Abstract

Introduction: Among the endocrine disorders, Hypothyroidism is now believed to be the worldwide problem next to Diabetes.

Aims: This study was carried out to ascertaint the prevalence and pattern of Hypothyroidism.

Methods: This prospective, epidemiological study was conducted in patients aged ≥20 years suspicion of thyroid disorders at a tertiary care teaching hospital from Jan 2012 to Dec 2013 in Bhuj, Gujarat. Thyroid abnormalities were diagnosed on the basis of laboratory results (serum FT3, FT4 and Thyroid Stimulating Hormone [TSH]).

Results: Out of 425 patients enrolled in our study, only 345 patients completed left. Out of the 345 analysable subjects, Female [n=217 (62.89%)] predominance is seen. Around n=72 cases were confirmed having thyroid abnormalities, Out of n=72 cases, only n=32 (9.27%) participants were found to have Hypothyroidism, Subclinical hypothyroidism was detected in n=28(8.11%) cases. Only n=12 (3.47%) cases had signs and symptoms of Clinical hyperthyroidism.

Conclusion: The prevalence of hypothyroidism was high, affecting approximately 9.27% study population. Hypothyroidism is found to have close association with Female gender and older age. Iodine intake ceases to be the sole etiological contender for thyroid disorders in urban areas.

Key Words
Hypothyroidism, free T3, free T4, prevalence, subclinical hypothyroidism, Clinical Hyperthyroidism
conducted to study the prevalence of Hypothyroidism in patients aged ≥20 years suspicion of thyroid disorders at a tertiary care teaching hospital from Jan 2012 to Dec 2013 in Bhuj, Gujrat. Thyroid abnormalities were diagnosed on the basis of laboratory results (serum FT3, FT4 and Thyroid Stimulating Hormone [TSH]). The serum sample of all the individual with suspicion of thyroid dysfunction were subjected to thyroid profile (Total T4, Total T3, Free T4, Free T3 and TSH). Patients with history of hypothyroidism and receiving levothyroxine therapy or those with serum free T4 <0.89 ng/dL and TSH >5.50 μIU/ml, were categorized as hypothyroid. Initially n=425 OPD patients were enrolled in our study but out of 425, only n=345 patients were finally included on the basis of inclusion and exclusion criteria and referred to Biochemistry department during the period January 2012 to December 2013 for the assessment of thyroid hormone profile.

Primary outcome measure of the study was the prevalence of hypothyroidism assessed by measurement of thyroid hormones. Secondary outcome measures were the prevalence of: i) Sub-clinical hypothyroidism, ii) Hyperthyroidism. Written informed consent was taken prior to the study. The study was commenced after being approved by an Institutional Ethical Committee.

A central certified hospital laboratory performed the haematological and biochemical investigations. Assays for thyroid hormone (FT3, FT4 and TSH) were performed. Analytical sensitivity of the kit used to measure TSH, FT3, FT4 was 0.010 μIU/mL, 0.1 ng/mL, and 0.3 μg/dL, respectively.

Based on previous thyroid history and current thyroid function test results, participants were classified using following definitions:
- Hypothyroid: Serum-free thyroxine (FT4) <0.89 ng/dL and thyroid stimulation hormone (TSH) >5.50 μIU/mL,
- Hyperthyroid: Serum FT4 >1.76 ng/dL and TSH <0.35 μIU/mL.
- Subclinical hypothyroidism: Normal serum FT4 and TSH >5.50 μIU/mL.

Results

Out of 425 suspected thyroid disorder patients enrolled in our study, only 345 fulfilled our inclusion and exclusion criteria and were enrolled. Out of the 345 analysable subjects, n=217 (62.89%) were females and n=128 (37.10%) were males (Table 1).

Among 345 cases, n=72 cases were confirmed having thyroid abnormalities on the basis of Laboratory tests. Out of n=72 cases, only n=32 (9.27%) participants were found to have Hypothyroidism (elevated level of TSH and low levels of total T3 and total T4 in blood serum) (Table 2).

<table>
<thead>
<tr>
<th>Thyroid disorders</th>
<th>No. of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothyroid</td>
<td>32(9.27%)</td>
</tr>
<tr>
<td>Subclinical hypothyroidism</td>
<td>28(8.11%)</td>
</tr>
<tr>
<td>Hyperthyroid</td>
<td>12(3.47%)</td>
</tr>
</tbody>
</table>

Among those clinical hypothyroid patients n=10 (31.25%) were males and n=22 (68.75%) were females. Subclinical hypothyroidism was detected in n=28(8.11%) cases who had no significant clinical signs and symptoms of hypothyroidism but the serum TSH level was elevated but exhibited normal range of T3 and T4 levels. Among 28 cases of subclinical hypothyroidism n=9 (32.14%) were male and n=19 (67.85%) were females. N=12 (3.47%) cases had signs and symptoms of hyperthyroidism and the laboratory findings of thyroid profile showed significant elevation of total T3, total T4 and free T4 levels in blood serum and low levels of TSH. Out of 12(3.47%) hyperthyroid cases n=3 (25.0%) were male and n=9 (75.0%) were females.

