

Characteristics of Thyroid Neoplasm Patients in the Department of Anatomic Pathology, Aloei Saboe Hospital

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ABSTRACT

Introduction: Thyroid Neoplasm is a tumor originating from the thyroid gland. Thyroid neoplasms encompass both benign and malignant tumors. Thyroid malignancies are among the most frequently encountered malignancies of the endocrine glands. Thyroid neoplasms generally have a relatively good prognosis when detected early. This study aims to determine the characteristics of thyroid neoplasm patients in the Department of Anatomic Pathology, Aloei Saboe Hospital.

Method: This study is descriptive research using secondary data from medical records. Data was collected using a total sampling technique with a sample size of 58 patients. The study was conducted in the Department of Anatomic Pathology, Aloei Saboe Hospital, from January 2021 to October 2022.

Results: The distribution of thyroid neoplasm patients is highest in late adulthood (36-45 years) with 15 patients (25.9%), followed by early elderly (46-55 years) with 15 patients (25.9%). The gender distribution shows more female patients, accounting for 43 (77.6%). The most common histopathological type is Colloid Goiter, with 20 patients (34.5%).

Conclusion: The distribution of thyroid neoplasm patients is most prevalent between the ages of 35 to 55 years, predominantly in females, with the most common histopathological finding being Colloid Goiter. This study is expected to serve as a valuable source of information, enhancing public knowledge and awareness regarding thyroid neoplasm patients' characteristics.

Key words: Aloei Saboe Hospital, characteristics, thyroid neoplasm



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Introduction

A thyroid neoplasm is a tumor that originates from the thyroid gland. It includes both benign and malignant neoplasms. Thyroid malignancy is one of the most commonly found malignancies among endocrine gland cancers. Generally, thyroid neoplasms have a relatively good prognosis if detected early. According to data from the World Health Organization (WHO) in 2020, thyroid cancer ranked 10th among the most prevalent types of cancer worldwide, with a total of 586,202 cases, and its prevalence has been steadily increasing over the last five years, accumulating to 1,984,927 cases.¹ In Indonesia, the prevalence of thyroid cancer during 2006-2010 was recorded as 318 cases across all ages and genders.² Based on data obtained from medical records at the Department of Anatomic Pathology, Aloe Saboe Hospital, there were 58 cases of thyroid neoplasm from January 2021 to October 2022. Furthermore, according to data from the Indonesian Association of Pathologists' Cancer Registration in 2008, thyroid malignancy ranked 5th among Indonesia's ten most common malignancies.³

The *American Cancer Society* explains that the incidence of thyroid cancer in females compared to males is 3:1. Approximately 1.7% of all cancers in females are thyroid cancer. In comparison, it accounts for only 0.5% of cancers in males.⁴ Out of the 13,114 cases reported in Indonesia in 2020, it can be detailed that females had a higher prevalence of thyroid cancer, with 9,053 cases ranking as the 6th most common cancer among females in the country. The remaining 4,061 cases were diagnosed in males.⁵

The risk of thyroid nodules increases with age, and low sodium intake triggers thyroid nodules. Additionally, radiation exposure contributes to the growth of thyroid nodules and increases the risk of thyroid nodules becoming malignancies. Based on histopathological findings, papillary, anaplastic, medullary, and follicular thyroid carcinomas are estimated to account for 90% of thyroid malignancy cases.⁶

Various modalities for establishing a definite diagnosis of thyroid nodules and determining their types are well-known in medicine. These range from simple anamnesis and physical examinations to supporting tests such as thyroid scans, *fine needle aspiration cytology* (FNAC), and thyroid histopathology as the *gold standard* for diagnostic investigations. The initial examination typically involves measuring the *thyroid stimulating hormone* (TSH) levels. Further testing may include *free tetra-iodothyronine* (FT4) and *free tri-iodothyronine* (FT3) measurements if abnormal TSH values are found. Thyroglobulin testing is usually conducted in the advanced step because of the limitation to differentiating between benign and malignant tumors, except when there is a significant increase in

thyroglobulin levels.⁶

The description above indicates that the incidence of thyroid nodule risk factors depends on age and gender. Histopathological diagnosis serves as the *gold standard* for supporting examinations in establishing the diagnosis of thyroid nodules. This research was conducted to understand and provide information about the characteristics of thyroid neoplasm patients at Aloei Saboe Hospital. Therefore, it is expected to enhance knowledge and understanding for the public, clinicians, and future researchers.

