

ORIGINAL ARTICLE

Incidence Rate of Thyroid Cancer in Wasit Province From (2017–2021) Related with Age and Gender

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Abstract

Background Thyroid cancer developing when the cells of thyroid gland grow abnormally. The characteristic of thyroid cancer involve swelling or a tumor in the neck.

Objective Knowledge the incidence rate of Thyroid cancer in Wasit Province from (2017–2021) related with Age and Gender.

Results In our research, cancer data were taken in Wasit Governorate for patients attending the Al-Karama Teaching Hospital for the period From 2017 to 2021, the results showed that thyroid cancer had recorded incidence reach (13.004%), where 42 out of 323 cases of cancer were recorded in last five years. The data were distributed according to the years as they were distributed over the years (2017 to 2021), where the highest rate of infection was in the year 2020, While the lowest rate of infection was recorded in 2019 with a frequency of 5 cases. As for the relationship of thyroid cancer with gender, the results showed that thyroid cancer had 21.42% of cases in males, while in females had 78.57%. The relationship of the disease with the age was found the majority of the 9 patients in this study were between the ages of 50 and 59, making about 21.4% of the total. Eight instances (19.1%) were found in people aged 40–49, while seven cases (16.7%) were found in people aged 30–39. Two occurrences of thyroid cancer were reported in people aged 70 to 79, the age group with the lowest incidence rate.

Conclusion Thyroid cancer in the past 5 years showed the highest rate of cases was recorded in 2020. Relationship of the disease with gender has shown that females are more affected than male. Relationship with age factor found that the most vulnerable age groups are 50-59 years old.

Keywords: Thyroid cancer; Age; Gender; Wasit Governorate

1 Introduction

Thyroid function includes regulating calcium homeostasis and basal metabolism, but it does much more than that. Most thyroid nodules are harmless, and they are a common finding in clinical practice. About 4-7% of the population in areas without an iodine deficiency has detectable nodules [1, 2].

During embryogenesis, the median and lateral endodermic regions fuse to form the normal thyroid. Thyroid follicular cells, which develop from tongue ep-

ithelial cells, migrate to the front of the neck and join forces with neuroendocrine C-cells. A third pyramidal lobe of normal thyroid tissue develops along the thyroglossal duct. After 11 weeks of gestation [3], iodine begins to accumulate in the thyroid and be bound there. The follicle is the basic anatomical and functional unit of the thyroid gland. This sphere is walled with epithelial cells and filled with colloid, which is a good source of thyroglobulin, a precursor hormone for the thyroid. Parafollicular cells (C-cells) are located in the interfollicular spaces and are so named because

they secrete calcitonin, a hormone that regulates calcium levels in the body. Follicular cells are responsible for the complex physiologic process of producing thyroid hormones like triiodothyronine (T3) and thyroxine (T4). Thyroid function cannot be maintained without iodine. It plays a pivotal role in regulating thyroid gland activity and is an essential part of T3 and T4 molecules. Thyroxine peroxide enzyme activity is also required. Thyroid hormones, once they have matured, are secreted into the bloodstream and play a crucial role in regulating the body's basal metabolic rate. Thyroid stimulating hormone (TSH, also known as thyrotropin) is secreted by the pituitary gland, and its interaction with thyrotropin releasing hormone (TRH) from the hypothalamus creates a feedback loop that controls thyroid gland activity. Both the thyroid gland and cells in the body's periphery convert T4 to T3, the active hormone.

Cancer that originates in the thyroid gland is called thyroid cancer. It's a condition characterized by uncontrolled cell growth that might potentially metastasize to other organs [4]. Lump or swelling in the neck are possible symptoms. Cancer that has progressed to the thyroid from another part of the body is not considered thyroid cancer.

Young age radiation exposure, an enlarged thyroid, and a family history of the disease are all risk factors [1, 2]. Papillary, follicular, medullary, and anaplastic thyroid cancers are the four most common kinds. Ultrasound and tiny needle aspiration are commonly used in diagnosis. As of 2017 [5], there is no evidence to support screening healthy adults with average risk for the disease. Surgery, radioactive iodine radiation therapy, chemotherapy, thyroid hormone, targeted therapy, and cautious waiting are all potential treatments. Thyroid surgery may entail partial or complete removal of the gland. [3] In the United States, the five-year survival rate is 98 percent.

