"PREVALENCE OF THYROID DYSFUNCTION AMONG TYPE 2 DIABETES MELLITUS PATIENTS IN URBAN AREAS OF BELAGAVI"

Submitted by
(REG. NO.BD0116005)

DISSERTATION

Submitted to the
KLE Academy of Higher Education and Research,
Belagavi, Karnataka

In Partial Fulfillment of the requirements for the degree of

DOCTOR OF MEDICINE (M. D.)

in

COMMUNITY MEDICINE

DEPARTMENT OF COMMUNITY MEDICINE,
J. N. MEDICAL COLLEGE,
BELAGAVI – 590010. KARNATAKA, INDIA.

APRIL – 2019

KLE Academy of Higher Education and Research,

Belagavi, Karnataka.

ENDORSEMENT BY THE HEAD OF DEPARTMENT, PRINCIPAL / HEAD OF THE INSTITUTION

This is to certify that the dissertation entitled **"PREVALENCE OF THYROID DYSFUNCTION AMONG TYPE 2 DIABETES MELLITUS PATIENTS IN URBAN AREAS OF BELAGAVI"** is a bona fide and genuine research work done by **REG. NO.BD0116005.**

Dr. (Mrs.) PADMAJA R. WALVEKAR.
M.D.,Ph.D
Professor and Head,
Department of Community Medicine,
J. N. Medical College, KAHER
Belagavi – 590010.
Karnataka. India.

Date: . 09 . 2018
Place: Belagavi

Dr. N.S. MAHANTSHETTI **M.D.,**
Principal,
J. N. Medical College, KAHER
Belagavi – 590010.
Karnataka, India.

Date: . 09 . 2018
Place: Belagavi

Undertaking

I, **REG. NO.BD0116005** hereby declare that the information and the data mentioned in my dissertation entitled **"PREVALENCE OF THYROID DYSFUNCTION AMONG TYPE 2 DIABETES MELLITUS PATIENTS IN URBAN AREAS OF BELAGAVI**" belongs to me and is original.

I am aware of the definition of plagiarism as detailed below:

- An act or instance of using or closely imitating the language and thoughts of another author without authorization and the representation of that author's work as one's own, as by not crediting the original author.
- A piece of writing or other work reflecting such unauthorized use or imitation.
- The deliberate or reckless representation of another's words, thoughts or ideas as one's own without attribution in connection with submission of academic work, whether graded or otherwise.

I hereby declare that the dissertation prepared by me is original-one and does not involve plagiarism anywhere. In case at a later stage it is found that I have indulged in plagiarism, then I am solely responsible for the same and the institution is at liberty to take any disciplinary action against me including cancellation of dissertation or any other penalties imposed by the University.

Date: . 09. 2018

Place: Belagavi. **(REG. NO. BD0116005)**

LIST OF ABBREVIATIONS USED

SL.No	ABBREVIATIONS	EXPANSION OF THE ABBREVIATIONS
1	**WHO**	World Health Organization
2	**OHA**	Oral Hypoglycemic Agents
3	**T2DM**	Type 2 Diabetes Mellitus
4	**T3**	Triiodothyronine
5	**T4**	Thyroxine
6	**TSH**	Thyroid Stimulating Hormone
7	**WHR**	Waist to Hip Ratio
8	**WC**	Waist Circumference
9	**FBS**	Fasting Blood Glucose
10	**PPBS**	Post Prandial Blood Glucose
11	**BP**	Blood Pressure
12	**ADA**	American Diabetes Association
13	**AITD**	Auto Immune Thyroid Disorders
14	**DIO2**	Deiodinase type 2gene
15	**TRH**	Thyrotropin-releasing hormone
16	***Anti-TPO***	Anti-thyroid peroxidase
17	**PUC**	Pre University College
18	**SES**	Socio Economic Status
19	**CF**	Correction factor
20	**Cm**	Centimeter

21	**BMI**	Body Mass Index
22	**SPSS**	Statistical Package for Social Sciences
23	**Kg**	Kilograms
24	**mmHg**	Millimeters of Mercury
25	χ^2	Chi Square
26	**Df**	Degree of Freedom
27	**SD**	Standard Deviation
28	**HbA1C**	Glycated hemoglobin
29	**DM**	Diabetes Mellitus
30	**SCH**	Sub Clinical Hypothyroidism
31	**UHC**	Urban Health Centre
32	**JNMC**	Jawaharlal Nehru Medical College
33	**CLIA**	Chemiluminescence Immunoassay
34	**HK**	Enzyme hexokinase
35	**ATP**	Adenosine triphosphate
36	**G-6-P**	Glucose-6-phosphate
37	**ADP**	Adenosine di phosphate
38	**NAD**	Nicotinamide adenine dinucleotide
39	**NADH**	Nicotinamide adenine dinucleotide
40	**CI**	Confidence interval
41	**OR**	Odds ratio

42	**SBP**	Systolic blood pressure
43	**DBP**	Diastolic Blood pressure
44	**HC**	Hip circumference
45	**JNC**	Joint National Committee
46	**Mg/dl**	Milligram per deciliter
47	**NCD**	Non Communicable diseases
48	**LDL**	Low Density Lipoprotein
49	**RR**	Relative risk
50	**NFHS**	National Family Health Survey
51	**SLE**	Systemic Lupus Erythematosis
52	**CHD**	Coronary Heart Diseases

ABSTRACT

Introduction:

Diabetes is a major disease burden in India and we are home to the second largest number of diabetes cases in the world with currently over 72 million cases of diabetes. Type 2 diabetes mellitus and thyroid disorders are highly prevalent disorders in the community. Both have been shown to mutually influence each other. Recognition of this interdependent relationship between thyroid disease and diabetes is of significance in guiding clinicians towards optimal management of both these conditions. The existing data regarding prevalence of thyroid disorders in patients with diabetes comes mostly from facility based studies.

Objective:

To determine the prevalence of thyroid dysfunction among type 2 diabetes mellitus patients and the risk factors associated with it

Methodology:

Data was collected from type 2 diabetes mellitus patients residing in areas under the Urban Health Centre Ashok Nagar and Rukmini Nagar which are under the field practice area of Department of Community Medicine, Jawaharlal Nehru Medical College, Belagavi.Periodic camps were conducted in the study areas to identify the known case of type 2 diabetes mellitus patients. From the identified T2DM patients, study participants were selected based on the selection criteria. After obtaining informed written consent pre designed and pre tested questionnaire was used to collect information about socio-demographic profile, risk behaviors, general physical examination, systemic and thyroid examination. Venous blood samples were collected

to estimate thyroid profile (T3, T4, TSH), FBS and PPBS. Statistical analysis was done using chi square test for categorical variables. Univariate and multivariate logistic regression analysis were used for association between various parameters with thyroid dysfunction and 'P' value less than 0.05 was considered significant.

Results:

Of the 380 study participant, 29.73% were in the age group of 61 - 70 years and 25.52% were in the age group of 51 – 60 years forming the majority of the participants. The average age of the study participant was 56.25 ± 11.24 (mean ± S.D.) with a range of 32 to 80 years of age. 60.26% were females forming the major portion and 39.74% were males. Majority of the study participants were home makers (55.79%) and self-employed were 20.26%. 30% of the participants did not have any kind of formal education; 23.42% of them studied up to secondary and 22.63% primary school; Majority of study participants belonged to SES class IV (32.37%); 65.53% of participants were Hindus; most of them were married (88.15%) and 52.37% of the participants were living in a joint family.

The prevalence of thyroid disorders was 21.58%. Sub-clinical hypothyroidism was more common than other conditions which constituted 13.68% of the thyroid dysfunction in the type 2 diabetes mellitus patients. Clinical hypothyroidism was 1.85%; hyperthyroidism was 6.05% [clinical hyperthyroidism (3.94%) and subclinical hyperthyroidism (2.11%)].

