

Nutritional Status of Women Suffering with Hypothyroidism in Sultanpur District Hospital

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Abstract: The present study involves the assessment of nutritional status of women suffering from the hypothyroidism (n-60), with in the age groups 37-60 years. The survey was conducted to elicit information on socioeconomic background, nutritional status using anthropometric measurement, clinical examination, diet history, medical history and their information pertaining on nutritional of women. A total of 60 subjects were analyzed by 24 hour dietary recall method. It was found that 41.66% subjects were suffering from puffiness, sensitivity, to cold physical retardation, weight gain and 28.33% women were suffered from hypothyroidism after their menopause. Values T3 and T4 were obtained less than normal values while TSH was found to be high than the normal value. Less sodium intake in the diet of patients was obtained as the main reason behind the hypothyroidism. Where other nutrient like energy, protein, and fat were found in adequate amount in their diet.

Keywords: Hypothyroidism, nutrition, women, physical retardation, clinical symptom's etc

1. Introduction

Thyroid gland is a small gland, normally weighing less than one ounce, located in the front of the neck it is made up of two halves, called lobes that lie along the windpipe (trachea) and are joined together by a narrow band of thyroid tissue known as the isthmus. The main function of the thyroid gland is to take iodine found in foods and convert it into thyroid hormones. Tetra-iodothyroxine (T₄) and tri-iodothyronine (T₃). Thyroid cells are the only all in the body which can absorb iodine. These cells combine iodine and amino acid tyrosine to make T₃ and T₄ which are then released into the blood stream and are transported throughout the body where they control metabolism (conversion of oxygen and calories to energy) every cell in the body depends upon thyroid hormones for regulation of their metabolism. (www.indocrineweb.com/function.htm2009).

Hypothyroidisms are very common especially in women. Hypothyroidism results from reduced effects of thyroid hormone on tissues. Hypothyroidism is more common in women, has total prevalence of 1% to 2%, and increases with age (~10% adults >65 years). Women have a greater requirement of thyroid hormones, particularly during puberty, pregnancy and lactation. This is one of the reasons for thyroid swellings to occur during these stages in life – the gland steps up activity to meet the greater demand with a resulting increase in size. This is a physiological process. But for reasons not clearly known, all types of thyroid disorders are far more common in women than in men. Another remarkable feature about the thyroid is its effect on reproductive health. From its location in the neck, the gland appears to remotely control the entire reproductive system. Excessive or subnormal production of the hormone causes menstrual disturbances – irregular periods, heavy flow or even complete cessation. Hypothyroidism is also a well-documented cause for infertility and miscarriages. The study was conducted-

To find out the prevalence of hypothyroidism women (37 to 60 years) and also assess the nutritional status women suffering from hypothyroidism.

2. Methodology

The study was conducted in Sultanpur district hospital and hospital was visited regular for one month. In order to obtain records from hospital pathology Laboratory and the selected subjects were interviewed collecting the data regarding the socio economic status, nutritional status and a few health related information, using an interview schedule. The dietary pattern of the sample was collected using the average daily nutrient intake was calculated with the help of the food composition table of **Gopalan (2000)** 24 hours dietary recall methods, food habits, types of foods, information pertaining to nutritional knowledge were also recorded to assess their and The calculated daily nutrient intake in terms of energy, protein, fat, iron, calcium, sodium folic acid were then compared against recommended dietary allowances for Indians (**ICMR, 2002**). Anthropometric measurement are used the standard procedure of **LIC Standard (2002)** was used to measure the heights (cm) and weights (kg), clinical examination of T₃, T₄ and TSH level were analyzed to assess their nutritional status according to **B.Srilakshmi (2004)**. After collecting the data statistical analysis like observed mean were done to analyze the consolidated data.

3. Results and Discussion

Table 1: Prevalence and age women suffering with hypothyroidism

Years	Average %
2012	10.28
2013	14.55
Age (years)	
37-49	48.33%
50-60	53.33%

The prevalence of hypothyroidism women of Sultanpur district hospital in high 14.55% in 2013 and then less of 2012 in only 10.28% comes for treatment in this hospital.

