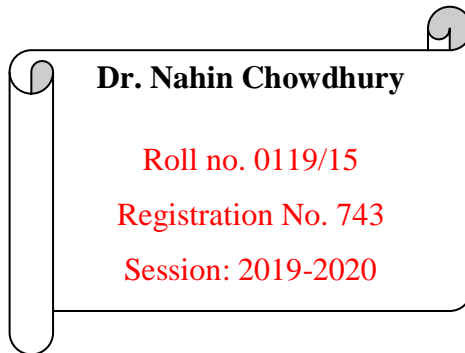




**Status of Thyroid Hormone Disorder and its Complications among the Women of  
Reproductive Age in Urban Chattogram**



**A thesis submitted in the partial fulfillment of the requirements for the degree of  
Masters of Science in Public Health**

**One Health Institute**  
**Chattogram Veterinary and Animal Sciences University**  
**Chattogram-4225, Bangladesh**

**June 2022**

## **Authorization**

I hereby declare that I am the sole author of the Thesis. I also authorize the, Chattogram Veterinary and Animal Sciences University (CVASU) to lend this thesis to other institutions or individuals for the purpose of scholarly research. I further authorize the CVASU to duplicate the thesis by photocopying or by other means, in total or in part, at the request of other institutions or individuals for the purpose of scholarly research.

I, undersigned, the author of this work, declare that electronic copy of this thesis provided to the CVASU library, is an accurate copy of the print thesis submitted, within the limit of technology available.

**Dr. Nahin Chowdhury**

June 2022

**Status of Thyroid Hormone Disorder and its Complications among the Women of  
Reproductive Age in Urban Chattagram**

---

**Dr. Nahin Chowdhury**

Roll no. 0119/15

Registration No. 743

Session: 2019-2020

**This is to certify that, we have examined the above Master's thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made.**

---

**Prof. Dr. Md Yusuf Elahi Chowdhury**  
**Supervisor**

Head of the Department of Medicine and Surgery  
Chittagong Veterinary and Animal Sciences  
University, Chittagong

---

**Prof. Dr. Sharmin Chowdhury**  
**Director**  
**One Health Institute**

**One Health Institute**  
**Chattogram Veterinary and Animal Sciences University**  
**Chattogram- 4225, Bangladesh,**  
**June 2022**

---

I dedicate this precious work  
to my beloved parents, my wife, my sons and  
My all respected Teachers

---

## **Acknowledgments**

On the very beginning I would like to express my profound gratitude to The Omnipotent “The Almighty Allah SWT”, WHO enable me to perform this research work.

Next it would be my great pleasure and pride to express my deepest respect gratefulness and profound gratitude to my learned and honorable supervisor **Prof. Dr. Md Yusuf Elahi Chowdhury**, Head of the Department of Medicine and Surgery, Chattogram Veterinary and Animal Sciences University for his extreme supervision, sincere cooperation, valuable and wise constructive criticism, providing important information and moreover giving me the opportunity to work with him through this course work and research.

I want to thank the Honorable Vice Chancellor, CVASU, Professor Gautam Buddha Das for giving us the opportunity to study Masters in Public Health in “One Health Institute” under Chattogram Veterinary and Animal Sciences University.

I want to pay respect to my teacher Professor Dr. Abdul Ahad sir, Ex-Dean, Chattogram Veterinary and Animal Sciences University

I am also very much grateful to my teacher Prof. Dr. Sharmin Chowdhury, Director One Health Institute, Chattogram Veterinary and Animal Sciences University for her continuous support and inspiration.

I am grateful to respected Professor Dr. Mohammad Alamgir Hossain, Ex-Director (Research and Extension) and Dean, Faculty of Veterinary Medicine, Chattogram Veterinary and Animal Sciences University.

I want to show my I wholeheartedly thanks and gratefulness to Chattogram Veterinary and Animal Sciences University authority specially Coordinator of advanced studies and research for funding this research work.

I am showing my great thankfulness and gratefulness to all of my kind teachers who have taught us through this course.