Methods

The research method used was descriptive research using secondary data from medical records as the subjects of the study. This research was conducted in the Department of Anatomic Pathology, Aloei Saboe Hospital. The study was carried out during the period of October-November 2022.

Population and Sample

The population in this study comprised all thyroid neoplasm patients in the Department of Anatomic Pathology, Aloei Saboe Regional General Hospital, from January 2021 to October 2022. The total number of thyroid neoplasm patients was 58. The inclusion criteria for this study were patients diagnosed with thyroid neoplasm by a pathologist based on histopathological examination in the Department of Anatomic Pathology, Aloei Saboe Hospital. The exclusion criteria were patients who did not have medical records in the Department of Anatomic Pathology, Aloei Saboe Hospital, records that need to be included, unreadable, or incomplete.

Data Collection Procedure

The data used in this research is secondary data obtained from medical records of thyroid neoplasm patients in the Department of Anatomic Pathology at Aloei Saboe Regional General Hospital. The data collection tools and research instruments used are writing utensils and tables to record the data obtained from the medical records.

Data Analysis

The data analysis used in this research was a univariate analysis conducted on each variable, and the research findings were analyzed descriptively to determine the distribution and presentation of each variable. Data analysis is performed using the Statistical Product and Service Solutions (SPSS) program (IBM, USA), where the predetermined variables will be presented in descriptive form through tables and narratives.

Results

This research was conducted for approximately three weeks between October and

November 2022. Table 1 shows the frequency distribution of age among thyroid neoplasm patients at Aloei Saboe Hospital from January 2021 to October 2022 was highest in the late adulthood group (36-45 years) with 15 patients (25.9%) and early elderly group (46-55 years) with 15 patients (25.9%). The distribution continues with eight patients (13.8%) in the early adulthood group, seven patients (12.1%) in the late adolescence group, seven patients (12.1%) in the late elderly group, five patients (8.6%) in the elderly group, and the least number in the early adolescence group (12-16 years) with one patient (1.7%). The frequency distribution of gender among thyroid neoplasm patients at Aloei Saboe Hospital from January 2021 to October 2022 shows that the highest number is in females, with 45 patients (77.6%), while males account for 13 patients (22.4%).

Table 1. The Characteristics of Thyroid Neoplasm Patients

Variable	Frequency (n)	Percentage (%)
Age		
Early Adolescence (12-16 years)	1	1.7
Late Adolescence (17-25 years)	7	12.1
Early Adulthood (26-35 years)	8	13.8
Late Adulthood (36-45 years)	15	25.9
Early Erderly (46-55 years)	15	25.9
Elderly (56-65 years)	7	12.1
Late Erderly (>65 years)	5	8.6
Gender		
Female	45	77.6
Male	13	22.4
Total	58	100

The results from Table 2 show that the frequency distribution of thyroid neoplasm patients based on histopathological findings is highest in the histopathological type called Colloid Goiter, with 20 patients (34.5%). Papillary Thyroid Carcinoma follows this with 18 patients (31.0%), then Follicular Thyroid Adenoma with eight patients (13.8%), Thyroid Cyst with three patients (5.2%), Adenomatous Goiter with three patients (5.2%), Hashimoto Disease with two patients (3.4%), Anaplastic Thyroid Carcinoma with two patients (3.4%), Hurthle Cell Adenoma with one patient (1.7%), and Squamous Cell Carcinoma with one patient (1.7%).

Table 2. The distribution of thyroid neoplasm patient characteristics based on histopathological findings.

Histopathological Picture	Frequency (n)	Percentage (%)
Benign		
Adenoma Follicular Thyroid	8	13.8
Hashimoto Disease	2	3.4
Colloidal Struma	20	34.5
Thyroid Cyst	3	5.2
Hurthle Cell Adenoma	1	1.7
Adenomatous Struma	3	5.2
Malignant		
Papillary Thyroid Carcinoma	18	31.0
Squamous Cell Carcinoma	1	1.7
Anaplastic Thyroid Carcinoma	2	3.4
Total	58	100

