Category	Variable	Hypothyroidism	No hypothyroidism	Total
<i>Gender</i>	Females	250	480	730
	Males	22	148	170
	Total	272	628	900
<i>Age</i>	<18years	2	17	19
	18-25	43	304	347
	26-35	60	100	160
	36-45	89	125	214
	>45	78	82	161
	Total	272	628	900
<i>Education level</i>	Secondary	56	71	149
	Undergraduate	175	481	657
	Postgraduate	13	29	42
	Others	28	25	53
	Total	272	628	900

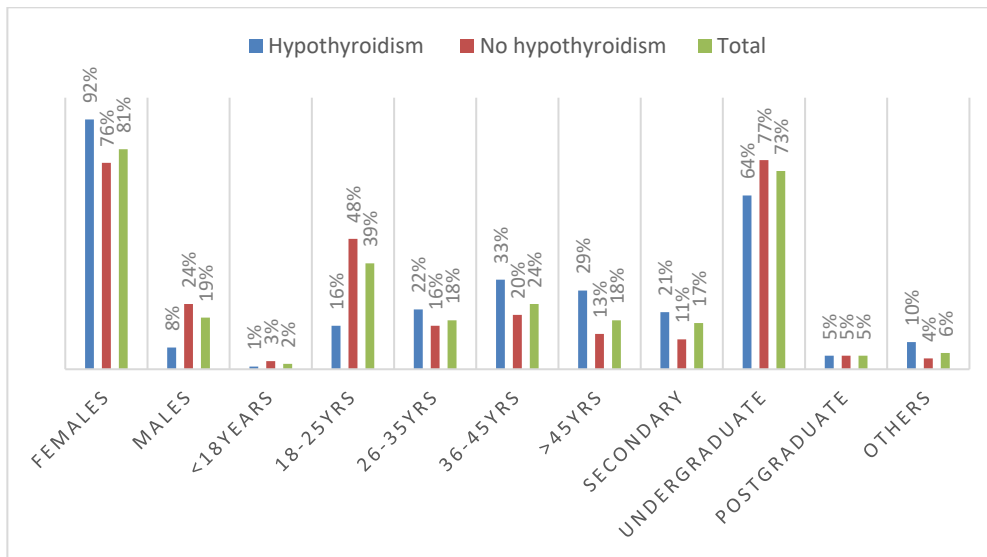


Figure 1. The study population by thyroid condition and demographical characteristics

On asking the participants on “Treatment for hypothyroidism should be initiated after physician consultation only”, out of the 272 patients with hypothyroidism, 206/272 (76%), 44/272 (16%), and 12/272 (2%) strongly agreed, agree, and not sure, correspondingly. Participants (no hypothyroidism) have a similar distribution, as indicated in Table Fig 2.

Table 2. Distribution of the study population by hypothyroidism and attitude towards physician consultation about treatment

Category	Variable	Hypothyroidism	No hypothyroidism	Total
<i>Treatment for hypothyroidism should be initiated after physician consultation only</i>				
	Agree	44	130	174
	Disagree	6	23	29
	Not sure	12	96	108
	Strongly agree	206	368	574
	Strongly disagree	4	11	15
	Total	272	628	900

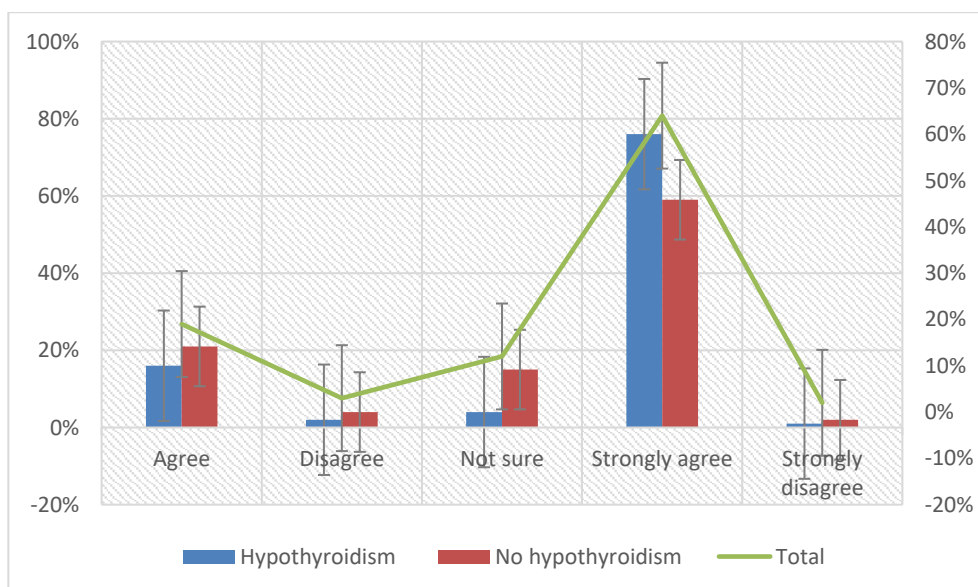


Figure 2. Hypothyroidism and attitude towards physician consultation about treatment

On asking the patients with hypothyroidism “Do you take hypothyroidism medication daily?”, 233/272 (86%) answered, "Yes" 216/250(86.4%) were females and 5/22(23%) were males).

On asking the patients with hypothyroidism “Do you use to miss some doses of your medication?”, 97/272 (36%) answered, "Yes" (89/250(37%) were females and 8/22(36%) were males).

On asking the patients with hypothyroidism “Do you take your medications 30-60 minutes before breakfast on empty stomach?”, 239/272(88%) answered, "Yes" (222/250(89%) were females and 17/22 (77%) were males).

On asking the patients with hypothyroidism “Do you take thyroid medications in combination with other medications”, 78/272(29%) answered “Yes” 70/250(28%) were females and 8/22(36%) were males), as described in Table 3.

Table 3. Distribution of the study population by gender and hypothyroidism treatment eminence

Category	Variable	Females	Males	Total
<i>Do you take hypothyroidism medication daily?</i>				
	Yes	216	5	233
	No	34	17	39
	Total	250	22	272
<i>Do you use to miss some doses of your medication</i>				
	Yes	89	8	97
	No	161	14	175
	Total	250	22	272
<i>Do you take your medications 30-60 minutes before breakfast on an empty stomach</i>				
	Yes	222	17	239
	No	28	5	33
	Total	250	22	272
<i>Do you take thyroid medications in combination with other medications</i>				
	Yes	70	8	78
	No	180	14	194
	Total	250	22	272

On asking the patients with hypothyroidism “As advised by your doctor do you get your TSH tested regularly?”, 202/272(74%) answered, "Yes" (187/250(75%) were females and 15/22(68%) were males).

On asking the patients with hypothyroidism “Do you use to look for information regarding hypothyroidism on the internet?”, 207/272(76%) answered, "Yes" (190/250(76%) were females and 17/22(77%) were males).

On asking the patients with hypothyroidism “Do you use to ask your doctor for more information (counseling) on how to manage the disease”, 190/272(70%) answered “Yes” (173/250(69%) were females and 17/22(77%) were males), as described in Table 4.

Table 4. Distribution of the study population by gender and source of information about hypothyroidism medication

Category	Variable	Females	Males	Total
<i>As advised by your doctor do you get your TSH tested regularly?</i>				
	Yes	187	15	202
	No	63	7	70
	Total	250	22	272
<i>Do you use to look for information regarding hypothyroidism on the internet?</i>				
	Yes	190	17	207
	No	60	5	65
	Total	250	22	272
<i>Do you use to ask your doctor for more information(counseling) on how to manage the disease</i>				
	Yes	173	17	190
	No	77	5	82
	Total	272	22	272

DISCUSSION

As hypothyroidism has varied symptoms fluctuating from minor symptoms or no signs to severe clinical manifestations, many people may be missed diagnosed. In Saudi Arabia, the burden of the hypothyroidism disease is in ongoing pattern [15]. Adjusting the treatment dose for hypothyroidism based on several factors requiring continuous rigorous assessment [14]. Therefore, the current study aimed to assess Saudi people's knowledge about hypothyroidism treatment usage.