I want to thank all of my fellow faculty members and course mates to create such a beautiful and educational environment.

I am very much thankful to Dr. A H M Roquibul Hoque, Director, Institute of Nuclear Medicine & Allied Sciences, Chattogram Medical College Hospital, Chattogram

I am thankful to Dr Dewan Asadullah, Head of the Department, Community Medicine, Southern Medical College and Hospital.

My special thanks to all officers staff and technical personnel of Chattogram Veterinary and Animal Sciences University for their help and kind cooperation.

Finally, I would like to thanks to my beloved mother, my husband, brother, sister and my two sons and one daughter for their constant inspiration and blessings throughout the entire period of my academic life in Chattogram Veterinary and Animal Sciences University.

**Dr. Nahin Chowdhury**

**The Author**

**June 2022**

## Table of Contents

Chapter	Title	Page No.
	<b>Authorization</b> .....	ii
	<b>Acknowledgements</b> .....	v
	<b>List of tables</b> .....	ix
	<b>List of figures</b> .....	x
	<b>List of abbreviations</b> .....	xi
	<b>Abstract</b> .....	xii
<b>Chapter I</b>	<b>Introduction</b> .....	1
<b>Chapter II</b>	<b>Review of literature</b> .....	5
	2.1 THYROID .....	5
	2.1.1 Thyroid hormones.....	5
	2.1.2 The hypothalamic and the pituitary regulation of thyroid hormone secretion.....	5
	2.1.3 Thyroid stimulating hormone, TSH and TSH receptor .....	6
	2.2 THYROID DYSFUNCTION.....	7
	2.2.1 Hypothyroidism.....	7
	2.2.2 Subclinical hypothyroidism.....	8
	2.2.3 Hyperthyroidism (thyrotoxicosis).....	8
	2.3 THYROID DYSFUNCTION AND FEMALE REPRODUCTION ..	8
	2.3.1 Hypothyroidism.....	8
	2.3.2 Hyperthyroidism (thyrotoxicosis).....	8
	2.4 Related previous study.....	9
<b>Chapter III</b>	<b>Materials and Methods</b> .....	15
	3.1 Study design.....	15
	3.2 Study place .....	15
	3.3 Study duration .....	15
	3.4 Study population.....	15
	3.5 Selection criteria .....	15
	3.6 Sampling method.....	15
	3.7 Sample size.....	15
	3.8 Data Collection Methods.....	16
	3.9 Data Management & Analysis Plan.....	17
	3.10 Quality Control & Quality Assurance.....	17
	3.11 Ethical consideration.....	17
<b>Chapter IV</b>	<b>Results</b> .....	18
<b>Chapter V</b>	<b>Discussion</b> .....	28
<b>Chapter VI</b>	<b>Conclusion</b> .....	32
<b>Chapter VII</b>	<b>Strength and Weakness</b> .....	33
<b>Chapter VIII</b>	<b>Recommendation and future perspective</b> .....	34
<b>Chapter IX</b>	<b>References</b> .....	35

<b>Chapter X</b>	<b>10. Appendices</b> .....	
	10.1 Questionnaire.....	43
	10.2 Consent form.....	44
	10.3 Brief Biography .....	45

---



## List of Tables

<b>Tables</b>	<b>Name of the table</b>	<b>Page no.</b>
<b>Table 1</b>	Distribution of the study patients by age	18
<b>Table 2</b>	Distribution of the study patients according to parity	19
<b>Table 3</b>	Distribution of the study patients according to abnormal uterine bleeding	20
<b>Table 4</b>	Distribution of the study patients according to BMI	21
<b>Table 5</b>	Distribution of the study patients according to blood pressure and urine iodine	22
<b>Table 6</b>	Distribution of the study patients according to thyroid profile	23
<b>Table 7</b>	Association between abnormal uterine bleeding and thyroid hormone status	24
<b>Table 8</b>	Association between age and thyroid hormone status	25
<b>Table 9</b>	Association between socioeconomic status and thyroid hormone status	26
<b>Table 10</b>	Association between iodine intake and thyroid hormone status	27
<b>Table 11</b>	Association between infertility and thyroid hormone status	28

