

# Pattern of thyroid pathology in thyroidectomy specimens in a rural teaching hospital of south India Tamil Nadu in two years

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## Abstract

**Introduction:** Almost one third of the world population have iodine deficiency. Approximately 42 million people in India are suffering from various thyroid disorders. Common thyroid diseases in India are hypothyroidism, hyperthyroidism, goitre, iodine deficiency disorders, Hashimoto's thyroiditis and thyroid cancer. The high incidence of thyroid diseases in India needs to be investigated since Iodized salt is freely available. A cross sectional study in Tamilnadu by Pandav CS *et al.* in 2010 showed poor iodine levels in the salt. Mark P J Vander pump states that goitre prevalence can go up to 80% in iodine deficiency areas. Other main cause of goitre is autoimmune diseases. Also gender plays an important role in thyroid disorders. Total thyroidectomy is one of the common mode in the treatment of thyroid diseases. The incidence of thyroid diseases show marked geographical variation around the world. In this study, we would like to present the pattern of thyroid diseases in our hospital which is situated in a hilly region of Tamil Nadu, South India. This is a retrospective study of 2 years duration. Data on the disorders of thyroid gland was collected from medical records department. The histopathological diagnosis was collected with age and sex in 97 cases of total thyroidectomy. The collected data was analysed and compared with similar data from other regions. Our study showed lowest incidence of Papillarycarcinoma (5%) highest incidence of thyroiditis (25%) compared to various centres around the world. More studies are required to find the possible causes.

**Keywords:** Thyroid pathology, thyroidectomy, south India, goiter, incidence.

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## INTRODUCTION

Approximately 42 million people in India are suffering from various thyroid disorders<sup>1</sup>. The five common thyroid

diseases in India are 1) hypothyroidism, 2) hyperthyroidism, 3) goitre and iodine deficiency disorders, 4) Hashimoto's thyroiditis, and 5) thyroid cancer<sup>2</sup>. Approximately one third of people in the world have iodine deficiency. Particularly the population in sub-Saharan Africa and South India are affected<sup>3</sup>. Considering South India is surrounded by sea and people use sea salt and iodised salt by the government norms, this high incidence needs to be investigated. A cross sectional study was conducted in Tamil Nadu by Pandav CS *et al.* and reported in 2010. In this study, they assessed the goitre, urinary iodine excretion and iodide in the household salt. Children between the ages of 6 – 12years were the subjects. They have found that goitre rate was

13.5%. The households consuming iodized salt was 18.2%<sup>4</sup>. This indicates poor iodine levels in the salt used by the public in spite of the proximity to the coastal region. Mark P J Vander pump, Endocrinologist from the Royal Free Hampstead NHS Trust, London has comprehensively reviewed the epidemiology of thyroid disease in 2011 and states that goitre prevalence can go up to 80% in iodine deficiency areas. Regions like South-East Asia, Latin America and Central Africa are at a higher risk. In areas where there is no iodine deficiency, the main cause of goitre is autoimmune diseases<sup>5</sup>. Also gender plays an important role in thyroid disorders. Researchers have showed that FT3 resistance index has a negative relationship with age in males whereas no such relationship was found in women<sup>6</sup>. Apart from malignancies, total thyroidectomy is performed for many benign disorders due to various reasons. Anjali Mishra *et al.* when analysing a series of 127 total thyroidectomy cases found that 75 were non-toxic goitre and 52 were toxic goitre. 6.3% of these cases showed occult malignancy. So they have concluded that total

thyroidectomy should be considered for even benign thyroid conditions in the presence of palpable nodule (s) and/or ophthalmopathy<sup>7</sup>. The incidence of thyroid diseases show marked geographical variation around the world. In this study, we would like to present the pattern of thyroid diseases in our hospital which is situated in a hilly region of Tamil Nadu, South India.

**MATERIALS AND METHODS**

This is a hospital based retrospective study of 2 years duration. The medical records department follows the guidelines of WHO-ICD for classification of diseases. Data on the disorders of thyroid gland was collected from medical records department with the permission of Institutional Ethical committee. The histopathological diagnosis was collected with age and sex in 97 cases of total thyroidectomy. The collected data was analysed and compared with similar data from other regions.