Thyroid cancer has affected 3.2 million persons worldwide in 2015 [6]. The number of new cases in 2012 was 298,000 [7]. The average age of diagnosis is between 35 and 65. More women than men are affected by this condition. The prevalence is higher in people of Asian heritage [3]. The rise in reported cases over the past three decades may be attributable to greater surveillance [7]. It caused 31,900 fatalities in 2015.

1.1 Aim of study

This study was aimed to know the extent of thyroid cancer among patients with cancer in Wasit Governorate, knowledge the prevalence of thyroid cancer over the past 5 years. And knowledge of the relationship of the spread of the disease with age and sex of the infected patients.

2 Patients & Methods

Patients diagnosed with cancer at Al-Karama Educational Hospital's Histopathology Unit in the Wasit Governorate between 2017 and 2021 are the focus of this research. whose cancer was confirmed by a biopsy performed by a histopathologist. Information such as each patient's illness history, age, gender, and zip code is gathered. These numbers represented all cancer kinds, while the research focused on thyroid cancer patients over the specified time frame. The information was broken down by age group, gender, and year of collection.

3 Results and Discussion

3.1 Overall Prevalence of Thyroid cancer in last 5 years

The results of this study, as shown in Table 1 Figures 1 and 2, showed frequency and percentage of total number of cancer cases during this period 5 years (2017, 2018, 2019, 2020, and 2021) were 323, and Thyroid cancer recorded 42 cases which 13.004 percent.

Table 1: Comparison of mean values of Parathyroid hormone in women pregnant and non-pregnant.

Name of Cancer	No. of cancer	Frequency of Thyroid cancer	Percentage %
Thyroid cancer	323	42	13.004%

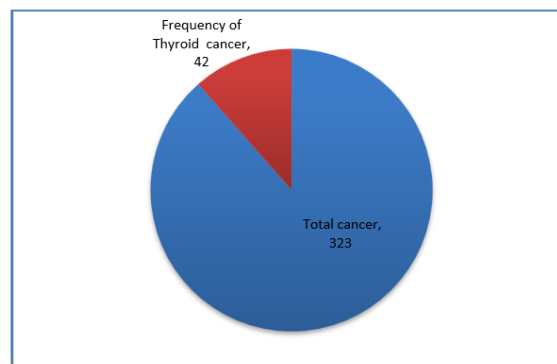


Figure 1: Frequency of Thyroid cancer in the last 5 years

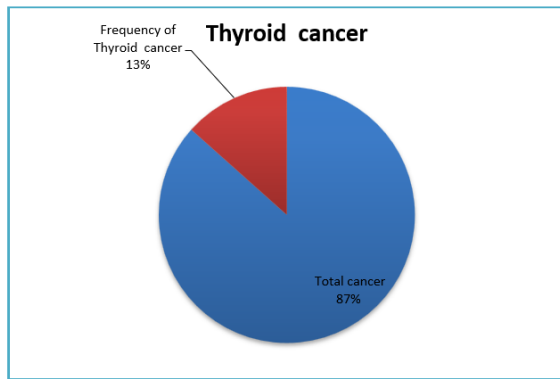


Figure 2: The percentage of Thyroid cancer in last 5 years

Thyroid cancer developing when the cells of thyroid gland grow abnormally. The characteristic of thyroid cancer involve swelling or a tumor in the neck. Many types of growths and tumors can develop in the

thyroid gland. Tumors may be benign or malignant. It is possible for cancer to spread to other parts of the body when cells from a malignant tumor break away and enter the lymphatic system or the bloodstream.

3.2 Prevalence of Thyroid cancer according to years

Table 2 and Figure 3 showed the distribution of cancer cases and thyroid cancer during the past 5 years, with the highest rate of cases in 2018, with 74 cases of cancer, Followed by 2021 with 67 cases of cancer. The highest rate of thyroid cancer cases recorded in 2020 of which 12 cases were thyroid cancer with a recurrence rate 19.04% followed by 2021 including 10 cases of thyroid cancer, a recurrence rate of 14.92%. While the lowest incidence rate was recorded in 2019 with five case of thyroid cancer with recurrence rate of 9.61%.

Table 2: Comparison of mean values of Parathyroid hormone in women pregnant and non-pregnant.