Statistically significant association was observed with factors such as gender, physical activity during leisure time, waist hip ratio and glycemic status with p value less than 0.05. Multivariate analysis demonstrated the presence of thyroid disorder

was related with glycemic status of the participants with odds ratio 1.85 (CI, 0.996 – 3.443).

Conclusion:

This study shows that a significant proportion of type 2 diabetes patients suffer from thyroid dysfunction and screening for the same should be routinely considered, as it is found to be an additional co-morbidity

Key words: Type 2 Diabetes mellitus, Thyroid dysfunction, Prevalence, Hypothyroidism

CONTENTS

LIST OF TABLES

LIST OF GRAPHS

LIST OF IMAGES

INTRODUCTION

Diabetes is a major disease burden in India and we are home to the second largest number of diabetes cases in the world. In 2017, there were over 72 million cases of diabetes in India.[1] The reported global prevalence of thyroid disorders in general population varies from 6.6% to 13.4%, whereas in diabetic population, the prevalence is still higher, ranging from 10% to 24%.[2]Thyroid dysfunction manifests either as hypothyroidism or hyperthyroidism which is estimated by the circulating levels of TSH and might affect glucose homeostasis[3].

Diabetes mellitus and thyroid dysfunctions are metabolic disorders that affect the carbohydrates, proteins and lipids metabolism.[4]Thyroid hormones are insulin antagonists, both insulin and thyroid hormones are involved in cellular metabolism and excess and deficit of any can result in functional derangement of the other.[5] Thyroid hormones influence glucose metabolism by a stimulation of glucose absorption, glycogenolysis and hepatic glucose production as well as enhanced insulin resistance. Insulin resistance in hyperthyroidism is strongly associated with enhanced hepatic gluconeogenesis. Hypothyroidism decreases hepatic glucose output by decreasing the absorption of glucose which reduces insulin synthesis which explains the decrease in peripheral glucose utilisation and insulin resistance. Conversely, poorly controlled diabetes mellitus may affect thyroid metabolism as uncontrolled hyperglycemia alters plasma triiodothyronin (T3) and in part thyroxine (T4) levels.[6][7]

Considering the strong association, American Diabetes Association (ADA) had proposed that people with diabetes must be checked periodically for thyroid

dysfunction. Thyroid disease should be screened annually in diabetic patients to detect subclinical thyroid dysfunction.[8]

Recognition of this interdependent relationship between thyroid disease and diabetes is of significance in guiding clinicians towards optimal management of both these conditions. Although many such studies have been conducted, to the best of our knowledge no community-based studies have been organised to estimate prevalence of thyroid dysfunctions in patients with type 2 diabetes mellitus (T2DM) in this part of Karnataka.

Hence this study has been planned to know the magnitude of thyroid dysfunction in diabetes population and its associated risk factors.

OBJECTIVES

1. To estimate the prevalence of thyroid dysfunction among type 2 diabetes mellitus patients in urban areas of Belagavi
2. To determine the risk factors associated with thyroid dysfunction among them

REVIEW OF LITERATURE

Diabetes is a heterogeneous group of diseases characterized by chronic hyperglycaemia resulting from defect in insulin secretion as well as insulin action or both. Occasionally other metabolic disorders like abnormal thyroid hormone level are seen in diabetes. Diabetes and thyroid disorders have been shown to mutually influence each other.

Thyroid gland is a butterfly-shaped endocrine gland that is normally located in the lower front of the neck. Major hormones secreted by thyroid gland are T3 and T4, which are secreted into the blood and then carried to every tissue in the body. Thyroid hormone helps the body use energy, stay warm and keep the brain, heart, muscles, and other organs working as they should. Hyperthyroidism and hypothyroidism are the two primary pathological conditions that involve the thyroid gland.[9] In the general population, risk factors associated with thyroid dysfunction include age, gender, BMI, family history of thyroid disease, smoking, and pregnancy. Incidence of hyperthyroidism and hypothyroidism increases with age and it has been confirmed that it is 10–20 times more higher in female gender than in males.[8] The relationship between thyroid dysfunction and diabetes mellitus is characterized by a complex interaction of interdependence.

Genetics

Epidemiological evidence advocates a common genetic background for both thyroid disease and diabetes mellitus. Among human autoimmune conditions, the strongest association is seen between T1DM and AITD. Genetics links are well less characterized for the association of thyroid disorders and type 2 diabetes mellitus.

Polymorphism of the deiodinase type 2 (DIO2) gene, Thr92Ala, suggest that homozygosity for this polymorphism is associated with an increased risk of T2DM[10].

Effects of Thyroid Hormones on Glucose Metabolism

Excess thyroid hormones is associated with enhanced glucose absorption in the gastrointestinal tract, increased hepatic glucose output, high free fatty acid levels and increased peripheral glucose transport and metabolism. Thyroid hormones produce an increase in the hepatocyte plasma membrane concentrations of GLUT2 which contribute to the increased hepatic glucose output. The increased hepatic glucose output constitutes a major factor in the induction of hyperinsulinaemia, induction of glucose intolerance and the development of peripheral insulin resistance. Hypothyroidism, on the other hand, is characterized by impaired glucose absorption from the gastrointestinal tract and delayed peripheral glucose assimilation and gluconeogenesis, decreased or normal hepatic glucose output and decreased peripheral tissue glucose disposal leading to decreased peripheral glucose utilization and peripheral insulin resistance.[11][12]

Effect of diabetes mellitus on thyroid hormones

Diabetes mellitus influences thyroid function by acting at the level of hypothalamus impairing the response of TSH to TRH and also by impairing the peripheral conversion of T4 to T3. Hyperglycaemia induces a reduction in the hepatic concentration of T4-T5 deiodinase, low serum concentration of T3, raised, normal or low T4[11][13].

An observational hospital based cross sectional study conducted to know the prevalence of thyroid dysfunction in patients with diabetes mellitus at Hospital

Universitario Pedro Ernesto, Brazil. 386 patients with type 1 diabetes mellitus and type 2 diabetes mellitus that regularly attended the outpatient clinic of the diabetes unit, underwent clinical and laboratory evaluation (Fasting plasma glucose, Post prandial plasma glucose, glycosylated haemoglobin, anti-thyroperoxidase antibody, Free thyroxine and thyroid stimulating hormone). The study showed 14.7% prevalence of thyroid disorders in all diabetic patients. The most prevalent thyroid disorder was subclinical hypothyroidism, 13% in Type 1 diabetes mellitus patients and 12% in type 2 diabetes mellitus patients.[2]

A hospital based cross sectional study was conducted to study the prevalence of subclinical hypothyroidism among diabetes mellitus patients at Kalafong Hospital, Pretoria, South Africa in which 565 patients (type 1 diabetes mellitus, type 2 diabetes mellitus patients and diabetes of unknown type) who were following up at Kalafong Hospital Diabetes Clinic underwent TSH testing as part of annual investigations. Any patient with an abnormally elevated TSH level underwent further evaluation with T4 levels to exclude the presence of primary hypothyroidism. The study showed 0.9% of subclinical hypothyroidism out of 563 patients that met the inclusion criteria for this study and 1.6% in the subgroup of type 2 diabetes mellitus patients.[14]

A hospital based cross sectional study was conducted to determine the prevalence of thyroid dysfunction among Greek type 2 diabetes mellitus in which 1092 patients with type 2 diabetes mellitus attending the diabetes outpatient clinic were selected and complete medical history were obtained. Patients who reported in taking thyroxine, triiodothyronine, carbimazole, methimazole or propylthiouracil and those with history of thyroidectomy, radioactive iodine treatment were identified as having thyroid dysfunction. The study concluded that the prevalence of thyroid

dysfunction among Greek diabetic patients is 12.3% and diabetic women (78.4%) were more frequently affected than men (21.6%).[15]