**Inclusion Criteria:** Age above 20 years and both Sexes.

**Exclusion Criteria:** Age below 20.

**OBSERVATIONS AND RESULTS**

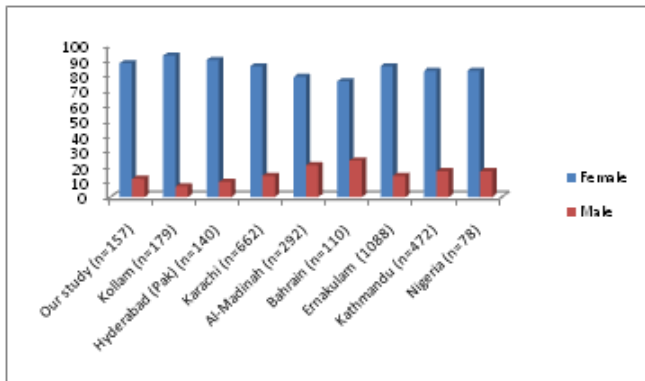
**Table 1: Gender and Histopathological diagnosis of thyroidectomy specimens**

Number of cases	Gender		Type of lesion			
	Male 88%	Female 12%	Non-neoplastic 69%		Neoplastic 31%	
n=157			MNG 44%	Thyroiditis 25%	Benign 21%	Malignant 10%
						Pap. Ca. 5% Others 4%

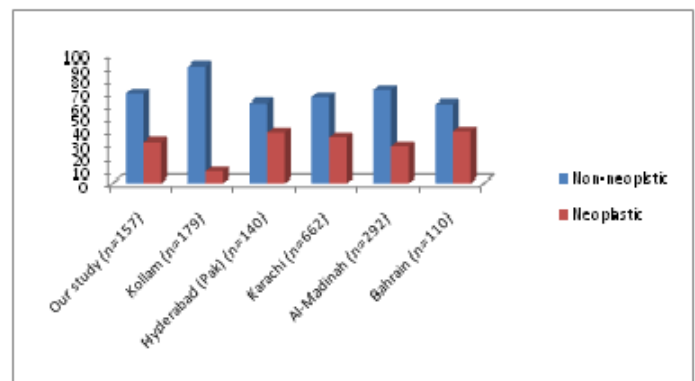
**Table 2: Comparable results from other regions**

	Female	Male	Non-neoplastic	Neoplastic	MNG	Thyroiditis	Benign	Malignant	Pap. Ca.	Others
Our study (n=157)	88%	12%	69%	31%	44%	25%	21%	10%	5%	4%
Kollam (n=179)	93%	7%	91%	9%	65%	12%	3%	8%	6%	3%
Hyderabad (Pak) (n=140)	90%	10%	62%	38%	60%	2%	27%	12%	8%	3%
Karachi (n=662)	86%	14%	66%	34%	62%	4%	14%	14%	11%	3%
Al-Madinah (n=292)	79%	21%	72%	28%	68%	4%	2%	25%	22%	3%
Bahrain (n=110)	76%	24%	61%	39%	46%	15%	15%	24%	23%	1%

(MNG – Multinodulargoiter, Pap. Ca.-Papillary carcinoma)



