



# Diagnosis and Treatment of Patients with Thyroid Cancer in Yemen during the National war 2017-2021



Amani Saleh Hadi<sup>1\*</sup>, Gamal Abdul Hamid<sup>2</sup>

<sup>1</sup>Specialist of Clinical Oncology and Nuclear Medicine National Oncology Center, Yemen

<sup>2</sup>National Oncology center Aden, Faculty of medicine & Health Science, Yemen

Submission: March 17, 2023; Published: April 04, 2023

\*Corresponding author: Amani Saleh Hadi Saeed, M.B., B.CH. M.Sc., Specialist of Clinical Oncology and Nuclear Medicine National Oncology Center, Yemen

## Abstract

Thyroid cancer is the most common malignancy of the endocrine system, representing 3.8% of all new cancer cases in the United States and is the ninth most common cancer overall. The American Cancer Society estimates that 62,450 people in the United States will be diagnosed with thyroid cancer in 2015, and 1950 deaths will result from the disease.

**Objective:** To review the current approach to the diagnosis and treatment of patients with thyroid cancer during the war period.

**Method and result:** One hundred and Fifty-five patients with thyroid malignancy were seen at the National Oncology Center, Aden during the period 2017-2021 were studied. Thyroid cancer showed that the median age of diagnosis was 43 years with a high incidence of the disease between the ages of 30 and 60 years. Thyroid cancer was common amongst females (118) than males (38) with 3.1:1 ratio. There were 123 (78.8%) papillary thyroid cancer, 21 (13.5%) follicular thyroid cancer and 7 (4.5%) anaplastic cell typecases.

**Conclusion:** Our results suggest that thyroid cancer continuous presenting alarming challenge with an increasing the prevalence in females. Papillary carcinoma is the most common type among Yemeni populations. Further epidemiological studies are required in policy strategies for control and prevention strategies of thyroid cancer in Yemen. The prognosis and treatment of thyroid cancer depend on the tumor type and its stage at the time of diagnosis. Early diagnosis and appropriate treatment can improve prognosis and reduce mortality.

**Keywords:** Thyroid cancer; Thyroidectomy; Tyrosine kinase inhibitors; Radioactive iodine

## Introduction

Thyroid cancer with an estimate of about 3.0% of new cases was the ninth cancer for incidence and the most common type of cancer of the endocrine system in 2020, globally [1]. About 230,000 new cases of thyroid cancer were estimated in 2012 among women and 70,000 among men, with an age-standardized (world population) rate of 6.10/100,000 women and 1.90/100,000 men [2].

Papillary thyroid cancer (PTC) is the most common subtype of thyroid cancer and is considered to be well-differentiated. Papillary carcinoma of the thyroid is usually an indolent tumor with a good survival prognosis especially when small and limited to the thyroid gland. The increasing mortality rates among patients with advanced-stage PTC suggest that for patients with these

high-risk tumors, there should be renewed focus on aggressive transdisciplinary management that includes surgery, adjuvant radioactive iodine, and, when indicated for the 5–10% of patients who develop progressive disease, systemic therapy. While there is continued debate about the appropriate extent of surgery for low-risk tumors, total thyroidectomy and adjuvant radioactive iodine are indicated for high-risk disease [3]. The risk factors of PTC include genetic mutation and environmental exposure [4].

The role of Notch signaling in PTC is not clearly defined, as it has been discordantly reported as both oncogenic and tumor suppressive. In 2011, Park et al. analyzed tissues from patients with PTC and found that the IHC expression of the Notch1 receptor correlated with the increased presence of nodal

metastases, extrathyroidal extension, and greater tumor size. However, they found no correlation between the presence of the Notch3 receptor and clinic-pathological factors [5]. Those with Bethesda III either underwent surgery or were followed up with repeat FNA. Some patients with Bethesda II or I opted for surgery either because of pressure symptoms in the neck, the large size of a goiter or hyperthyroidism. For those who underwent surgery and had a thyroid tumor, the World Health Organization (WHO) 2017 classification was used to classify thyroid tumors [6]. The results of the Global Cancer Incidence, Mortality, and Prevalence (GLOBOCAN) 2020 study showed that thyroid cancer in Turkey and Iran with 13,682 and 4,114 incident numbers among women had the highest values in the Eastern Mediterranean Region (EMR) [7]. The economic cost of overdiagnosis in a thyroid cancer patient can range from hundreds to thousands of dollars, depending on the extent of the examinations performed and the complexity of the intervention and follow-up [8].

