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Retrospective Study of Histopathological Patterns of Thyroid Lesions at Sirte Oncology Centre, Central Libya

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A B S T R A C T

Background: Thyroid disorders are common worldwide. Thyroid disorders can be neoplastic or non-neoplastic lesions. The author noted that no prior studies on thyroid lesions were undertaken in Sirte City. This study aimed to define the histopathological patterns, frequency, and demographic distribution of non-neoplastic and neoplastic thyroid lesions in thyroidectomy specimens at Sirte Oncology Center. **Material and methods:** A retrospective cross-sectional study was conducted at pathology department of Sirte Oncology Centre, Sirte, Libya, covering the period from July 2021 to December 2024. Collected data were tabulated and analyzed using SPSS version 26.0 statistical software. **Results:** Seventy-two thyroidectomy specimens were analyzed with patients aged 20–75 years; females predominated (83.3%). There were 40 (55.6%) neoplastic thyroid lesions, and 32 (44.4%) non-neoplastic. The most common neoplastic lesions were malignant neoplasms (72.5%), predominantly papillary carcinoma (67.5%), followed by benign adenoma (25%). The most frequently reported non-neoplastic thyroid lesions were hyperplastic changes (68.7%), mainly multinodular goiter (65.6%). The most common histological pattern among both neoplastic and non-neoplastic thyroid lesions was papillary carcinoma, followed by nodular goiter. Most of thyroid lesions diagnosed in the 41–50-year age group (34.72%), followed by 31–40 years (26.39%) with papillary thyroid carcinoma most common in the former group. **Conclusion:** Neoplastic lesions outnumber the non-neoplastic lesions in this study. Papillary carcinoma followed by nodular goiter recorded as the most frequent lesions. The current study emphasizes the need for population-based epidemiological research to investigate the true epidemiology of neoplasms in this region and to investigate the demographic and etiological factors.

دراسة استرجاعية للأنماط النسيجية المرضية لآفات الغدة الدرقية في مركز سرت للأورام، وسط ليبيا

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الـمُخلص

خلفية البحث: اضطرابات الغدة الدرقية شائعة في جميع أنحاء العالم، وقد تكون آفات ورمية أو غير ورمية. وأشار الباحث إلى عدم وجود دراسات سابقة لآفات الغدة الدرقية في مدينة سرت. لذلك هدفت الدراسة إلى تحديد الأنماط النسيجية المرضية، والتكرار، والتوزيع الديموغرافي لآفات الغدة الدرقية الورمية وغير الورمية في عينات الغدة الدرقية المستأصلة في مركز سرت للأورام.

طرق ومواد البحث: دراسة استرجاعية مقطعية في قسم علم الأمراض بمركز سرت للأورام، سرت، ليبيا، في الفترة من يوليو 2021 إلى ديسمبر 2024. جُمعت البيانات وخضعت للتحليل الإحصائي باستخدام برنامج SPSS الإصدار 26.0.

النتائج: حُللت اثنتان وسبعون عينة استئصال للغدة الدرقية لمرضى بأعمار 20–75 سنة، وكانت الإناث الغالبية (83.3%). وجدت 40 آفة ورمية (55.6%)، و32 آفة غير ورمية (44.4%). وكانت الأورام الخبيثة أكثر الآفات الورمية شيوعًا (72.5%)، وكان معظمها سرطان الغدة الدرقية الحليمي (67.5%)، يليها الورم الغدي الحميدي (25%). أما الآفات غير الورمية فغلبت عليها التغيرات التضخمية (68.7%)، خاصة تضخم الغدة الدرقية متعدد العقد (65.6%). وكان أكثر الانماط النسيجية شيوعًا هو سرطان الغدة الدرقية الحليمي، يليه تضخم الغدة الدرقية العقدي. شُخصت معظم الحالات في الفئة العمرية 41 –50 سنة (34.72%)، تليها الفئة 31–40 سنة (26.39%)، مع وجود سرطان الغدة الدرقية الحليمي أكثر شيوعا في الفئة العمرية الأولى.