**Figure 1**



**Figure 2**

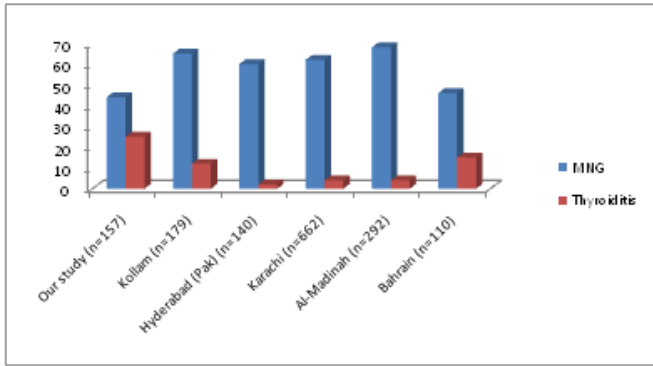


Figure 3

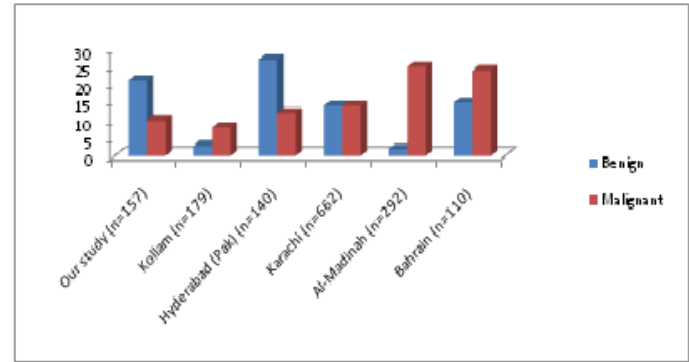


Figure 4

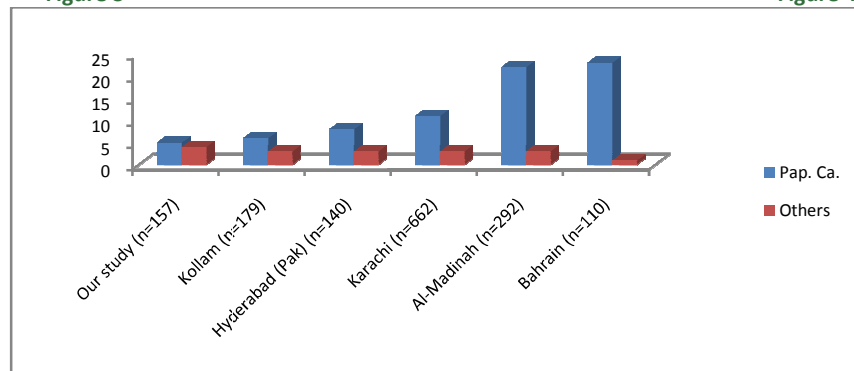


Figure 5

**Legend**

- Figure 1: Gender distribution comparison of thyroid diseases from various centres.
- Figure 2: Comparison of Histopathological diagnosis of our centre to others
- Figure 3: Multinodular goiters Thyroiditis comparison with other centres
- Figure 4: Benign vs Malignant tumours comparison with other centres
- Figure 5: Papillary carcinoma verses other types - comparison with other centres

**DISCUSSION**

We compared our gender data of the patients with eight other centres from India and around the world<sup>8,9,10,11,12,13,14,15</sup>. The predilection of thyroid diseases towards female sex is well known. Our study also showed 88% of the patients are women. Our data corroborated with all other regions except Kollam, Kerala, where the female fraction was still higher (93%)<sup>8</sup>. When the histopathological diagnosis was compared with five other centres, Kollam, Kerala showed remarkably low incidence of neoplastic lesions of thyroid (9%) and Bahrain the highest (39%) compared to the study average of 29.8%. Among non-neoplastic lesions, there is no significant difference in the incidence of Multinodular Goiter among the five centres. Our incidence was 44% which was comparable to the study average of 57.5%. But there was great variation in the incidence of Thyroiditis. Our study showed the highest incidence of 25% whereas the lowest was 2% in Hyderabad (Pakistan). The study average was 10.3%. Among neoplastic lesions, Al-Madinah (25%) and Bahrain (24%) showed high incidence of malignant tumours. Even though Kollam, Kerala showed lowest

number of neoplastic lesion, the proportion of malignant lesion among that was higher (8% out of 11%). Among malignant tumours, Bahrain (23%) and Al-Madinah (22%) showed very high incidence of Papillary carcinoma of thyroid. Our study showed the lowest incidence of Papillary carcinoma thyroid (5%) compared to the study average of 12.5%.

