

**Research Article****A Clinical Study to See the Relationship between Thyroid Swellings and Various Demographic Factors in Northern India****Irfan Khan<sup>1</sup>, Mohsin ul Rasool<sup>2</sup>, Imran Khan<sup>3</sup>, Sajad Hamid<sup>4</sup>, P. Angmoo<sup>5</sup>, P. K. Koul<sup>6</sup>**<sup>1</sup>Senior Resident, Department of Blood Bank, SKIMS Medical College, Bemina, Srinagar, India<sup>2</sup>Senior Resident, Department of Pathology, SKIMS Medical College, Bemina, Srinagar, India<sup>3</sup>Senior Resident, Department of Internal Medicine, SKIMS, SKIMS Medical College, Bemina, Srinagar<sup>4</sup>Lecturer, Department of Anatomy, SKIMS Medical College, Bemina, Srinagar, India<sup>5</sup>Associate Professor, Department of Pathology, GMC, Jammu, India<sup>6</sup>Professor, Department of Pathology, GMC, Jammu, India**\*Corresponding author**

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**Abstract:** Thyroid nodules are commonly encountered in clinical practice and more common in women, and the incidence increases with age, history of radiation and diet containing goitrogenic material. The present study was conducted in the Postgraduate Department of Pathology of a teaching hospital in Northern India for a period of 1 year. It was a prospective hospital based study in which FNAC of new cases of thyroid lesions was done. In each case, a brief clinical history and physical examination along with evaluation of relevant investigation was carried out. The study comprised of 139 patients of thyroid lesions who were subjected to USG-guided and conventional method fine needle aspiration cytology (FNAC). Out of 139 patients, maximum numbers of patients were in 31-40 age group i.e., 43 and minimum patients were in < 10 years and > 70 year age group. 24 patients were males and rest 115 was females. The results of this study indicate that more females were affected as compared to males. Thyroid swellings showed demographic dependence.**Keywords:** Thyroid nodules, thyroid lesions, Fine Needle Aspiration Cytology(FNAC)

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**INTRODUCTION**

Thyroid nodules are commonly encountered in clinical practice, with a prevalence of 2% to 5% for palpable thyroid nodules [1] and 19% to 46% for nodules detected by thyroid ultrasonography [2]. Thyroid nodules are more common in women, and the incidence increases with age, history of radiation and diet containing goitrogenic material [1]. Various studies have shown that the risk of malignant involvement of thyroid palpable nodules [3] is 4% to 7%.

Thyroid nodules are the most common endocrine disorders particularly in countries where dietary iodine intake is low [4]. Clinically thyroid lesions present as goitre or thyroid enlargement which can be nodular (solitary or multiple) or diffuse [5].

Clinicians have used clinical examination, biochemical lab., tests (T3, T4, TSH), transcutaneous ultrasonography, scintigraphy with (I-123 or Tc-99m) and fine needle aspiration cytology (FNAC) for the evaluation of thyroid nodules. FNAC has surpassed most of other tests [6].

Fine-needle aspiration cytology (FNAC) is a standard diagnostic test for evaluating palpable thyroid nodules. It is a simple rapid, reliable and minimally traumatic procedure that is done as a routine practice [5, 7]. The procedure is regarded as a valuable method of distinguishing between malignant from those with benign nodules that can be followed clinically [8].

FNAC can be used to diagnose most benign nodular goitres, cysts, thyroiditis and neoplasms (papillary, medullary, anaplastic, poorly differentiated and metastatic malignancy) with high degree of accuracy based on cyto-morphological features [9].

The diseases of thyroid form a major share of head and neck surgery. Clinical examination, although very accurate in most cases, is inadequate in some areas especially, in staging of thyroid malignancies and in detecting the multi-nodularity of the gland. Ultrasound of the neck is extremely sensitive in detecting thyroid pathology and is felt to be the most complete and cost-effective imaging method for the evaluation of the thyroid gland [10].

The reported incidence of thyroid nodules in children and adolescents is estimated to be between 1% and 2%. However, this incidence may be increasing because diagnostic radiological procedures are detecting incidental thyroid nodules in children [11].

FNAC and USG are thus used in association with clinical features. The present study is undertaken to evaluate usefulness of clinical features, FNAC and USG in managing thyroid nodules. USG guided FNAC of the thyroid is being performed as a special procedure in our department with the help of Radiology departments to diagnose various palpable and non palpable lesions. Harsuolis *et al.* [12] performed FNAC in 1100 patients (aged 14-80, 993 women), with nodular goiter. Cochand-Priollet B *et al.* [13] did a prospective study to know the diagnostic value of FNAC in the study included 132 patients, 19 men and 113 women, aged from 18 to 82 years. Alexander EK *et al.* [14] collected data of all patients at the Brigham and Women's Hospital Thyroid Nodule Clinic regarding Patient age, gender, nodule size, cystic content, solitary vs. multinodular thyroid, and nodule location. Sarunya Kantasueb *et al.* [15] carried out a review of the incidence of thyroid lesions from the histopathology of thyroid lesions in 848 patients, comprising 136 males (16.04%) and 712 females (83.96%). Kamenov ZA *et al.* [16] did a study on 300 patients with mean age  $\pm$  SD  $48.4 \pm 11.2$  years; women/men = 12.8/1.