الاستنتاج: فاقت الآفات الورمية الآفات غير الورمية، وكان سرطان الغدة الدرقية الحليمي الأكثر شيوعًا يليه تضخم الغدة الدرقية العقدي، مما يؤكد الحاجة إلى إجراء ابحاث على مستوى السكان لدراسة الانتشار الحقيقي للأورام في هذه المنطقة، ودراسة العوامل الديموغرافية والسببية.

الكلمات المفتاحية: آفات الغدة الدرقية، الأنماط، الورمية وغير الورمية، ليبيا.

1 Introduction

The thyroid gland is an endocrine gland that plays an important role in growth and development of the body (Kumar et al., 2021; Braverman et al., 2021; Barrett et al., 2025). Thyroid lesions are commonly affecting the general population and include a variety of non-neoplastic disorders including genetic, developmental, inflammatory, immunologic, as well as neoplastic disorders. The incidence and histological patterns of the thyroid lesions depend on many factors, including gender, age, ethnicity, nutrition, environment, and

geographical areas (Kumar et al., 2021; Chen & Haymart, 2026). Despite a variety of manifestations, the thyroid lesions manifested in two main patterns: either a diffuse pattern associated with a disease affecting the entire thyroid, such as thyroiditis and hyperplasia, or nodules that were attributed to a clinically or radiologically identifiable lesion within the gland (Cooper et al., 2009). The majority of nodules are asymptomatic and discovered incidentally by ultrasound; however, a minority are malignant (Kant et al., 2020). Although there are many methods used to diagnose thyroid diseases, including clinical evaluation, thyroid function tests, and ultrasonography, they could not differentiate between benign and malignant lesions (Taneri et al., 2001). Additionally, FNAC is also helpful but has technical and interpretation limitations (BHARGAVA et al., 2012; Torres et al., 2024; Moorthy et al., 2026). Thus, a histopathological examination with the support of adjunctive methods is the only method to arrive at a specific diagnosis. Although, the incidence of thyroid diseases has been notably increased over the past two decades (Song et al., 2024) including the thyroid cancer (Forma et al., 2025), their mortality rate remains low, possibly due to overdiagnosis (Vaccarella et al., 2016). Non-neoplastic thyroid disorders, particularly hyperthyroidism and hypothyroidism, remain among the most common endocrine diseases worldwide (Chaker et al., 2022; Mariani et al., 2021). Despite the clinical importance of thyroid lesions, there is a lack of published histopathological studies evaluating the pattern and distribution of thyroid lesions in Sirte City, creating a significant local research gap. Furthermore, no previous data are available from Sirte Oncology Center. Therefore, the present study is undertaken to determine the histopathological spectrum/patterns, frequency, and age and sex distribution of non-neoplastic and neoplastic thyroid lesions in thyroidectomy specimens received at the pathology department of Sirte Oncology Center.