A screening program for thyroid dysfunction was conducted among type 2 diabetes mellitus patients attending diabetes clinic at the Hospital General de Segovia, Spain from 2003 to 2005 to assess the prevalence of thyroid dysfunction in patients with type 2 diabetes. Total 318 patients attended the diabetes clinic. The number of patients with thyroid dysfunction and their respective prevalence were: overt hyperthyroidism (3.5%); subclinical hyperthyroidism (3.1%); overt hypothyroidism (15.1%), and subclinical hypothyroidism (10.7 %). The screening program detected the following cases of newly diagnosed thyroid dysfunction: subclinical hyperthyroidism (1.6%); overt hypothyroidism (1.9 %), and subclinical hypothyroidism (6.3%). The prevalence of thyroid dysfunction was 32.4 %, and newly diagnosed thyroid dysfunction was 9.7 %.[16]

A cross sectional study was carried out to know the prevalence of thyroid dysfunction among type 2 diabetic patients at the diabetes clinic, National Hospital of Sri Lanka. This study included 393 type 2 diabetes mellitus subjects selected by simple random sampling method and data was collected using an interviewer administered data collection form. Fasting plasma glucose, total cholesterol and Thyroid stimulating hormone (TSH) were measured and when required free T4 and free T3 were measured. The study showed 21.1% prevalence of thyroid disorders among the study population of which subclinical hypothyroidism (9.4%), overt hypothyroidism (6 %), Subclinical hyperthyroidism (5.1%) and overt hyperthyroidism (0.5%).[17]

A cross-sectional study was conducted in Endocrine and Diabetes Polyclinic, Department of Internal Medicine, CiptoMangunkusumo Hospital from July to September 2015 to find the proportion and characteristics of thyroid dysfunction in Indonesian type 2 diabetes mellitus patients. The study enrolled 364 type 2 diabetes mellitus patients, age ≥ 18 year-old, willing to undergo thyroid laboratory testing. 273 subjects (90.1%) were euthyroid, 7 subjects (2.31%) were hyperthyroid, and 23 subjects (7.59%) were hypothyroid. Majority of the patients had subclinical hypothyroidism (56.5%), while 42.9% and 71.4% subjects had clinical hyperthyroidism based on clinical appearance and FT4 laboratory result respectively.[18]

A cross sectional study was conducted to know the inter-relationship of glycemic control and thyroid status in type 2 diabetes mellitus in Bangalore which screened 81 confirmed cases of type 2 diabetes mellitus ages between 18-70 years of either sex for FBS, PPBS and thyroid profile. The study showed 37% prevalence of thyroid dysfunction out of which hypothyroidism - 30% and hyperthyroidism – 7%. The study also subcategorised the cases based on glycaemic control and thyroid status.[3]

A hospital based cross sectional study was conducted from Sub Himalayan region to know the association between thyroid disorders and type 2 diabetes mellitus in which 100 patients with type 2 diabetes mellitus attending outpatient clinic and admitted at a tertiary care hospital were investigated for fasting blood sugar, glycosylated haemoglobin, thyroid stimulating hormone, free triodothyroxine, free thyroxine, antithyroperoxidase and antithyroglobulin levels to find the association of thyroid disorders and type 2 diabetes mellitus. The study showed 24% prevalence of

thyroid dysfunction. Hypothyroidism was found to be the most common thyroid disorder (19%) of which 11% of them had overt hypothyroidism and 8% had subclinical hypothyroidism. Anti–TPO antibodies were found in 9 (47.36%) cases of hypothyroidism while anti-Tg antibodies were found in 3 (15.78%) cases of hypothyroidism.[19]

A cross-sectional hospital-based study is conducted to find out the prevalence of thyroid dysfunction. 713 type 2 diabetes mellitus subjects were investigated for fasting blood sugar, glycosylated haemoglobin, total triiodothyronine, total thyroxine, and thyroid-stimulating hormone. The study showed that the prevalence of thyroid dysfunction in type 2 diabetes mellitus was 16.2% and was found to be higher among females, higher age groups, poor glycaemic control and duration of diabetes.[13]

A study was conducted on 200 patients of type 2 diabetes mellitus aged between 40 – 70 years to find out the prevalence of thyroid disorders in patients of type 2 diabetes mellitus. All the patients were evaluated for thyroid dysfunction by testing thyroid profile test. The study reported that the prevalence of thyroid disorders in patients of type 2 diabetes mellitus was 16%. Subclinical hypothyroidism was commonly found about 7.5% which was further found to be more in females, elderly patients, and patients with uncontrolled diabetes, i.e., HbA1C values ≥ 7or patients on insulin and patients with BMI > 30.[20]

A cross sectional study was conducted from June 2015 to June 2016 in Medicine Department of Mahatma Gandhi Memorial Hospital, Warangal. 108 patients with known Type 2 DM or newly detected cases were included in the study and were evaluated for thyroid dysfunction by testing thyroid profile. The prevalence of thyroid disorder was correlated with gender distribution, age distribution, HbA1C,

duration of diabetes, hypertension, and family history of diabetes, body mass index, usage of oral hypoglycemic agents and insulin, and dyslipidemia. The study reported that 13% of the patients with Type 2 DM had abnormal thyroid profile and the most common abnormality was subclinical hypothyroidism (64.2%) followed by subclinical hyperthyroidism (21.4%) followed by overt hypothyroidism. The prevalence of thyroid abnormality was more common in females than in males and showed a significant correlation between abnormal thyroid profile and family history of diabetes and serum lipid profile.[21]

A cross sectional observational descriptive study was conducted to determine the prevalence of subclinical thyroid disorders in patients with type 2 diabetes mellitus and to analyse the clinical and metabolic profile of patients with this dual endocrine disorder. 100 consecutive type 2 diabetic patients without clinical manifestations of thyroid disorders were screened for subclinical hypothyroidism and subclinical hyperthyroidism using serum free T3, free T4 and thyroid stimulating hormone levels. Individuals of subclinical thyroid disease were further screened for thyroperoxidase antibodies. Subclinical hypothyroidism was detected in 13% of type 2 diabetic patients and none had subclinical hyperthyroidism. Subclinical hypothyroidism was common among females with type 2 diabetes (84.6%) and had elevated thyroperoxidase antibody levels in 84.6%. Diabetic retinopathy among SCH patients showed significant association with higher serum TSH levels. Left ventricular diastolic dysfunction was present in 30.8% of SCH patients.[22]

A study was conducted on 300 patients of type 2 diabetes mellitus above 30 years of age attending an outpatient department and medical wards of Hamdard institute of medical sciences and research institute New Delhi to determine the

prevalence of thyroid dysfunction among type 2 diabetes mellitus patients. All the patients were evaluated for thyroid dysfunction by testing thyroid profile. The correlation of prevalence of thyroid dysfunction with gender, age and hbA1c was carried out. The study observed that prevalence of thyroid dysfunction was17. 3% in diabetic patients, most common was subclinical hypothyroidism (9%). Thyroid dysfunction was found to be more in females 73.1% as compared to males 26. 9%. There was significant association between prevalence of thyroid dysfunction with HbA1c.[23]

A hospital based study was conducted to investigate the prevalence of hypothyroidism among hospitalized patients with type 2 diabetes mellitus and its related factors, and to assess the prevalence of macrovascular and microvascular diseases among type 2 diabetes mellitus inpatients with hypothyroidism and euthyroidism. A total of 1662 type 2 diabetes mellitus in patients hospitalized at the Metabolic Diseases Hospital, Tianjin Medical University from 1 January 2008 to 1 March 2013 were included in this study. Using medical records information on demographic and anthropometric factors and additional variables related to hypothyroidism were collected. The prevalence of hypothyroidism among type 2 diabetes mellitus inpatients was found to be 6.8 %, and 77.0% of the patients with hypothyroidism had subclinical hypothyroidism. The prevalence of hypothyroidism increased with age, and was higher in women than in men. Older age, female gender, and positive thyroid peroxidase antibody were associated with higher risk for hypothyroidism among type 2 diabetes mellitus inpatients. The type 2 diabetes mellitus inpatients with hypothyroidism had higher prevalence of cerebrovascular diseases than those with euthyroidism.[24]

A cross sectional study was conducted with the aim at determining the incidence and prevalence of thyroid dysfunction in patients with type 2 diabetes mellitus in relation to age, sex, metabolic syndrome and other co-morbid conditions. 250 type 2 diabetes mellitus patients were enrolled aged between 40 and 75 years. All the patients were evaluated for thyroid dysfunction by testing thyroid profile and were also investigated for fasting blood sugar, post prandial glucose, glycosylated haemoglobin, serum cholesterol, serum triglycerides, high density lipoprotein, low density lipoprotein, very low density lipoprotein, blood urea, serum creatinine and presence of other co-morbid conditions. The study reported a high prevalence of thyroid dysfunction (28%) was observed in type 2 diabetic patients with subclinical hypothyroidism (18.8%) as the commonest thyroid disorder. Thyroid dysfunction was more prevalent in females, with presence of dyslipidemia, retinopathy, poor glycemic state (HbA1c ≥7) and longer duration of diabetes as significant contributing factors.[25]

To establish a relation between thyroid dysfunctions and type 2 DM, a cross sectional study was carried out in Govt. Medical College and attached group of hospitals, Kota, Rajasthan. The study period was from January 2016 to June 2016.A total of 124 Diabetic patients (type 2) were included in the study and TSH was estimated. Among the 124 cases of type 2 DM, 1 overt hyperthyroid (< 0.05mU/L), 7 subclinical hyperthyroid (0.05-0.3mU/L), 4 overt hypothyroid (>10mU/L), 10 subclinical hypothyroid (4.5-10mU/L) and 102 euthyroid patients (0.3-4.5mU/L) were found. The study reported the prevalence of various types of thyroid disorders as 17.74% among type 2 diabetes mellitus.[5]

MATERIALS AND METHODOLOGY

The study was conducted in Ashok Nagar Urban Health Centre (UHC) and Rukmini Nagar UHC, which are the urban field practice area under Department of Community Medicine, Jawaharlal Nehru Medical College (JNMC), KAHER, Belagavi.

Study population: Type 2 diabetes mellitus patients residing in areas belonging to Ashok Nagar Urban Health Centre [UHC] and Rukmini Nagar Urban Health Centre in Belagavi, Karnataka.

Image1: Field practice area of Urban Health Centre Ashok Nagar, Belagavi. Area enclosed by red line.

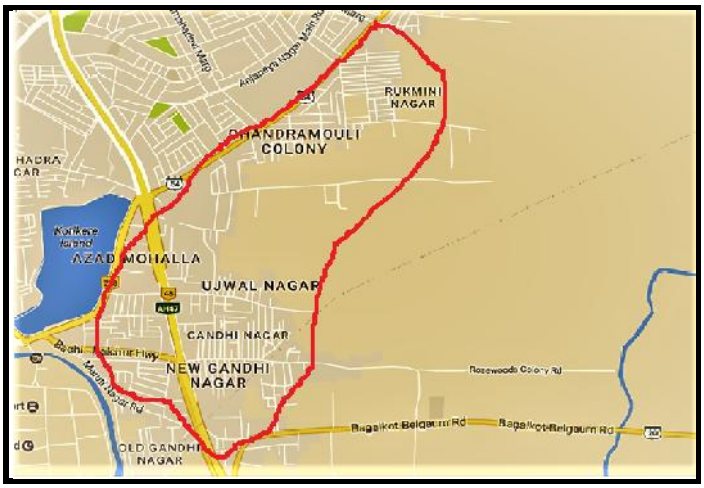


Image2: Field practice area of Rukmini Nagar Urban Health Centre, Belagavi. Area enclosed by red line.

Study design: A community based cross sectional study

Study period: January 2017 to December 2017

Sample size: The sample size was calculated assuming that the prevalence of thyroid dysfunction among type II diabetes mellitus patients is 37% [6] and that the true prevalence is expected to fall within ±5% (i.e. between 32% and 42%) with a confidence level of 95%. The following formula was used to calculate the sample size

Sample size was calculated by using the formula

$n = 4pq / d^2$

Where, n = sample size

p = 37%

q = (100 - p) = (100 - 37) = 63

d = 5 (absolute error)

n = (4×37×63) / 25

= 372.96 ≈ 380

Sampling method: Convenient sampling

METHOD OF COLLECTION OF DATA:

Selection criteria:

Inclusion criteria:

1. Type 2 diabetes mellitus patients residing in the study area.

Exclusion criteria:

1. Type 1 diabetes mellitus
2. Patient on drugs affecting the thyroid status (ex: Amiodarone, Lithium, anti-thyroid drugs, thyroxine)

3. Patients with previous history of thyroid surgeries (Total/subtotal thyroidectomy)
4. Patients on radioactive iodine treatment
5. Patients with history of Grave's disease and thyroid malignancies
6. Patients with known case of thyroid dysfunction diagnosed prior to type 2 diabetes mellitus
7. Pregnant and lactating women
8. Drug induced diabetes (ex: Steroids, Anti-depressants – Amitriptyline, Tacrolimus)

Materials:

1. **Measuring tape** – Used to measure waist and hip ratio
2. **Mercury sphygmomanometer with standard adult cuff** – Used to measure blood pressure
3. **Stethoscope** – Used to do systemic examination and to measure blood pressure
4. **Weighing scale** – Used to measure weight
5. **Stadiometer**– Used to measure height
6. **Blood collection kit (Disposable syringe, Cotton, Spirit, Adhesive tape)** – Used for collecting blood samples
7. **Vacutainer blood tubes (Red top)** – Clot activator and gel for serum separation, used to collect blood for serum thyroid function test
8. **Vacutainer blood tubes (Grey top)** – Contains glycolytic inhibitors like sodium fluoride, used to collect blood for Fasting Plasma Glucose (FBS) and Post Prandial Plasma Glucose (PPBS)

Ethical Clearance:

The study was approved from Institutional Ethics Committee for Human Subject's Research, Jawaharlal Nehru Medical College, KAHER; Belagavi with the reference number MDC/DOME/25 dated 17th October, 2016 (Annexure I)

Data Collection:

Periodic non communicable disease camps were conducted within the study areas to identify the known case of type 2 diabetes mellitus patients (T2DM). From the identified T2DM patients, study participants were selected based on the selection criteria. The selected patients were given appointment for reporting at the nearest Urban Health Centre which was convenient to the participants. Since fasting samples were to be collected, the participants were advised in writing about the instructions regarding overnight fasting and the time in early morning to assemble at the centres. After obtaining written informed consent data was collected using a pre designed and pre tested questionnaire by personal interview method from the participants (Annexure II & III). General physical examination and systemic examination was done. A total of 4 ml of venous blood from antecubital vein was collected after overnight fasting. Two ml of blood collected in sodium fluoride containing blood collection tube for estimation of fasting plasma glucose and 2 ml in clot activator tube for thyroid hormone estimation (T3, T4, and TSH). Another 2 ml of venous blood was collected again in sodium fluoride containing tube 2 hours after the patient had taken his regular meal for estimation of post prandial plasma glucose level. Blood samples were sent to an authenticated standard diagnostic laboratory where plasma glucose was estimated by Hexokinase method and thyroid hormone estimated using chemiluminesence method. Informed consent was taken prior to data collection.

