



The University of Zambia

**HISTOPATHOLOGIC AND DEMOGRAPHIC PATTERNS OF SURGICALLY
TREATED THYROID DISEASE AT UNIVERSITY TEACHING HOSPITAL
(UTH), LUSAKA**

By

Dr. Furkat Mirzakarimov

A dissertation submitted to the University of Zambia in partial fulfillment of the requirements for the award of the degree of Master of Medicine in Surgery.

2013

DECLARATION

I hereby declare that this dissertation represents my own work, and it has not previously been submitted for a degree, diploma or other qualification at this or another University.

Signature.....Date.....

Candidate: Dr.FurkatMirzakarimov

Signature.....Date.....

Supervisor: Professor BFK Odimba

Signature.....Date.....

Co-Supervisor: Dr.PeniasTembo

CERTIFICATE OF APPROVAL

This dissertation entitled **HISTOPATHOLOGIC AND DEMOGRAPHIC PATTERNS OF SURGICALLY TREATED THYROID DISEASE AT UNIVERSITY TEACHING HOSPITAL (UTH), LUSAKA** by Furkat Mirzakarimov has been approved as partial fulfillment of the requirements for the award of Degree in Master of Medicine (General Surgery) by the University of Zambia, School of Medicine.

Signature _____ Date _____

.....

.....

.....

ACKNOWLEDGEMENTS

It is my sincere gratitude to acknowledge the invaluable contribution and support of my supervisors, Prof BFK.Odimba and Dr P. Tembo. Their guidance, advice, repeated corrections and revisions helped shape this project the way it is now. I also appreciate the contributions from the Department of Surgery (UTH) and the University of Zambia Postgraduate forums. Many thanks go to Prof. G. Desai, Dr J. Munthali, Dr B. Andrews and Dr Y.Ahmed for their dedicated and timeless help. Finally, thank you, to many colleagues and laboratory staff that helped me collect data.

TABLE OF CONTENTS

	Pages
Declaraion.....	i
Certificate of Approval.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Tables and Figures.....	v
Abbreviations.....	vi
Abstract.....	vii
Introduction	1
Literature review	2 - 5
Study justification	6
Research question.....	6
Objectives.....	6
Methods	7- 8
Ethical considerations	9
Results	10 - 18
Discussions	19 – 21
Study limitations.....	21
Conclusions	22
Recommendations	22
References	23
Appendix: Data abstraction sheet	24

LIST OF TABLES AND FIGURES

Table 1 - Distribution and proportion of thyroidectomies over 10 years (2001-10) at UTH

Table 2 - Histopathological patterns of thyroid diseases in 239 thyroidectomy specimens (UTH, 2001-10)

Table 3 - Distribution of the histologic thyroid diseases in relation with gender of patient

Table 4 - Distribution of the histological thyroid disease in relation with age

Table 5 -Distribution of thyroid malignancies.

Table 6 - Distribution of thyroid malignancies by gender

Table 7 -Distribution of thyroid malignancies by age

Table 8 - Distrubution of patients with thyroid disease operated at UTH in 10 year with histopathology results.

Figure 1 - Pie chart shows histopathological patterns of thyroid diseases encountered in 239 thyroidectomy specimens examined

Figure 2- Distribution of the histologic results of thyroid diseases in relation with sex.

Figure 3- Pie chart demonstrating distrubution of thyroid malignacies.

Figure 4- Age distrubution of thyroid malignancies

Figure 5- Sex distrubution of thyroid malignacies

Figure 6- Distrubution of provinces where patients with thyroid disease came from Operatedat UTH in 10 year period with histopathology results

ABBREVIATIONS

CA CARCINOMA

FNAC FINE NEEDLE ASPIRATION

HIV HUMAN IMMUNODEFENSENCY VIRUS

NCG NODULAR COLLOID GOITRE

UNZABREC UNIVERSITY OF ZAMBIA BIOMEDICAL RESEARCH AND ETHICS
COMMITTEE

UK UNITED KINGDOM

USA UNITED STATES OF AMERICA

UTH UNIVERSITY TEACHING HOSPITAL

WHO WORLD HEALTH ORGANISATION

ABSTRACT

Background: Thyroid gland disease is a common disorder of the endocrine system worldwide. This disease varies according to the environment. The aim of this study is to determine histopathologic patterns of thyroid disease for past 10 years (2001-2010) at the University Teaching Hospital, Lusaka, Zambia.

Methods: This was a retrospective review of patients' records (n=239) over a ten year period (2001-2010) at the University teaching Hospital, Lusaka, Zambia. Rate of thyroidectomies, demographic characteristics (age and gender), histologic types and regions where patient came from (for clustering) were analysed.