Shows that the incidence of disease was high between 50-60 years of age 53.33% in all the age groups. The occurrences of the disease between 37-49 years of age were found to be 48.33%. So it can be conclude that the incidence of hypothyroidism was after 50 years of age. **Bonar et al. (2002)**. Found the prevalence of hypothyroidism was more in females who were than 50 years of age

4. Anthropometric Measurements

The mean of BMI and Exercise, of the women suffering with hypothyroidism

Table 2

Age (in years)	Observed mean of BMI
37-49 years	25.37
50-60 years	28.21
Exercise	Average %
Exercise	16.66%
Walking	45%
Yoga	18%
None	20%

The mean BMI of subjects are more than the compared with the **ICMR standards (1968)**.in the study was 37-49 years subjects are under the (BMI-25.37) overweight, and the 50-60 years age group subjects were suffering from the grade obesity (BMI-28.21). **Bertoli et al. (2002)** Found that hypothyroidism and obesity effects BMD (body mineral density) differently in body segments, and gravitational force affects bones of patients of subclinical hypothyroidisms. Hence a condition of subclinical hypothyroidism should be considered when evaluating for osteoporosis. **Kaneka et.al. (2005)** stated that thyroid hormone increased both the rate of cholesterol synthesis and catabolism in the liver .In hypothyroidism the rate of catabolism is decreased relatively, this results in a net increase in cholesterol. The sample average shows that 45% respondent went for walking 16.66% respondent did not exercise and 18.33% respondent did yoga.

Table 3: Clinical observation of among women suffering with hypothyroidism

Symptoms	Average %
Body swelling+wt gain	25
Body swelling+wt+poor appetite	21
Puffiness physical retardation	11.66
Puffiness+sensitivity+to cold physical retardation +wt gain	41.66
Causes	
Less activity of thyriodismdue to deficiency of iodine	28.33
Heredity	16.66
Hormones	40
Due to other disease	15
other complication	
High blood pressure	30
Low blood pressure	4
Diabetes	20
Arthritis	11
H.B.P.+D	3.33
H.B.P+A	3.33
Low B.P.+D	6.66
L.B.P.+A	8.33
D+A	3.33

None	13;33
Biochemical parameter	
Serum free levels of thyroid stimulating hormones (TSH)	5.61 (diff- 1.61)
Serum free level of thyroxin of hypothyroidism (T4)	0.86 (diff-0.06)
Serum free level of tri-iodothyronine (T3)	1.7 (diff- 0.3)

The higher symptoms present in respondents puffiness, sensitivity, to cold physical retardation weight gain in 41.66 % and 25 % respondents are body swelling weight gain,21 %body swelling weight gain appetite and only 11.66% symptoms are present in respondents puffiness physical retardation

Aschebrook et.al (2011) Found the over 75% of hypothyroidism patients and 67% patients had neuromuscular symptoms (Weakness,fatigue,stiffness) but proper diagnosis and appropriate treatment lead to resolution of these symptoms. And that the 28.33% respondent had the disease due to less activity of thyroid due to deficiency of iodine 16.66 % had the disease due to heredity and the higher 40% respondents due to hormones only 15% had the disease due to other factor like diabetes, blood pressure, heart patient. **Bakker et.al (2005)** found that cardiovascular risk disease increased the risk of subclinical hypothyroidism

The sample average showed that 30 % respondent suffering from high blood pressure 4% low blood pressure 20% respondents suffering from and the 3.33% respondents were suffering from high blood pressure diabetes and high blood pressure Arthritis 6.77% respondents are suffering from the low B.P +D;8.3% respondents are L.B.P+A AND 13.33% are suffering from other complication. **Wartofsky and Burman (2007)** studied that chronic and acute illness, surgical trauma fasting, starvation hypothyroidism males and euthyroid females resulted in a normal pregnancy rate, and sex ratio of the offspring. **Golden S.H et.al (2009)** studied that pregnant women with hypothyroidism (underactive) thyroid had four times greater risk to miscarriage during second trimester.