Years	No. of cancer	No. of Thyroid cancer	Percentage %
2017	66	8	%12.12
2018	74	7	9.45 %
2019	52	5	9.61 %
2020	63	12	%19.04
2021	67	10	14.92 %
Total	323	42	%13,004

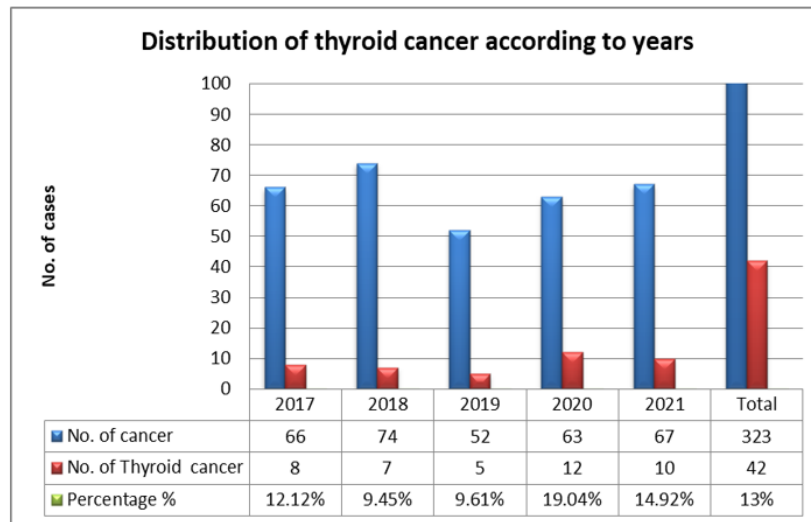


Figure 3: Distribution of Thyroid cancer according to years.

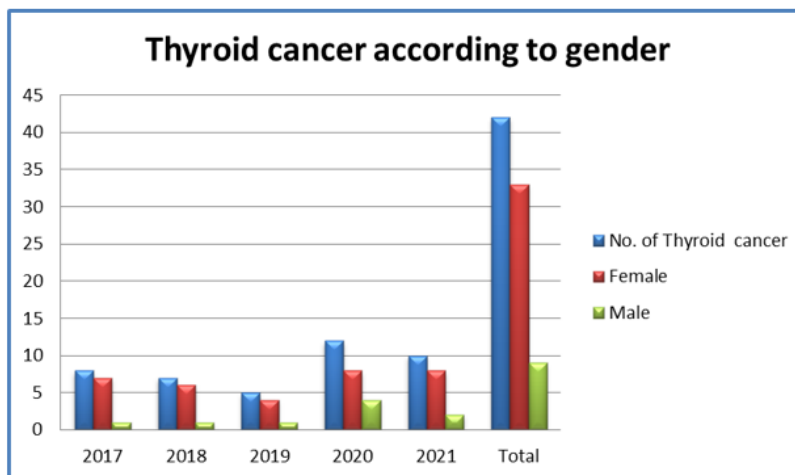
3.3 Prevalence of thyroid cancer according to gender

The results in Table 3 and Figure 4 showed the distribution of Thyroid cancer among males and females

and found that thyroid cancer had recorded 9 (21.42%) of the cases in males, while female had recorded 33 (78.57%) cases of cancer. This means that females are more likely to infected with thyroid cancer than male.

Table 3: Comparison of mean values of Parathyroid hormone in women pregnant and non-pregnant.

Year	No. of Thyroid cancer	Male	Percent %	Female	Percent %
2017	8	1	12.5 %	7	87.5 %
2018	7	1	14.28 %	6	85.71 %
2019	5	1	20 %	4	80 %
2020	12	4	33.33 %	8	66.66 %
2021	10	2	20 %	8	80 %
Total	42	9	21.42 %	33	78.57 %

**Figure 4:** The percentage of Thyroid cancer patients according to the gender.

The inequality in the incidence of cancer between males and females led to change in sex ratio among them. This change in ratio is attributed to several reasons such as smoking, infections, sex hormones and other factors. Smoking is one of the most dangerous factors that cause cancer. Continued smoking by people with cancer increasing the frequency of secondary cancer risk [8]. One of the most dangerous factors that cause cancer in humans is caused by some bacteria, viruses and parasites [9]. Various type of cancer also effect negatively or positively by sex hormones [10]. The levels of endocrine hormones play a significant role in the development of cancers for several organs (breast, prostate and lung) that are linked with the sex hormones receptor [11]. The other environmental factors are Low exposure to sunlight and lack of physical exercises [12, 13].

