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Changing trends in prevalence of goitre in hilly areas

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ABSTRACT

Background: Thyroid disorders are the most common endocrine disorders affecting the population worldwide. The aim of the study was to identify the emerging changing trends in prevalence of thyroid lesions in hilly areas to control and prevent goitre in these areas.
Methods: 100 patients with thyroid swelling were taken up in this study. The study included detailed history taking including age and sex, patient's presenting symptoms, dietary habits, psychological status, complete physical examination and investigations like thyroid functions tests, fine needle aspiration cytology and ultrasonography neck. The findings were noted and analysed.
Results: More incidence of goitre was seen in females and younger and middle age groups. Hypothyroidism is more prevalent but there is increasing prevalence of hyperthyroidism. Non neoplastic lesions are much more common than neoplastic lesions. There is strong correlation between dietary habits and thyroid disorders. Stress factor has a role in thyroid disorders.
Conclusions: Thyroid disorders are common in hilly regions with age, sex, stress and dietary habits playing an important role in their prevalence.

Keywords: Goitre, Hyperthyroidism, Hypothyroidism, Thyroid disorders, Thyroid function tests

INTRODUCTION

The term goitre means the enlargement of thyroid gland.[1] Thyroid disorder is the commonest endocrine disease affecting 300 million people worldwide and around 42 million in India.[2,3] Its prevalence depends on various factors like geographical conditions, ethnic conditions and environmental conditions.[4] In India, Himalayan hilly region is said to be endemic for goitre as being far away from sea the iodine content of the soil is low leading to iodine deficiency.[5,6] Due to efforts to eradicate iodine deficiency due to use of iodised salt, increased awareness and early diagnosis and treatment and emergence of new etiological factors for thyroid disorders, the clinical prevalence of goitre has changed. There is paucity of data available on emerging changes in its prevalence in hilly areas.

Thyroid function tests (TFT) are the common test for screening and evaluating thyroid disorders. Tri iodothyronine (T3), thyroxine (T4) and thyroid Stimulating Hormone (TSH) are used to assess the functional status of patients with goitre. Fine needle aspiration cytology (FNAC) is used for cytological diagnosis. It is a simple, quick and economical OPD procedure to classify thyroid swelling as non-neoplastic, benign or malignant lesion. Ultrasonography (USG) Neck is used to determine the type and physical characteristic of swelling.

So this study was aimed to identify the etiology and changing trends of prevalence of goitre in hilly areas using the parameters of detailed history taking, complete examination and above listed investigations to control and prevent goitre in hilly region.

METHODS

This study was conducted in Department of ENT and Surgery of our medical college and hospital from December 2015 to November 2016. 100 patients with thyroid swellings, aged above 18 years were enrolled in the study after obtaining written consent from the patients. The approval of Institutional Ethics Committee was taken. Patients with other neck swellings like reactive lymphadenitis, tubercular swellings, neck metastasis, other cystic swellings were excluded from the study. All the patients were examined by the authors performing this study.

All the patients underwent detailed history taking including age of the patient, sex, occupation, residence, clinical complaints, past history, personal and dietary habits and psychological status. All the patients underwent complete physical examination. All the 100 patients were investigated for TFT, FNAC and USG Neck.

The results were analysed on the basis of the following assessment points –

- Age and sex distribution of thyroid swellings
- Thyroid function status as euthyroid, hypothyroid or hyperthyroid.
- Types of thyroid swelling as neoplastic or non-neoplastic.
- Dietary and personal habits of the patients with thyroid swelling.
- Incidence of stress disorders in patients with thyroid swelling
- Major symptoms of the patients with goitre.

RESULTS

100 patients with thyroid swellings, aged above 18 years who gave written consent were enrolled in the study. All the patients were analysed according to the various assessment points. As the study included subjective assessment only adult patients above age of 18 years were included in the study.

Thyroid swellings were the most common neck swellings (38%) among the patients visiting our OPD. Other common neck swelling was reactive lymphadenitis (33%) as given in Figure 1. Only patients with thyroid swellings were taken up further in the study. Patients with other neck swellings were excluded from further study.

