# Profile of Thyroid Disease at the Endocrine Clinic, Dr. Soetomo General Academic Hospital period January 2019 – December 2020

*by* Soebagijo Adi Soelistijo

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# Profile of Thyroid Disease at the Endocrine Clinic, Dr. Soetomo General Academic Hospital period January 2019 – December 2020

Alfi Syahriani[1], Soebagijo Adi Soelistijo[2*], Dwi Hari Susilo[3], Hermawan Susanto[2]

[*]Corresponding Email: soebagijo.adi.s@fk.unair.ac.id

[1]Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia

[2]Departement of Internal Medicine, Faculty of Medicine, Universitas Airlangga/Dr. Soetomo General Academic Hospital, Surabaya, Indonesia

[3]Departement of Head and Neck Surgery, Universitas Airlangga/Dr. Soetomo General Academic Hospital, Surabaya, Indonesia

**Abstract**

**Introduction:** Thyroid disease is the world's second most frequent endocrine condition after diabetes. Nearly 300 million individuals worldwide are affected. Moreover, approximately 60% of people with thyroid disease are completely unaware of their medical condition. Thyroid disease might have been an underlying disease leading to death, even if it's not the primary cause of death. **Methods:** This type of research is descriptive research with a retrospective study design using secondary data from medical records of patients with thyroid disease at the Endocrine Clinic, Dr. Soetomo General Academic Hospital from January 2019 - December 2020. **Results:** Among 897 cases, thyroid disease was found to be more prevalent in females (79.2%). It was also discovered that most sufferers (22.4%) were between 50 and 59 years old. In hyperthyroidism, the highest prevalence was found in thyrotoxicosis, unspecified (ICD E05.9) (75.3%). The most common type of hypothyroidism was found in hypothyroidism, unspecified (ICD E03.9) (90.8%). The most common euthyroidism was malignant neoplasm of thyroid gland (ICD C73) (52.3%). It also showed in thyroiditis that the highest prevalence was found in thyroiditis, unspecified (E06.9) (75%). **Conclusion:** The prevalence of thyroid disorders is more significant in females and the 50-59 age group. Thyrotoxicosis, unspecified (ICD E05.9), hypothyroidism, unspecified (ICD E03.9), Malignant neoplasm of thyroid gland (ICD C73), and Thyroiditis, unspecified (ICD E06.9) were the most common thyroid diseases.

*Keywords*: Thyroid disease, Age, Gender, Profile

## 1. Introduction

Thyroid disease is the world's second most frequent endocrine condition after diabetes. Nearly 300 million individuals worldwide are affected [1]. According to the American Thyroid Association, 60% of people with thyroid disease are completely unaware of their medical condition [2]. Indonesia has the highest prevalence of thyroid disease in Southeast Asia with a total of 1.7 million persons affected. Whereas in 2017, the prevalence of thyroid disease in Indonesia also ranked the highest with 17 million persons affected [3]. Thyroid disease is categorized into three types determined by hormone levels including euthyroidism, hyperthyroidism, and hypothyroidism [4]. Euthyroidism, hyperthyroidism, and hypothyroidism are clinical conditions with normal, excessive, and insufficient thyroid hormone levels [5].

The thyroid gland is a massively powerful organ whose functions affect the entire body. In addition, the body's immune system is influenced by thyroid hormones, which thyroid hormone levels affect the maturation, differentiation, and activation processes. Thyroid disease might have been an underlying disease leading to death, even if it's not the primary cause of death [6,7]. It also can cause complications that might diminish a patient's life quality if they are not treated [8]. Thyroid function is impacted by numerous factors. This varies according to age, gender, race/ethnicity, and geographical area due to differences in dietary iodine consumption [9]. Regarding the influence of age on thyroid function, it is currently believed that with the increase in age, the prevalence of thyroid disease gradually increases [10].

However, data on thyroid disease in Indonesia is currently lacking, specifically data on hypothyroidism [11]. There needs to be more data regarding thyroid disease in Indonesia. Therefore, it is necessary to conduct research on the profile of thyroid disease at the Endocrine Clinic, Dr. Soetomo General Academic Hospital to increase prevention, with the goal of reducing the prevalence of thyroid diseases in Indonesia.