Discussion

This prospective study was carried out to know the prevalence of thyroid disorders in a tertiary care teaching hospital. According to WHO, India has been classified having optimal iodine nutrition and hence iodine deficiency does not seem to play important role for thyroid disorders presently for India. Therefore this study was conducted in adults residing in urban city with the aim to ascertain whether Iodine is the only cause of Hypothyroidism or there are other causes also.

In our study, most of the patients suffering from thyroid disorders were female (n=50, 69.44%) than male (n=22, 30.55%) (Table 1). This predominance of thyroid dysfunction in women is consistent with worldwide reports, especially those in midlife (46-54 years). Also frequency of patients were found to be more in 41-60 age group (n=40, 55.55%) followed by 20-40 age group (n=24, 33.33%) and least in 61-80 age group (n=8, 11.11%). These findings are parallel to the studies conducted by Jatwa J and Ismail B.

Table 1: Demographic details of patients enrolled (n=345).

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Males</th>
<th></th>
<th>Females</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euthyroid</td>
<td>Abnormal</td>
<td>Euthyroid</td>
<td>Abnormal</td>
<td>Euthyroid</td>
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</tr>
<tr>
<td>Euthyroid</td>
<td>Abnormal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-40</td>
<td>38</td>
<td>8</td>
<td>49</td>
<td>16</td>
<td>87</td>
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<tr>
<td>41-60</td>
<td>56</td>
<td>12</td>
<td>92</td>
<td>28</td>
<td>148</td>
</tr>
<tr>
<td>61-80</td>
<td>12</td>
<td>2</td>
<td>26</td>
<td>6</td>
<td>38</td>
</tr>
</tbody>
</table>

2012. Hypothyroidism was found to be a common form of thyroid dysfunction affecting 10.9% of the study.
population. In our study also, Hypothyroidism was found to be a common form of thyroid dysfunction [Clinical, n =32(9.27%) & Subclinical hypothyroidism, n= 28(8.11%)] and least thyroid disorder found was Hyperthyroidism [n=12(3.47%)] (Table 2) This is in accordance with the study conducted by Yadav NK et al., 2013 according to him, incidence of subclinical hypothyroidism was 7.9% and is much similar to our data. [16] Similar results were seen in study conducted by Unnikrishnan AG et al., 2013 who showed that Hypothyroidism was found to be a common form of thyroid dysfunction affecting 10.9% of the study population. [14] Abraham R et al., 2009 revealed that Hyperthyroidism had the lowest incidence among thyroid disorders and is comparable to our study. [17] Similar findings were revealed by Abbot India, a leading health care and pharmaceutical company in a Thyroid Epidemiological Study that Over 11% of the study population from Delhi reported hypothyroidism and one-third of them were not even aware of their disease. [18]

Thus the present study reflects the high prevalence of thyroid disorders in our hospital. This type of studies should be carried out in other parts of India as well to know the more precise incidence of Thyroid disorders in India. Since iodine deficiency is not now the only factor responsible for this issue, further studies need to be carried out to know the exact aetiology of Hypothyroidism.

Since the study was conducted in urban city and the patients enrolled were having good demographic characteristics, subjects were presumed iodine sufficient, without testing for reliable markers such as iodine content in salt samples or urinary iodine excretion. Thus, with regard to the cause of hypothyroidism, there may be etiological factors other than the iodisation status.

Conclusion

Hypothyroidism is a commonly prevailing disorder in adult Indian population with predominance of female. Furthermore, female with advance age are more prone to thyroid abnormalities. Autoimmune mechanisms appear to play an etiological role in a significant proportion of patients. Iodine intake ceases to be the sole etiological contender for thyroid disorders in urban areas. Therefore physicians are required to conduct such type of studies more in different parts of our country to ascertain other causes of thyroid disorders. Identification of multiple risk factors and plausible underlying mechanisms is warranted.

What this study adds:

1. **What is known about this subject?**
   Thyroid disorders are related to iodine deficiency.

2. **What new information is offered in this study?**
   Besides, iodine deficiency there are other causes of Hypothyroidism.

**REFERENCES**


Cite this paper as: