

Original Article**Goiter Prevalence and Associated Factors among Women in Hargeisa, Somalila**

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Abstract

Background: Goiter, which is associated with various risk factors, is highly prevalent in Hargeisa region of Somalia and is a serious health problem among women living in the region. **Objective:** This study aims to reveal the true extent of the problem, identify the causative factors and suggest preventive methods accordingly. **Methods:** A cross-sectional analysis was conducted on 270 female patients randomly selected from 1659 patients at Hargeisa Group Hospital (HGH), in Somalia, between January and August of 2022. The study sample was equally distributed between those with and without a diagnosis of goiter. Independent risk factors were identified by making comparisons between groups. **Results:** For the study group, dietary habits were identified as an important risk factor for the development of goiter. Patients who regularly consumed 'cabbage' - 188 (87.4%) had a higher rate of goiter compared to those who did not - 64 (47.4%); ($p < 0.001$). Furthermore, those who consumed iodized salt regularly or more frequently - 54 (40%) were less likely to have goiter compared to those who did not - 128 (94.8%); ($p < 0.001$). The use of non-iodized salt and cabbage consumption were identified as predictive factors for the development of goiter. **Conclusion:** Randomized studies with larger study groups should be conducted. The Minister of Health, health professionals and the media should work in cooperation to raise public awareness and take necessary precautions.

Keywords: Goiter, Hargeisa district, Somalia, Women.

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Introduction

Goiter, an abnormal enlargement of the thyroid gland, is more prevalent in regions with inadequate iodine intake, such as South Asia and sub-Saharan Africa¹⁻³. Despite the implementation of some remedial actions, such as the introduction of iodized salt programs, the prevalence of goiter in Africa is around 28.3%^{4,5}.

Although there are many publications on the subject across the continent, few studies have specifically addressed the situation in Hargeisa, Somaliland. In this study, we aimed to reveal the

prevalence of goiter in female patients attending HGH surgical clinics and to identify important risk factors, as well as to make recommendations for preventive measures.

Methods

A cross-sectional analysis with a quantitative descriptive research design was envisaged. This study was conducted at Hargeisa Group Hospital (HGH), a tertiary referral health center located in Hargeisa, in Somalia, which is known as the largest public hospital in the country. HGH has one of the highest patient loads in the region (120

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patients per year) seeking surgical care for thyroid disease compared to other hospitals in the region.

Female patients diagnosed with goiter and older than 18 years of age were included in the study. The sample was randomly selected from those presenting to HGH between January and August 2022. The diagnosis of goiter was made by physical examination in the outpatient clinic by inspection and palpation of the thyroid gland. Medical histories including physical complaints, dietary habits, medication history and laboratory measurements were then recorded. Female patients diagnosed with thyroid malignancy and/or younger than 18 years of age were excluded from this analysis.

Data were obtained through a questionnaire administered in the outpatient clinic to investigate the relationship between goiter and its causative factors. This questionnaire included questions about the presence of goiter, socio-demographic status of the patient, iodized salt consumption and dietary habits.

Systematic random sampling method was used to select the participants of the study. Cronbach's alpha technique was used to measure the consistency of the findings presented. The content validity technique was chosen to address the fit between the test questions and the intended content or subject area in order to assess the extent to which a test or questions in a test measure a particular construct as seen by the researcher, the test user and the test takers. The questionnaires were shared with the research supervisor and other senior doctors at the hospital, all of whom confirmed that the questionnaires met the target requirements. Statistical Package for Social Sciences (SPSS) was used to analyze the data. Each question in the questionnaires was summarized and frequencies were obtained, and the results were presented in tables, pie charts and graphs. Chi-Square and Fisher Exact test were used to determine the relationship between dependent and independent variables and statistical significance was set at $p < 0.05$.

Results

Goiter prevalence: Between January and August 2022, 159 (9.6%) of the 1659 patients who presented to HGH with different complaints were treated for goiter (Figure 1). After randomization, 270 (16.3%) female patients were included in the study, of whom half ($n=135$) were diagnosed with

goiter. The most common presenting symptom during outpatient visits was a clinically significant, palpable thyroid mass.

Sociodemographic factors associated with goiter:

There was no significant correlation between the age of the patient and the prevalence of goiter ($p=0.391$). Similarly, no significant correlation was found between education level and disease ($p=0.022$). Patients with goiter had a higher rate of employment ($n=36$ (26.7%)) compared to those without the disease ($n=23$ (17%)), but this did not reach a significant value ($p=0.056$) (Table 1).