Results: A total of 3475 general surgical operations were done in a 10 year period. Of these 252 (7.25%) were for thyroid surgery. 239 thyroid specimen results were found. They were from 212 females and 27 males with female: male ratio of 7.8:1. There were 172 cases (71.96%) of colloid goitre (the most common thyroid disease) followed by 33 cases of thyroid neoplasms (n=33, 13.8%). Benign tumour i.e., adenoma were seen in 8 (3.3%) cases and thyroid carcinoma in 26 (10.8%) cases. Thyroiditis constituted 3 (1.2%) of the cases. Thyroid cyst accounted 19 (8.1%) and Toxic goitre 9 (3.8%) cases. Age range for colloid goitre was 19-89, malignancy 19-69, thyroid adenoma 19-69 and toxic goitre 20-69. Colloid goitre had a peak at age group 31-49 years. Follicular carcinoma was the commonest malignant thyroid tumour (15 cases). Peak age for thyroid malignancy 30-59. Most patients were from Lusaka (n=103) followed by Eastern province (29 patients).

Conclusion: This study shows thyroid surgery is a significant proportion of major surgical operations. Colloid goitre (a preventable disease), was the commonest thyroid disease in this study. Females mostly affected. A thyroid carcinoma pattern differs from other parts of world. In this study Follicular carcinoma was more common than other thyroid malignancies.

INTRODUCTION

Thyroid enlargement or goiter is a common disorder of the endocrine system worldwide including Zambia. There are many conditions in which the thyroid gland is affected. The principal diseases of the thyroid gland are goitre (diffuse or nodular), hypothyroidism, hyperthyroidism, thyroiditis and neoplasms [1].

Simple (non-toxic) goitre is extremely common condition throughout the world and is thought to affect more than 200 million individuals. Iodine deficiency is the major cause but goitrogens are incriminated as well [1].

The reported incidence of both benign and malignant lesions in surgically treated thyroid swellings varies widely from one geographical area to another [1].

Of the world's 191 countries, iodine deficiency disorders (IDD) was a public health problem in 130, and data was insufficient to categorize another 41[2].

The prevalence of iodine deficiency disorders (IDDs) in most African countries ranges from mild in low-lying areas to severe in highlands. Zambia is grouped among countries world-wide believed to have an iodine-deficiency disorder problem of public health significance [3].

Despite being benign or malignant the goiter may have its own morbidity and mortality in relation to its size on the management. Thyroid surgery constitutes a significant proportion of major elective general surgery in the developing world. For example, in Kijabe, Kenya, 100 thyroidectomies are carried out annually and in Papua New Guinea there were 376 thyroid specimens sent to pathology laboratory over a 10-year period. The vast majority of cases are operated on electively rather than as an emergency and by general surgeons or otorhinolaryngologists. The management of thyroid disease presents a challenge because patients in countries where health facilities are poor normally present with advanced disease [4].

The purpose of this retrospective study is to find out the patterns of thyroid disease as seen at UTH in the past 10 years (2001-2010). We do not have recent data as regards histopathologic patterns in surgically treated thyroid disease at UTH.

LITERATURE REVIEW

Thyroid disorders are common endocrine disorders encountered in the African continent. Environmental and nutritional factors are often implicated in the occurrence of some thyroid disorders that occur in this part of the world. The reported incidence of both benign and malignant lesions in surgically treated thyroid swellings varies widely from one geographical area to another.

Thyroid surgery constitutes a small but significant proportion of major elective general surgery in the world. [4] For example, in the South West Thames region (UK) over a 6 month period, 186 thyroid operations were performed on 179 patients at eight hospitals serving almost 1.7 million people. The frequency of thyroidectomy in different hospitals varied from 13 to 35 per 100 000 per year and 6.4% of the operations were second thyroidectomies. Benign multinodular goitre was the most common histological finding (34%). A benign solitary nodule was found in 36% and malignancy in 8.4% of the specimens. [5] In Papua New Guinea there were 376 thyroid specimens sent to pathology laboratory over a 10-year period and in Kijabe, Kenya 100 thyroidectomies are carried out annually. [4]

A retrospective analysis was made of patients who underwent operation for thyroid diseases during a surgical help program in Leo/Burkina Faso during a 7-year period from 2001 to 2008. A total of 253 cases presented with goitres grade III (WHO classification) and were operated on: 134 hemi-thyroidectomies, 108 hemi-thyroidectomies combined with subtotal contralateral resection, and 11 total thyroidectomies were performed. Histological examinations showed Graves' disease in 6 cases, and multinodular goitre in 231 cases. Follicular cancer was found in 15 cases, and anaplastic carcinoma was found in 1 case. [6]

The management of thyroid disease presents a challenge because patients in countries where health facilities are poor normally present with advanced disease.