This research supports previous findings by Mahmood, and Thamer [14] showing females are more likely than males to develop thyroid cancer. The incidence of thyroid cancer is one to three times higher in women than in men, as documented by the Iraqi cancer registry. Thyroid disorders, in general, affect more women than males. Women's susceptibility to thyroid disease is thought to have a genetic basis, but it is not

linked to a distinct phenotype. Thyroid cancer has been linked to reproductive variables such the menstrual cycle, but studies have shown conflicting results [15].

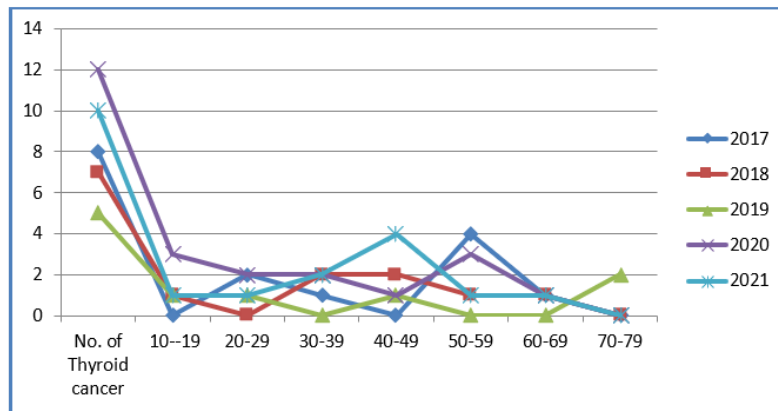
Although there remains no solid proof for this except for the presence of estrogen receptors in thyroid cells [16, 17], it has been suggested that estrogen may play a role in the difference in the occurrence of thyroid cancer. Stem cells are not immune to estrogen's capacity to kickstart cell division. There is no evidence linking oral contraceptive use to delayed menstruation or birth defects. It has been observed that the prognosis for thyroid cancer in pregnant women is both worse and the same as in women who are not pregnant [18, 19].

3.4 Prevalence of Thyroid cancer according to Age

Table 4 displays the age distribution of patients diagnosed with thyroid carcinoma in this study. The lowest rate of Thyroid cancer was observed in people aged 70-79 years old (9 cases, 21.4%), followed by 8 cases, 19.1%, in those aged 40-49 years old, and 7 cases, 16.7%, in those aged 30-39 years old.

Table 4: Comparison of mean values of Parathyroid hormone in women pregnant and non-pregnant.

Year	No. of Thyroid cancer	10-19	20-29	30-39	40-49	50-59	60-69	70-79
2017	8	0	2	1	0	4	1	0
2018	7	1	0	2	2	1	1	0
2019	5	1	1	0	1	0	0	2
2020	12	3	2	2	1	3	1	0
2021	10	1	1	2	4	1	1	0
total	42	6	6	7	8	9	4	2
Percent %	100	14.2	14.2	16.7	19.1	21.4	9.5	4.8

**Figure 5:** Distribution of Thyroid cancer according to age.

Thyroid cancer incidence peaked between the ages of fifty and sixty-nine, according to one study. Although thyroid cancer can develop at any age, it is most common in those between the ages of 20 and 55. Typically, an atypical thyroid cancer is detected in patients over the age of 60. The average age of diagnosis for women is in their 40s or 50s, while for males it's in their 60s or 70s.

Thyroid cancer's association with becoming older has been rethought as of late. Several recent studies suggested that mortality did not increase in patients with thyroid cancer before the age of 50 or 55 at the time of diagnosis, leading to the proposal of a high-point age of 55 years in 2018. Patients over the age of 55 who were diagnosed with thyroid cancer appeared to have a higher risk of dying from the disease [20,21].

4 Conclusions

1. The results of thyroid cancer in the past 5 years showed the highest rate of cases was recorded in 2020.
2. The relationship of the disease with gender has shown that females are more affected than male
3. Relationship with age factor found that the most vulnerable age groups are 50-59 years old.

Conflict of Interest: No conflicts of interest exist between the authors and the publication of this work.

Ethical consideration: The ethical committee approved the study at The Open Educational College, Wasit Center, Wasit, Iraq.

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