## 2. Methods

This research method is descriptive research with a retrospective study design and uses secondary data from patient medical records that are based on the guidelines of the International Classification of Diseases 10th Revision (ICD-10). The population in this research were patients with thyroid disease at the Endocrine Clinic, Dr. Soetomo General Academic Hospital from January 2019 - December 2020. In this case, there were 897 patients. The variables in this study were based on patient sociodemographics and thyroid disease classification into hyperthyroidism, hypothyroidism, euthyroidism, and thyroiditis.

## 3. Results

### 3.1. *Distribution of patient's sociodemographic*

Among 897 thyroid patients the predominance of thyroid diseases often occurs at an age range of 50-59 as shown in table 1. Meanwhile, the age of 70 years and older, was an age that is rarely obtained from thyroid disease. Furthermore, table 1 also shows that females outnumber males in the gender distribution of thyroid disease patients.

Table 1. Distribution of patient's sociodemographic

| Sociodemographic | Amount (n) | Percentage (%) |
|---|---|---|
| Age | | |

| | | |
|---|---|---|
| < 20 years old | 29 | 3.2 |
| 20-29 years old | 152 | 16.9 |
| 30-39 years old | 187 | 20.8 |
| 40-49 years old | 199 | 22.2 |
| 50-59 years old | 201 | 22.4 |
| 60-69 years old | 105 | 11.7 |
| ≥70 years old | 24 | 2.7 |
| Gender | | |
| Male | 187 | 20.8 |
| Female | 710 | 79.2 |

3.2. *Distribution of disease in hyperthyroidism*

On table 2, it was found that there were about 546 patients who complained of hyperthyroid, among them are graves' disease (ICD E05), thyrotoxicosis, unspecified (ICD E05.9), other thyrotoxicosis (ICD E05.8), toxic multinodular goiter (ICD E05.2) and toxic adenoma (ICD E05.10). The highest data was found in thyrotoxicosis, unspecified (ICD E05.9), with as many as 412 patients (75.3 %). In graves' disease (ICD E05), there were 134 patients (21.6 %). As well as in other thyrotoxicosis (ICD E05.8), there was a total of 1 patient (0.2 %). For toxic multinodular goiter (ICD E05.2) and toxic adenoma (ICD E05.10), no data was obtained. It was also discovered that females were more often affected by hyperthyroid disease rather than males.

Table 2. Distribution of disease in hyperthyroidism

| **Disease** | **Gender** | | **Amount (n)** | **Percentage (%)** |
|---|---|---|---|---|
| | **Male** | **Female** | | |
| Graves' Disease (ICD E05) | | | | |
| Thyrotoxicosis with diffuse goiter (ICD E05) | 5 | 11 | 16 | 2.9 |
| Thyrotoxicosis (hyperthyroidism) (ICD E05) | 37 | 81 | 118 | 21.6 |

| | | | | |
|---|---|---|---|---|
| Thyrotoxicosis, unspecified (ICD E05.9) | 120 | 292 | 412 | 75.3 |
| Other thyrotoxicosis (ICD E05.8) | 0 | 1 | 1 | 0.2 |
| Toxic multinodular goiter (ICD E05.2) | 0 | 0 | 0 | 0 |
| Toxic adenomas (ICD E05.10) | 0 | 0 | 0 | 0 |

3.3. *Distribution of disease in hypothyroidism*

Table 3 shows the total amount of hypothyroid patients were 217 patients. The most common type of hypothyroidism was found in hypothyroidism, unspecified (ICD E03.9) which is 203 patients, followed by other hypothyroidism (ICD E03) in 12 patients. There were 2 patients with other specified hypothyroidism (ICD E03.8). Meanwhile, congenital hypothyroidism (ICD E03.1) and hashimoto's disease (ICD E06.3) did not obtain any data. In addition, hypothyroidism was dominated by female compared to male patients.