From the departmental surgical audits at University Teaching Hospital there has been an increase over the past few years in the number of patients who are undergoing thyroidectomies. This study will determine common histopathologic characteristics thyroid disease past 10 years.

It is difficult to compare the pattern of pathology with studies in developed countries that also show wide variability between countries. A retrospective study which was done in Karachi, Pakistan to evaluate the histologic spectrum of surgically treated thyroid disease shown. A total of 662 cases were collected, 570 were females and 92 were males i.e. 6.19:1 ratio. The age range was from 12 to 70 years. Multinodular goitre was the commonest thyroid disease (61.63%), follicular adenoma was encountered next, 93 cases (14.05%). Amongst 26 cases of thyroiditis, lymphocytic thyroiditis were seen in 22 (3.32%) which was commoner than Hashimoto's thyroiditis (0.06%). The overall incidence of malignancy was 14.35%. Papillary carcinoma was found to have higher incidence (11.17%) than follicular carcinoma (1.81%). Medullary carcinoma (0.06) and anaplastic carcinoma (0.045) respectively. [7]

Another study was done in Addis Ababa University. Seven hundred and eighty consecutive patients with thyroid disease were included in the study. Six hundred and sixty (79%) were found to be non-neoplastic and 164 (21%) were neoplastic. Nodular colloid goitre (NCG) was found in 600 (76.9%) cases. Adenoma, carcinoma and thyroiditis accounted for 100 (12.8%), 64 (8.2%) and 16 (2.1%) cases respectively. Female to male ratio was 4.5:1. Eighty five point seven per cent of the thyroid diseases were found in the age group 20-59 years. The morphological subdivision of the 64 thyroid carcinomas showed 76.6% of papillary, 15.6% follicular, 6.3% anaplastic, and 1.5% medullary carcinoma. [1] In this retrospective histopathological study results showed that nodular colloid goitre is the commonest histological disease. Studies have also proved colloid goiter to be a result of iodine deficiency and iodine supplement was found to decrease the prevalence of goitre.

Thyroid cancer represents approximately 0.5–1% of all human malignancies. In the UK the incidence of thyroid cancer is 2-3 per 100,000 populations. [8] In Saudi Arabia, thyroid cancer was the second most common malignancy after breast cancer, while it was reported as the third most common in the United Arab Emirates and fourth most common cancer in Filipino women. [9] In geographical areas of low iodine intake and in areas exposed to nuclear disasters the incidence of thyroid cancer is higher. Nodular thyroid disease increases with age and is also more common in females and in geographical areas of low iodine intake. Primary thyroid malignancy can be broadly divided into 2 groups. The first group, which generally have much better prognosis, are the well-differentiated thyroid carcinoma, which includes papillary carcinoma, follicular

carcinoma and Hürthle cell tumours. The second group includes the poorly differentiated thyroid carcinoma like medullary thyroid carcinoma and the anaplastic thyroid carcinoma. [8] The proportion of poorly differentiated and aggressive (anaplastic) cancers was higher than those reported from iodine-replete regions. Iodine-deficient areas often have a different spread of thyroid carcinomas. Whereas papillary cancers tend to be the commonest in developed countries, follicular cancers are the commonest in sub-Saharan Africa where iodine deficiency is endemic. In Durban, South Africa, follicular carcinoma is commonest in blacks, but papillary cancer is the commonest in the Indian population, not subject to iodine deficiency. [4]

A high incidence of malignancy in multinodulargoitres has been reported from sub-Saharan Africa with rates varying from 13 to 20%. [4] A study reviewed reports of thyroid tissue sent for histopathology to the Department of Pathology at the University Teaching Hospital (UTH), Lusaka by one of the five general surgical units at the institution during the period January 1981 to December 1990. The result shows a 20% decrease in the incidence of colloid goitre and doubling of the incidence of adenoma and carcinoma when compared to the study done at the Central Hospital, Kitwe in the late sixties. [10]

The cause of thyroid carcinoma is not known, but there are some predisposing factors. Head and neck irradiation in childhood is a known predisposing factor, mainly for the papillary type. There is also experimental evidence suggesting an association between prolonged high levels of thyroid stimulating hormone (TSH) and thyroid follicular adenoma and carcinoma. Moreover, iodine deficient areas are known to have a high frequency of follicular carcinoma. [9]

As we have seen from literature, a pattern of thyroid cancer in Sub Saharan Africa differs from other parts of world. Thyroid cancers reported in the tropics is summarized below.

