



PREVALENCE OF THYROID DYSFUNCTION AMONG YOUNG FEMALES OF URBAN AND RURAL POPULATION IN AND AROUND BANGALORE

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ABSTRACT

Background: Endocrine disorders are common amongst Indian population, out of which thyroid disorders represent an important subset of these endocrine disorders. According to a projection from various studies on thyroid disease, it has been estimated that about 42 million people in India suffer from thyroid disease. Hypothyroidism in young women is linked to menstrual irregularities, polycystic ovaries and infertility. Also, several studies have highlighted the importance of diagnosing and treating hypothyroidism in pregnancy. Hence, this study was done to assess the prevalence of hypothyroidism in young women attending our hospital who are going to become pregnant in future.

Methods: This study was done in Bowring and lady Curzon hospital, Bangalore, South India; we used the electronic data of patients of who consulted during May 2019 to July 2019. The study subjects (611) were females aged 18–30years. Thyroid-stimulating hormone (TSH), FT3 and FT4 assays were done in all blood samples as a screening test for thyroid disease.

Results: A total of 611 subjects were screened of whom 187 subjects (30.6%) had abnormal TSH. Out of which the prevalence of elevated TSH was 8.51%, and 14.73 % had mild TSH elevation. A low TSH was seen in 7.37% of the study population.

Conclusion: Thyroid dysfunction was common in young women in south India. One out of every eight young women had thyroid dysfunction, and mild TSH elevation was the most common abnormality. Hence thyroid screening should be included in medical check-up in all Hospitals.

KEYWORDS : Adult female, hypothyroidism, Thyroid dysfunction.

INTRODUCTION:

Disorders of thyroid hormones are one of the most common endocrine diseases in India. Various studies projected that approximately 42 million populations are affected by thyroid disorders in India. (1) The prevalence and type of thyroid disorders depend on various factors like age, sex, ethnicity, geographical area, nutritional status, national policies, health care delivery system, and drug intake. Especially, the level of iodine intake in food is closely associated with pattern of thyroid disorders (2, 3) the prevalence of thyroid disorders, both hypothyroidism and hyperthyroidism, is more common in women than in men. (4).

Thyroid diseases are different from other diseases in terms of their ease of diagnosis, accessibility of medical treatment and relative visibility that even a small swelling of thyroid offers to the treating physician. Early diagnosis and treatment remains the cornerstone of management. The prevalence of Hypothyroidism in developed world is 4-5% and prevalence of sub-clinical hypothyroidism in the developed world is 4-15 %. (5-7) Hypothyroidism in young women is linked to menstrual irregularities, polycystic ovaries and infertility. (7-10) Studies on prevalence of thyroid disorders in the post iodisation era is very few. Similarly, studies on hypothyroidism in young women are fewer. So, this study was done to assess the prevalence of hypothyroidism in young urban / rural women attending Bowring and Lady Curzon hospital, Bangalore, who are going to become mothers in future.

MATERIALS AND METHODS

The study was conducted in Bowring and Lady Curzon hospital, Bangalore, 611 study subjects were females aged 18–30 yrs, selected from clinical biochemistry... We used the electronic data of patients of who consulted during May 2019 to July 2019. This was representative of the mix of the urban plus rural population. The study participants were residents of in and around of Bangalore, South India. Careful history was taken and clinical evaluation was done by a gynaecologist pertaining to thyroid illness. All ladies were questioned in detail regarding consumption pattern of iodized salt. In this study, our study population was iodine sufficient.

Exclusion criteria:

Included previous history of thyroid disorders, signs and symptoms of thyroid disorder, history of OCPs (oral contraceptive pill), history of breastfeeding, and pregnancy.

Thyroid-stimulating hormone (TSH), FT3 and FT4 assays were done in all blood samples as a screening test for thyroid disease. Thyroid function tests processed by using chemiluminescence immunoassay on the Beckman coulter access II.