In this random sample of the Saudi population, 30.2% of the participants were found as patients with hypothyroidism, which suggests that hypothyroidism is prevalent in Northern Saudi Arabia in particular. To the best of our knowledge there are no such reports from this area, yet reports from the region revealing relatively similar findings [16].

On asking the participants on “*Treatment for hypothyroidism should be initiated after physician consultation only*”, 76% and 16% of patients with hypothyroidism were strongly agreed, and agree. This represents a high level of knowledge, as the initiation of hypothyroidism is a vital decision [17].

On asking the patients with hypothyroidism “*Do you take hypothyroidism medication daily?*”, 86% answered “Yes” and the remaining 14% use to interrupt their treatment. Prolonged untreated hypothyroidism or unused treatment usually results in diverse clinical effects [18].

Approximately 88% of the patients with hypothyroidism “*used to take their medications 30-60 minutes before breakfast on an empty stomach*”. Levothyroxine is recommended to be taken on an empty stomach [19].

About 29% of the patients were used to take hypothyroidism medications in combination with other therapies. Several drugs have been documented to have interactions with hypothyroidism medications [20]. So it is highly recommended that when drugs for other conditions are prescribed should be checked for possible hypothyroidism therapies interactions.

In the present study, about 74% of the patients used to test their TSH regularly as advised by their doctors. Although a low TSH level can indicate thyroid dysfunction [21], it can be elevated in cases of subclinical hypothyroidism [22].

In geographical regions with prevalent hypothyroidism, raising awareness of the population towards the disease can assist in the early detection of the disease and enhance the outcomes of the overall management. In the present study most patients with hypothyroidism use to get the information related to the disease through an internet search and direct counseling of their doctors.

Although the present study provides some important data about the burden of hypothyroidism in Saudi Arabia, it has some limitations including its cross-sectional setting and gender imbalance.

CONCLUSION

Hypothyroidism is prevalent in Northern Saudi Arabia. Raising community awareness towards hypothyroidism is essential for better control of the diseases. Healthcare providers should inspire their patients to adjust the treatment does as prescribed without cessation.

REFERENCES

1. Tsai TY, Tu YK, Munir KM, Lin SM, Chang RH, Kao SL, Loh CH, Peng CC, Huang HK. Association of hypothyroidism and mortality in the elderly population: A systematic review and meta-analysis. *The Journal of Clinical Endocrinology & Metabolism*. 2020 Jun;105(6):dgz186.
2. Tuli G, Munarin J, Tessaris D, Matarazzo P, Einaudi S, de Sanctis L. Incidence of primary congenital hypothyroidism and relationship between diagnostic categories and associated malformations [published online ahead of print, 2020 Jun 7]. *Endocrine*. 2020;10.1007/s12020-020-02370-w. doi:10.1007/s12020-020-02370-w.
3. Kumar AB, Umashankar MS, Porselvi A. Case Report on Dilated Cardiomyopathy in Type 2 Diabetes Mellitus Patient with Hypothyroidism. *J. Adv. Pharm. Educ. Res.* 2018;8(2):1-4.
4. Hu Y, Zhang Z, Qin K, Zhang Y, Pan R, Wang Y, Shi R, Gao Y, Tian Y. Environmental pyrethroid exposure and thyroid hormones of pregnant women in Shandong, China. *Chemosphere*. 2019 Nov 1;234:815-21. doi:10.1016/j.chemosphere.2019.06.098.