Most of the patients of thyroid swelling were of younger and middle age group. There was greater female predominance with F:M ratio 3.5:1 as in Table 1

TFT were done on all the patients. The tests done were T3, T4 and TSH. According to the results patients were classified as euthyroid, hypothyroid and hyperthyroid.

- Euthyroid – normal T3, normal T4, normal TSH
- Hypothyroid – decreased T3, decreased T4, increased TSH
- Hyperthyroid – increased T3, increased T4, decreased TSH.

Most of the patients with thyroid swelling (74%) were euthyroid. Hypothyroid patients (17%) were near double the hyperthyroid patients (9%). More incidence of hypothyroidism was seen in younger and middle age groups. Hyperthyroid patients were comparatively more in upper middle age group of 46-60 years as given in Table 2.

Table 1: Age and sex distribution.

Age group	Male	Female	Total
18-30 years	8	28	36
31-45 years	6	26	32
46-60 years	5	15	20
>60 years	3	9	12
Total	22	78	100

Table 2: Thyroid function.

Age group	Euthyroid (%)	Hypothyroid (%)	Hyperthyroid (%)
18-30 years	25 (70 %)	8 (22%)	3 (8%)
31-45 years	24 (75%)	6 (19%)	2 (6%)
45-60 years	15 (75%)	2 (10%)	3 (15%)
> 60 years	10 (82%)	1 (9%)	1 (9%)
Total	74 (74%)	17 (17%)	9 (9%)

Regarding type of thyroid swellings as diagnosed by physical examination, FNAC and USG neck, 88% of swellings were non neoplastic. Among non-neoplastic, diffuse colloid goitre was the most common. Among the neoplastic thyroid swellings, papillary carcinoma was the most common followed by follicular carcinoma as shown in Table 3.

The major symptoms of the patients with goitre were weight gain (18 patients), fatigue (17 patients) and irritability (12 patients). Around one third of patients gave history of some kind of stress or depression on psychological evaluation as in Table 4.

Regarding dietary and personal habits, almost all the patients (95%) had regular intake of cabbage and cauliflower. Most of the patients (85%) were using iodized salt. More than three fourth of patients took non vegetarian food like chicken or mutton as given in Figure 2.

Table 3: Type of thyroid swelling.

Type of neoplasam		No. of patients	%
Non Neoplastic			
1	Diffuse colloid goitre	37	
2	Solitary thyroid nodule	33	
3	Multi nodular goitre	18	
	Total	88	**88%**
Neoplastic			
1	Benignfollicular adenoma	2	
2	Papillary carcinoma	7	**12%**
3	Follicular carcinoma	3	
	Total	12	

Table 4: Major symptoms of patients with thyroid swelling.

Symptoms	% of patients affected
H/O stress or depression	31%
Weight gain	18%
Fatigue	17%
Irritability	12%
Weight loss	9%
Intolerance to cold	9%
Intolerance to heat	4%