Summary of thyroid cancers report from the tropics. Adapted from Thyroid surgery in the tropics.[4]

Author	Country	Place	Types of cases	No cases	Total no. malignancies	%	Papillary	Follicular	Anaplastic	Medullary
Wagana et al.	Kenya	Kijabe	All thyroid surgery	222	26	11.7	15	11	0	0
Bisi et al.	Brazil	Sao Paulo	All histology	8263	550	6.6	201	233	86	16
Bazira et al.	Burundi	Bujumbura	Thyroidectomy	395	31	7.8	5	16	8	0
Desai et al.(11)	Zambia	Lusaka	All histology	304	50	16.4	5	21	15	2
Sinha&Singupta	PNG	Port Moresby	All histology	376	109	28.9	61	36	12	4
Bashier et al.	Sudan	Khartoum	Solitary nodules	89	12	13.4	5	6	1	0
Nmadu&Mabugunje	Nigeria	Zaria	Goitre operations	245	50	20.4	20	26	4	0
Watters et al.	Hong Kong	Shatin	All thyroid surgery	258	48	18.6	37	6	3	2
Igun et al	Nigeria	Jos	Goitre operations	509	46	9	16	26	2	0
Baxi et al	Nepal		Goitre& nodules	539	61	11.3	39	9	11	0
		Totals		11210	983	8.8	404	390	142	24
Omran& Ahmed	Sudan	Khartoum	Thyroid cancer		112		25	47	24	
Mulaudzi et al.	South Africa	Durban	Thyroid cancer		100		16	68	13	2
Thomas &Ogunbiyi et al.	Nigeria	Ibadan	Thyroid cancer		137		62	62	6	8
Nkanza et al.	Zimbabwe	Harare	Thyroid cancer		100		12	60	12	2
Abdullah et al.	Malaysia	Kuala Lumpur	Thyroid cancer		107		74	24	2	7
		Totals			556		189		57	19

STATEMENT OF THE PROBLEM

Thyroid disease is common in the world including in Zambia. There have been no recent studies on demographic and histopathologic patterns of thyroid disease in Zambia.

STUDY JUSTIFICATION

Knowledge of the local demographic and histopathologic pattern of surgical pathology of thyroid disease is important it will help in outlining the plans for early detection, diagnosis and management of the thyroid diseases. The information in the present study may be considered as a baseline data of thyroid diseases at UTH and central hospitals in Zambia.

RESEARCH QUESTION

What are the demographic and histopathology patterns of surgically treated thyroid disease over a 10 year period (2001-2010)?

GENERAL OBJECTIVE

To study demographic and histopathologic patterns of thyroid disease operated at UTH with relationship with age and sex.

SPECIFIC OBJECTIVES.

- To determine histopathologic characteristics thyroid disease at UTH.
- To determine demographic characteristics thyroid disease.
- Evaluate the frequency and types of thyroid carcinoma with respect to age, sex and region.

METHODOLOGY

Study site

- Histopathology laboratory at UTH and private histopathology laboratories in Lusaka.
- Patients files from archive. Registries located in surgical theatre and pathology laboratories.

Study design

This was a retrospective study of 10 years (2001-2010) biopsy material from patients with thyroid disease who were operated at UTH.

Sample size

Convenience sample

Data collection

- There were 3 layers of data collection using a data abstraction form.
 - 1.Log books from surgical theatre at UTH.
 - 2.Log books from the pathology labs at the hospitals as well as private pathology laboratories.
 - 3.Patient files.

The data collected was different at each layer, with each layer contributing to a different specific objective.

Inclusion criteria

- All patients with thyroid disease operated at UTH past 10 years (2001-2010).
- Histopathology reports from 2001-2010.

Exclusion criteria

- Patient who was operated elsewhere than UTH.
- No histology report

Variables

- Independent variables
 - Age
 - Sex
 - Residence
 - HIV status
- Dependent variables
 - Histopathologic type

Data Analysis

- Rate of thyroidectomies were described as number of procedures in each year at UTH.
- Histopathologic characteristics were divided into the following categories:
 - Multinodular goitre
 - Colloid goitre
 - Toxic goitre
 - Thyroid cyst
 - Thyroid Adenoma
 - Thyroiditis
 - Neoplastic
 - a. papillary
 - b. follicular
 - c. anaplastic
 - d. medullary
- All categorical variables were described as number and percentage
- Continuous variables were described as mean and standard deviation
- Region where patient came from were showed on map to see if there was any clustering.
- Association between age and gender with type of thyroid disease was analysed
- For analysing the data the Epi-Info Computer software used.

ETHICAL CONSIDERATIONS

- Permission was obtained from the UTH administration as well as Pathology laboratories.
- All information obtained was kept confidential.
- Ethical approval obtained from the University of Zambia Biomedical Research and Ethics Committee (UNZABREC).
- Due to the difficulty in tracking patients after discharge, patients were not contacted and consent was not obtained.
- Because this is a file review, there were no physical risks to the patients.
- Only de-identified data were utilized; no patient identifiers were recorded.