Table 3. Distribution of disease in hypothyroidism

| **Disease** | **Gender** | | **Amount (n)** | **Percentage (%)** |
|---|---|---|---|---|
| | **Male** | **Female** | | |
| Hypothyroidism, unspecified (ICD E03.9) | 49 | 154 | 203 | 93.5 |
| Other specified hypothyroidism (ICD E03.8) | 0 | 2 | 2 | 0.9 |
| Other hypothyroidism (ICD E03) | 4 | 8 | 12 | 5.5 |
| Congenital hypothyroidism (ICD E03.1) | 0 | 0 | 0 | 0 |
| Hashimoto's Disease (ICD E06.3) | 0 | 0 | 0 | 0 |

3.4. *Distribution of disease in euthyroidism*

Table 4 presents the distribution of euthyroid disease. Malignant neoplasm of thyroid gland (ICD C73) was the most common euthyroid disease, accounting for 58 patients (52.3%), followed by nontoxic goiter, unspecified (ICD E04.9), which affected 44 patients (39.6%). There was also a nontoxic single thyroid nodule (ICD E04.1), which had 4 patients (3.6%), nontoxic multinodular goiter (ICD E04.2), and benign neoplasm of thyroid glands (ICD D34), which had 2 patients (1.8%), followed by nontoxic diffuse goiter (ICD E04), which had 1 patient (0.9%). It was also shown that euthyroidism is more common in females.

Table 4. Distribution of disease in euthyroidism

| **Disease** | **Gender** | | **Amount (n)** | **Percentage (%)** |
|---|---|---|---|---|
| | **Male** | **Female** | | |
| Euthyroid goiter | | | | |
| Diffuse | | | | |
| Nontoxic goiter, unspecified (ICD E04.9) | 6 | 38 | 44 | 39.6 |
| Nontoxic diffuse goiter (ICD E04) | 0 | 1 | 1 | 0.9 |
| Nontoxic single thyroid nodule (ICD E04.1) | 1 | 3 | 4 | 3.6 |
| Nodular | | | | |
| Nontoxic multinodular goiter (ICD E04.2) | 1 | 1 | 2 | 1.8 |
| Thyroid tumors | | | | |
| Benign neoplasm of thyroid glands (ICD D34) | 1 | 1 | 2 | 1.8 |
| Malignant neoplasm of thyroid gland (ICD C73) | 14 | 44 | 58 | 52.3 |

3.5. *Distribution of disease in thyroiditis*

Table 5 shows that in thyroiditis patients, 4 people (100%) were diagnosed with thyroiditis, unspecified (ICD E06.9). In comparison, females were more frequently affected than males. However, no patient was obtained for riedel thyroiditis (ICD E06.5), subacute thyroiditis (ICD E06.1), or postpartum thyroiditis (ICD O90.5).

Table 5. Distribution of disease in thyroiditis

| **Disease** | **Gender** | | **Amount (n)** | **Percentage (%)** |
|---|---|---|---|---|
| | **Male** | **Female** | | |
| Thyroiditis | | | | |
| Thyroiditis, unspecified (ICD E06.9) | 1 | 3 | 4 | 100 |
| Riedel thyroiditis (ICD E06.5) | 0 | 0 | 0 | 0 |
| Subacute thyroiditis (ICD E06.1) | 0 | 0 | 0 | 0 |
| Postpartum thyroiditis (ICD O90.5) | 0 | 0 | 0 | 0 |

## 4. Discussion

4.1. *Distribution of patient's sociodemographic*

In this present research, patients suffering from thyroid disease at the Endocrine Clinic, Dr. Soetomo General Academic Hospital were dominated by the age range of 50-59 years, with a total of 201 patients (22.4%), and was dominated by female gender (79.2%). It has the same pattern as another study by Antony, Celine, and Chacko (2014), which discovered that people aged 40-60, as well as females, were more likely to have thyroid disease [12]. Moreover, according to a study by Crosby *et al.* (2016), the age group 51-60 is the largest age group, and females also predominate in thyroid disease [1]. This implies that females are more likely than males to experience thyroid and become more frequent as people get older, and the thyroid gland undergoes numerous morphological and physiological changes as they age [13, 14].