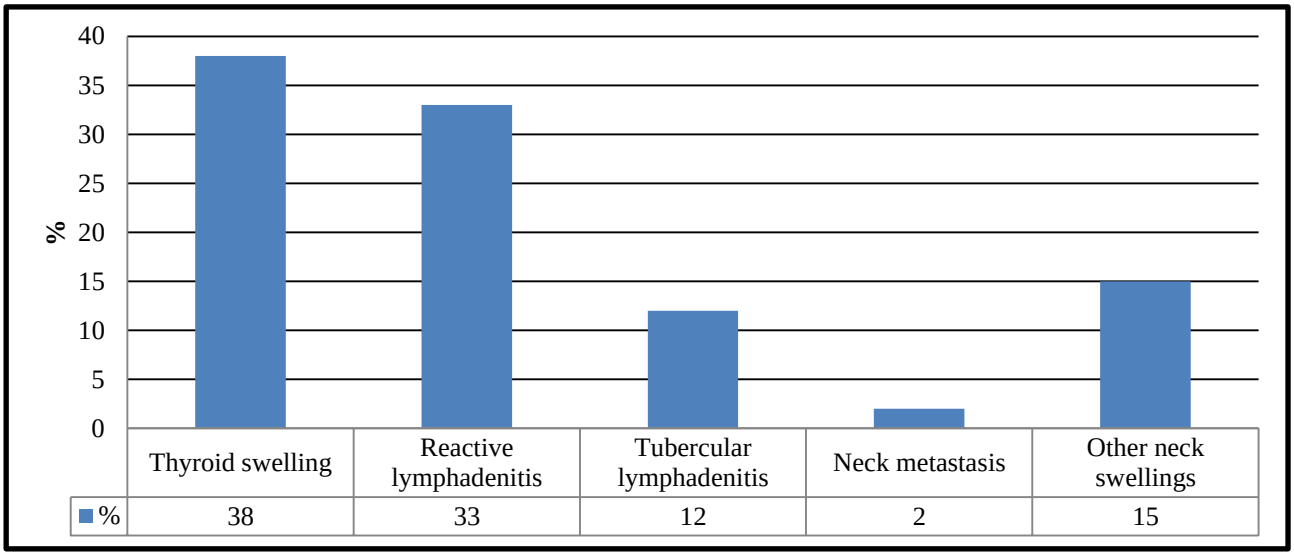

Figure 1: Types of neck swellings.

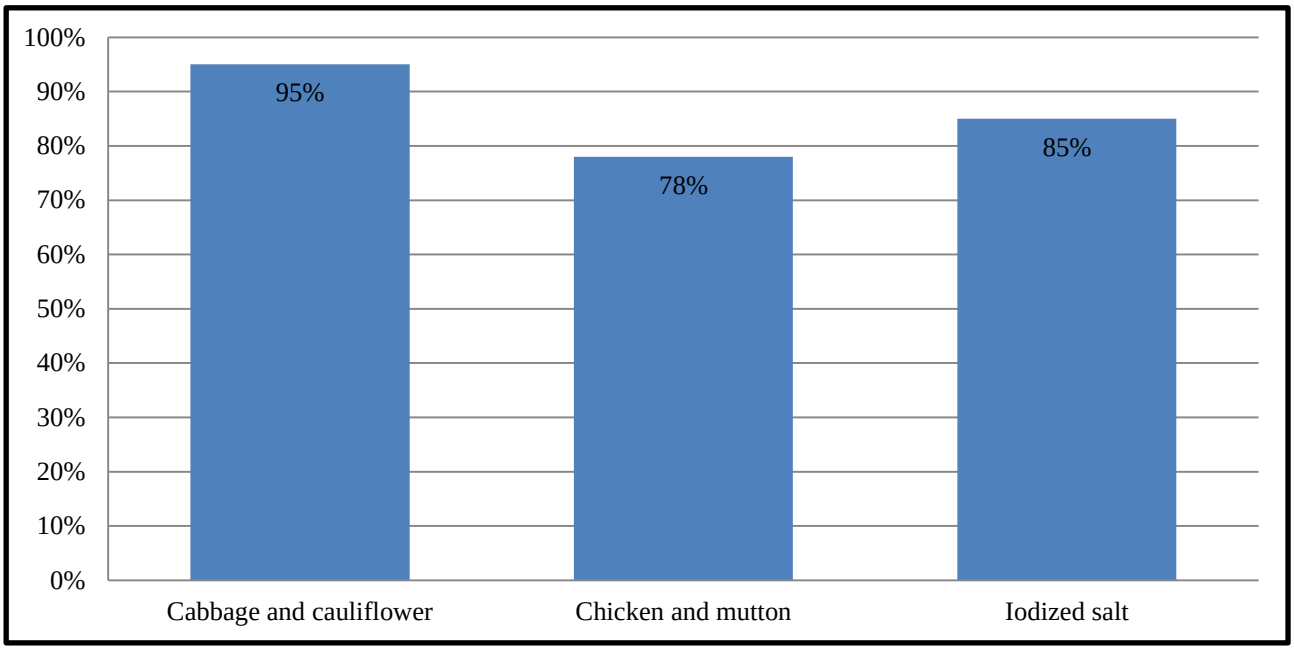

Figure 2: Dietary habits of patients with thyroid swelling.