**CONCLUSION**

Thyroid cancer incidence has steadily increased from 1973 to 2002 except Sweden. Age adjusted international thyroid cancer incidence rate has increased 5-fold by geographic region for males and 10-fold for females<sup>16</sup>. Our study, compared to five other centres in the world, showed lowest incidence of Papillary carcinoma (5%), highest incidence of thyroiditis (25%) and higher incidence of Multinodular goiter (44%). More studies are required to analyse the causes and distribution of thyroid diseases throughout the world. That will enable us to find out the possible, avoidable causes of thyroid disorders.

## REFERENCES

1. Choudhury SarojiniDutta. Hypothyroidism: A common phenomenon. The Clarion- International Multidisciplinary Journal. 2012; 1(1):21-24.
2. AmbikaGopalakrishnan, Unnikrishnan, UshaV.Menon.Thyroid disorders in India: An epidemiological perspective.Indian J EndocrinolMetab. 2011; 15(2): S78-S81.
3. Zimmermann MB.Iodine deficiency.Endocr Rev. 2009; 30(4):376-408.
4. Pandav CS, Krishnamurthy P, Sankar R, Yadav K, Palanivel C, Karmarkar MG.A review of tracking progress towards elimination of iodine deficiency disorders in Tamil Nadu, India.Indian J Public Health. 2010; 54(3):120-5.
5. Mark P. J. Vanderpump. The epidemiology of thyroid disease.Oxford Journals, Medicine and Health, British Medical Bulletin.2011; 99(1): 39-51.
6. Satoru Suzuk, Shin-ichi Nishio, Teiji Takeda, Mitsuhsa Komatsu.Gender-specific regulation of response to thyroid hormone in aging.Thyroid Research.2012; (5)1.
7. Anjali Mishra, Amit Agarwal, Gaurav Agarwal, S.K. Mishra. Total Thyroidectomy for Benign Thyroid Disorders in an Endemic Region.World Journal of Surgery.2001; 25(3): 307-310.
8. AshwiniKolur, Anitha B, Letha P, Trupti Joshi, Jayasree, Samith Ahmed, Harish Naik.Pattern of thyroid disorder in thyroidectomy specimen.Int J Med Sci Public Health. 2014; 3(12): 1446-1448.
9. Jimmy Antony, TM Celine, MichaleChacko. Spectrum of thyroid disorders: A retrospective study at a medical college hospital. Thyroid Res Pract 2014; 11:55-9.
10. Mahato RV, Nepal AK, Gelal B, Poudel B, Yadav BK, Lamsal M. Spectrum of thyroid dysfunction in patients visiting Kantipur Hospital, Kathmandu, Nepal.Mymensingh Med J. 2013; 22(1):164-9.
11. ChampaSushel, Tariq WahabKhanzada, ImranaZulfikar, Abdul Samad. Histopathological Pattern of Diagnoses in Patients Undergoing Thyroid Operations.RMJ. 2009; 34(1): 14-16.
12. NazarHussain, M. Anwar, Nadia N., ZulfikarAli. Pattern of surgically treated thyroid disease in Karachi.Biomedica.2005 ;(21).
13. Abdulkader Albasri1, ZeinabSawaf1, Akbar Shah Hussainy, Ahmed Alhujaily. Histopathological Patterns of Thyroid Disease in Al-Madinah Region of Saudi Arabia. Asian Pac J Cancer Prev. 2015; (14): 5565-5570.
14. Abdulla H. Darwish, Khalid A. Al Sindi, Jihene El Kafsi, BAcantab. Pattern of Thyroid Diseases - A Histopathological Study. Bahrain Medical Bulletin, December 2006; Vol.28 (4).
15. A. O. Ogbera, O. Fasanmade, O. Adediran P. Pattern of thyroid disorders in the southwestern region of nigeria. Ethnicity and Disease, Spring 2007; 17: 327 – 330.
16. Briseis A. Kilfoy, TongzhangZheng, Theodore R. Holford, Xuesong Han, Mary H. Ward, Andreas Sjodin, Yaqun Zhang, Yana Bai, Cairong Zhu, Grace L. Guo, Nathaniel Rothman, Yawei Zhang. International patterns and trends in thyroid cancer incidence, 1973–2002.Cancer Causes Control. 2009; 20(5): 525–531.

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