

Prevalence of Thyroid dysfunction at Chitradurga District, Karnataka

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Abstract

Background: The prevalence of hypothyroidism in Chitradurga is unknown. The aim of the present study was to estimate the prevalence of overt and subclinical hypothyroidism among the adult population of Chitradurga District.

Materials & Methods: A retrospective, cross-sectional referral hospital study was conducted. Sample size comprised of 997 patients who were referred to Department of Pathology, Basaveshwara Medical College, Chitradurga. Assessment of thyroid function over a period of 8 months from January 2013 to August 2013 in the serum has been performed by electro-chemiluminescence immunoassay method on ECLIA 2010 fully automatic analyzer. Interview cum questionnaire methods were used to record the patient history.

Results: Of the 997 studied subjects (131 men and 866 women), 395 (39.6%) were euthyroid (69 (52.7%) men and 326 (37.6%) women), 220 (37 men and 183 women) had overt hypothyroidism, 241 (18 men and 223 women) had subclinical hypothyroidism, and 108 (two men and 106 women) had overt hyperthyroidism and 20 (04 men and 16 women) had subclinical hyperthyroidism.

Conclusion: Hypothyroidism appears to be common in Chitradurga, Karnataka. The community should be screened for Sub clinical hypothyroidism in high risk group to identify the patients and treat them.

Key words: Hypothyroidism, Hyperthyroidism, subclinical hyperthyroidism

Introduction

Hypothyroidism a serious, often clinically neglected chronic condition, and may be associated with adverse health outcomes that can be avoided by thyroxine treatment.¹ Both clinical and subclinical forms of hypothyroidism contribute to hyperlipidemia, hypercholesterolemia, cardiovascular, and psychiatric disease, especially in older people.^{2,3} Controversy. The prevalence of subclinical hypothyroidism varies substantially from nation to nation,⁶ and its current prevalence ranges from 1% to 10%, approaching 20% in some reports.^{7,8} The higher prevalence rates are in women and with advancing age.⁶⁻¹¹ In a survey, the prevalence of subclinical hypothyroidism in men over the age of 74 (16%) was almost as high as it was in women of the same age (21%).⁸ Up to 75% of patients have only mildly elevated serum thyrotropin values,^{7,8} and 50% to 80% of patients have positive tests for antithyroid peroxidase antibody (TPOAb), depending on age, gender, and serum thyrotropin levels. Goiter is twice as prevalent among patients with this condition as in the general population.⁷

In India, Universal Salt Iodization (USI) has been in force since 1984. The impact of this programme on thyroid status has been reported by us and other Indian workers in school age children. 43-5 3,5,6 there are limited data evaluating the impact of salt iodization on thyroid function in Indian adults.

In view of this, the present study was undertaken to evaluate thyroid functional status of adults after more than two decades of salt iodization.

Materials and Methods

This is a cross sectional study including subjects reporting to Basaveshwar Hospital, Chitradurga from January 2013 to August 2013 for routine check up. The subjects in the study group had no history of medication for any thyroid disorder, thyroidectomy or any exposure to radioiodine. None of the subjects were diagnosed for any renal, hepatic or pancreatic disorder, diabetes mellitus or familial hypercholesterolemia. Secondary data of the subjects was collected from the outpatient card and report form. 5 ml venous blood sample was collected from each patient after an overnight fast. The blood was allowed to clot at room temperature and then centrifuged at 3000 rpm for 5 minutes. Serum was separated and was used for analysis.

The thyroid function test panels (fT3, fT4 and TSH) were assayed by the electro Chemiluminescence method (Cobas e 411) by using a standard kit.