RESULTS

Distribution of thyroid surgery over 10 years at UTH

A total of 3475 general surgical operations were done in 10 year period from 2001-2010 in Phase 3 theatre at UTH. Table 1 and Figure1 shows the distribution and proportion of thyroidectomies in the 10 years period.

Table 1 Distribution and proportion of thyroidectomies over 10 years (2001-10) at UTH.

Year	Operations	Thyroid surgery	%
2001	413	29	7.0%
2002	466	28	6.0%
2003	363	18	5.0%
2004	382	25	6.5%
2005	398	23	5.8%
2006	330	21	6.4%
2007	287	25	8.7%
2008	238	29	12.2%
2009	297	38	12.8%
2010	301	16	5.3%
Total	3475	252	7.3%

Histological patterns of thyroid specimens

A total of 252 thyroid operations were done. Of these 239 thyroid specimens histology results found. Colloid goitre accounted for 172 (71.96%) cases. Thyroid neoplasms were encountered in 33 (13.8%) cases only. The benign tumour i.e., adenoma were seen in 7 (2.92%) cases and thyroid carcinoma in 26 (10.8%) cases. Thyroiditis constituted 3 (1.25%) of the cases Thyroid cyst accounted 19(7.94%) and Toxic goitre 9(3.76%) case. Table 2 and Figure 2 illustrates the distribution of the histologic results in the study.

Table 2. Histopathological patterns of thyroid diseases in 239 thyroidectomy specimens (UTH, 2001-10)

HISTOPATHOLOGYRESULT	No	%
COLLOID GOITRE	172	72%
THYROID CYST	19	7.9%
TOXIC GOITRE	9	3.8%
THYROID ADENOMA	7	2.9%
MULTINODULAR GOITRE	3	1.3%
THYROIDITIS	3	1.3%
CARCINOMA	26	10.9%
TOTAL	239	100.0%

Figure 1. Pie chart showing histopathological patterns of thyroid diseases encountered in 239 thyroidectomy specimens examined (UTH, 2001-10)

Gender distribution of patients whose thyroid specimens examined histologically

Of the 239 cases, 212 (88.7%) were in females and 27(11.3%) were in males. The female: male ratio was 7.8:1.All types of thyroid disease more common in females..

Table 3. Distribution of the histologic thyroid diseases in relation with gender of patient.

Gend er	Colloid goitre n (%)	Multi- nodular goitre N (%)	Thyroid adenoma n (%)	Thyroid cyst n (%)	Thyroid- itis n (%)	Toxic goitre n (%)	Carcinoma n (%)	Total N (%)
F	157 (91.3)	3 (100)	5 (71.4)	18 (94.7)	2 (66.7)	9(100)	18 (69.2)	212(88.7)
M	15 (8.7)	0 (0)	2 (28.6)	1 (5.3)	1 (33.3)	0 (0)	8 (30.8)	27 (11.3)
Total	172 (100)	3(100)	7 (100)	19 (100)	3 (100)	9(100)	26(100)	239(100)
Row %	72.0%	1.3%	2.9%	7.9%	1.3%	3.8%	10.9%	100.00%

Figure 2. Distribution of the histologic results of thyroid diseases in relation to gender of patient.

Age distribution of patients with specimens examined

The average age for a patient with thyroid diseases was 42.24 ± 12.42 years (range 19-82 years).

The majority of the cases, that is 86.6% of the thyroid diseases in this study, were seen in the age group 20-59 years, the young age group 0-19 years and the elderly group above 60 years constituted 2.5% and 10% respectively. The age distribution of the specific thyroid disease entities as shown in Table 4 and Figure 4.

Table 4. Distribution of the histological thyroid disease in relation with age

Age	Colloid goitre	Toxic goitre	Multi-nodular goitre	Thyroid adenoma	Thyroid cyst	Thyroid - itis	Papillary ca	Follicular ca	Undifferentiated	Anaplastic	Total
10-19	3	0	0	1	1	0	0	1	0	0	6
20-29	27	3	0	0	0	1	0	0	0	0	31
30-39	47	3	1	2	5	0	1	4	1	0	63
40-49	60	2	2	2	8	2	0	6	0	1	81
50-59	20	1	0	1	4	0	2	4	1	0	32
60-69	10	3	0	1	1	1	1	3	0	1	21
70-79	3	0	0	0	0	0	0	0	0	0	3
80-89	2	0	0	0	0	0	0	0	0	0	2
Total	172	9	3	7	19	3	4	18	2	2	239
Row%	71.96%	3.85%	1.28%	3.39%	8.12%	1.28%	1.67%	7.53%	0.8%	0.8%	100%

Distribution of thyroid malignancies (UTH, 2001-10)

There were 26 cases of thyroid malignancies in study ((10.9% of all specimens examined).The morphological subdivision of the 26 thyroid carcinomas showed 69.2% were follicular, 15.4% papillary, 7.7% anaplastic, and 7.7% undifferentiated carcinoma. As the study showed follicular carcinoma was commonest. Table 5 and Figure 5 illustrates distribution of thyroid malignancies.