2 Materials and Methods

The current retrospective cross-sectional study was conducted at the Pathology Department of Sirte Oncology Centre, located in Sirte, Central Libya, from July 2021 to December 2024. The study included 72 thyroid specimens submitted to the Pathology Department during the study period. It included specimens from all patients presenting with thyroid enlargement who underwent surgery and whose specimens were sent for histopathological examination during the study period. Cases with a definitive histopathological diagnosis and complete demographic and histopathological data were included. Patients of all age groups and both sexes were enrolled in the study. Cases with incomplete clinical or histopathological records, duplicate record from the same patient, lacking a definitive histopathological diagnosis, and all the cytology specimens obtained by fine needle aspiration were excluded. Clinicopathological and demographic data, including the type of surgery, definitive diagnosis, age, and sex, were obtained from pathology reports and reviewed. The thyroid lesions are categorized into neoplastic and non-neoplastic lesions, the non-neoplastic lesions classified according to type of lesion into two discernible types (hyperplastic and inflammatory) and then further subclassified based on histological ground into three diseases (multinodular goiter, Grave's disease, and Hashimoto's thyroiditis). Neoplastic lesions were classified according to the fifth edition of the World Health Organization (WHO) classification of thyroid tumors (2022) into three observable types: benign tumors, low-risk neoplasms, and malignant neoplasms. These were further subclassified according to their underlying histological types, including follicular adenoma, oncocytic adenoma, Noninvasive Follicular Thyroid Neoplasm with Papillary-like Nuclear Features (NIFTP), papillary carcinoma, follicular carcinoma, and oncocytic carcinoma (Jung et al., 2022). Data was tabulated and analyzed using SPSS version 26.0 statistical software. A univariate descriptive analysis was used to assess median and range of age distribution, and frequencies, and percentages of histopathological patterns of thyroid specimens as well as distribution of thyroid lesions across age, the expressed data as frequencies and percentages in the total column and figure were calculated from the total number of cases (n = 72). A bivariate descriptive analysis of cross tabulation was used to demonstrate the distribution of histopathological patterns of thyroid lesions, across different age categories, that were presented as counts in the table, the frequencies and percentages of each histopathological subtype were calculated based on the total number of cases (n =72). The bivariate descriptive analysis also was used to show how thyroid lesion categories are distributed according to gender, the percentages for males and females were calculated within each histopathological subtype.

3 Results

A total of 72 thyroidectomy specimens were received and performed during the study period. The most frequently submitted specimens were hemithyroidectomy (48.6%), followed by total thyroidectomy (44.4%), and lobectomy (7%). Table 1 showed that, out of the 72 studied cases, the majority of diagnosed lesions were neoplastic (40; 55.6%) while the non-neoplastic lesions were 32 (44.4%). The most common neoplastic lesions were malignant neoplasms (29/40 (72.5%)), with papillary carcinoma accounting for the highest percentage (67.5%), followed by benign adenomas comprising 25% of the neoplastic lesions, including follicular adenoma as the most common histological subtype (15%) and oncocytic adenoma (10%). Other neoplasms were less frequently encountered, including malignant follicular carcinoma, oncocytic carcinoma, and Noninvasive Follicular Thyroid Neoplasm with Papillary-like Nuclear Features (NIFTP), comprising 2.5% each of reported cases. On the other hand, the most common non-neoplastic thyroid

lesions were hyperplastic (22/32 (68.7%)), with multinodular goiter constituting the highest percentage (65.6%), followed by inflammatory lesion of Hashimoto's thyroiditis (31.3%). Additionally, Table 1 demonstrated that papillary carcinoma (37.5%) was the most common histological pattern among both neoplastic and non-neoplastic thyroid lesions, followed by nodular goiter (29.2%).

Table 1. Proportion of histopathological patterns in thyroid specimens (n=72*).

Histopathological pattern category	Type of lesion	Histology subtype	No.	% of Total (n=72) **	% Within Category**
Non-neoplastic	Hyperplastic	Multinodular goiter	21	29.2%	65.6%
		Grave's disease	01	1.4%	3.1%
	Inflammatory	Hashimoto's thyroiditis	10	13.9%	31.3%
Total			**32**	**44.4%**	**100%**
Neoplastic	Benign tumors	Follicular adenoma	06	8.3%	15%
		Oncocytic adenoma	04	5.6%	10.0%
	Low-risk neoplasms	Noninvasive Follicular Thyroid Neoplasm with Papillary-like Nuclear Features (NIFTP).	01	1.4%	2.5%
	Malignant neoplasm	Papillary carcinoma	27	37.5%	67.5%
		Follicular carcinoma	01	1.4%	2.5%
		Oncocytic carcinoma	01	1.4%	2.5%
Total			**40**	**55.6%**	**100%**