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Definitions

Thyroid status was defined as euthyroid (TSH level within the normal range, 0.3 – 4mIU/L), overt hypothyroidism (TSH>4 mIU/L and low FT4I), subclinical hypothyroidism (TSH level>4 mIU/L and normal serum FT4), overt hyperthyroidism (TSH level<0.3 mIU/L and high FT4 or T3), and subclinical hyperthyroidism (TSH level<0.3 mIU/L and normal FT4 and T3).¹²

Statistical Analysis

The data were entered and analyzed by the Software Package for Social Sciences, version 16 (SPSS 16). The data were represented as percentage, frequency, mean and standard error. The Chi-square test, the ANOVA test and the Mann Whitney Test were applied. The data were considered as significant at a P value of 0.05

aged 20 – 86 years, we found that hypothyroidism was common in Chitradurga, as 21.1% of women and 28.3% of men had hypothyroidism; however, most of them were mildly hypothyroid. These data are consistent with reports of the high prevalence of hypothyroidism in other iodine-sufficient populations.^{6,7,22-24} As in other studies in developed countries, hypothyroidism tends to increase with age and is more common in women, and people with goitre^{6-9,22,23,25,26}

Estimates of the prevalence of hypothyroidism depend upon methodological factors, classifications of hypothyroidism, and composition of the community examined by age, ethnicity, and gender, making comparisons between studies of limited values. Tunbridge et al.⁷ were the first to provide a reliable estimate of the prevalence of hypothyroidism in the

Table 1. Prevalence of thyroid abnormalities among 131 men and 866 women, Chitradurga, Karnataka, India.

Thyroid status	Men n (%)	Women n (%)	Difference (95%CI)
Euthyroid	69(52.7)	326 (37.6)	7.4 (4.23, 9.62)*
Subclinical hypothyroid	18 (13.7)	223 (25.8)	-2.5 (-4.66, -1.21)*
Overt hypothyroid	37 (28.3)	183(21.1)	-2.6 (-1.42, -0.50)*
Subclinical hyperthyroid	04 (3.1)	16 (1.8)	-0.2 (-0.35, 0.60)
Overt hyperthyroid	02(1.5)	106 (12.2)	-0.4 (-0.54, -0.22)*
Euthyroid sick syndrome	01 (0.7)	03 (0.3)	0.0 (-0.12, 0.27)

Results:

The study population was slightly younger and had more high school and college graduates and females (86.9%) were more in number compared to men (13.1%). 44.4% of the subjects were of the age group less than 30 years, 40.2% were of the age group between 30 and 50 years and 19.4% were above 50 years.

Of the 997 studied subjects (131 men and 866 women), 395 (39.6%) were euthyroid (69 (52.7%) men and 326 (37.6%) women), 220 (37 men and 183 women) had overt hypothyroidism, 241 (18 men and 223 women) had subclinical hypothyroidism, and 108 (two men and 106 women) had overt hyperthyroidism and 20 (04 men and 16 women) had subclinical hyperthyroidism (Table 1).

Discussion:

The burden of thyroid disease in the general population is enormous. Thyroid disorders are the most common among all the endocrine diseases in India.¹ The prevalence of hypothyroidism in various studies around the world shows a considerable variation and its current prevalence ranges from as low as 1% to as high as 20%^{7,8,27} In this cross-sectional study of 997 adults

general adult population. They found out that 10.3% and 0.3% were suffering from subclinical and overt hypothyroidism, respectively. Another study from Tehran, on individuals aged 20 years demonstrated that 0.35% had overt and 2.2% had subclinical hypothyroidism.²⁷ A study from five coastal areas of Japan, which has iodine- rich seaweed, showed that the prevalence of hypothyroidism was 0 – 9.7%.²⁷ Report from northern Japan, where iodine intake is high, reveals that incidence of overt hypothyroidism is 0.7% in men and 3.1% in women.¹⁰

In the present study subclinical hypothyroidism was seen in 13.7% in men and 25.8% in women. In summary, hypothyroidism appears to be quite common in Chitradurga. People of advanced ages were more vulnerable to thyroid dysfunction in the population. Hypothyroidism and subclinical hypothyroidism were preponderant, followed by subclinical hyperthyroidism.

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