**Statistical Analysis**

All statistical analyses were performed using IBM SPSS statistics (version 23). The results of the descriptive analysis of the epidemiological data were presented as frequencies, percentages and mean ± standard deviation for normally distributed data and median ± interquartile range for non-normally distributed data.

**Method and result**

One hundred and Fifty-five patients with thyroid malignancy were seen at The National Oncology Center, Aden during the period 2017-2021 were studied Table 6. Thyroid cancer showed that the median age of diagnosis was 43 years with a high incidence of the disease between the ages of 30- and 60-years Table 1. Thyroid cancer was common amongst females (118) than males (38) with 3.1:1 ratio Tables 2,3 and 4. There were 123 (78.8%) papillary thyroid cancer, 21 (13.5%) follicular thyroid cancer and 7 (4.5%) anaplastic cell type cases Table 5.

**Table 1:** Thyroid cancer age.

	Age year	Sex	Age group	Pathology	Residence	Incidence year
N	156	156	156	156	156	156
Mean	43.88	1.24	3.47	1.46	3.04	3.41
Median	43	1	3	1	2	3
Std. Deviation	16.21	0.431	1.667	1.636	2.674	1.391
Range	84	1	7	18	9	4
Minimum	11	1	1	1	1	1
Maximum	95	2	8	19	10	5

**Table 2:** Thyroid cancer: sex.

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Female	118	75.6	75.6	75.6
	Male	38	24.4	24.4	100
	Total	156	100	100	

**Table 3:** Age group \* Sex Crosstabulation.

	Female	Sex		Total
		Male		
Age group	19-Oct	1	2	3
	20-29	22	1	23
	30-39	31	7	38
	40-49	20	12	32
	50-59	28	5	33
	60-69	8	6	14
	70-79	5	2	7
	80	3	3	6
Total		118	38	156

**Table 4:** Age Group.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
10-19	3	1.9	1.9	1.9
20-29	23	14.7	14.7	16.7
30-39	38	24.4	24.4	41
40-49	32	20.5	20.5	61.5
50-59	33	21.2	21.2	82.7
60-69	14	9	9	91.7
70-79	7	4.5	4.5	96.2
80	6	3.8	3.8	100
Total	156	100	100	

**Table 5:** Pathology of Thyroid cancer.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Papillary	123	78.8	78.8	78.8
Follicular	21	13.5	13.5	92.3
Medullary	2	1.3	1.3	93.6
Anaplastic	7	4.5	4.5	98.1
Lymphoma	2	1.3	1.3	99.4
19	1	0.6	0.6	100
Total	156	100	100	

**Table 6:** Incidence year.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
2017	18	11.5	11.5	11.5
2018	27	17.3	17.3	28.8
2019	34	21.8	21.8	50.6
2020	27	17.3	17.3	67.9
2021	50	32.1	32.1	100
Total	156	100	100	

## Discussion

Over the past 3 decades, there has been a dramatic increase in the number of people diagnosed with thyroid cancer, which may be attributable to the wide use of imaging studies, including ultrasounds, computed tomography, magnetic resonance imaging, and positron emission tomography scans that incidentally detect thyroid nodules.

The heterogenous clinical presentations and genetic profiles of thyroid cancer can make this disease complex in nature. The term “thyroid cancer” encompasses a range of subtypes that originate from different cell types within the thyroid- namely follicular thyrocytes and the parafollicular C-cells. Across the various thyroid cancer subtypes, the degree of cellular differentiation has a strong influence on disease progression, treatment strategies,

and overall patient survival [9-11].

Salt iodization was introduced in Yemen in 1995 and was, at that time, supposed to cover 22–60% of the households. Whether this is still the case is unknown; this may in Yemen in 2015 with increased bombing in many areas of the country. This could be a source of environmental carcinogens causing an increase in the rate of thyroid be a factor causing an increase in the percentage of patients with follicular thyroid cancer (FTC). The war started cancer; including an increase in the risk of FTC; this has to be further studied, but environmental pollutants have been linked to an increase in thyroid cancer [12,13]. Abdulmughni YA, et al. [14] Not all histological variants of thyroid cancer are represented in this study. Papillary carcinoma formed the bulk of TC cases. Salt iodization program might have an effect on the incidence of thyroid malignancy, and on the papillary/follicular carcinoma

ratio. Better level of expertise is needed in the field of fine needle aspiration and ultrasonography. A consensus has to be reached, which is based on our environment and capabilities, where TC has to be managed aggressively by experienced surgeons. Yemen is in real need of a national cancer registry to assess the problem on a national level.