*= valid cases

**= % of Total = percentage calculated from all thyroid cases (n=72).

*** % Within Category = percentage calculated from cases in the specific category (Non-neoplastic or Neoplastic).

The age of our cases ranged from 20 to 75 years, with the median age of 45 years. The distribution of thyroid lesions in various age groups is demonstrated in Figure1. It illustrates that the maximum number of thyroid lesions were diagnosed in the age group 41–50 (34.72%), followed by the age group of 31–40 (26.39%), and the minimum number of lesions were reported in ages up to 20 years (1.39%). Table 2 provides further details on the age distribution of histopathological patterns of thyroid lesions, showing that only one nodular goiter case occurred in patients aged up to 20 years. In patients between the ages of 21 and 30, there was one nodular goiter lesion, two Hashimoto's thyroiditis lesions, and four adenomatous lesions. In the age category of 31–40 years, three nodular goiter, one Hashimoto's thyroiditis lesion, one adenomatous lesion, one NIFTP lesion, and thirteen papillary carcinoma lesions were present.

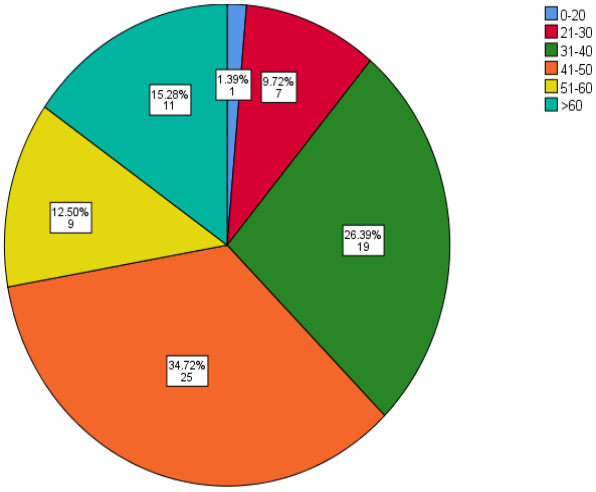

Figure 1. Distribution of thyroid lesions across age groups (n = 72).

Table 2. The distribution of histological patterns of thyroid lesions in different age groups (n=72).

Histopathological patterns & subtypes.	0-20	21-30	31-40	41-50	51-60	>60	Total=72
Non-neoplastic							**32 (44.4%)**
• Hyperplastic							
✓ Multinodular goiter	1	1	3	9	4	3	21 (29.2%)
✓ Grave's disease	0	0	0	0	1	0	1 (1.4%)
• Inflammatory							
✓ Hashimoto's thyroiditis	0	2	1	7	0	0	10 (13.9%)
Neoplastic							**40 (55.6%)**
• Benign tumors							
✓ Follicular adenoma	0	1	1	2	0	2	6 (8.3%)
✓ Oncocytic adenoma	0	3	0	0	1	0	4 (5.6%)
• Low-risk neoplasms							
✓ Noninvasive Follicular Thyroid Neoplasm with Papillary-like Nuclear Features (NIFTP).	0	0	1	0	0	0	1 (1.4%)
• Malignant neoplasms							
✓ Papillary carcinoma	0	0	13	7	3	4	27 (37.5%)
✓ Follicular carcinoma	0	0	0	0	0	1	1 (1.4%)
✓ Oncocytic carcinoma	0	0	0	0	0	1	1 (1.4%)