Statistical analysis

Data was entered in Excel sheet after coding. Analysis of the numerical variable outcomes was summarized by computing the mean and standard deviations (SD). Categorical data were summarized using rates (percentages). Chi-square test was done for categorical variables Univariate and multivariate logistic regression analysis was used for association between various parameters with thyroid dysfunction in type 2 diabetes mellitus patients. Significance level was kept at 0.05 level of probability. Statistical Package for Social Sciences (SPSS) version 20.0 and Microsoft data excel sheet was used to analyze the data.

Questionnaire:

The questionnaire was designed according to the needs of the present study. It includes questions regarding socio-demographic profile, history of clinical symptoms of hypothyroidism and hyperthyroidism, duration of diabetes, presence of other comorbid conditions, current anti-diabetic medications and other risk factors.

Definition of profoma variables:

1. **Age:** Age of the participant in completed years as on their last birthday.
2. **Sex:** Either male or female was mentioned.
3. **Religion:** Participants religion was classified as Hindu, Muslim, Christian or others as stated by them.
4. **Education:** Every study subject was asked about their educational status. It was classified as:
    - **Illiterate:** A person who could not read and write any language.

- **Primary school:** A person who had studied from first to seventh standard.
- **Secondary school:** A person who had studied eighth to tenth standard.
- **Pre-university II:** The person who had studied up to Pre-University College second year.
- **Graduate:** A person who had a degree in a diploma or under-graduation course.

5. **Occupation**[26]**:** Every study subject was asked about their occupation. It was classified as:
    - **Government employee:** An individual who is hired by a government office or agency and paid a salary. This includes employees of: Central, State or Municipal government and the agencies that are owned by the government.
    - **Non-government employee:** An individual who is hired to work and is paid a salary or wages. This includes any employees not working for the government.
    - **Self-employed:** An individual who produces goods for sale or earns an income through provision of services to different people and/or who spends significant amount of time working for family business, farming or other similar activity.
    - **Student:** An individual whose primary activity is engaging in studies at, pre-university or university schools.
    - **Homemaker:** An individual whose primary activity is in carrying out household tasks without being paid.

- **Retired:** An individual who has earned income during some period in the workforce or as an employer and who is no longer working due to age.
- **Unemployed:** An individual who could work but does not currently have a job or business (excluding homemaker)

5. **Marital Status:** Marital status was classified as "Married", "Unmarried" and "Widow or Divorced"

6. **Family:**[27]

   - **Nuclear Family:** The family consisting of married couple along with their dependent children.
   - **Joint Family:** It consists of number of married couples and their children who live in the same household.
   - **Broken Family:** A family where the parents have separated, or where death has occurred of one or both the parents.
   - **Three generation Family:** A family where of representatives of three generations related to each other by direct descent live together.
   - **Problem Family:** Those families which lag behind the rest of the community. Standards of life are generally far below the accepted minimum and home life is utterly unsatisfactory.

7. **Socioeconomic status:** Information regarding per capita income (in Rupees/month) was collected and socio-economic status was classified using Modified B. G. Prasad's classification for the study period of 2017.

$$\text{Monthly Per Capita Income} = \frac{\text{Total monthly income of family}}{\text{Total members of family}}$$

Modification was done with the aid of Correction factor (CF), which was obtained as below:

As the study period was from 1st January to 31st December 2017, the mean consumer price index for the period was considered.

Average consumer price index for year 2017 was 274.[28]

$$CF = \frac{\text{Value of consumer price index average (2017)} \times 4.93 \times 4.63}{100}$$

$$= \frac{274 \times 4.93 \times 4.63}{100} = 62.61$$

Modified B. G. Prasad's = Per capita family monthly income of 1961 (B.G. Prasad) x CF

Socio-Economic Class	Prasad's classification 1961 (per capita income in Rupees/month)	Modified Prasad's classification 2017 (per capita income in Rupees/month)
I	100 and above	6254 and above
II	50-99	3127-6253
III	30-49	1876-3126
IV	15-29	938-1875
V	<15	938 and below

8. **Sign and symptoms of thyroid disorder:** History of presence of common signs and symptoms of both hypo and hyperthyroidism was noted.

   Signs of symptoms of thyroid disorder included in the questionnaire are

HYPOTHYROIDISM	HYPERTHYROIDISM
• Fatigue/sluggish • Inability to exercise • Difficult in tolerating cold • Swelling at the front of the neck • Difficulty/Infrequent bowel movements (Constipation) • Dry skin • Dry hair • Thick brittle nails • Facial puffiness • Swelling at the extremities • Muscles cramps • Excessive sleepiness (Daytime) • Weight gain • Hair loss	• Palpitations • Increased appetite • Weight loss • Difficulty falling asleep/Insomnia • Abnormal protrusion of eyeball • Hand tremor • Warm skin • Difficult in tolerating heat • Increased sweating

9. History of miscarriage (if any) and menstrual history was asked for, in women.

10. The details regarding duration of diabetes and patients' past history of any major medical illness were noted.

11. **Family History**: Family history of thyroid disorders was assessed among parents of the participants.

12. Patients' personal habits such as alcohol consumption and tobacco consumption were asked.

13. Mode of treatment based on the current pharmacological therapy being used to control diabetic status was noted. Habits such as alcohol consumption was considered if the

14. **Alcohol consumption:**For the assessment of history of alcohol consumption period of recall was considered for the past one year.

    - **Alcoholics:** Subjects who had consumed any drink containing alcohol either in the past or at present were categorized as “alcoholics”.

    - **Non Alcoholics:** Subjects who had never consumed alcohol

15. **Tobacco consumption:** For the assessment of history of use of tobacco in any form (smoking or smokeless) period of recall was considered for the past one year and was based on WHO guidelines for tobacco use surveillance.

    - **Tobacco Consumers:** Subjects those who had used either smoke or smokeless form of tobacco in the past or at present were considered as “tobacco consumers”.
    - **Non tobacco consumers Smokers:** Subjects who had never used any form of tobacco (smoke / smokeless) were considered as “non-tobacco consumers”.

16. **Physical activity:** Regular physical activity or exercise (walking, running, yoga) and the duration of the exercise were asked

17. **Diet:**Dietary assessment included type of diet, type of salt intake, common goitrogens intake and its frequency of intake per week

    - **Non Vegetarian:** Subjects those who consume both non vegetarian and vegetarian food were considered as “Non Vegetarians”

- **Vegetarian:** Subjects those who consume only vegetarian food were considered as "Vegetarians"
- **Extra salt consumption**: Extra Salt consumption was assessed by habit of taking extra salt in the plate other than which has been already added in the food. Salt added during cooking and invisible salt in food and vegetable was not taken into consideration.[29]

18. **General physical examination**: Includes looking for pallor, icterus, cyanosis, clubbing, edema, palpable lymph nodes, calculation of waist – hip ratio and calculation of Body Mass Index based on height and weight.

