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Community Medicine

PREVALENCE OF THYROID DYSFUNCTION IN KASHMIR VALLEY: A CROSS SECTIONAL STUDY

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ABSTRACT A community based cross sectional study was carried out to measure the prevalence of thyroid dysfunction (hypo and hyper) in men and women greater than 45 years of age. The study was purposively conducted in Central zone of Kashmir Valley which includes three districts, district Srinagar, district Budgam and district Ganderbal. The study was carried out in both rural and urban areas, with district Srinagar representing the urban population & district Budgam & district Ganderbal representing the rural population. Multi-stage sampling was adopted for selection of subjects and a total of 2800 subjects were taken up for the study. Fasting blood sample was sent for calculation of TSH, T3 and T4. TSH was elevated in 347 (12.4%) decreased in 36 (1.3%). Subclinical hypothyroidism was seen in 314 (11.2%), hyperthyroidism in 36 (1.3%), overt hypothyroidism in 33 (1.2%). Among the subjects with thyroid dysfunction, generalized body aches was the most common symptom seen (3.3%) followed by cold intolerance (1.8%).

KEYWORDS : Thyroid dysfunction, Cross sectional study, Kashmir Valley.

INTRODUCTION

Kashmir is a valley which nurtures a good number of thyroid disease cases. Thyroid disease is common in the general population and the prevalence increases with age. The assessment of thyroid function by modern assays is both reliable and inexpensive Screening for thyroid dysfunction is indicated in certain high-risk groups such as neonates and the elderly. Hypothyroidism is by far the most common thyroid disorder in the adult population and is more common in older women. It is usually autoimmune in origin, presenting as either primary atrophic hypothyroidism or Hashimoto's thyroiditis. Thyroid failure secondary to radioactive iodine therapy or thyroid surgery is also common. Rarely, pituitary or hypothalamic disorders can result in secondary hypothyroidism[1]. Since sub clinical hypothyroidism (SCH) and overt hypothyroidism are recognized risk factors for atherosclerotic cardiovascular disease, hyperlipidemia, low grade inflammation and hypercoagulability[2], an effort was made to assess the prevalence and associates of thyroid dysfunction among adults so that appropriate recommendations may be made for the prevention and control of the same.

OBJECTIVE

To study the health status with respect to the prevalence of thyroid dysfunction (hypo and hyper) in Kashmir.

METHODOLOGY

A community based cross sectional study was carried out to measure the prevalence of thyroid dysfunction in men and women greater than 45 years of age. The study was purposively conducted in Central zone of Kashmir Valley which includes three districts: Srinagar, Budgam and Ganderbal. District Srinagar represented the urban population & district Budgam & district Ganderbal represented the rural population. The study was conducted on a total of 2800 subjects greater than 45years of age for a period of two years. The subjects were included in the study only after obtaining their written consent. A door to door visit was made and every subject was administered a questionnaire with details regarding demographic and socioeconomic characteristics like age, sex, educational status, family and income. Blood pressure measurement and BMI of the study subjects was also calculated. The subjects were informed about the venue and time for blood sample collection. Blood sample was sent for TSH, T3 and T4.

RESULTS:

The participants comprised of 1429 males and 1371 females. Most of the participants were from rural areas 1943 (69.4%) than from urban areas 857 (30.6%). Most of the studied subjects 1158 (41.4%) belonged to lower middle class followed by middle class 774 (27.6%) as per the BG Prasad's socioeconomic status scale.

Table 1: Age and Gender Distribution of the Studied Population

Age (years)	Male		Female		Total	
	n	%	n	%	n	%
45 to 49	324	22.7	295	21.5	619	22.1
50 to 54	262	18.3	248	18.1	510	18.2
55 to 59	250	17.5	226	16.5	476	17.0
60 to 64	213	14.9	193	14.1	406	14.5
65 to 69	151	10.6	142	10.4	293	10.5
70 to 74	105	7.3	110	8.0	215	7.7
75 to 79	54	3.8	56	4.1	110	3.9
≥ 80	70	4.9	101	7.4	171	6.1
Total	**1429**	**51.0**	**1371**	**49.0**	**2800**	**100.0**
mean ± SD	58.8 ± 10.4 (45, 89)		59.6 ± 10.9 (45, 89)		59.0 ± 10.5 (45, 89)	

Table 1 demonstrates the age and gender wise distribution of studied population. Studied population was between 45 to ≥ 80 years with mean age 59.0±10.5 years. Most of participants (22.1%) were in the age group of 45-49 years followed by 50 to 54 years (18.2%), 55 to 59 years (17.0%), 60-64 years (14.5%).

Overall 385(13.75%) participants had thyroid dysfunction in the form of either hypothyroidism or hyperthyroidism.

Table 2: Status of thyroid function in the studied population.

Parameter	Status	N	%
TSH (mu/ml)	Decreased	36	1.3
	Elevated	347	12.4
T3 (ng/dl)	Elevated	36	1.3
T4 (mg/dl)	Decreased	33	1.2
	Elevated	36	1.3
Thyroid Dysfunction	Subclinical Hypothyroidism	314	11.2
	Hyperthyroidism	36	1.3
	Overt Hypothyroidism	33	1.2

Table 2 shows that TSH was elevated in 347 (12.4%) decreased in 36 (1.3%). Subclinical hypothyroidism was seen in 314 (11.2%), hyperthyroidism in 36 (1.3%), overt hypothyroidism in 33 (1.2%) of the participants.