5. Alnahdi HS. The Possible Ameliorative Mechanisms of Curcumin and/or Coenzyme Q10 Against Hyperthyroidism Induced Liver Damage in Rats. *Entomol. appl. sci. lett.* 2018;5(1):7-16.
6. Drugs BI. Lactation Database (LactMed). Bethesda (MD)[(accessed on 8 June 2019)]. 2006.
7. Patil N, Rehman A, Jialal I. Hypothyroidism. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2020.
8. Cherella CE, Wassner AJ. Update on congenital hypothyroidism. *Curr Opin Endocrinol Diabetes Obes.* 2020;27(1):63-69. doi:10.1097/MED.0000000000000520.
9. Sindi HA, Yousef FM, Aljahdali BA. Vitamin D Status and Autoimmune Disease (Hashimoto's Thyroiditis) in Saudi Arabian Women. *Int. J. Pharm. Phytopharm. Res.* 2018;8(1):21-6.
10. Abbas MA, El Badrey SM, ElDeeb AM, Sayed AM. Effect of aerobic exercises on the thyroid hormones in treated hypothyroid pregnant women. *J. Adv. Pharm. Educ. Res.* 2019;9(4):49-53.
11. Chaker L, Bianco AC, Jonklaas J, Peeters RP. Hypothyroidism. *Lancet.* 2017;390(10101):1550-1562. doi:10.1016/S0140-6736(17)30703-1
12. Koulouri O, Auldin MA, Agarwal R, Kieffer V, Robertson C, Falconer Smith J, Levy MJ, Howlett TA. Diagnosis and treatment of hypothyroidism in TSH deficiency compared to primary thyroid disease: pituitary patients are at risk of under-replacement with levothyroxine. *Clinical endocrinology.* 2011 Jun;74(6):744-9.
13. Eghtedari B, Correa R. Levothyroxine. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2020. doi:10.1111/j.1365-2265.2011.03984.x.
14. de Carvalho GA, Paz-Filho G, Mesa Junior C, Graf H. MANAGEMENT OF ENDOCRINE DISEASE: Pitfalls on the replacement therapy for primary and central hypothyroidism in adults. *Eur J Endocrinol.* 2018;178(6): R231-R244. doi:10.1530/EJE-17-0947.
15. Abbas M, Tayrab E, Elmakki A, Tayrab J, Al-shahrani A, Miskeen E, Salih K. Primary Thyroid Stimulating Hormone Screening for Congenital Hypothyroidism in King Abdullah Hospital, Bisha, Saudi Arabia. *Cureus.* 2020 Mar;12(3). doi:10.7759/cureus.7166.
16. Alzahrani AS, Al Mourad M, Hafez K, Almaghamsy AM, Alamri FA, Al Juhani NR, Alhazmi AS, Saeedi MY, Alsefiri S, Alzahrani MD, Al Ali N. Diagnosis and Management of Hypothyroidism in Gulf Cooperation Council (GCC) Countries. *Advances in Therapy.* 2020 Jun 1. doi:10.1007/s12325-020-01382-2.
17. Hoermann R, Midgley JE, Larisch R, Dietrich JW. Individualised requirements for optimum treatment of hypothyroidism: complex needs, limited options. *Drugs in context.* 2019;8. doi:10.7573/dic.212597.
18. Lee SJ, Moon JE, Lee GM, Cho MH, Ko CW. An Alport syndrome boy with Van Wyk-Grumbach syndrome induced by prolonged untreated congenital hypothyroidism. *Ann Pediatr Endocrinol Metab.* 2020;25(2):132-136. doi:10.6065/apem.1938074.037.
19. Zaboon IA, Alidrisi HA, Hussein IH, Alabbod M, Alibrahim NT, Almomin AM, Al-Waeli DK, Alhamza AH, Mohammed AG, Nwayyir HA, Al-Ali AJ. Best Time for Levothyroxine Intake in Ramadan (THYRAM): Basrah Experience. *International Journal of Endocrinology and Metabolism.* 2020 Apr;18(2). doi:10.5812/ijem.94325.
20. Colucci P, Yue CS, Ducharme M, Benvenga S. A Review of the Pharmacokinetics of Levothyroxine for the Treatment of Hypothyroidism. *Eur Endocrinol.* 2013;9(1):40-47.
21. Jannin A, Penel N, Ladsous M, Vantyghem MC, Do Cao C. Tyrosine kinase inhibitors and immune checkpoint inhibitors-induced thyroid disorders. *Crit Rev Oncol Hematol.* 2019;141:23-35. doi:10.1016/j.critrevonc.2019.05.015doi:10.17925/EE.2013.09.01.40.
22. Delitala AP, Scuteri A, Maioli M, Mangatia P, Vilardi L, Erre GL. Subclinical hypothyroidism and cardiovascular risk factors. *Minerva Med.* 2019;110(6):530-545. doi:10.23736/S0026-4806.19.06292-X.