In the age category of 41–50 years, nine nodular goiter lesions, seven Hashimoto's thyroiditis lesions, two adenomatous lesions, and seven papillary carcinoma lesions were present. Regarding the age category of 51–60 years, four nodular goiter lesions, one Graves' disease lesion, one adenomatous lesion, and three papillary carcinoma lesions were present. Among cases in the age category of > 60 years, three nodular goiter lesions, two adenomatous lesions, four papillary carcinoma lesions, one follicular carcinoma lesion, and one oncocytic carcinoma lesion were present. Overall, the most common non-neoplastic lesions of both nodular goiter and Hashimoto's thyroiditis are mostly detected in the group of 41–50 years (42.9% (9/21) and 70% (7/10), respectively). On the other hand, the most frequently reported neoplastic lesions, which are papillary carcinoma, follicular adenoma, and oncocytic adenoma, are commonly diagnosed in age groups 31–40, 41–50, and >60, and 21–30 years, in that order. Table 3 demonstrates the distribution of the histological pattern of thyroid lesions by gender, where the majority of histological subtypes diagnosed in females (60/72, 83.3%) and only 16.7% (12/72) in males. Interestingly, a half of female's cases (30/60) reported with non-neoplastic lesions and the other half of cases (30/60) reported with neoplastic lesions, however, for male patients, 10 cases reported as neoplastic and only 2 cases reported as non-neoplastic lesions. Overall, malignant neoplasms were the commonest encountered lesions among all thyroid lesions in both females and males, it comprises 21 (72.4%) and 8 (27.6%) cases respectively, with papillary thyroid carcinoma forms the commonest reported cancer in females and males (70.4% and 29.6%, respectively). The second common thyroid lesions in both genders were non-neoplastic lesion of nodular goiter constituted 19 (90.5%) and 2 (9.5%) cases in both females and males in corresponding sequence.

4 Discussion

In the present study, hemithyroidectomy specimens were the most frequently submitted specimens, accounting for (48.6%) cases, which is consistent with another study that reported hemithyroidectomy in 31.8% of specimens (Abdalraziq et al., 2022). Additionally, our study revealed that the neoplastic lesions (55.6%) were more common than non-neoplastic lesions (Table 1). This finding is inconsistent with studies from other regions worldwide, including eastern Libya, where the opposite pattern has been reported (Indrani et al., 2024; Shaban et al., 2022; Ramya T et al., 2024; Fahim et al., 2012; Salama et al., 2009; Darwish et al., 2006; Mirzakarimov et al., 2012; El Sharif Khalil, 2026). Unfortunately, malignant neoplasms predominated over benign neoplasms in the present study, constituting 72.5% of cases (Table 1). This finding is in concordance with a study from Nigeria, which reported that 50.3% of cases were malignant tumors, and 49.7% were benign. neoplasms (Hussain et al., 2005). Similarly, a report from Saudi Arabia found that 41.4% of cases were malignant whereas 12.1% were benign tumors (Ahmed et al., 2023). However, these findings inconsistent with those reported in other studies (Abdalraziq et al., 2022; Chukudebelu et al., 2012). Additionally, papillary carcinoma was the most common neoplasm (67.5%),

Table 3. The distribution of histological patterns of thyroid lesions according to gender (n=72).

Histopathological patterns & subtypes.	No. (% of Total, n=72)	Female No. (%*)	Male No. (%*)
Non-neoplastic	**32 (44.4%)**	**30/32 (93.8%)**	**2/32 (6.25%)**
a. Hyperplastic	22 (30.6%)	20/22 (90.9%)	2/22 (9.1%)
- Multinodular goiter	21 (29.2%)	19/21 (90.5%)	2/21 (9.5%)
- Graves' disease	1 (1.4%)	1/1 (100%)	0/1 (0.0%)
b. Inflammatory	10 (13.9%)	10/10 (100%)	0/10 (0.0%)
- Hashimoto's thyroiditis	10 (13.9%)	10/10 (100%)	0/10 (0.0%)
Neoplastic	**40 (55.6%)**	**30/40 (75%)**	**10/40 (25%)**
a. Benign Tumors	10 (13.9%)	8/10 (80%)	2/10 (20%)
- Follicular adenoma	6 (8.3%)	5/6 (83.3%)	1/6 (16.7%)
- Oncocytic adenoma	4 (5.6%)	3/4 (75%)	1/4 (25%)
b. Low- risk neoplasms	1 (1.4%)	1/1 (100%)	0/1 (0.0%)
- Noninvasive Follicular Thyroid Neoplasm with Papillary-like Nuclear Features (NIFTP).	1 (1.4%)	1/1 (100%)	0/1 (0.0%)
c. Malignant neoplasms	29 (40.3%)	21/29 (72.4%)	8/29 (27.6%)
- Papillary carcinoma	27 (37.5%)	19/27 (70.4%)	8/27 (29.6%)
- Follicular carcinoma	1 (1.4%)	1/1 (100%)	0/1 (0.0%)
- Oncocytic carcinoma	1/72 (1.4%)	1/1 (100%)	0/1 (0.0%)
Total	**72/72 (100%)**	**60/72 (83.3%)**	**12/72 (16.7%)**