Thyroid cancer is divided into several main types, with papillary thyroid cancer being the most common. The treatment options for patients with thyroid cancer include the surgical removal of the entire thyroid gland (total thyroidectomy), radioactive iodine therapy, and molecular-targeted therapies with tyrosine kinase inhibitors. During the war in Yemen in the last 8 years the nuclear medicine completely closed and patients have two choices; to do thyroidectomy in Yemen then travel abroad for further evaluation and treatment or travel and do every thin abroad.

## Conclusion

Our results suggest that thyroid cancer continuous presenting alarming challenge with an increasing the prevalence in females. Papillary carcinoma is the most common type among Yemeni populations. Further epidemiological studies are required in policy strategies for control and prevention strategies of thyroid cancer in Yemen. The prognosis and treatment of thyroid cancer depend on the tumor type and its stage at the time of diagnosis. Early diagnosis and appropriate treatment can improve prognosis and reduce mortality.

## References

- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, et al. (2021) Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer J Clin* 71(3): 209–249.
- Erlay J, Soerjomataram I, Ervik M, et al. (2013) eds. GLOBOCAN 2012 v1.0, Cancer incidence and mortality worldwide: IARC cancer base no. 11[Internet]. Lyon, France: International Agency for Research on Cancer, 2013.
- Haugen BR, Alexander EK, Bible KC, Gerard M Doherty , Susan J Mandel, et al. (2015) American Thyroid Association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: the American Thyroid Association guidelines task force on thyroid nodules and differentiated thyroid cancer. *Thyroid* 26(1): 1–133.
- Clarke CA, Reynolds P, Oakley-Girvan I, Lee E, Lu Y, et al. (2015) Indicators of microbial-rich environments and the development of papillary thyroid cancer in the California teacher's study. *Cancer Epidemiol* 39(4): 548–553.
- Geers C, Colin IM, Gerard AC (2011) Delta-like 4/Notch pathway is differentially regulated in benign and malignant thyroid tissues. *Thyroid* 21(12): 1323–1330.
- Bychkov A (2019) World Health Organization (WHO) classification. Pathology Outlines.com website.
- Organization WH (2020) International Agency for Research on Cancer: Data visualization tools for exploring the global cancer burden in 2020.
- Schlumberger M, Borget I, Nascimento C, Brassard M, Leboulleux S (2011) Treatment and follow-up of low-risk patients with thyroid cancer. *Nature Reviews Endocrinology* 7(10): 625–628.
- Jung CW, Kong JS, Seol H, Park S, Koh JS, et al. (2017) Expression of activated Notch1 and Hey1 in papillary thyroid carcinoma. *Histopathology* 70(2): 301–308.
- Yu XM, Jaskula-Sztul R, Georgen MR, Aburjania Z, Somnay YR, et al. (2016) Notch1 Signaling regulates the Aggressiveness of Differentiated Thyroid Cancer and Inhibits SERPINE1 Expression. *Clin Cancer Res.* 22(14): 3582–3592.
- Yuan L, Ma L, Xue H, Song S (2019) Relationship between the upregulation of Notch1 signaling and the clinical characteristics of patients with papillary thyroid carcinoma in East Asia: a systematic review and meta-analysis. *Cancer Cell Int* 19: 5.
- Pellegriti G, Frasca F, Regalbuto C, Sebastiano Squatrito, Riccardo Vigneri, et al. (2013) Worldwide increasing incidence of thyroid cancer: update on epidemiology and risk factors. *J Cancer Epidemiol* 2013: 965212.
- Tuminello S, van Gerwin MAG, Genden E, Michael Crane, Wil Lieberman-Cribbin, et al. (2019) Increased incidence of thyroid cancer among world trade center first responders: a descriptive epidemiological assessment. *Int J Environ Res Public Health* 16(7): 1258.
- Abdulmughni YA, Al-Hureibi MA, Al-Hureibi KA, Ghafoor MA, Al-Wadan AH, et al. (2003) Thyroid cancer in Yemen. *Saudi Med J* 25(1): 55-59.



This work is licensed under Creative Commons Attribution 4.0 License  
DOI: [10.19080/CTOIJ.2023.23.556117](https://doi.org/10.19080/CTOIJ.2023.23.556117)

### Your next submission with Juniper Publishers will reach you the below assets

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats  
**( Pdf, E-pub, Full Text, Audio )**
- Unceasing customer service

Track the below URL for one-step submission

<https://juniperpublishers.com/online-submission.php>