    - **Height**: The subject was asked to stand straight without footwear, with heels, buttocks and back straight and arms hanging by side. The height was measured from head to heal. The coinciding reading was measured to the nearest 0.1 cm using a metallic measuring tape.[26]

    - **Weight:**Body weight was measured without any foot wear and with minimal clothing to the nearest 0.1 kilogram using a standard portable adult weighing machine, which was standardized periodically during the study. The scale was adjusted to zero before each session and weight was recorded in kilograms.[26]

    - **Calculation of Body Mass Index (BMI in Kg/m^2):**Calculation of Body Mass Index (BMI in kg/m^2): Weight in kg / (Height in m) ^{2} × 100 BMI calculated was categorized as per the WHO criteria for Asian population.[30]

Category	Body Mass Index
Underweight	<18.5 kg/m^2
Normal	18.5 – 22.9 kg/m^2
Overweight	23.0 – 27.9 kg/m^2
Obese	>28 kg/m^2

- **Waist circumference (WC):** The measurement was made at the approximate midpoint between the lower margin of the last palpable rib and the top of the iliac crest and the subject stands with arms at the sides, feet positioned close together, and weight evenly distributed across the feet.[26] Waist circumference > 80 centimeter for females and > 90 centimeter for males was considered to have abdominal obesity.[31]

- **Hip Circumference (HC):**It is the maximum circumference in the horizontal plane measured over the buttocks at the level of greater tubercle.[26]

- **Waist hip ratio (WHR):**The ratio of waist circumference to the hip circumference less than 0.85 in females and less than 0.95 in male was considered normal.[31]

19. Patients' vitals were checked, which included pulse, respiratory rate, blood pressure and temperature.

- **Blood Pressure:** Blood pressure was recorded in the sitting position and then classified according to updated JNC-7 guidelines recommendations.[32]

Category	Systolic Blood Pressure (mm of Hg)		Diastolic Blood Pressure (mm of Hg)
Normal	<120	and	<80
Pre-hypertensive	120 – 139	Or	80 – 89
Hypertension Stage I	140 – 159	Or	90 – 99
Hypertension Stage II	≥160	Or	≥100

20. **Local Examination:** Examination of the thyroid gland was done by inspection, palpation, auscultation and percussion.
21. **Systemic Examination:** Systemic examination was done to check cardiovascular system, respiratory system, central nervous system and gastrointestinal system by inspection, auscultation and percussion for the completeness.
22. **Laboratory investigations:**

a) Thyroid function test: To assess thyroid disorders, thyroid function test (T3, T4, TSH) was done using Chemiluminescence Immunoassay (CLIA) kit.

The TSH (Human) CLIA kit test utilizes a unique monoclonal antibody directed against a distinct antigenic determinant on the intact TSH molecule. Mouse monoclonal anti-TSH antibody is used for solid phase (microtiter wells) immobilization and a goat anti-TSH antibody is in the

antibody-enzyme (horseradish peroxidase) conjugate solution. The test sample is allowed to react simultaneously with the two antibodies, resulting in the TSH molecules being sandwiched between the solid phase and enzyme-linked antibodies. After a 60 minutes incubation at room temperature, the wells are washed 5 times by wash solution to remove unbound anti-TSH conjugate. A solution of chemiluminescent substrate is then added and read relative light units (RLU) in a Luminometers. The intensity of the emitting light is proportional to the amount of enzyme present and is directly related to the amount of TSH in the sample. By reference to a series of TSH standards assayed in the same way, the concentration of TSH in the unknown sample is quantified.[33]

- Classification of the results will be based on the use of the following as normal reference range:

  TSH: 0.5-4.7mcIU/ml

  T3: 0.59-1.8 ng/mL

  T4: 4.5 – 10.87 mcg/dl[34]

- **Hypothyroidism** – when T3, T4 were less and TSH greater than the reference ranges
- **Hyperthyroidism** – when T3, T4 were greater and TSH less than the reference ranges
- **Subclinical hypothyroidism** – when T3, T4 were within normal range and TSH greater than the reference ranges

- **Subclinical hyperthyroidism** – when T3, T4 were within normal range and TSH less than the reference ranges.

b) **Glycaemic control:** The glycaemic control was assessed by their fasting (FBS) and postprandial glucose levels (PPBS) using hexokinase method.

Enzyme hexokinase (HK) catalyzes the reaction between glucose and adenosine triphosphate (ATP) to form glucose-6-phosphate (G-6-P) and adenosine di phosphate (ADP). In the presence of nicotinamide adenine dinucleotide (NAD), G-6-P is oxidized by the enzyme glucose-6-phosphate dehydrogenase (G-6-PD) to 6-phosphogluconate and reduced nicotinamide adenine dinucleotide (NADH). The increase in NADH concentration is directly proportional to the glucose concentration and can be measured spectrophotometrically at 340 nm[35]

The glycaemic control was graded as

- Euglycemic if FBS≤126 mg/dl and PPBS is ≥200 mg/dl
- Hyperglycemic if FBS is >126 mg/dl or PPBS is >200mg/dl [36]

RESULTS

The present study was conducted in urban areas of Ashok Nagar and Rukmini Nagar, which are the field practice areas of Department of Community Medicine, Jawaharlal Nehru Medical College, KAHER, Belagavi on 380 with type 2 diabetes mellitus patients during the period of January 2017 to December 2017.

The data of the study participant was tabulated and analyzed under following headings as below:

I. **Sociodemographic profile**
II. **Distribution of participants based on clinical symptoms related to thyroid disorders**
III. **Prevalence of associated co-morbidities and risk factors**
IV. **Prevalence of thyroid disorders**
V. **Association of thyroid disorders with sociodemographic variables and risk factors**
VI. **Multivariate Logistic regression Analysis: The Association Between Various Parameters With Thyroid Dysfunction in type 2 diabetes mellitus patients**

I. Sociodemographic profile

Table1. Distribution of study participants according to age (n = 380)

Age (years)	Numbers	Percentage (%)
30 – 40	45	11.85
41 – 50	90	23.69
51-60	97	25.52
61-70	113	29.73
>70	35	9.21
Total	**380**	**100**

Of the 380 study participants, 45(11.85%) were between the age group of 30 to 40 years, 90(23.69%) were in the age group of 41 to 50 years, 97(25.52%) were in the age group of 51 to 60 years, 113(29.73%) were in the age group of 61 to 70 years and 35(9.21%) were above the age of 70 years. The average age of the study participant was 56.25 ±11.24(mean ± S.D.) with a range of 32 to 80 years.

Graph 1: Distribution of study participants according to age (n = 380)

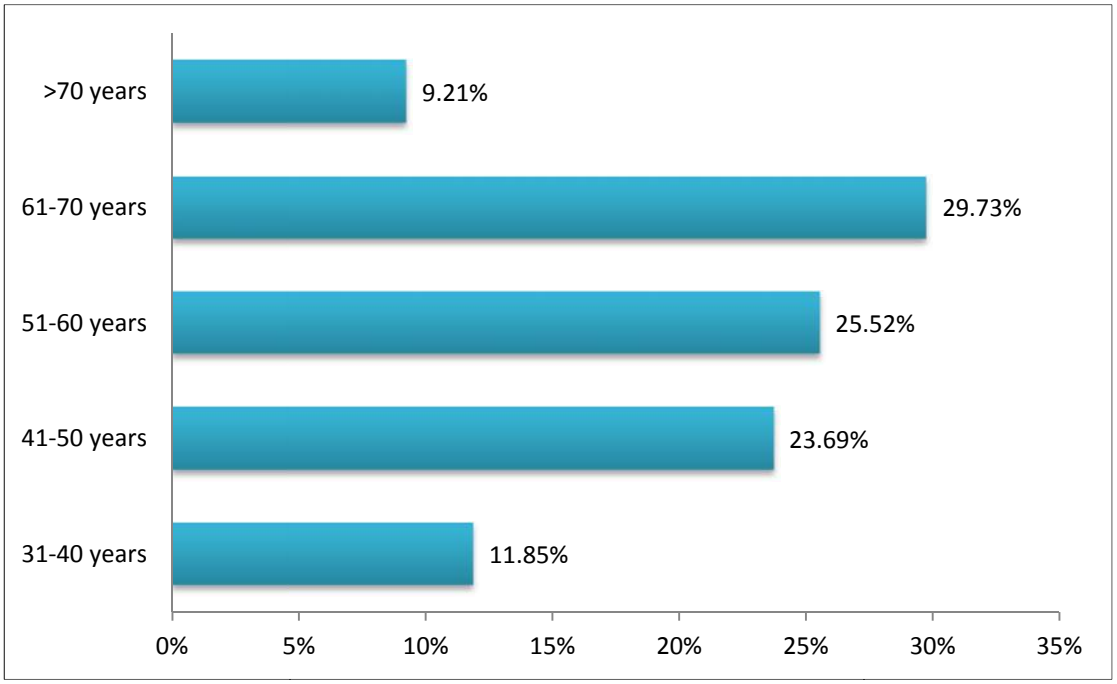


Table 2: Distribution of the study participants according to sex (n = 380)

Sex	Number	Percentage (%)
Male	151	39.74
Female	229	60.26
Total	**380**	**100**

Out of the total 380 participants, 229 (60.26%) were females and 151 (39.74%) were males.