* =percentages for females and males were calculated within each histopathological category.

followed by follicular adenoma (15%) as the second most common tumor. These findings are in concordance with a study from Northern Saudi Arabia, which reported 32.1% of cases as papillary carcinoma and 12.1% as follicular adenoma (Ahmed et al., 2023), as well as another study from Egypt that reported 20.8% of cases with papillary carcinoma followed by 8.5% with follicular adenoma (Shaban et al., 2022). The aforementioned findings are in contrast to another previous studies reporting follicular adenoma as the most common neoplasm, followed by papillary carcinoma—for example, a study from eastern Libya in which follicular adenoma accounted for the majority of cases (80%) while papillary carcinoma comprised 14% of the neoplasms (Abdalraziq et al., 2022). In the present study, among all malignancies (Table 1), papillary thyroid carcinoma was the most frequent malignancy This finding is consistent with results from previous studies (Siddiqui et al., 2024; Ramya T et al., 2024; Ahmed et al., 2023; Jabeal et al., 2017). On the other hand, this was in contrast to other studies that reported follicular carcinoma as the most common thyroid cancer (Elhassan et al., 2023). With regard to papillary carcinoma, it is associated with a good prognosis compared with other thyroid cancers (La Vecchia et al., 2015). It was the most frequently accounted lesion 2015)among all thyroidectomy cases in the current study, which may partly reflect increased histopathological detection rather than a true rise in incidence. This was also suggested by Vaccarella et al. who demonstrated that the global rise in thyroid cancer, particularly papillary thyroid carcinoma, is mainly due to increased diagnosis associated with improved health services and increased detection of small subclinical tumors rather than a true increase in disease occurrence (Vaccarella et al., 2016). Although the emphasis is on the importance of cautious interpretation of histological diagnoses, it should take into consideration the influence of healthcare access, referral patterns, and case selection on the reported incidence of thyroid cancer (Vaccarella et al., 2016). Hence, the study setting might have influenced our results, as the study was conducted at an oncology center. However, these findings highlight the need for population-based studies to investigate the true epidemiology in this region. In the present study, the most common reported non-neoplastic lesion was nodular goiter (65.6%) (Table 1). This finding is consistent with previous studies such as a study conducted in India (48.25% and 42.5%) (Rajagopal et al., 2021; Fatima et al., 2018), Eastern Libya (83% and