## MATERIALS AND METHODS

The study was conducted in the Postgraduate Department of Pathology of a teaching hospital in Northern India for a period of 1 year. It was a prospective hospital based study in which FNAC of new cases of thyroid lesions was done. In each case, a brief clinical history and physical examination along with evaluation of relevant investigation was carried out.

Correlation was done by statistical evaluation using SPSS 11.5 software.

## RESULTS

The age distributions of the study cohort revealed that maximum number of patients were 43 in the 31-40 age groups. Minimum patients were in the less than 10 years as described in Table 1.

The patient demographic status was that maximum patients belonged to urban area 96 (68.75%) and remaining 43 (31.25%) were from rural area.

Out of total 139 patients, 87 patients were benign; 19 were male and 68 were female. The malignant lesions were 39; 8 were male and 31 were female. Besides, follicular were 9, 1 male and 8 female. Lastly, unsatisfactory, were 4, 1 male and 3 females.

**Table 1: Age Distribution of Patients of Study Sample**

Age (yrs)	No. of Pts.	Percentage (%)
<10	1	0.72
11 to20	10	7.19
21 to 30	28	20.14
31 to 40	49	35.25
41 to 50	25	17.99
51 to 60	15	10.79
61 to 70	09	6.47
> 70	02	1.44
Total	139	100

**Table 2: Demographic distribution of patients**

Region	Number	Percentage
Urban	96	68.75
Rural	43	31.25

**Table 3: Sex distribution of patients by USG based-Cytology**

Cases	Male	Percentage	Female	Percentage
Benign	19	13.67	68	48.92
Malignant	8	5.67	31	22.30
Follicular	1	0.72	8	5.76
Unsatisfactory	1	0.72	3	2.16
Total	29	20.86	110	79.14

**DISCUSSION**

The study was a prospective hospital-based study conducted in the Postgraduate Department of Pathology in a teaching hospital in Northern India for a period of 1 year. In the present study Ultrasound guided and Free handed Fine needle aspiration was performed in 139 patients with thyroid swelling. The present study aimed at studying the relationship between various demographic factors and thyroid lesions selected in study population.

Fine needle aspiration cytology (FNAC) is the fundamental method for evaluation of thyroid nodules. Examination of the material obtained by FNAC enables

to differentiate between benign and malignant lesions. Wrong detection and poor aspiration techniques cause most of the false negative reports [17].

Ultrasound guidance allows continuous visualization of the needle during insertion and sampling which results in pinpoint accuracy with a high level of safety. Ultrasound guided Fine needle aspiration cytology improves the yield of cancer detected at surgery [18].

The present study has revealed some interesting data with respect to thyroid disease in the Northern India

**Table 4: Showing age range and median age of different studies and present study**

Study	Age range(Yrs)	Mean age
Nicholas J Screation et al	14-80	48
A Martinek et al	13-87	38.6
Hatada et al	-	54.7
Laurence et al	16-83	49.5
Present study	5-79	34.26

In the present study, age of the patients ranged from 5-79 yrs with a mean age of 38.5 years. According to Dorairajan and Jayshree [19], majority (36%) of their patients were in the age group of 30-40 years, which is in conformity with our study in which maximum number of patients (30.94%) were from this age group.

Age distribution and mean age of the present study was comparable to A Martinek *et al.* [17] study but the mean age was lower when compared to Hatada *et al.* [20], Nicholas J Screation *et al.* [21] and Laurence *et al.* [22].

**Table 5: Showing sex distribution and male to female ratio of different studies and present study**

Study	Total no.	Male	Female	M:F
A Martinek et al	245	52	193	1:3.7
Hatada et al	72	7	63	1:9
Antonello et al	325	31	294	1:9.4
Laurence et al	450	78	372	1:4.76
Present study	139	29	110	1:3.79

In the present study majority were females numbering 110 whereas 29 were male, forming a male to female ratio of 1:3.79. Sex distribution, was comparable to study by A. Martinek *et al.* [17] and male patients were more in number compared to Hatada *et al.* [20] where as females are more in number compared to study by Laurence *et al.* [22] etc.

**CONCLUSION**

The study comprised of 139 patients of thyroid lesions who were subjected to USG-guided and conventional method fine needle aspiration cytology (FNAC). Following conclusions were inferred from the study:

- Out of 139 patients, maximum numbers of patients were in 31-40 age group i.e., 43 and minimum patients were in < 10 years and > 70 year age group. 24 patients were males and rest 115 were females.

- In conclusion, the results of this study indicate that more females were affected as compared to males.
- Thyroid swellings showed demographic dependence.

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