Graph 2: Gender wise distribution of study participants (n = 380)

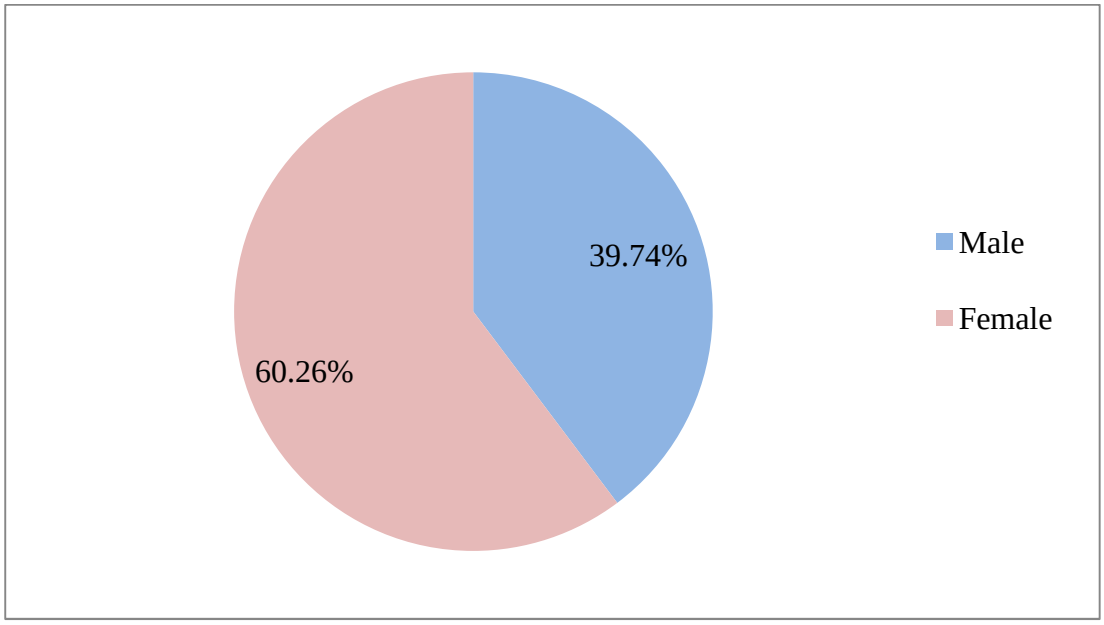


Table 3: Distribution of the study participants according to religion (n = 380)

Religion	Number	Percentage (%)
Hindu	249	65.53
Muslim	113	29.73
Christian	6	1.58
Jain	12	3.16
Total	**380**	**100**

Among the study participants, 249 (65.53%) were from Hindu religion, 113 (29.73% Muslims, Christians and Jain constituted 6 (1.58%) and12 (3.16%) respectively.

Graph 3: Distribution of the study participants according to religion

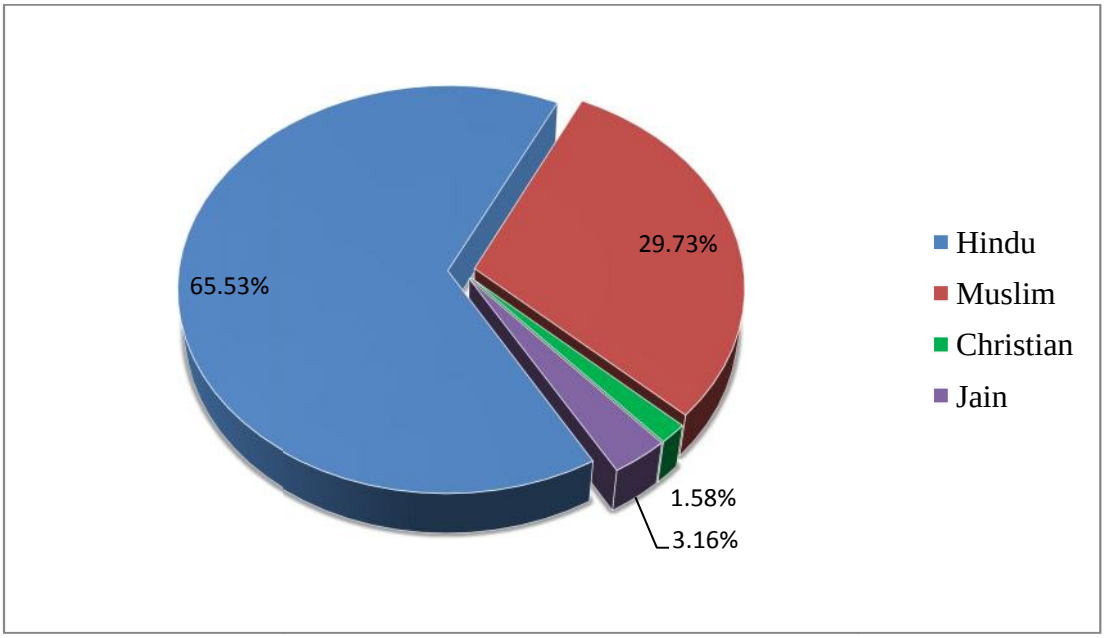


Table 4: Distribution of study participants according to literacy status (n = 380)

Literacy status	Number	Percentage (%)
Illiterate	114	30.00
Primary School	86	22.63
Secondary School	89	23.42
Pre University	31	8.16
Diploma &Graduate	60	15.79
Total	**380**	**100.0**

In the present study, 114 (30%) participants were illiterate, 86 (22.63%) had primary school education, 89 (23.42%) had high school education, 31 (8.16%) had pre university education and 60 (15.79%) had either diploma or graduate education.

Graph 4: Distribution of study participants according to literacy Status

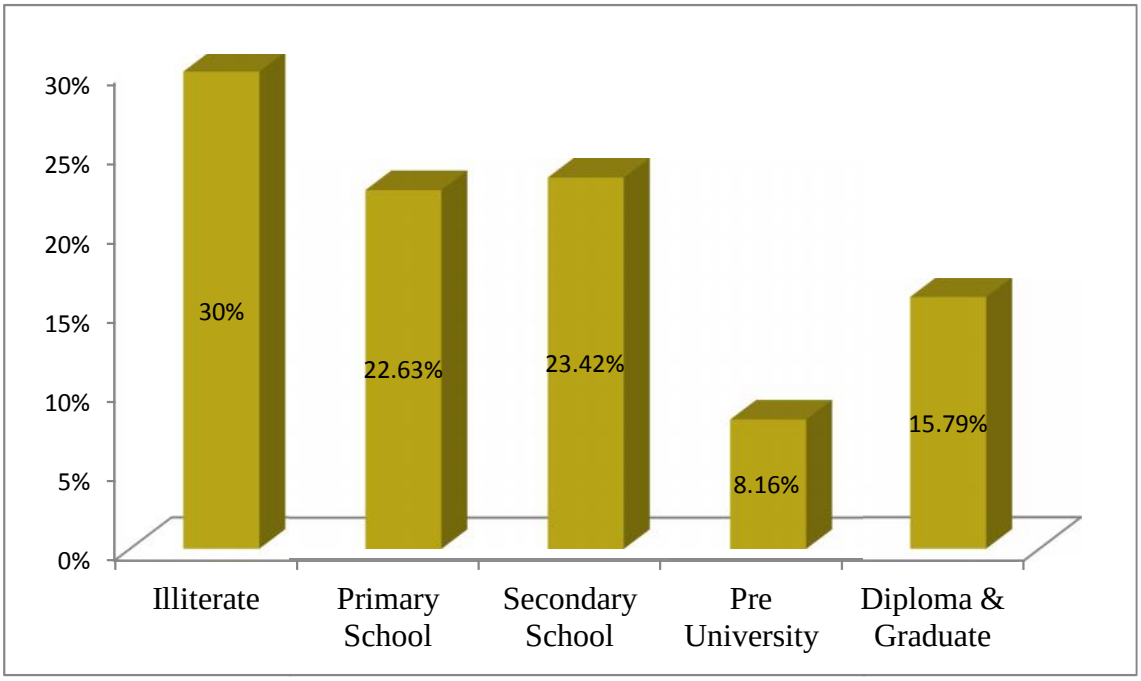


Table 5: Distribution of the study participants according to occupation (n = 380)