For this Study,

The laboratory reference value for - FT3: 0.83-1.78 ng/ml; FT4: 6-12 µg/dl; TSH was 0.5–4 µIU/ml
Abnormal TSH values were grouped into three categories:
Mild TSH elevation- TSH of 4.5–10 µIU/ml
Significant TSH elevation- TSH >10 µIU/ml
Suppressed TSH- TSH <0.4 µIU/ml.

Women with an elevated serum thyrotropin but a normal serum free thyroxine were designated to have subclinical hypothyroidism and those with a low thyrotropin and a normal serum free thyroxine level were designated to have subclinical hyperthyroidism. Euthyroid women had both normal thyrotropin and normal serum free thyroxine values.

Statistic analysis

The obtained data were analyzed by one way ANOVA using SPSS software, version 20 (IBM SPSS Statistics, 20, US). The p-value <0.05 is considered significant.

RESULTS

Prevalence of abnormal thyroid-stimulating hormone

Among the 611 subjects, abnormal TSH was seen in 187 subjects and the overall prevalence of abnormal TSH was 30.60%.

Thyroid stimulating hormone values of 4.5–10 µIU/ml

Of 187 subjects with abnormal TSH, 48.13% (90) had TSH values between 4.5–10 µIU/ml. The overall prevalence of mild TSH elevation among the 611 subjects was 14.73%.

Thyroid stimulating hormone values >10 µIU/ml

Totally, 52/187 subjects (27.81%) had TSH values >10 µIU/ml. The overall prevalence of TSH values >10 was 8.51% in the study population.

Thyroid stimulating hormone values <0.4 µIU/ml

Among the 187 subjects with TSH abnormality, 45 had a TSH value < 0.4 µIU/ml (24.1%). The overall prevalence of suppressed TSH was 7.37% in the study population.



The results are summarized in Figure 1.

DISCUSSION

The World Health Organization classified India as having optimal iodine nutrition based on assessment of global iodine status in 2004 (11). The prevalence of thyroid disorders depends on various factors such as age, sex, geographical factors, and iodine intake. Thyroid dysfunction was seen in 30.6 % (187) of study subjects. Majority of them had sub-clinical hypothyroidism (64) and sub-clinical hyperthyroidism (53).

Our study results are consistent with reports from other studies. In a similar study conducted in Madurai district by Velayutham K et al the overall prevalence of abnormal TSH among female college students was 12.5 % (2). The prevalence of hypothyroidism was 13.3% and 11.5% in the study from Kerala and Pondicherry respectively (1, 4, and 12). In another nationwide study in India, the prevalence of overt undiagnosed hypothyroidism was 3.5% and the prevalence of subclinical hypothyroidism was 8.5% (13). In a study from Delhi in 2012 by Marwaha et al, subclinical hypothyroidism was present in 19.3% of subjects and 4.2% had overt hypothyroidism (14).

Since prevalence of sub clinical hypothyroidism in young female of age group 18-30 years came out to be 34.22 % in our study, which is quite prominent. This study

demonstrates that hypothyroidism, mainly subclinical hypothyroidism, is still now alarmingly high in the concerned population. This indicates that thyroid disease

should be considered during routine evaluation of this susceptible group and should be followed by appropriate detection and treatment. The finding that a large number of control women unknowingly have laboratory evidence of thyroid dysfunction supports the usefulness of screening for early detection. The causes for the high prevalence of thyroid disorder in an-Indian population with adequate history of intake of iodized food need to be searched for.

Our study suggested that despite iodization, the prevalence of thyroid disorder has not dramatically decreased. Further studies are recommended in a larger number of adult female in this region, including environmental and etiological factors like role of goitrogens, autoimmunity, medications, iodine, and nonthyroidal illness for better diagnosis and management of thyroid illness.

CONCLUSIONS:

Since prevalence of hypothyroidism in young female of age group 18-30 years came out to be 7.37 % in our study, which is quite prominent. One out of every eight young women had thyroid dysfunction, and mild TSH elevation was the most common abnormality, and hence thyroid screening should be included in medical checkup of all Hospitals. This young population is at risk of infertility, reproductive dysfunction and possibly foetal abnormalities – all important enough to deserve further study and research in future.

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