Discussion

Based on the results of the study, it was found that the highest frequency of patients with thyroid neoplasms occurred in the late adult age group (36-45 years), as many as 15 patients (25.9%), and early elderly (46-55 years) as many as 15 patients (25.9%), then at least it was found in the early adolescent age group (12-16 years) as many as one patients (1.7%). It was in line with research conducted by Saputri, in which she argued that thyroid neoplasms based on age characteristics mainly occur in the age group 40–49 years and 50–59 years. It just means the age of patients who experience thyroid neoplasms starts from adulthood to old age.⁶ This is also in line with Nugroho's research, which found that most thyroid nodule sufferers were 36–40 years.⁷

It was supported by the theory put forward by Masjhur, who stated that the hormone tyrosine produced by the thyroid gland would do enormous work in producing hormones. A deficiency in the hormone tyrosine can cause the anterior pituitary gland to secrete excessive amounts of TSH. TSH then causes thyroid cells to secrete large quantities of thyroglobulin into the follicles and causes the thyroid gland to enlarge.⁸

The theory put forward by Vani also supports this, that this happens because the endocrine system and especially the endocrine organs, including the thyroid, experience functional changes with age. The prevalence of thyroid disorders increases with age, and the morphology and physiology of the thyroid gland undergo many changes with age increase.⁹

Based on the study's results, the frequency of gender was the highest in the female sex, with as many as 45 patients (77.6%); in men, there were as many as 13 patients (22.4%). It was in line with a study conducted by Crosby, in which he stated that the highest incidence of thyroid nodules was in women, with 196 sufferers (80.3%), while in men, there were 48 sufferers (19.7%).¹⁰ It's also in line with a study conducted by Kurniawan, in which he found that out of 36 patients diagnosed with thyroid nodules, 33 were mainly female, while the remaining 3 were male.¹¹ It was also supported by the theory put forward by Heriady, in which he argued that there were more cases of thyroid nodules in women than men; this was due to the association of estrogen receptor expression in the thyroid gland epithelium, while estrogen has carcinogenic properties, namely which stimulates the emergence of excessive cell growth or what is often referred to as malignancy. It was supported by the theory put forward by Crosby, who argued that the influence of hormones on women is one of the predisposing factors to the increasing number of female patients compared to men. Estrogen can increase thyroid-binding globulin (TBG) levels, which works as a transport of T4 and T3 in the blood, decreasing free T4 levels. It stimulates TSH so that glandular hyperplasia occurs as a compensatory mechanism to form more thyroid hormone so that serum T4 and T3 levels can return to normal.

The present study reveals that the frequency of histopathological appearance was found in the benign category, namely Struma Kolloides, in 20 patients (34.5%), and the malignant category, namely Papillary Thyroid Carcinoma, in 18 patients (31.0%). It was in line with a study conducted by Heriady, where he found that out of 71 patients, the histopathological picture of the thyroid nodule was mostly the adenoma group. It is also in line with a study by Widarso; of 288 cases of thyroid nodules, the histopathological examination found 259 cases of thyroid adenomas and 29 cases of malignant thyroid tumors.¹² The results of this study are supported by the theory put forward by Maitra, who said that thyroid goiter is the most common thyroid disease. Maitra also noted that the most common type of thyroid carcinoma found was papillary carcinoma and follicular carcinoma in second place, and the rarest were medullary and anaplastic carcinomas.¹³ It just follows the theory put forward by Kumar that a deficiency in thyroid hormone synthesis will lead to an increase in TSH production, which will have an impact on increasing the number and hyperplasia of thyroid gland cells and, if this occurs continuously, will trigger goiter or nodules in the thyroid gland.¹⁴

The theory put forward by Ertek, namely the increase in cases of follicular variant, tends to be caused by the rapid and quite extensive spread of lesions, the higher age factor,

and also, this variant often appears to have had vascular and extrathyroidal invasions.¹⁵ The theory put forward by Kumar is that papillary carcinoma is the most common type of thyroid cancer. This tumor can occur at any age and is a thyroid carcinoma most commonly associated with a history of exposure to ionizing radiation.

The limitation of this study is that the analysis was carried out in a univariate manner so that it can only provide a descriptive description of the characteristics of patients with neoplasms so that further research is needed to determine whether there is an association. Then in this study, some factors were not examined, such as histopathological features included in the borderline category.