## List of figures

<b>Tables</b>	<b>Name of the Figure</b>	<b>Page no.</b>
<b>Figure 1</b>	The hypothalamic--pituitary--thyroid axis	5

## List of Abbreviations

---

ART	Assisted reproductive technology
ATA	American Thyroid Association
AUB	Abnormal uterine bleeding
BMI	Body mass index
CI	Confidence intervals
FT3	Free triiodothyronine
FT4	Thyroxine
IQR	Inter quartile range
SCH	Sub clinical hypothyroidism
SPSS	Statistical package for social sciences
TAI	Thyroid autoimmunity
TPO-abs	Thyroid peroxidase autoantibodies
TSH	Thyroid-stimulating hormone
TT3	Total triiodothyronine
UIC	Urinary iodine concentration
WHO	World health organization

---

## Abstract

**Introduction:** Our endocrine system is a very sophisticated hierarchical structure that governs the efficiency and dynamic management of several processes in our bodies. The thyroid gland is unusual among endocrine organs in that it regulates several bodily activities including as metabolism, growth, and sexual and emotional development. Thyroid disease is the world's second most common endocrine illness.

**Objective:** To do a survey on the pattern of thyroid hormone status among the reproductive age of women.

**Materials and Methods:** Descriptive type of cross-sectional study was conducted from April 2020 to April 2021 different laboratory in Chittagong metropolitan city. Total 385 female patient between 20-45 years were included in this study among them 15 patients were dropout finally 370 patients were included in this study. After collecting data and following data cleaning, database preparation, they were analyzed by using the SPSS version 23 for windows. Descriptive statistics was calculated and was calculated as Mean  $\pm$  Standard deviation. Chi Square ( $\chi^2$ ) tests was used to analyze the association in socio-demographic variables.

**Results:** The average age was determined to be  $30.8 \pm 6.6$  years with range from 20 to 42 years. Among 370 thyroid patients, more than half 192(51.9) of the patient were primipara, 144 (38.9%) were multipara, and 34 (9.2%) were nullipara. More than half (52.2%) of patients had menorrhagia, 98(26.5%) had polymenorrhea, 45(12.2%) had oligomenorrhea, and 34(9.2%) had hypomenorrhea. The majority of patients (91.4%) had a BMI of 25.0-29.9  $\text{kg/m}^2$ , 27(7.3%). The mean FT3 was  $2.97 \pm 0.77$  pg/ml, the FT4 was  $1.27 \pm 0.35$  ng/ml, and the TSH was  $3.31 \pm 1.81$   $\mu\text{U/ml}$ . Eight (42.1%) patients were found oligomenorrhea in hyperthyroidism, 30(11.7%) in euthyroidism and 7(7.4%) in hypothyroidism. The difference was statistically significant ( $p < 0.05$ ) between Menorrhagia and Oligomenorrhea groups. Thirteen (68.4%) patients belonged to age 26-35 years in hyperthyroidism, 132(51.6%) in euthyroidism and 45(40.9%) in hypothyroidism. The difference were statistically significant  $\leq 25$  vs  $> 35$  years and 26-35 vs  $> 35$  years age groups. Regarding socioeconomic status 1(5.3%) of the patients come from upper middle class family in hyperthyroidism, 69(27.0%) in euthyroidism and 17(15.78%) in hypothyroidism. The difference was not statistically significant ( $p > 0.05$ ). One (5.3%) patients

iodine intake in hyperthyroidism, 5(2.0%) in euthyroidism and 14(14.73%) in hypothyroidism. The difference was statistically significant ( $p < 0.05$ ).

**Conclusion:** In this study suggested more than half patients were found primipara, more than half patients were found in menorrhagia, other abnormal uterine bleeding also be found polymenorrhea, oligomenorrhea and hypomenorrhea. Majority patients were found in euthyroidism. Significant relation was found abnormal uterine bleeding and age in years with thyroid hormone status.