Table 5 Distribution of thyroid malignancies.

Thyroid Carcinomas	No	%
Follicular	18	69.2%
Papillary	4	15.36%
Anaplastic	2	7.69%
Undifferentiated	2	7.69%
Total	26	100%

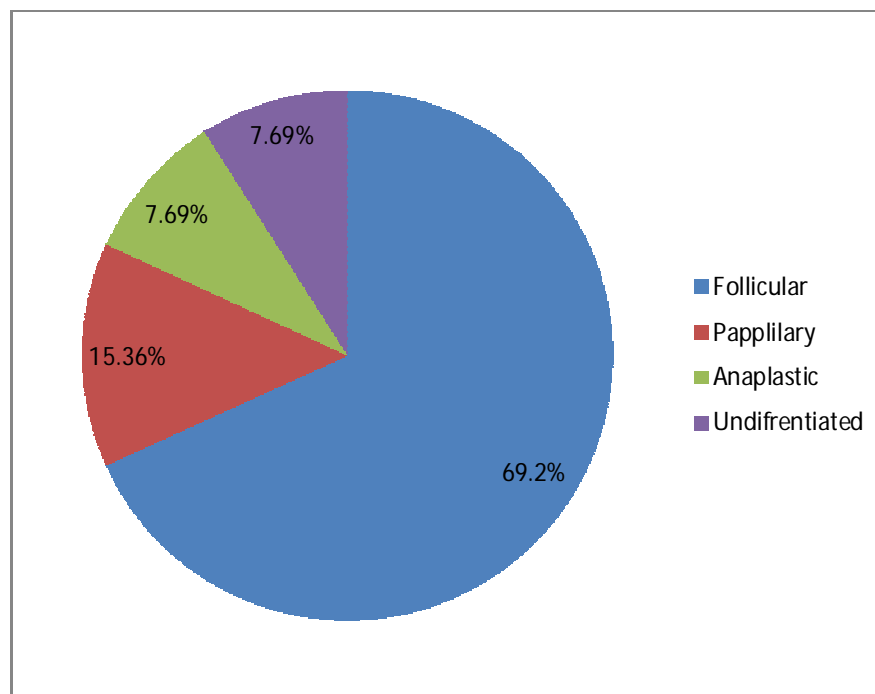


Figure 3 Pie chart demonstrating distribution of thyroid malignancies.

Gender distribution of patients with thyroid malignancies

Thyroid malignancies were common in female 18(69.23%) than male 8(30.76%) Female to male ratio 2.2:1.

Table 6 Distribution of thyroid malignancies by gender

Thyroid Carcinomas	female	male	Total N (%)
Follicular	13	5	18 (69.2)
Papillary	3	1	4 (15.36)
Anaplastic	1	1	2 (7.69)
Undifferentiated	1	1	2 (7.69)
Total	18 (100)	8 (100)	26 (100)

Figure4. Distribution of thyroid malignacies by gender

Age distribution of patients with thyroid malignancies

The average age for a patient with thyroid malignancies was 48.75 ± 12.48 years (range 19-69 years).

Table 7. Distribution of thyroid malignancies by age

Age	Follicular ca	Papillary ca	Anaplastic	Undifferentiated	Total
10-19	1	0	0	0	1
20-29	0	0	0	0	0
30-39	4	1	1	0	6
40-49	6	0	0	1	7
50-59	4	2	1	0	7
60-69	3	1	0	1	5
70-79	0	0	0	0	0
80-89	0	0	0	0	0
Total	18	4	2	2	26

Figure 5. Age distribution of thyroid malignancies

Geographical distribution of thyroid disease

Out of 239 patients with thyroid disease whose histology results were available, 103(43%) came from Lusaka, 29(12.1%) from Eastern province, 23(9.8%) Central province, 26 (10.8%) Southern province, 17(7.1%) Northern province, 16(6.6%) were from Copperbelt. From Luapula, Western and North-Western provinces 12(5%), 11(4.6%) and 5(2%) respectively. Table 8 and Figure 8 shows distribution of provinces patients with thyroid disease came from operated at UTH in 10 year period with histopathology results.

