

ASSESSMENT OF DEMOGRAPHIC AND DIETARY PATTERNS AMONG FEMALES SUFFERING FROM HYPOTHYROIDISM IN WESTERN

UTTAR PRADESH, INDIA

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ABSTRACT

Introduction: One of the most prevalent endocrinal disorder in India is dysfunctioning of thyroid gland. Age, sex, regional considerations, dietary choices, and iodine intake all affect the frequency and pattern of thyroid problems.

Aim and Objectives: To determine the frequency of hypothyroidism and the contribution of demographic factors, family history, medical history and dietary patterns.

Materials and Methods: A pre-designed questionnaire was used to interview 546 respondents from different geographic locations like rural and urban parts of District Moradabad (U.P.), gathering information on their demographics, family histories, eating habits, and potentially concerning symptoms.

Results: Dietary patterns have a big impact on how much the thyroid hormone fluctuates. Urban locations were shown to have a higher distribution of thyroid patients, whilst rural areas had a lower frequency of thyroid disorders.

Conclusion: Launching an educational programme is necessary and thyroid levels need to be routinely monitored. Complications can be avoided through early detection, early implementation, and early recovery.

Keywords: Hypothyroidism, Dietary Patterns, Demographic factors.

INTRODUCTION

Around 42 million Indians suffering from thyroid disorders till date. Iodine deficiency known to affect 27 per 1000 people in India. Thyroid disorders are a lifetime risk for one in every eight women. In older women, hypothyroidism is much more prevalent than in younger ones [1].

The survey reveals that among the most prevalent endocrine disorders in India are thyroid abnormalities. Age, iodine consumption, ethnicity, geography, and sex all affect the occurrence and pattern of thyroid problems. Abnormalities of birth, psychomotor deficits, mental impairment and still births were found to be a result of iodine deficiencies. Moreover, Hypothyroidism can increase a person's risk of developing osteoporosis, hyperlipidaemia, hypercholesterolemia, cardiovascular disease, and neuropsychiatric disorders [2]. The severity of thyroid problems should not be understated because thyroid storm and myxoedema coma frequently result in fatal outcomes [3]

Only 1.8% of people in North India were predicted to have hyperthyroidism, compared to 11.5% having hypothyroidism. In general, women are more likely to acquire hypothyroidism, but this risk is increased during adolescence, the onset of menstruation, pregnancy, the first six months following childbirth, and menopause [4, 5].

As per evidence, thyroid disorders affect 0.6% of men and 25% of women worldwide. About 5% of coastal residents have hyperthyroidism, compared to 0.6% who have hypothyroidism. People in the hilly region are discovered to be iodine deficient as a result of the soil being eroded by yearly flooding [6]. The precise cause is still unknown.

Performing such hypothyroidism investigations can greatly aid doctors in focusing on particular problems during initial patient interactions and follow-ups. Data on the knowledge, awareness, and practises (KAP) of patients with primary hypothyroidism in Moradabad are quite scarce. The goal of this study is to evaluate the demographic characteristics, food habits, and medication compliance of hypothyroidism patients.

Therefore, the current study was designed to evaluate how eating habits and geographic factors affect the prevalence of hypothyroidism.

MATERIALS AND METHODS

A structured cross-sectional survey was carried out to evaluate the knowledge, attitude, and habits of both healthy females and hypothyroid female patients in Moradabad district of North India. For easy sampling, participants for the study were chosen. The software "raosoft" was used to calculate the sample size. The software used the population of District Moradabad from the 2011 census to determine the sample size, which was 384 with a margin of error of 5% and a confidence level of 95%. However, additional sampling was done to increase the study's participant pool to 546 in order to obtain more accurate results [7].

The proposed protocol has been adopted and given approval by institutional ethics committee of Teerthanker Mahaveer University, Moradabad. A community survey was conducted in both urban and rural regions of Moradabad District. Using a pre-designed questionnaire, 546 female respondents who were above 25 years old were questioned.

Inclusion & Exclusion Criteria

Demographic information, family history, medical history, eating habits, menstrual history, and suspected symptoms are all included in the pre-designed questionnaire whereas males, illiterate females, and patients who had undergone thyroidectomy and radioactive ablation were all excluded from the study.

The sampling was conducted in District Moradabad by dividing it into three zones-

Zone 1- Urban Area

Zone 2- Sub Urban Area

Zone 3- Rural Area

RESULTS & DISCUSSION

The purpose of the community survey in this study was to raise health-related knowledge of thyroid disorders and the contribution of vegetarian and non-vegetarian food to the occurrence of hypothyroidism. Based on past findings, it was carried out utilising a questionnaire as a technique to gather data from the women over 25 years. The community survey was conducted in several parts of the western Uttar Pradesh region of District

Moradabad. Urban and rural were the two distinct geographic divisions of the district. 293 females were taken from urban areas, and 253 women from the rural areas were involved in the study.

Based on their symptoms 347 respondents (63.55%) of the 546 female respondents were suspected of having hypothyroidism. Only 98 (28.24%) of the 347 individuals with hypothyroidism continued their prescribed medication. 30 % of female patients did not take the treatment plan seriously. 16.13% females have good habits towards maintaining the thyroid level up to normal range.

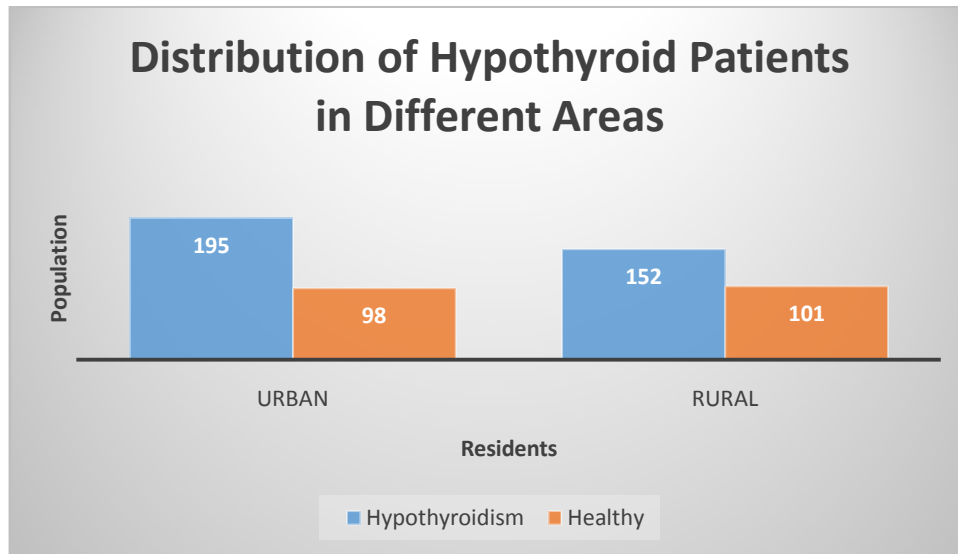
1. Distribution of Hypothyroid patients in different areas

It is erroneously assumed that people residing in urban have less iodine deficiency disorders as compare to rural area, because of consumption of iodized salt which is rich in iodine. In our study we have conducted the survey in urban, sub urban and rural areas where the availability of vegetables, dairy products and non-vegetarian food is same. 66.55% of urban population is suffering from hypothyroidism and 60.07% of rural population suffer with the same. There is a slight difference in number of patients of hypothyroidism in urban and rural areas, Thus our study reveals the truth that there living area is not a good cause of hypothyroidism but some other causative factors might be associated with patients of hypothyroidism. (Table 1)

According to **Nimmy N J et al.** (2012) People who live in coastal areas were shown to have thyroid disorders, whereas non-coastal, mid-land, and hilly areas have low thyroid disorder prevalence rates. The categories exhibit a significant linear trend, as indicated by the P Value of 0.003 [8]. It suggests that regional differences are a contributing factor to thyroid disease. (Graph 1)

Resident	Hypothyroid Patients	Healthy Females	N
Urban	195	98	293
Rural	152	101	253
P value	0.072	0.067	
Total			546

Table 1. Distribution of Hypothyroid patients in different areas



Graph 1. Number of Healthy & Hypothyroid females in rural & urban area

2. Age wise distribution

Additional demographic factors like age, employment, pregnancy, menstrual cycle other than diet and resident area also govern the condition of hypothyroidism. In our current study, it is shown that 70% females of age between 30-40 years are more prone to hypothyroidism with a p value of 0.032 which suggests that age plays an important part in association with hypothyroidism. Females of age above 40 years might also suffer with the thyroid disorders but many of them never undergone the test for the same may be due to unawareness (Table 2)

	Frequency	Percent %
Gender		
Male	00	00
Female	546	100
Age (Years)		
25-30	45	8.24
30-35	186	34.06
35-40	165	30.21
40-45	62	11.35
45 -50	27	4.94
50 -55	26	4.76
55-60	22	4.02
60 & Above	13	2.38

Table 2. Demographic details of the population

3. Employment Factor

44.5% females in total population were employed and 76.54% of employed females suffer from hypothyroidism while 54.54% of unemployed females had hypothyroidism. 167 females were home maker and 48% had hypothyroidism. p value of 0.035 which represents that hypothyroidism can somewhere be associated with hypothyroidism.

The study shows that employed females are more prone to suffer from hypothyroid disorders as compared to unemployed and home makers because of the association of many factors like improper diet, excessive work pressure followed by stress (Table 3).

Employment Status	Hypothyroidism	Healthy	N
Employed	186	57	243
Unemployed	42	35	77
Self-employed	9	14	23
Home-maker	108	59	167
Student	0	21	21
Retired	2	13	15
Total	347	199	546
P value	0.029	0.035	

Table 3. Details of population with respect to employment status

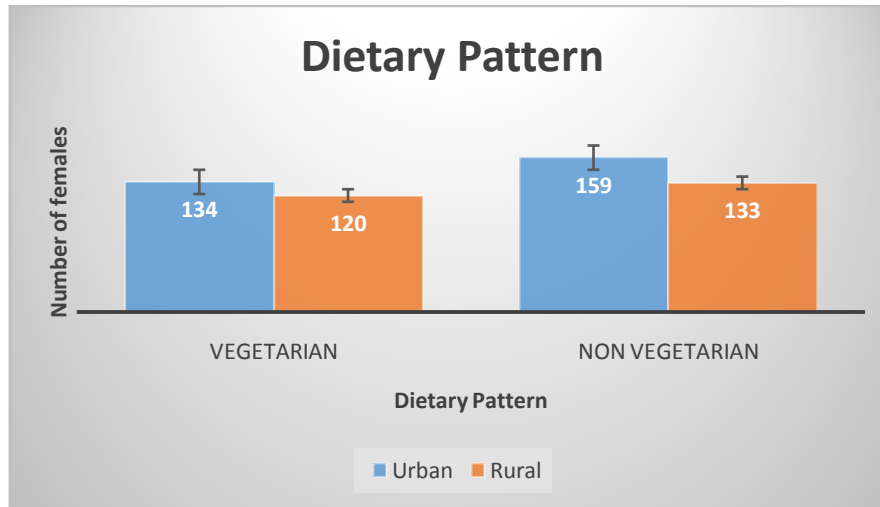
4. Food habits

In the present study, it was found that 53.47% population were non-vegetarian and 47% of urban females consume junk food containing saturated fats, trans fat and others, 2-3 days a week, whereas 83.22% females of urban area were given history of intake of less oily, homemade food, full of fibres and green vegetables.

Moreover in our study, veggies and non-vegetarian foods like soy, cauliflower, and cabbage are goitrogens that might cause changes in our thyroid hormone. The intake of non-vegetarian cuisine and junk food was lower in rural regions might be due to lack of options. Only 39.5% of females in rural areas were not vegetarians. Relative risk is 0 and P value is 0.0235. It demonstrates that there is a higher relative risk of hypothyroidism in non-vegetarians. One of the cause could be that eating red meat contributes to the prevalence of hypothyroidism.

In contrast, **Hitman et al.** (1999) indicated that a high-fibre diet might also produce thyroid hormone fluctuations. Similarly, in current study it is seen that population of rural areas

contains more fibrous food as compared to population of urban areas and females containing more fibrous diet are more predisposed to hypothyroidism [9].



Graph 2. Correlation of dietary pattern with residence ($p^* = 0.013$)

5. Menstrual cycle

In our current study 27% females having hypothyroidism had irregular menstrual cycles, which included heavy menstruation and a halt of periods for two to three months. Females of age between 30-35 years have more irregular menstruation as compared to the females of age between 25-30 years. Patients above age of 50 years had menopause issues.

Davies et al. (1998) outlined how thyroid hypofunction influences ovulation frequency and incidence. It also inhibits ovulation while raising prolactin levels. It is proved that fertilization of eggs requires the controlled regulation of thyroid hormone. Infertility seems to be brought on by thyroid gland dysfunction [10].

6. Symptoms Experienced

During the phase of TSH fluctuation, thyroid patients encounter various unique symptoms. 347 females, out of 546 were found diseased with hypothyroidism. Major symptoms of hypothyroidism include:-

S. No	Symptoms	Percentage (%)
1	Weight gain	82 %
2	Irregular Menstruation	78 %
3	Heat Intolerance	62 %
4	Dry Mouth	06 %
5	Fatigue	58 %
6	Restlessness	48 %
7	Mood Swing	62%

Table 4. Details of Symptoms associated with Hypothyroidism

CONCLUSION

It has been discovered that Dist. Moradabad's urban regions have a higher hypothyroidism prevalence than its rural ones. Food habits, particularly the consumption of non-vegetarian food, capsicum, cauliflower, and geographical characteristics of the area are the key contributing factors to predominance.

Additionally, it was shown that excess of anything can cause a change in thyroid hormone levels. Launching an educational programme is necessary and thyroid levels need to be routinely monitored. Complications can be avoided through early detection, early implementation, and early recovery.

To increase knowledge and awareness of the condition among patients with primary hypothyroidism, public health initiatives are necessary. More public education and awareness are required to raise the general population's level of understanding about hypothyroidism. Only the urban and rural regions of District Moradabad were included in the study, which would have jeopardised its external validity. The study's internal validity could be harmed by the fact that only literate participants were chosen for it

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