

Prevalence of Hypothyroidism and Its Associated Risk Factors in Arar City, Saudi Arabia

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ABSTRACT

Background: Hypothyroidism is a common endocrine disorder worldwide. The prevalence of hypothyroidism depends on many factors, such as age, sex and geographical factors.

Objective: This study is carried out to assess the prevalence of hypothyroidism and the related etiology and risks in the general population of Arar city, northern border of Saudi Arabia. **Methods:** A cross-sectional study was conducted in Arar, Northern Saudi Arabia. A multistage stratified random sampling technique was used. A pre-designed online questionnaire was distributed among the targeted population and filled by participants after a brief introduction or explanation of the idea of the research to the public. Sampled participants filled out the self-reported predesigned questionnaire to collect socioeconomic and thyroid diseases related data.

Results: In our study, the prevalence of hypothyroidism was 25.5% (116/454), females are more affected than males, as 57.7% of the cases were female, most of them (80%) aged 21-60 years old and 40% of the cases has a family history of the disease. 64.7% of the cases were on medical treatment but only 16% of them responded. While surgical treatment were found in only 8% of the cases. **Conclusion:** Hypothyroidism is prevalent in Arar, Northern Saudi Arabia, females were more affected than males. Knowledge of factors influencing thyroid dysfunction help the public to guard against these prevalent diseases. More studies should be carried out in Arar city to stress on the individual thyroid disorder. The studies should be community based with clinical and laboratory diagnosis of cases.

Keywords: Hypothyroidism; risk factors; manifestations; Arar, Northern Saudi Arabia.

INTRODUCTION

Thyroid disorders (hyper and hypo thyroidism); are amongst the most prevalent of medical conditions. Hypothyroidism is a common endocrine disorder worldwide. The prevalence of hypothyroidism depends on many factors, such as age, sex and geographical factors^[1]. It's also a diet related disorder and it's usually seen when the daily intake of iodine falls below 25µg. Hypothyroidism can be classified according to the gland function into primary and secondary^[2].

In primary hypothyroidism the defect is in the thyroid gland itself and the hypo activity of the gland, while secondary hypothyroidism is due to a defect in the posterior pituitary gland which secretes the thyroid stimulating hormone or TSH^[2]. Several studies have been reported from different parts of the world showing the prevalence of hypothyroidism.

The prevalence of spontaneous hypothyroidism is between 1% and 2%, and it is more common in older women and ten times more common in women than in men^[3]. Hypothyroidism is characterized by a broad clinical spectrum ranging from an overt state of myxedema, end-organ effects and multisystem failure to an asymptomatic or subclinical condition with normal levels of thyroxine and triiodothyronine and mildly elevated levels of serum thyrotropin^[4,5]. The prevalence of subclinical hypothyroidism in the

developed world is about 4-15%^[6,8], while the prevalence of hypothyroidism is about 4-5%^[6,7]. It affects many systems, such as cardiovascular, gastrointestinal and musculoskeletal^[2]. Hypothyroidism is associated with high levels of LDL, total cholesterol, triglycerides obesity, metabolic syndrome and high blood pressure^[9-10].

It also has widespread systemic manifestations including their effects on bone and mineral metabolism. Some studies reported decreased serum calcium and phosphorus levels in hypothyroidism^[11]. Iodination programs are of proven value in treatment of hypothyroidism and in preventing goitre development, however; some rare cases need a surgical treatment. Due to asymptomatic nature of subclinical hypothyroidism, it's recommended to do a routine TSH screening at the age of 35 for both sexes and every 5 years thereafter.

Objectives

The present study carried out to assess the prevalence of hypothyroidism and its related risk factors in the general population of Arar city, northern border of Saudi Arabia.

METHODS

A cross-sectional study was conducted in Arar, Northern Saudi Arabia. A multistage stratified random sampling technique was used. A pre-

designed online questionnaire was distributed among the targeted population and filled by participants after a brief introduction or explanation of the idea of the research to the public. Sampled participants filled out the self-reported predesigned questionnaire to collect socioeconomic and thyroid diseases related data.