4.2. *Distribution of disease in hyperthyroidism*

In the present research, the distribution of hyperthyroid patients at the Endocrine Clinic, Dr. Soetomo General Academic Hospital was dominated by thyrotoxicosis, unspecified (ICD E05.9) with a total of 412 patients. Then followed by graves' disease (ICD E05) with 134 patients. The previous study by Antony, Celine, and Chacko in 2014 reveals that thyrotoxicosis, unspecified (ICD E05.9) is the most common cause of hyperthyroidism [12]. However, a study by Goichot *et al*. in 2016 discovered that graves' disease was the most common cause, accounting for 802 cases [15]. Another study in Taiwan also stated the different data in which graves' disease was the commonest cause of the hyperthyroid state, then toxic nodular goiter [16]. According to a study by Caputo *et al*., this could be due to a population's varying iodine status, which

influences the prevalence of hyperthyroidism in different countries. Additionally, it was observed in this research that the gender distribution of all diseases favors females over males. This is similar to the results from a study in Italy in which women had twice the prevalence and incidence of men [17].

4.3. *Distribution of disease in hypothyroidism*

The majority of hypothyroidism was found in hypothyroidism, unspecified (ICD E03.9) with a total of 203 patients (93,5%) at Endocrine Clinic, Dr. Soetomo General Hospital. This research has the same pattern as the study of Antony, Celine, and Chacko in 2014. It was shown that the most common type of hypothyroidism is hypothyroidism, unspecified [12]. There are differences in the study conducted by Zoungrana *et al.*, (2021), in which approximately 11 patients (9.2%) had hashimoto's disease [18]. The discrepancies in the prevalence of hypothyroidism in this study against other studies could be determined by disparities in iodine status, which occurs more likely to occur in people with relatively high iodine intake as well as populations that are severely iodine deficient [19]. Moreover, female was found to have the highest gender distribution. This is consistent with the study by Taylor *et al*. in 2018 which found that females outnumber males in the gender distribution of hashimoto's disease [20].

4.4. *Distribution of disease in euthyroidism*

In the present research, the highest prevalence of euthyroid disease was reported in malignant neoplasms of the thyroid gland (ICD C73), with a total of 58 patients (52.3%). However, the histopathological type was not described in detail. In accordance with this finding, another study at RSUP Prof. Dr. R. D. Kandou Manado discovered a similar result, which was 59 patients with malignant thyroid disease, with papillary carcinoma being the most common histopathological type of malignant thyroid disease [1].

Furthermore, this study discovered that females were more likely than males to have a euthyroid disease. This is also consistent with the findings of Parura, Pontoh, and Merung (2016), who discovered that the prevalence of thyroid cancer was higher in females [21]. Another study also stated that the highest prevalence of patients who suffered nontoxic goiter multinodusa was found in females [22].

4.5. *Distribution of disease in thyroiditis*

In the present research, the distribution of thyroiditis at the Endocrine Clinic, Dr. Soetomo General Academic Hospital was dominated by thyroiditis, unspecified (ICD E06.9) (100%) and none of the patients had subacute thyroiditis (ICD E06.1), riedel's thyroiditis (ICD E06.5) and postpartum thyroiditis (ICD O90.5). In addition, females had the highest prevalence. This is consistent with the study of Antony, Celine, and Chacko in 2014, who discovered that thyroiditis, unspecified is the most prevalent type of thyroiditis, and females were affected more often than males [12]. Meanwhile, this research slightly has a different result from the research conducted by Lazim and Al-Irhayim in 2008 which discovered 1 patient with subacute thyroiditis and 1 patient with riedel's thyroiditis [23]. The disparities in the results of the previous studies might be happened due to the differences in sample size and duration of the data collection.

**5. Conclusion**

This study led to the conclusion that the highest prevalence was found in women and the 50-59 age group among thyroid patients at the Endocrine Clinic, Dr. Soetomo General Academic Hospital from January 2019 to December 2020. Furthermore, thyrotoxicosis, unspecified (ICD E05.9), hypothyroidism,

unspecified (ICD E03.9), malignant neoplasm of thyroid gland (ICD C73), as well as thyroiditis, unspecified (ICD E06.9) are the most common thyroid diseases.

## 6. Acknowledgment

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