

## Original Article

### Histological patterns of thyroid lesions among different age groups in Mogadishu, Somalia

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#### Abstract:

**Background:** Thyroid nodules are seen in 4-7% of the population which are more common in women. Excising all of these lesions is impractical and associated with certain risk factors as well. Fine needle aspiration (FNA) biopsy is the most relevant diagnostic procedure to decide those that need to be surgically excised or not.

**Methodology:** The present study was conducted in Liban clinic, Mogadishu, Somalia. 220 patients whom were diagnosed with various types of thyroid lesions within 2 years of period were included in the study. Main objectives were to put forward the distribution of histological findings according to fine needle aspiration (FNA) biopsy results among different age groups, and to define the prevalence of certain subtypes of thyroid nodules in the region.

**Results:** 207 patients had 'benign' nodules and 13 patients had 'malignant' nodules according to histological evaluation of fine needle aspiration (FNA) biopsy results. '31-40' years of age interval was found to have the highest percentage of histologically 'benign findings', while patients within '41-50' years of age had the highest rate of 'malignant lesions' in count among the study population. 'Papillary' (n=8)(61.5%) and 'medullary' (n=5)(38.5%) carcinomas were most common malignant features. Mostly recorded benign lesions were 'colloidal goiter, multinodular goiter (MNG), nodular hyperplasia and adenomatoid goiter' (n=94)(45.4%).

**Conclusion:** Characteristics of thyroid lesions in region of Mogadishu, Somalia show similar patterns based upon correlation of age with histological differences compared to recent literature. With the aid of FNA, majority of the population can be managed conservatively safely without need of surgical interventions.

**Keywords:** Thyroid disease; Fine needle aspiration (FNA); Somalia

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## Introduction

Diseases of the thyroid gland are common and constitute a broad range of clinical conditions varying from systemic diseases such as (Grave's disease or Hashimoto's disease) to a simple nodular enlargement (goitre) or a tumoural mass. Thyroid disorders are most common especially in countries where iodine intake through diet is low.<sup>1-4</sup>

Thyroid carcinoma closely resembles its benign

counterpart in physical characteristics. Therefore, histological examination of a suspicious nodule has paramount importance in differentiating a lesion from another and thus deciding appropriate treatment strategy. Most of the thyroid nodules are benign in character which they do not require any surgical excision.<sup>5,6</sup>

Solitary, palpable, and clinically detectable nodules raise more concern since they usually hinder higher probability of malignancy which can range from

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5-35% within all solitary thyroid nodules. Neoplasms of the thyroid are relatively uncommon which they constitute only 0.7% of all cancers in females and 0.2% in males.<sup>7-9</sup>

Fine needle aspiration (FNA) biopsy is preferred as a first-line tool to evaluate the thyroid lesions because of its cost effectiveness and simplicity to perform. FNA biopsy is highly helpful in deciding to which patients will be referred to operative management or not according to histopathological results. This also enables surgeons to take an early decision regarding mode of treatment to be applied.<sup>10, 11</sup>

Thyroid gland disorders are common in Africa continent as well. Pre-operative diagnosis by ways of biopsy is highly underutilized and surgery is mostly the preferred initial approach in management of all suspicious lesions of thyroid whether it is benign or not in fact. So, this brings out a need to set up thyroid disorder registries in order to put forward the real prevalence of thyroid lesions that need surgical intervention.

Main purpose of the study was to seek the distribution of thyroid lesions according to their FNA biopsy results among different age groups at Liban clinic in Mogadishu, Somalia. The results obtained would raise the awareness of community about the real status of thyroid disease and will guide in taking necessary steps accordingly.

## Materials and Methods

### Study Design

The study had been conducted at Liban clinic, Mogadishu, Somalia between period of July 2013 and July 2015. The sample size was chosen from the patients whom had been diagnosed with different types of thyroid lesions according to their FNA biopsy results (Figure 1-2).

220 patients with confirmed thyroid lesions according to FNA biopsy results were included in the study. Patients having symptoms such as swelling, pain, tenderness, etc. due to inflammation were excluded from the study to prevent false positive or negative interpretation of FNA biopsy results.

Collected data were presented in tables showing relation of categorical variables (age, histological diagnosis) with each other.

### Ethical terms

The data of which were achieved from the medical



Figure 1- Prominent swelling due to enlarged thyroid gland



Figure 2- Demonstration of FNA thyroid biopsy

database of the hospital was kept confidential. Required ethical permissions had been taken from ethical committee of Liban Hospital.

## Results

Patients within 0-10 years of age had no malignancy, but only 2 of them were diagnosed with benign lesions. Just like the opposite, 2 patients older than 70 years of age were diagnosed with malignant lesions only. Third decade of study population which includes patients with 31-40 years of age, that seems to be the highest rate of benign lesions while most frequent count of malignancies were observed during the fourth decade which is between 41-50 years of age.

Both benign and malignant lesions show a gradual incline during third and fourth decade of life, reach the peak rate at mid 40s, and show a declining course there after.