Table 8. Distribution of patients with thyroid disease operated at UTH in 10 year period with histopathology results

	HISTOPATHOLOGY RESULTS									
PROVINCE	Colloid goitre	Thyroid cyst	Multinodular goitre	Toxic goitre	Thyroid adenoma	Thyroiditis	Follicular ca	Papillary ca	Anaplastic + Undifferentiated	Total
Central	14	3	1	0	1	1	3	0	0	23
Copperbelt	13	1	0	1	0	0	1	0	0	16
Eastern	19	2	0	1	1	0	4	2	1	29
Luapula	10	1	0	0	0	0	1	0	0	12
Lusaka	73	9	1	6	4	2	5	1	2	103
North western	3	0	0	0	0	0	2	0	0	5
Northern	13	1	1	0	1	0	1	0	0	17
Southern	22	2	0	0	1	0	1	0	0	26
Western	8	0	0	1	0	0	0	1	1	11
Total	172	19	3	9	7	3	18	4	4	239

Regions where patients came from is shown on the map of Zambia showing the provincial distribution.



Figure 6. Map of Provinces of Zambia showing where patients with thyroid disease came from (2001-10)

DISCUSSION

Thyroid diseases are of great importance because most are amenable to medical or surgical management. This study showed thyroid surgery 7.25% of general surgical major operations done at UTH in 10 year period. Peak incidence of thyroid surgery were in 2009,38 cases recorded. Figure 1 shows distribution and proportion of thyroid surgery. Thyroid surgery constitutes a small but significant proportion of major elective general surgery in the world.

In this study, colloid goitre accounted for 71.96% (172 cases) forming the most common pathologic presentation. This is higher than 56.58 reported in a retrospective histological study done on 76 histopathological reports over a ten year period (1981-1990)[10]. This might be due to increasing iodine deficiency and a difference in indication for the thyroidectomy. It is well known that colloid goitre is endemic in sub-Saharan Africa and thyroid malignancies are relatively uncommon [10]. Thyroid cyst (7.9%) was the second most common histological disease in our study and this is 6.7% higher than previous reported study done by Desai. The prevalence of adenoma in this study was 2.9% and it is much lower than reported study results in Lusaka (17.11%)[10] and Kitwe(9.4%)[14].

Thyroid disease common in females than males. In this study female male rate was 7.8:1. Age range was 19 to 82 years. This is almost same 7.4:1 reported in study which was done at UTH in late nineties [10]. This is similar results which was shown studies done in Ethiopia[1], Pakistan[7] and other observations. It was the expectation of the study that females were more affected by thyroid disease and benign conditions more common.

The overall incidence of malignancy in this study was 10.9%. Figure 6 shows distribution of thyroid malignancies. This is almost same the 11.84% reported by Desai[10] but it is higher than 6.1% reported by Mahmud-Durani et al[14]. In Zambia the reported incidence of thyroid cancer in the eighties was less than 1.1% of all the malignancies as compared to

1.2% in the sixties. In Elem and Patil's study, thyroid cancer was not among the twenty most common cancers in Zambia[10]. In other parts of world studies showed overall incidence of malignancies USA it was 5.8%, in Libya 9.7% and in South Africa 5.4%. [7]. Increase of thyroid malignancies may be due to alteration in the dietary habits of the Zambian people in the last few decades and high prevalence of HIV infection can explain this change.

In this study Follicular cancer was most common malignancy 15(68%) followed by Papillary 3(14%). Anaplastic carcinoma 2(9%) and Undifferentiated carcinoma 2(9%) were seen. Of all the cancers of the thyroid gland anaplastic carcinoma contributed 9% as compared to 66.6% and 45.46% in Lusaka and Kitwe's study respectively [10]. It affected twice as many males as females.[10]. Another study by Desai et al showed that overall incidence malignancies 16.4%. Follicular carcinoma was commonest 42%, followed by Anaplastic 30% and Papillary carcinoma 10%.[11]. Study done in Bahrain showed overall malignancies 24% and all histology result showed papillary carcinoma only type malignancy in study period [12]. In Nigeria study showed overall incidence of malignancies 11% and commonest was Follicular carcinoma[13]. Study showed that malignancy common in females than males almost double times. As we have seen from literature, a pattern of thyroid cancer in Sub Saharan Africa differs from other parts of world. Follicular carcinoma more common in this part of world. The cause of thyroid carcinoma is not known, but there are some predisposing factors can play role. The geographic variation in the prevalence rate of thyroid cancer could be attributed to the iodine content in food. The iodine deficient areas are known to have a high frequency of follicular carcinoma.[9]

Study showed that most cases with thyroid disease came from Lusaka .It is explained that population of capital city is high than other parts of country and relatives of most patients stay in Lusaka.

