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### RESEARCH ARTICLE

#### PREVALENCE OF THYROID DYSFUNCTION IN HILLY DISTRICT OF KASHMIR.

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#### Manuscript Info

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Thyroid Dysfunction, prevalence, Hilly District.

#### Abstract

**Background:** Thyroid disorders are highly prevalent especially hypothyroidism that has been reported in Kashmir Valley of India. Further, Shopian being a Hilly District and excess of pesticides are used there for agricultural purpose. So, we conducted a study to see the prevalence of hypothyroidism in patients attending Community Health Centre Zainapora.

**Objective:** To see the prevalence of hypothyroidism in the local population who visited the outpatient department of Community Health Centre Zainapora.

**Material & Methods:** This was a Cross-sectional study carried out for one year and was conducted in Community Health Centre Zainapora of District Shopian. Random samples of 367 patients with suspected thyroid dysfunction were taken.

**Results:** A total of 367 study subjects were taken. Out of which 267 were females and 100 were males. Prevalence of hypothyroidism in present study was found to be 28%. 71% patients were euthyroid, 19% were subclinical and 9% were overt. Female hypothyroidism was more prevalent than male hypothyroidism.

**Conclusion:** Prevalence of hypothyroidism was found to be high especially the overt hypothyroidism.

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#### Introduction:-

Diseases of thyroid gland are among the most common endocrine disorders affecting the population worldwide. In the developed world, the prevalence of hypothyroidism is 4-15%<sup>1,2</sup>. It has been estimated that about 42 million people in India have thyroid dysfunction, and hypothyroidism is the most common thyroid disorder<sup>3</sup>. Further, prevalence of hypothyroidism in India is 11%<sup>4</sup>. Thyroid hormones have an indispensable role in metabolic processes in human body, and numerous physiological and pathological stimuli are known to influence thyroid metabolism<sup>5</sup>. The Himalayan belt is one of the most severe endemic areas for iodine deficiency disease<sup>6,7,8</sup>. Prevalence of total goitre rate was reported to be 19.8% in Kangra district of Himachal Pradesh<sup>8</sup>. The first study conducted on iodine deficiency in Kashmir Valley reported an overall prevalence of goitre to be 45.2%<sup>9</sup>. Recent studies carried out in Srinagar and adjoining areas have reported total goiter prevalence rate of 5.57% in boys and 6.85% in girls<sup>10</sup>. Recent studies have reported that Thyroid disorders are highly prevalent in Kashmir population and subclinical hypothyroidism being most prevalent thyroid disorder and prevalence of thyroid disorders in Kashmir population as 40.36%<sup>11</sup>.

Further, Shopian is a hilly district with lot of apple orchids and good amount of pesticides are used for spraying orchids. This study is aimed to investigate the prevalence of hypothyroidism in the local population visiting the outpatient department of CHC zainapora.

### Methods:-

This was Cross sectional Observational study conducted for a period of one year (from First March 2017 to First March 2018). A random sample of 367 patients with suspected thyroid dysfunction was taken. The data from patients with suspected thyroid dysfunction and thyroid profile (TSH, T3 and T4) was analyzed.

The biological reference ranges for TSH, T3, and T4 were<sup>11,9</sup>

Serum T4: 4.8–12.7 ug/dl

Serum T3: 0.8–2 ng/ml

Serum TSH: 0.27–4.2 uIU/ml

The study subjects were categorized as euthyroid, subclinical hypothyroidism, overt hypothyroidism, hyperthyroidism<sup>11,9</sup>

**Statistical analysis:** Open epi was used for calculation of sample size, by taking prevalence as 40%, confidence interval as 95%.

### Results:-

**Table no.1:-**Age and sex wise distribution of study subjects

Age group (years)	Males	Females	Total
5–10	1	7	8
11–20	8	32	40
21–30	22	55	77
31–40	15	66	81
41–50	26	54	80
51–60	14	40	54
61–70	10	11	21
>70	4	2	6
Total	100	267	367

Table no.1 depicts that majority of study subjects were Females (73%) as compared to Males (27%). Majority of study subjects were in age group of 30-40 yrs of age.

**Table no.2:-**Distribution of study subjects according to clinical type of hypothyroidism

Thyroid status	n (%)	Males (%)	Females (%)
Overt hypothyroidism	33(9)	7(7)	26(9.7)
Subclinical hypothyroidism	71(19.4)	15(15)	56(21)
Euthyroid	260(71)	77 (77)	184(69)
Hyperthyroidism	2(0.6)	1(1)	1(0.3)
Total	367	100	267

A total of 367 study subjects were enrolled. Out of which 267 were Females and 100 were males. Prevalence of hypothyroidism in present study was found to be 28%. 71% patients were euthyroid, 19% were subclinical and 9% were overt. Among females, 9.7 % were having overt hypothyroidism, 21% were having subclinical hypothyroidism. Among males, 7% had overt hypothyroidism, 15% were having subclinical hypothyroidism.

### Discussion:-

In our study, majority of study subjects were females and majority were in age group of 30-40yr. Prevalence of hypothyroidism being 28% with 9% overt hypothyroidism. Female hypothyroidism was more prevalent than male hypothyroidism.

As our results suggest that overt hypothyroidism is highly prevalent (9%) in our study as compared to other study by **Jailkhani R et al**<sup>11</sup> done in Kashmir where overt hypothyroidism is 5 % and subclinical hypothyroidism is 35%. As per another study by **Khan SMS et al**<sup>12</sup> done in Kashmir prevalence of goitre was found to be 18.9 %. In India, Iodine deficiency disorders (IDD) are major public health problem especially the Sub-Himalayan belt and Kashmir is known iodine deficiency endemic area<sup>8,9</sup>

Further, in our study there is predominance of females suffering from hypothyroidism as compared to males. As per other studies by **Menon uv et al**<sup>13</sup> & **jailkhani R et al**<sup>11</sup>, there is high prevalence of hypothyroidism in females compared to males. As per other study done in Kashmir by **BashirH et al**<sup>14</sup> there is increased prevalence of hypothyroidism in females. As per **Unnikrishnan AG et al**<sup>15</sup>, Female gender was found to have significant association with hypothyroidism. As per other study by **Mahanta A et al**<sup>16</sup> done in Assam, prevalence of overt hypothyroidism was 10.9% and subclinical hypothyroidism as 13.1%. Male female ratio was 1:3. As per another study by **Goldner WSet al**<sup>17</sup> prevalence of self-reported clinical thyroid disease in female spouses of pesticide applicators is 12.5% higher than in the general.

Population & Hypothyroidism is the most common abnormality concluding that role of organochlorines, in addition to fungicides, in the etiology of thyroid disease among female spouses enrolled in the Agricultural Health Study. A study by **Zaidi SS et al**<sup>18</sup> showed an increase in TSH levels and a decrease in T3 levels in workers compared with controls due to organochlorines and organophosphate insecticides. Another study by **Fordham et al**<sup>19</sup> and **Sinham et al**<sup>20</sup> showed Malathion (organophosphate insecticide) has been reported to affect thyroid hormone levels in freshwater catfish and bullfrog tadpoles.

Shopian being a hilly district and having apple orchards and pesticides being highly used in the area. This may likely be reason for high prevalence of overt hypothyroidism in Shopian. Further studies are needed to confirm whether pesticide exposure is associated with thyroid disease in pesticide applicators.

### Conclusion:-

Hypothyroidism is highly prevalent in our study especially the overt hypothyroidism.

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