Association of dietary habits with goiter:

Cabbage consumption and frequency were significantly associated with goiter ($n=118$ (87.4%)) ($p < 0.001$). Iodized salt intake had a clear predictive role against goiter ($n=7$ (5.2%) vs ($n=54$ (40%)) ($p < 0.001$) (Table 2)

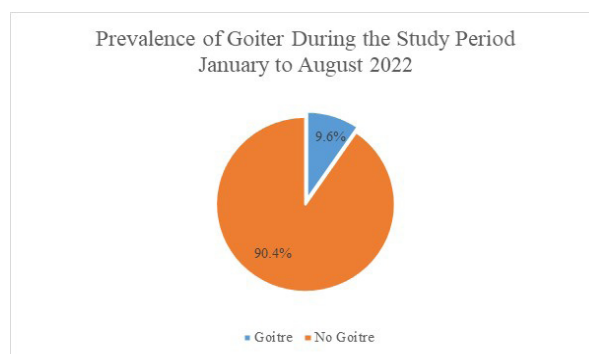


Figure 1: Representing the prevalence of goiter in Hargeisa Group Hospital, Somalia (January – August, 2022).

Discussion

In the present study, daily cabbage consumption and inadequate iodized salt intake were identified as statistically significant factors associated with goiter development. In a study conducted in Ethiopia, Gebremedhin et al. reported a 15.8% incidence of goiter in adolescents⁴. In the present analysis, the prevalence of goiter disease in female patients attending the HGH surgery clinic was found to be 9.6%. This finding is consistent with other findings, mostly attributed to physiologic differences between men and women^{6,8-10}. Furthermore, our study showed that the use of non-iodized salt was an important factor contributing to the development of goiter, which is consistent with the findings of other similar studies⁶⁻⁷. Pregnancy-induced metabolic changes such as enlargement of

Table 1. Demonstration of patient characteristics from diagnosis to surgery

		Time from diagnosis to surgery (month)				p (month)
		< 3 months		> 3 months		
		N	%	N	%	
Gender	Female	2	7,40%	0	0,00%	0,698
	Male	14	51,90%	11	40,70%	
Age (Average)		59		69		0,412
Height (cm) (Average)		169		170		0,510
Weight (kg) (Average)		78		79		0,004
ASA score (*)	1	7	25,90%	5	18,50%	0,386
	2	5	18,50%	4	14,80%	
	3	4	14,80%	2	7,40%	
Smoking status	Never smoked	5	18,50%	4	14,80%	0,252
	Current smoker or Ex-smoker (<6 weeks ago)	3	11,10%	0	0,00%	
	Ex-smoker (>6 weeks ago)	8	29,60%	7	25,90%	
Clinical Frailty Scale	1-3	16	59,30%	10	37,00%	0,696
	4-6	0	0,00%	1	3,70%	
	7-9	0	0,00%	0	0,00%	
Co-morbidity	None	12	44,40%	8	29,60%	0,774
	Ishemic heart disease	2	7,40%	1	3,70%	
	Congestive heart disease	0	0,00%	1	3,70%	
	Cerebrovascular occlusion	1	3,70%	1	3,70%	
	Diabetes Mellitus	1	3,70%	0	0,00%	
Symptoms	No	2	7,40%	2	7,40%	0,721
	Yes	14	51,90%	9	33,30%	
Length of symptoms (month) (Average)		20		12		0,649
Time from diagnosis to surgery (month) (Average)		2		26		
Performing daily activities before surgery	Yes (completely)	7	25,90%	5	18,50%	0,341
	Partial	9	33,30%	6	22,20%	
Site of hernia	Left	7	25,90%	4	14,80%	0,340
	Right	8	29,60%	7	25,90%	
	Bilateral	1	3,70%	0	0,00%	
Size of hernia	Groin limited	14	51,90%	10	37,00%	0,005
	Scrotum limited	2	7,40%	1	3,70%	
Indication for surgery	Asymptomatic	1	3,70%	2	7,40%	0,815
	Symptomatic	15	55,60%	9	33,30%	