STUDY LIMITATIONS

- There some historical pathology results were not available because some patients did not pay for laboratory . This deficiency factored into analysis.
- As with any retrospective study, the collection and analysis of historical data were limited to those variables which were routinely recorded at that time.

CONCLUSIONS

- Thyroid surgery constitutes a small but significant proportion of major elective general surgery at UTH. It is 7.25% of all elective general surgical cases.
- Colloid goitre commonest cause of thyroid swelling in this study 71.96%.
- Thyroid disease common in females than males, ratio 7.8:1 respectively.
- Overall incidence of malignancy was 6.8% Follicular cancer was commonest thyroid malignancy in this study.

RECOMMENDATIONS

- Evaluation of thyroid disease requires proper diagnostic tools, including ultrasonography, reliable FNAC technique and proper pathologicalexamination.Pre-operative FNAC diagnosis plays a crucial role in the diagnosis of thyroid nodules and enables the number of surgical operations to be reduced.
- Thyroid diseases are preventable. Thus, public health measures such as iodination of salt and health education are called for to reduce the occurrence of this disease.
- The information in the present study may be considered as a baseline data of thyroid disease at UTH and more elaborate prospective study carried out on a large scale in this country will contribute more to make things clear.

REFERENCES

1. Tsegaye B, Ergete W. Histopathologic pattern of thyroid disease. East Afr. Med. J. 2003. Oct; 10 (10):525-528.
2. International Council For Control Of Iodine Deficiency Disorders (ICCIDD) IDD NEWSLETTER, WHO REVIEW 1999. May; 15: 2
3. Kenji G, Nyerenda K, Kabwe G. Iodine levels in edible salt sold in Malawi, Kenya and Zambia. Afr. J. Food agriculture Nutrition and Development. 2003. Nov; 2(3):1684-5374
4. Watters DAK, Jack W. Thyroid surgery in the tropics. ANZ J. Surg. 2007; 77: 933–940
5. Asimakopoulous G, Loosemore T, Bowyer R, McKee G, Giddings A. A regional study of thyroidectomy: surgical pathology suggests scope to improve quality and reduce cost. Ann R Coll Surg Engl 1995; 77: 425-430
6. Rumstadt B, Kirr H, Kaltenbach N, Homenu W, Schilling D, Thyroid Surgery in Burkina Faso, West Africa: Experience from a Surgical Help Program . World J Surg. 2008. Oct; 32 :2627-2630
7. Nazar H, Anwar M, Nadia N, Zulfiqar A. Pattern of surgically treated thyroid disease in KARACHI. Biomedica .2005. Jan. – Jun; 21
8. Heitham G. Update on epidemiology classification and management of thyroid cancer. Libyan J Med. 2006. June; www.ljm.org.ly
9. Bukhari U, Sadiq S, Memon J, Baiga F. Thyroid carcinoma in Pakistan: a retrospective review of 998 cases from an academic referral center. Hematol Oncol Stem Cell Ther 2009; 2(2); 345-348.
10. Desai G, Islam R. The changing pattern of surgical pathology of the thyroid gland in Zambia. Cent Afr J Med. 1992 Jun; 38(6):240-2.
11. Desai, G.; Elem, B.; Islam, R.; Banda, J., 1992: The pattern of surgical thyroid diseases in Zambia. Tropical Doctor. 22(4): 182-183.
12. Abdulla H, Khalid A, Jihene K. Patterns of thyroid disease-A histopathological study. Bahrain Medical Bulletin. 2006 Dec; 28(4).
13. Nggada H, Ojo O, Adelusola K. A histopathological analysis of thyroid disease in Ile-Ife, Nigeria. a review of 274 cases. Nigerian postgraduate medical journal. 2008 Mar.
14. Mahmud-Durrani A, Bhattacharya S K, Desai M H. Thyroid diseases at the Central Hospital, Kitwe: Review of 212 cases. *Med J Zambia* 1972; May issue: 78-87

DATA ABSTRACTION FORM

Study Number _____

Age _____ Sex _____

Residence: Province _____ District _____ Village _____

Date first seen: __ / __ / ____

Date of Operation ____ / ____ / ____

2. HIV Status: Negative __ Positive __ Not tested __

3. Laboratory results

T3 _____ T4 _____ TSH _____

4. Type of Operation

Lobectomy _____ Sub-total thyroidectomy _____ Total thyroidectomy _____

5. Histopathology result:

a) Multinodular goiter _____ b) Colloid goiter _____

c) Toxic goiter _____ d) Thyroid cyst _____

e) Thyroid Adenoma _____ f) Thyroiditis _____

g) Malignancies

Papillary		Follicular		Anaplastic		Medullary	
-----------	--	------------	--	------------	--	-----------	--

h) Other _____