67.7%) (Abdalraziq et al., 2022; El Sharif Khalil, 2026), Egypt (85.6%) (Shaban et al., 2022), Southern Africa (73.2%) (Mirzakarimov et al., 2012), and Bahrain (47.6%) (Darwish et al., 2006). Furthermore, the second most frequently observed non-neoplastic lesion in this study was an inflammatory thyroid disorder, which is Hashimoto's thyroiditis that accounted for 31.3% (10/32) of cases. This finding is consistent with the report by Magdalene et al., which documented Hashimoto thyroiditis in 28.1% (45/160) of cases (Magdalene et al., 2017), as well as another study by Shaban et al., who reported a prevalence of 10.9% (40/368) (Shaban et al., 2022). In regard to nodular goiter, it was found to be the second most common thyroid lesion among all neoplastic and non-neoplastic lesions; this finding was in contrast to other observations (Shaban et al., 2022; Joseph et al., 2016). In the present study, the incidence of thyroid pathology (Figure 1) was found to be minimal (1.39%) in patients up to 20 years of age, which is consistent with findings from other studies (Abdalraziq et al., 2022; Indrani et al., 2024; Ramya T et al., 2024). It was also observed that thyroid diseases were generally more common in the 41–50 year age group, a finding concordant with Joseph et al, (Joseph et al., 2016) and inconsistent with other reports (Indrani et al., 2024). Table 2 showed that the maximum number of the most common non-neoplastic lesion, which is nodular goiter, occurred in the 41–50 year age group, that is not compatible with Ramya et al., who reported the highest incidence in the 31–40–year age group (20.83%) (Ramya T et al., 2024). On the other hand, the most frequently reported neoplastic lesion is malignant papillary carcinoma, observed in the 31–40-year age group. This is in concordance with the similar age group reported by Ramya et al. (10.42%). In present study, the majority of the lesions were reported in females (83.3%) (Table 3), which is consistent with other reports from India (91.3%) (Indrani et al., 2024), Egypt (78.3%) (Shaban et al., 2022), Eastern Libya (92.4%) (Abdalraziq et al., 2022) and South Africa (88.7%) (Mirzakarimov et al., 2012). Overall, malignant neoplasms were the most common encountered lesions among all thyroid lesions in both females and males, that is inconsistent with other studies, (Joseph et al., 2016; Abdalraziq et al., 2022; Ahmed et al., 2023; Ramya T et al., 2024). This finding highlights the need to study the related risk factors in this region. Furthermore, papillary thyroid carcinoma was reported as the most frequent neoplasm in both females and males, with a female predominance. This is in concordance with other reports (Joseph et al., 2016; Shaban et al., 2022; Abdelmahmuod et al., 2026; Mohamed Alshintari et al., 2025), but contrasts with studies that reported follicular adenoma as the most common neoplasm (Abdalraziq et al., 2022; Indrani et al., 2024). Moreover, nodular goiter was the second most frequent lesion in both genders and was predominantly in females. This is in contrast to other studies that documented nodular goiter as the most common lesion among all thyroid lesions and commonly reported in females (Shaban et al., 2022; Joseph et al., 2016). Based on these findings, a female predominance was observed among both neoplastic and non-neoplastic lesions in the current study. From all the discussed findings, neoplastic thyroid lesions were more frequently reported than non-neoplastic lesions, with papillary carcinoma representing the most encountered malignant subtype. However, these findings should be taken with caution because the study was conducted at the single-center design of the study at an oncology referral facility, which may have led to an overrepresentation of neoplastic and malignant cases compared to the general population. Many patients with non-neoplastic thyroid disorders are commonly managed and followed up in medical outpatient clinics rather than being referred to the oncology center. Similarly, cases of papillary thyroid carcinoma are more likely to be referred for specialized oncological evaluation and management. Additionally, a relatively limited sample size may not reflect the accurate prevalence of thyroid lesions in the population. Therefore, the author recommends future multicenter studies involving both surgical and medical facilities across the region to get a more reliable evaluation of the distribution and actual frequency of thyroid lesions in the region.

5 Conclusions

The current study concluded that neoplastic thyroid lesions were more frequent than non-neoplastic lesions among the examined thyroidectomy specimens, with papillary thyroid carcinoma being the most common lesion, followed by nodular goiter. Follicular adenoma represented the second most frequent neoplastic lesion. A female predominance was noted, with most cases occurring in the 41–50–year age group, however, papillary thyroid carcinoma was more commonly seen in the 31–40–year age group. These observations should be interpreted with caution due to the single-center - based nature of the study, and a relatively limited sample size, and the results may not fully reflect the true population-based distribution of thyroid lesions. Therefore, the reported findings should not be generalized beyond the study context. The study underscores the need for large-scale, multicenter population-based studies to better characterize the epidemiological pattern of thyroid lesions and to explore associated demographic and etiological factors, including female predominance

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Conflict of interest: Author declares that there are no potential conflict of interest

Ethical Considerations

This retrospective study was conducted with departmental authorization from the Department of Pathology, Sirte Oncology Centre. As the study used archived patient pathology records and no direct patient

involvement occurred, formal informed consent was waived

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