		Time from diagnosis to surgery (month)				p (month)
		< 3 months		> 3 months		
		N	%	N	%	
Mode of anesthesia	Sedation	1	3,70%	2	7,40%	0,087
	General	13	48,10%	4	14,80%	
	Spinal	2	7,40%	5	18,50%	
Operator	Specialist surgeon	15	55,60%	11	40,70%	0,799
	Surgical resident	1	3,70%	0	0,00%	
Operative approach	Open	13	48,10%	9	33,30%	0,652
	Laparoscopic	3	11,10%	2	7,40%	
Size of hernial defect	<1.5 cm	13	48,10%	8	29,60%	0,310
	1.5 - 3.0 cm	1	3,70%	3	11,10%	
	>3.0 cm	2	7,40%	0	0,00%	
Typer of repair	Primary repair	1	3,70%	0	0,00%	0,603
	Lichenstein	11	40,70%	9	33,30%	
	TEP	4	14,80%	2	7,40%	
Use of mesh	No	1	3,70%	0	0,00%	0,799
	Yes	15	55,60%	11	40,70%	
Suture used to fix the mesh	Non-absorbable	11	42,30%	9	34,60%	0,569
	Tucker	4	15,40%	2	7,70%	
30-day post-op surgical site infection	No	11	40,70%	11	40,70%	0,516
	Yes	5	18,50%	0	0,00%	
In case of infection;	No re-admission	2	40,00%	0	0,00%	0,789
	Re-admission	3	60,00%	0	0,00%	
30-day reoperation	No	16	59,30%	11	40,70%	.
	Yes	0	0,00%	0	0,00%	
Post-op length of stay (day) (<i>Average</i>)		1		1		
Clavien-Dindo score	0	11	40,70%	11	40,70%	0,516
	1	5	18,50%	0	0,00%	

*American Society of Anesthesiologists (ASA)

Table 2. The relationship between the time from diagnosis to surgery (months) and symptoms

Measure	Symptoms	N	Rank.Average	Rank.Sum	U	z	p
Time from diagnosis to surgery (months)	None	4	15.25	61.00	41.000	-.342	.733
	Present	23	13.78	317.00			
	Total	27					

https://ijhshfimaaweb.info/index.php/IJHHS

the thyroid gland occur in approximately 10% of women. This condition is more severe in iodine deficient areas¹¹⁻¹³. In this study, the majority of the patients had more than one birth. This is because women living in Hargeisa are mostly unoccupied, do not take part in social life and are mostly responsible for housework and childbearing. This region-specific sociodemographic characteristic leads to the inability of iodized salt consumption to meet the increased demand due to multiple births.

As mentioned earlier, dietary habits play an influential role in the physiology of goiter. Excessive consumption of certain foods, such as cabbage, may worsen the clinical condition. Gebremedhin et al. found that adolescents who consumed excessive amounts of cabbage were more likely to develop goiter⁴. In another cross-sectional study published from the continent, cabbage was identified as a goitrogenic food and its consumption was identified as a predictor of goiter among school-age children¹⁴. Similarly, in this study, most of the patients had a history of cabbage consumption and this was found to be an important factor. Most people living in Hargeisa consume cabbage at least once a week and usually more, depending on their financial situation. As the population is mostly low-income, they are not able to make many alternative arrangements in their daily diet.

The size of the population, lack of resources and inadequate use of iodized salt lead to an enlarged thyroid gland. Also, most patients do not go to the hospital unless the thyroid gland is quite enlarged. In other words, people do not feel the need to seek medical advice or guidance unless it is at an advanced stage. This can be attributed to the low level of education, which is supported by the results presented in the study, as only a few patients were university graduates.

Some limitations should be mentioned. The results presented here cannot be considered a reliable

measure for the whole region, as the analysis was performed on a specific group of patients. Therefore, the actual situation may be more severe if a larger group is studied, or vice versa in terms of numbers. Further randomized trials are needed to clarify that the recommendations will only reduce the prevalence of goiter disease. Another disadvantage is that this study only evaluated the current situation in the HGH surgery clinic and there are no previous studies to compare the results presented. As mentioned, a similar study with larger patient groups should be performed.

Conclusion

In conclusion, the findings provided valuable information on the current status of goiter in Hargeisa district. The establishment of a regulatory dietary program by the government aimed at increasing the use of iodized salt in daily life and reducing the consumption of cabbage foods and raising public awareness through educational programs explaining the current situation and potential threats to the health of individuals, which can be delivered by specialized health workers and social media, are standard measures that should be taken in this direction.

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