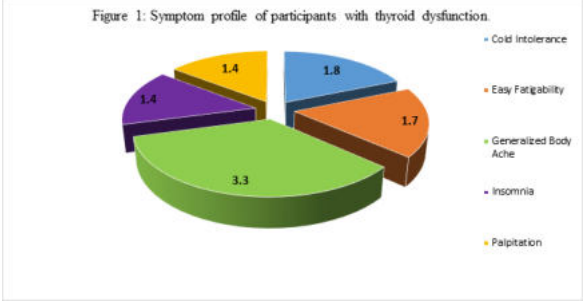

Figure 1 shows that among the subjects with thyroid dysfunction, generalized body aches was the most common symptom seen (3.3%), followed by cold intolerance (1.8%), easy fatigability (1.7%) and

Insomnia and palpitations(1.4% each).

Table 3: Relationship of age and gender with hypothyroidism

	Hypothyroid		Not hypothyroid		p value
Age (years)	N	%	n	%	0.000
45 to 49	51	8.2	568	91.8	
50 to 54	73	14.3	437	85.7	
55 to 59	50	10.5	426	89.5	
60 to 64	25	6.2	381	93.8	
65 to 69	31	10.6	262	89.4	
70 to 74	46	21.4	169	78.6	
75 to 79	20	18.2	90	81.8	
≥ 80	51	29.8	120	70.2	
Gender					
Male	114	8.0	1315	92.0	0.000
Female	233	17.0	1138	83.0	

The above table depicts that most of the hypothyroidism was significantly associated with age and gender with highest prevalence in the > 80 years age group (29.8%) and higher prevalence in females (17%).

Table 4: Relationship of age and gender with hyperthyroidism

	Hyperthyroid		Not hyperthyroid		P value
Age (years)	N	%	n	%	
45 to 49	5	0.8	614	99.2	0.311
50 to 54	7	1.4	503	98.6	
55 to 59	6	1.3	470	98.7	
60 to 64	7	1.7	399	98.3	
65 to 69	3	1.0	290	99.0	
70 to 74	4	1.9	211	98.1	
75 to 79	2	1.8	108	98.2	
≥ 80	2	1.2	169	98.8	
Gender					
Male	11	0.8	1418	99.2	0.013
Female	25	1.8	1346	98.2	

Above table shows that the association of hyperthyroidism with age and gender was not statistically significant.

Table 5: Relationship of hypertension and BMI with hypothyroidism

	Hypothyroid		Not hypothyroid		P value
Body mass index (kg/m^2)	n	%	n	%	
Normal	210	60.5	1841	75	0.00
Over Weight	124	35.7	560	22.8	
Obese	13	3.7	52	2.1	
Hypertension					
No	258	74.4	2034	82.9	0.000
Yes	89	25.6	419	17.1	

Table 5 shows that 35.7% of the hypothyroid subjects were overweight and hypertension was present in 25.6% of the subjects with hypothyroidism.

DISCUSSION

The prevalence of thyroid dysfunction in our study was found to be 13.75% of which 12.4% had hypothyroidism and 1.3% had hyperthyroidism. Among the hypothyroidism 11.2% had subclinical hypo-thyroidism and 1.2% had overt hypothyroidism. This is consistent with the study done by M. Hamm, Leonarel Maryen et al (1994)[3] which was aimed to recognize hypothyroidism in elderly patients found that 14.6% of the women and 15.4% of the men had subclinical hypothyroidism in undiagnosed subjects. The prevalence is slightly on the lower side possibly because our study has been conducted on the population of middle aged people which was a community based study. ln our study there was also an increase in the prevalence of thyroid disease with respect to age and more in females. Our results are same as the study by WMG Tunbrige et al. (1977)[4] who in their study found that TSH did not vary with age in males but increased markedly in females with advancing age.

Among the participants with thyroid dysfunction, the most common symptom was generalized body aches (3.3%) followed by cold intolerance(1.8%) and easy fatigability (1.7%). Our results are similar with Nothen Wei et al[5] who found that significant percentage of the 12 million people end up also being diagnosed as fibromyalgia which has varying degree of muscle and joint pain. But Irfan M. Khurram et al (2003)[6] in their study which was designed to evaluate difference in the clinical presentation in hypothyroid subjects found that lethargy was the most common symptom and facial edema was most common sign. Their result does not match with the findings of our study.

The present study also demonstrated 35.7% of the total hypothyroid subjects were overweight. Our study when compared with study conducted by Nazir et al. (2009)[7] revealed between obesity and hypothyroidism. The same findings were revealed by Hussyein Arnie, Hussyein Gundoz et al (2006)[8], who in their study which was aimed to evaluate prevalence of subclinical hypothyroidism in morbidly obese population concluded that severe obesity is associated with increased TSH levels.

In our study hypertension was present in 25.6% of the subjects with hypothyroidism. The same was found by Kotsis, Vasillios et al (2007)[9] in their study which was aimed to examine the differences in 24 hour ambulatory BP monitoring in hypothyroid and normal volunteers, the mean 24 hour systolic BP and 24 hour pulse pressure was significantly higher in patients with hypothyroid compared with normal volunteers.

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