DISCUSSION

The etiology and changing trends of prevalence of goitre in hilly areas was studied in this study. The study included detailed history taking including age and sex, patient's presenting symptoms, dietary habits, psychological status, complete physical examination and investigations like thyroid functions tests, fine needle aspiration cytology and ultrasonography neck. The primary aim of this study is to find out various factors responsible for goitre in this hilly region and to note any changing trends in its prevalence. The long term aim of this study is to control and prevent goitre in hilly region.

Thyroid disorders according to various studies are more common in hilly areas due to low soil iodine content in high altitudes leading to iodine deficiency.[7] Also there is lack of education and awareness in hilly backward areas. But with the use of iodized salt, the prevalence of goitre has decreased.[8] In our study we found around 85% of patients using iodized salt as seen in Figure 2. According to a study thyroid disorder are 8 times more common in females than males.[2] Similar results were obtained by Sharma et al and many other studies.[9] A study by Baral et al though showed equal proportion of thyroid dysfunction in males and females.[10] In our study we found 3.5 times greater female predominance among patients of thyroid swelling as given in Table 1. This could be explained by increased demand in females due to puberty, pregnancy and lactation due to the effects of oestrogen and progesterone. Peak incidence of thyroid disorders is in the middle age group in 4th decade according to various studies by Sengupta et al and Pradeep Kumar et al.[11,12] Another study showed the mean age as 39 years of age.[13] Though a few studies have also shown increased incidence with advancing age.[14] In our study we found most of the patients of younger and middle age group as given in Table 1. This shows that goitre is more common in females and in younger and middle age groups.

Hypothyroidism and hyperthyroidism are common in patients with thyroid swellings out of which hypothyroidism is said to be more common.[2] Baral et al also reported higher incidence of hypothyroidism.[10] But recent studies have shown increasing incidence of hyperthyroidism as one in Nigeria.[15] This they say could be due to increased iodized salt intake. Another factor could be stressful life events leading to thyrotoxicosis.[15] There are some studies showing association of thyroid diseases with depression.[16] In our study we obtained the incidence of hypothyroidism to be nearly double the incidence of hyperthyroidism. But we also obtained the relatively higher incidence of hyperthyroidism in the upper middle age group as in Table 2. On psychological assessment of our patients with goitre, we found nearly one third of them giving history of stress disorders or depressions as in Table 4. The other major symptoms in our study were weight gain, fatigue and irritability. This shows that though hypothyroidism is more common but there is increasing incidence of hyperthyroidism which could be because of use of iodized salt or because of increasing stress related disorders.

According to various studies non neoplastic lesions are more common than neoplastic lesions. Ahmed et al found 64.3% of thyroid lesions to be non-neoplastic.[17] Similar results were obtained by Patil et al.[18] Among the non-neoplastc lesions solitary nodule was more common according to one study and multi nodular goitre according to another.[19,20] Studies have shown increase in incidence of thyroid malignancy in recent years.[21] Papillary carcinoma is the most common thyroid malignancy with incidence almost double than follicular carcinoma.[22] The increasing incidence of papillary carcinoma has been related to increased intake of iodized salt.[23] In our study we found non neoplastic lesions to be much more prevalent (88%) as compared to neoplastic lesions. Among non-neoplastic lesions diffuse colloid goitre was found to be most common followed by solitary thyroid nodule. Among neoplastic lesions papillary carcinoma was most common as given in Table 3. We found most of the patients had regular intake of cabbage and cauliflower which are said to be goitrogenic. Also many of the patients are non-vegetarians consuming mainly chicken and mutton as seen in Figure 2. Studies have shown non vegetarian food to be goitrogenic.[24]

So we can conclude that goitre is the most common neck swelling in hilly areas with female predominance and affecting younger and middle age groups. Though hypothyroidism is more common but there is increasing incidence of hyperthyroidism which could be because of use of iodized salt or because of increasing stress related disorders. Dietary habits like regular intake of cabbage, cauliflower and non-vegetarian food contributes to goitre. With increasing awareness, use of iodized salt and increasing incidence of stress and depression the prevalence of types of goitre has changed with increasing incidence of papillary thyroid carcinoma though non neoplastic lesions are still more common.

There is scope of further studies regarding goitre where the studies can focus on the effect of common disorders like diabetes, obesity and hypertension on goitre. This could be our next research with the aim to control and prevent goitre in our hilly region.

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