Conclusion

The results of the distribution of cholelithiasis patients who underwent laparoscopic cholecystectomy in the Aloei Sabote Hospital in the period January 2020 – December 2021 found the most incidents in patients who were female (70 people, 81.40%) age group 46-55 years (23 people, 26.7%). Most patients had no history of diabetes mellitus (76 people, 88.4%). This finding may offer a primary data reference for further research by increasing the number of variables to explore the risk factors for cholelithiasis.

Conflicts of Interest

Nothing to declare

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References

1. Olson E, Wintheiser G, Wolfe KM, Droessler J, Silberstein PT. Epidemiology of Thyroid Cancer: A Review of the National Cancer Database, 2000-2013. *Cureus*. 2019 Feb 24;11(2):e4127. doi: 10.7759/cureus.4127.
2. Prajoko YW. Profil Penderita Karsinoma Tiroid di RSUP dr. Kariadi, Semarang (Januari 2006 Juni 2010). *Indonesian Journal of Cancer*. 2013;7(4). doi:10.14414/ijoc.v7i4.307
3. Indriani SN, Dewi IGAM, Sriwidayanti NP, Ekawati NP. Karakteristik Kliniko Histopatologi Nodul Tiroid dari 1 Januari 2016 – 31 Desember 2017 di Laboratorium Patologi Anatomi Fakultas Kedokteran Universitas Udayana/ RSUP Sanglah Denpasar. *J Med Udayana*. 2021;10(4):5–9.
4. Haugen BR. 2015 American Thyroid Association Management Guidelines for Adult Patients With Thyroid Nodules and Differentiated Thyroid Cancer : What Is New and What Has Changed ? *Cancer*. 2017 Feb 1;123(3):372-381. doi: 10.1002/cncr.30360
5. Depkes. Infodatin pusat data dan informasi kementerian kesehatan RI: Situasi penyakit kanker di Indonesia. http://www.depkes.go.id/resources/download/pusdatin/infodatin/infodatin_kanker.pdf - Diakses 16 Oktober 2017

6. Saputri Y, Nur IM, Damayanti MM. Karakteristik Pasien dengan Nodul Tiroid di Rumah Sakit Al-Ihsan Bandung. *J Integr Kesehatan Sains*. 2021;3(2):148–53.
7. Heriady Y, Romadhona N. Characteristics of Thyroid Nodule in Terms of Age , Sex , and Histopatologic Picture at Al-Ihsan Bandung Hospital Period Of 2017. 2017;(22):841–51.
8. JS Masjhur. Buku ajar ilmu penyakit dalam. IV. Jakarta: Internal Publishing; 2014. 2455 p.
9. Prapyatiningsih Y, Ardika Nuaba IG, Sucipta IW. Karakteristik penderita nodul tiroid yang mendapatkan tindakan operatif di RSUP Sanglah Denpasar periode 2011-2013. *Med J*. 2017;48(1):72.
10. Crosby H, Pontoh V, Merung MA. Pola kelainan tiroid di RSUP Prof . Dr . R . D . Kandou Manado periode Januari 2013 - Desember 2015. *Jurnal e-Clinic (eCI)*, 2016;4(1):430-437.
11. Pangribowo S. Beban Kanker di Indonesia. Pus Data Dan Inf Kesehat Kementeri Kesehat RI. 2019;1–16.
12. Widarso AP, Norahmawati E, Setijowati N. Akurasi Diagnosa FNAB (Fine Needle Aspiration Biopsy) Dibandingkan dengan Pemeriksaan Histopatologi pada Tumor Tiroid (Studi Kasus di Instalasi Patologi Anatomi RS dr. Saiful Anwar Malang Periode 2008-2010). *Majalah Kesehatan*. 2015;2(3):127-134.
13. Maitra A, Kumar V. Sistem endokrin. In: Kumar V, Cotran RS, Robbins SL, editors. *Patologi Robbins volume 2. (7th ed)*. Jakarta: EGC, 2012; p. 818- 24
14. Kumar V, Abbas AK, Aster JC. *Robbins Basic Pathology*. 9th ed. Philadelphia: Elsevier; 2015
15. Ridho MA, Qodir N, Triwani T. Karakteristik Pasien Karsinoma Tiroid Papiler di Rumah Sakit Umum Pusat Dr. Mohammad Hoesin Periode Januari-Desember 2016. *Majalah Kedokteran Sriwijaya*. 2018;50(4):166-174. doi:10.36706/mks.v50i4.8564