Table 4: Average daily consumption of food groups by the respondents:

. Foods Groups	Food item (gm)		
	Avg. Mean intake	Std. Value (ICMR)	Difference
Cereal	603.16	500	+103.16
Pulses	64.23	50	+14.23
Green leafy vegetables	87.64	100	+12.36
Other vegetables	57.46	50	+7.46
Root tuber	67.08	50	17.08
Fruits	45	20	+28.61
Milk & milk product	113.11	200	-86..61
Fats and oils	48.61	20	+28.61
Sugar and Jeggary	38.78	30	+8.21
Meat and poultry	9.14	20	-10.86
Food habit	Average %		
Vegetarian	63.33	-	-
Non-veg	28.33	-	-
Over-veg	8.33	-	-
food consumed by women			
Type of food	-	-	-
Non-spicy	33.33	-	-
Spicy	31.66	-	-

Junk	15	-	-
Fried	20	-	-
Type of salt	-	-	-
Iodized	81.66	-	-
Non-iodized	18.33	-	-

Table 3. Shows the average daily consumption of food groups. It is clear from the table that intake of cereals, pulses, green leafy vegetables, other vegetables, fruits, milk and milk products and fat and oils sugar and jaggery was high and, meat and poultry (603.16kcal, 64.23gm, 87.64gm, 57.46gm, 67.08gm, 45gm, 113gm.11, 48.61ml, 38.78gm, and 9.14gm). was less than the required values of ICMR Standard (500Kcal,50gm,100gm,50gm,50gm,20gm,200gm,20ml.30gm,20gm) respectively. The 63.33% respondents were

vegetarian 28.33% were non-vegetarians and only 8.33% were ovo vegetarians. And the 33.33% respondents consumed non spicy food 31.66% had spicy food 20% take fried food and 15% had junk foods. Hence the study reveals that maximum present had spicy food followed by spicy food and minimum 15% consumed junked foods. The sample average showed that 81.66% respondents used iodized salt and only 18.33% used no iodized salt. **Marcisz et.al. (2004)** found that the application of low sodium diet led to less increase in plasma rennin activity in hypothyroid patients who had salt sensitive blood pressure than in individuals who had salt resistant blood pressure. Hence different and several mechanisms are responsible for blood pressure elevation in patients with hyperthyroidism or hypothyroidism.

Table 5: Average daily nutrient intake of the subjects

Nutrients	Energy (Kcal)	Protein (g)	Fat (g)	Calcium (mg)	Iron (mg)	Folic acid(mg)	Riboflavin (mg)	Sodium (mg)
RDA ICMR 2001	1250	50	20	400	30	100	1.2	20
Observed mea	2381.95	84.43	44.69	457.44	28.86	120	1.38	17.05
Difference	+1131.95	+34.43	+24.60	+57.44	-1.34	+20.05	+0.25	-2.5

Table. 5. Show the nutrient intake of the female hypothyroidism respondent age groups 37-60 years. The intake all the nutrients (2381.95kcal, 84.43gm, 44.69gm, 457.44mg, 28.86mg, 120mg, 1.38mg, 17.05mg.) with references to calories, protein ,fat, calcium ,iron ,folic acid, riboflavin ,sodium were significantly higher than the (ICMR RDA,1250kcal, 50gm, 20gm, 400mg, 30mg, 100mg, 1.2mg, 20gm) and the intake of iron and sodium are less than the RDA reference values respectively.

Delange (2006) presented a papers stating that during pregnancy it iodine intake is less than the recommended allowances then subclinical hypothyroidism resulting in minor brain damage in the neonates.

5. Conclusion

The study may be concluded that the prevalence of hypothyroidism women in the hospital of sultanpur district high 14.55% in 2013.in this study found the incidence of hypothyroidism was higher after 50 years of age and (37-49 years) women are underweight and 50-60 years women are suffering from the grade obeysity.The clinical observation of the subjects high symptoms present in 41.66% (puffiness, sensitivity and the suffering from the high complication of 30% in high blood pressure with other complication. The nutrient intake by the respondents of adequate amount but iron and sodium are less than the required values. The mean level of biochemical parameters T3andT4 is less than the normal values. And TSH level are increase in this condition

6. Recommendations

Nutrition awareness and education programmes, related to the importance of iodine, in the diet should be organized for the community especially for young girls and young women so that the incidence of hypothyroidism & the repercussion of the health there of can be controlled.

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