**Table 1.** Demonstrating frequency and distribution of different benign lesions

Benign lesions	Number of cases (n=)	Percentage (%)
Benign lesions (colloidal goiter, MNG (Multinodular goiter), nodular hyperplasia, adenomatoid goiter)	94	45.4
Hashimoto's thyroiditis	44	21.26
Cystic lesions	30	14.5
Follicular neoplasm	29	14
Lymphocytic thyroiditis	10	4.84
Total	207	100

According to FNA biopsy results, most frequent benign lesions were recorded as; colloidal goiter, MNG (Multinodular goiter), nodular hyperplasia and adenomatoid goiter respectively (n=94 (45.4%)). This was followed by Hashimoto's thyroiditis (n=44 (21.26%)), cystic lesions (n=30 (14.5%)), follicular neoplasm (n=29 (14%)) and lymphocytic thyroiditis (n=10 (4.84%)) in decreasing order (Table 1).

**Table 2.** Presentation of malignant cases with their prevalence

Malignant lesions	Number of cases (n=)	Percentage (%)
Papillary carcinoma	8	61.5
Medullary carcinoma	5	38.5
Total	13	100

Analysis of FNA biopsy results considering frequency of malignant lesions among the study population had given close rates of occurrence with each other as most commonly recorded malignant lesion was papillary carcinoma (n=8 (61.5%)). This was followed by medullary carcinoma (n=5 (38.5%)) (Table 2).

## Discussion

Thyroid nodules increase with age and are present in almost 7% of adult population.<sup>12, 13</sup> Thyroid biopsy has a critical part in deciding management strategy for suspicious lesions that would entail a large number of unnecessary procedures otherwise.

Thyroid ultrasonography (USG), nuclear imaging (thyroid scan (I-123)), and biochemical tests (T3, T4, TSH, Thyroglobulin etc.) are helpful tools for management of thyroid nodules though none of them is beneficial as histological confirmation to reach most accurate diagnosis. Because of this, FNA biopsy has been accepted as the first choice of evaluation of suspicious nodules. Being cost-effective and easily applicable in most conditions, makes it a preferred approach.

Herein, we have presented an analysis of FNA biopsy results of patients whom were diagnosed with different thyroid lesions in a certain territory within a 2 year period. Main objective of the study was to demonstrate the actual prevalence of certain thyroid lesions within community, and to make recommendations regarding treatment strategy based upon results presented.

Majority of patient population were spread within 21-40 years of age for our study which is similar by another relevant research conducted in India by Dr. Auradha et al. during 2004-2005. Also, there are some other similar results reported in current literature with different geographic regions and timespans .

According to knowledge from current literature, thyroid lesions are much more common in female gender. Likewise in the present study, female patients were more dominant among the study population with a ratio of 1:6 to men.

Thyroid gland cancers are classified majorly into 2 groups such as 'differentiated' and 'undifferentiated'. Papillary and follicular carcinoma are most frequently seen differentiated thyroid tumors with average percentages of 75-85% and 10-20% in consecutive order. Mostly commonly seen in women like most other thyroid lesions, they have a favorable prognosis compared to 'undifferentiated' tumors like 'medullary' carcinoma which has a prevalence of 5-10%<sup>14-17</sup>.

Somehow, the findings in our study considering percentage of thyroid cancers had given very approximate results to each other such as the

percentage of papillary cancer (61.5%) was very low and likewise, the prevalence of medullary carcinoma (38.5%) had been found significantly high compared to other relevant studies in recent literature<sup>18, 19</sup>. This discrepancy may be attributed to possible false positive/negative results (may be due to abnormal conditions like inflammation, or inadequate experience of the clinician) of histological evaluation which may need further assessment, and also analysing the results on a bigger sample of patients could give more accurate results.

The study itself has some limitations such that the hospitals in Somalia doesn't have a registered health system that keeps record of thyroid patients within a certain period of time. Most health facilities don't have necessary equipments to make reliable evaluations of the public and to keep the record of medical data in secure as well. Besides technical problems, lack of experience and inadequate knowledge of the clinicians could cause the evaluations to be less accurate.

Another debate is about the patients diagnosed with follicular neoplasm. It would be difficult and possibly not so reliable to confirm diagnosis of follicular carcinoma according to histological evaluation of a needle biopsy specimen unless capsular invasion and/or vascular invasion had been proved.<sup>20</sup> Thus, it is possible that some of those patients could be follicular carcinoma instead of neoplasm or adenoma.

Considering its reliability, easy to perform and being cost-effective; we recommend use of FNA biopsy for initial evaluation of suspicious thyroid lesions in modifying treatment allocations by avoiding unnecessary surgical interventions as well.<sup>21</sup> Implementing FNA biopsy as a standard approach during initial evaluation of thyroid lesions may

also help in establishing a national health record in the territory thus may provide information about the real status of the public and may help to make management strategy.

### **Conclusion**

Results of present study highlight the utility of FNA biopsy in evaluation of thyroid lesions. Its application may clearly avoid practice of unnecessary surgical interventions which may lead to increased rates of morbidity and even mortality. We hope that this study has brought updated knowledge about the current status of the region as much as possible and also to be useful for enhancing community awareness. The findings of this study should be important for qualified healthcare workers and policy makers in Mogadishu, Somalia hospitals in order to initiate further investigations with bigger size of patient populations.

### **Authorship Contributions:**

LHW, OA made contributions to the conception and design of the study

LHW, RES and AMF conducted the data analysis

AMF, OA provided clinical guidance

All authors made substantial contributions to the interpretation of the findings

RES and OA contributed to drafting and revising the manuscript for intellectual content, and approved the final version for submission.

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