Ethical considerations

Participants informed that participation is voluntary and written consent obtained from each participant before being subjective with them. No name recorded on the questionnaires and all questionnaires kept safe. Research approval was obtained from research ethical committee of Northern Borders General Health Affairs.

Statistical analysis

Collected data was coded and analyzed using statistical package for the social sciences (SPSS, version15). Both descriptive statistics (e.g., number and percentage) and analytic statistics was examined. Chi-Square tests (χ^2) was employed to test for the association and/or the difference between two categorical variables. P values equal to or less than 0.05 was considered statistically significant.

RESULTS

Table (1) discussed the socio-demographic characteristics, prevalence and family history of hypothyroidism and history of obesity among the

studied population, we found that, female were 57.7% and most of them (80%) aged 21-60 years old. Our study found that 53.7% were married, although 75% reach university stage of education, 49% of them don't get jobs.

Table (2) show the relationship between hypothyroidism and sociodemographic characteristics, family history and obesity among the studied population. In our study, the prevalence of hypothyroidism was 25.5% (116/454), female are more affected than male as 57.7% of the cases were female, most of them (80%) aged 21-60 years old and 40% of cases has a family history of the disease. Table (3) discussed the clinical manifestations and treatment characteristics of hypothyroidism among the studied cases. It was found that 42% of hypothyroidism cases had positive family history and 63% were obese. The most common symptoms of hypothyroidism were general weakness in 87.9%, loss of concentration in 81.9%, sense of depression in 69.8%, dry skin 56.0%, digestive system troubles in 69% and persistent constipation in 56.0%. More than half of female the cases complained of menstrual troubles and 6% had a history of previous neck operation. 64.7% of cases get medical treatment but only 16% of them are compliant and responded fully. While surgical treatment was found in only 8% of the cases.

Table (1): Socio-demographic characteristics, prevalence and family history of hypothyroidism and history of obesity among the studied population, Arar, 2017

	Sex	Frequency (n=454)	Percent
Gender	Female	262	57.7
	Male	192	42.3
Age group (in years)	< 18	9	2.0
	18-21	74	16.3
	21-60	363	80.0
	> 60	8	1.8
Marital status	Single	210	46.3
	Married	244	53.7
Educational level	Illiterate	3	.7
	Primary	11	2.4
	Secondary	99	21.8
	University or more	341	75.1
Working status	Working in private sector	44	9.7
	Working in governmental sector	186	41.0
	Not working	224	49.3
Hypothyroidism	Yes	116	25.6
	No	338	74.4
Family history	No	303	66.7
	Yes	151	33.3
Obesity	No	276	60.8
	Yes	178	39.2

Table (2): The relationship between hypothyroidism and sociodemographic characteristics, family history and obesity among the studied population, Arar, 2017

Variables	Hypothyroidism		Total (n=454)	P value
	Yes (n=116)	No (n=338)		
Sex	94	168	262	0.001
	81.0%	49.7%	57.7%	
Female	22	170	192	
	19.0%	50.3%	42.3%	
Male	5	4	9	
	4.3%	1.2%	2.0%	
< 18	9	65	74	
	7.8%	19.2%	16.3%	
18-21	97	266	363	
	83.6%	78.7%	80.0%	
21-60	5	3	8	
	4.3%	.9%	1.8%	
>60	2	1	3	0.009
	1.7%	.3%	.7%	
Illiterate	7	4	11	
	6.0%	1.2%	2.4%	
Primary	26	73	99	
	22.4%	21.6%	21.8%	
Secondary	81	260	341	
	69.8%	76.9%	75.1%	
University or more	12	32	44	0.946
	10.3%	9.5%	9.7%	
Working in private sector	48	138	186	
	41.4%	40.8%	41.0%	
Working in governmental sector	56	168	224	
	48.3%	49.7%	49.3%	
Not working	65	238	303	0.004
	56.0%	70.4%	66.7%	
No	51	100	151	
	44.0%	29.6%	33.3%	
Yes	42	234	276	0.001
	36.2%	69.2%	60.8%	
No	74	104	178	
	63.8%	30.8%	39.2%	
Yes				

Table (3): Clinical manifestations and treatment characteristics of hypothyroidism among the studied cases, Arar, 2017

Manifestations and treatment of the disease	No. (n=116)	%
Family history of hypothyroidism	49	42.2
Obesity	74	63.8
General weakness and laxity	102	87.9
Loss of concentration	95	81.9
Digestive system troubles	81	69.8
Repeated constipation	65	56.0
Sense of fullness	39	33.6
Osteoporosis	40	34.5
Menstrual troubles (in females)	67	57.8
Sense of depression	93	80.2
Skin dryness	98	84.5
Pallor	93	80.2
Loss of hair	99	85.3
Continues sense of coldness	57	49.1
Loss of libido	65	56.0
Irritability	88	75.9
Pervious neck operations	7	6.0
Observation of neck swelling	29	25.0
Past history of regular drugs for any condition	13	11.2
Medical treatment	75	64.7
Duration of medical treatment (in weeks)		
< 1	13	11.2
1-3	7	6.0
> 3	71	61.2
Response to medical treatment		
No	15	12.9
Moderate	45	38.8
Good	38	32.8
Complete cure	19	16.4
Side effect of medical treatment	21	18.1
Relapse after treatment	39	33.6
Surgical treatment	10	8.6
Having information about the disease before it	22	19.0
Presence of because of the disease	79	68.1

DISCUSSION

Our study had 454 participant, 262 woman, 192 man. Regarding the age group, we had 9 below the age of 18 year old, 74 between 18 and 21 year old, 363 between 21 and 60 year old and 8 participant aged over 60 year old.

The prevalence of hypothyroidism was 25.5% (116 over 454 patients), 94 woman (81.0%) and 22 men (19.0%). Another study done in india had 5360 participant, 2932 female, 2428 male , 1447 participant between 18 and 35 year old, 1244 between 36 and 45 year old, 1068 between 46 and 54 year old and 1601 over 55 year old had a lower prevalence of hypothyroidism (10.9%) in their study population ^[12].

Also **Velayutham K et al.** ^[11] found in his study done in South India that the prevalence of hypothyroidism was 7.3%; which is another lower prevalence than ours. Another study done in King Khalid Hospital , Hail region , Saudi Arabia ^[13] found that out of 175 patients, 98 cases (27 male and 71 female) was found to have hypothyroidism. The prevalence of hypothyroidism was 6.18% in Libya and 47.34% in Saudi Arabia according to a study on the thyroid diseases in the Arab world ^[14]. In our study 51 participant (44.0%) of those diagnosed with hypothyroidism had a positive family history of hypothyroidism. In a study done in Hail region, Saudi Arabia ^[13], 73 (41.7%) of the

participants had a positive family history of hypothyroidism. In our study 57 participant (49.1%) had continues sense of coldness, 102 participant (87.9%) had General weakness, laxity, 98 participant (84.5%) complained of skin dryness, and 65 participant (56%) complained of repeated constipation. While in a study done in Hail region, Saudi Arabia ^[13], the prevalence of continues sense of coldness, general weakness and laxity, skin dryness and repeated constipation were 30.6%, 42.2%, 27.5% and 50% respectively.

CONCLUSION AND RECOMMENDATIONS

Hypothyroidism is prevalent in Arar, Northern Saudi Arabia, females were more affected than males. Knowledge of factors influencing thyroid dysfunction help the public to guard against these prevalent diseases. More studies should be carried out in Arar city to stress on the individual thyroid disorder. The studies should be community based with clinical and laboratory diagnosis of cases.

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