Occupation	Number	Percentage (%)
Government employee	37	9.74
Non - government employee	15	3.95
Self-employee	77	20.26
Home maker	212	55.79
Retired	39	10.26
Total	**380**	**100**

In the study 37 (9.74%) of the participants were government employees, 15 (3.94%) were non-government employees, 77 (20.26%) were self-employed, 212 (55.79%) were homemakers, 39 (10.26%) were retired.

Graph 5: Distribution of the study participants according to occupation

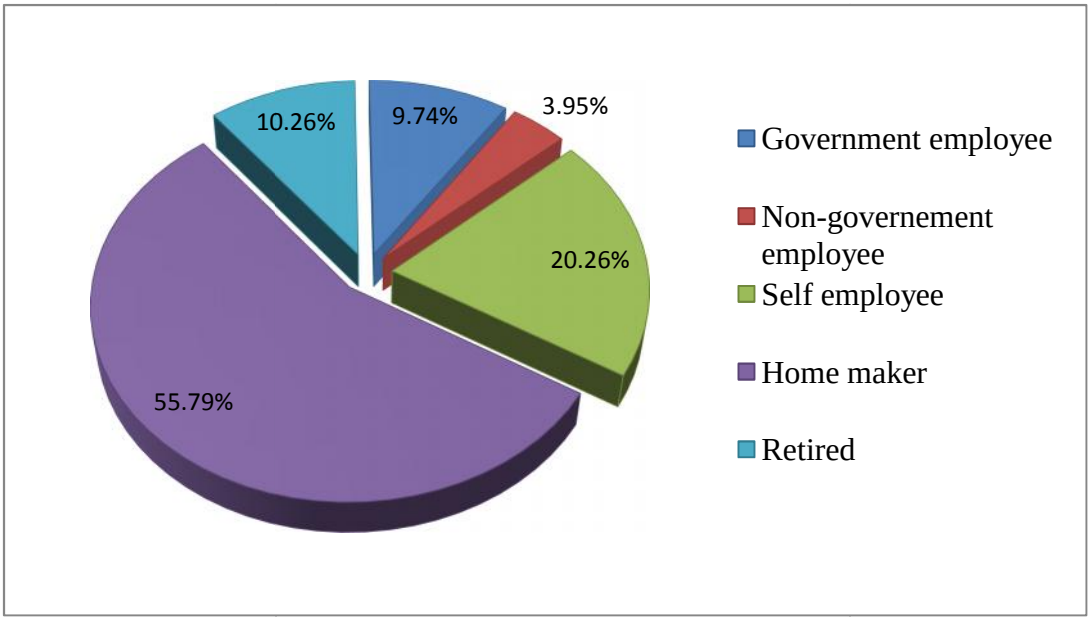


Table 6: Distribution of the participants according to socioeconomic status (n = 380)

Socio-economic status	Number	Percentage (%)
Class I	62	16.32
Class II	49	12.89
Class III	98	25.79
Class IV	123	32.37
Class V	48	12.63
Total	**380**	**100.00**

In the present study, majority of study participants, 123 (32.37%) belonged to class IV SES as per modified B.G. Prasad's classification; followed by 98 (25.79%) in class III; 62 (16.32%) in class I, 49 (12.89%) in class II and in class V 48 (12.63%).

Graph 6: Distribution of the participants according to socio-economic status (n =380)

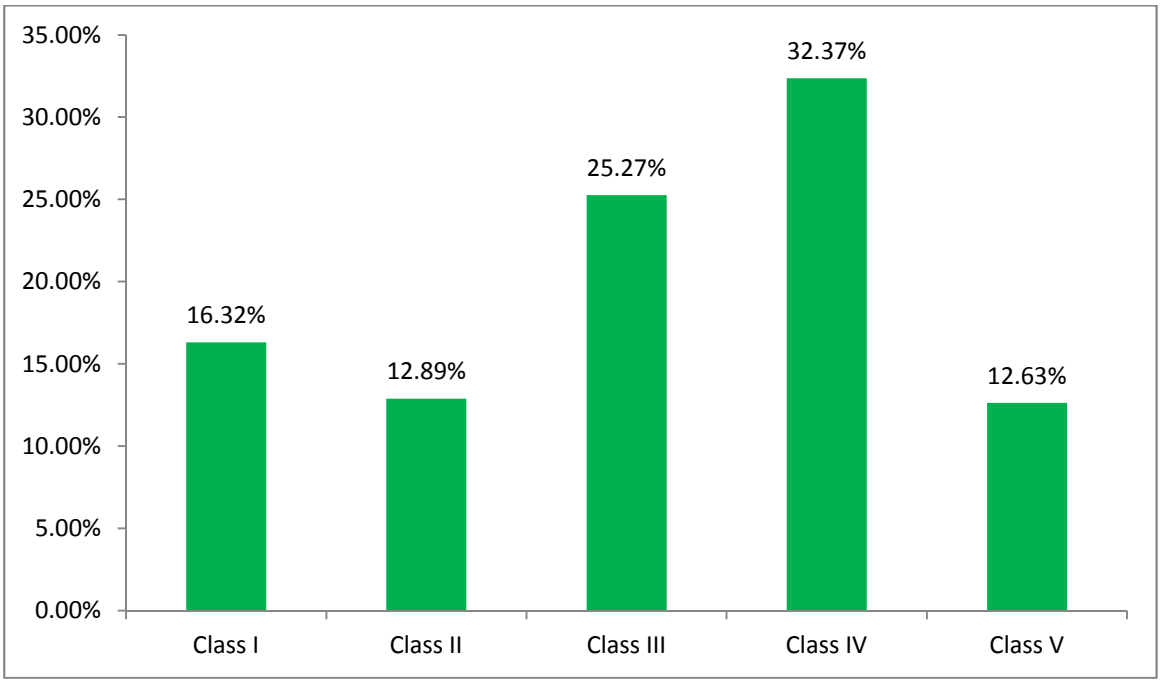


Table 7: Distribution of Study participants according to their marital status (n = 380)

Marital status	Number	Percentage (%)
Married	335	88.15
Unmarried	2	0.53
Widowed / Divorced	43	11.32
Total	**380**	**100**

In the present study, 335 (88.15%) were married, 2 (0.53%) were unmarried and 43 (11.32%) were widowed or divorced

Table 8: Distribution of Study participantsaccording to the type of family (n = 380)

Type of family	Number	Percentage (%)
Joint	199	52.37
Nuclear	150	39.47
Broken	31	8.16
Total	**380**	**100**

Among the study participants, 199 (52.37%) stayed in joint families, 150 (39.47%) in nuclear families and,31 (8.16%) were from broken families

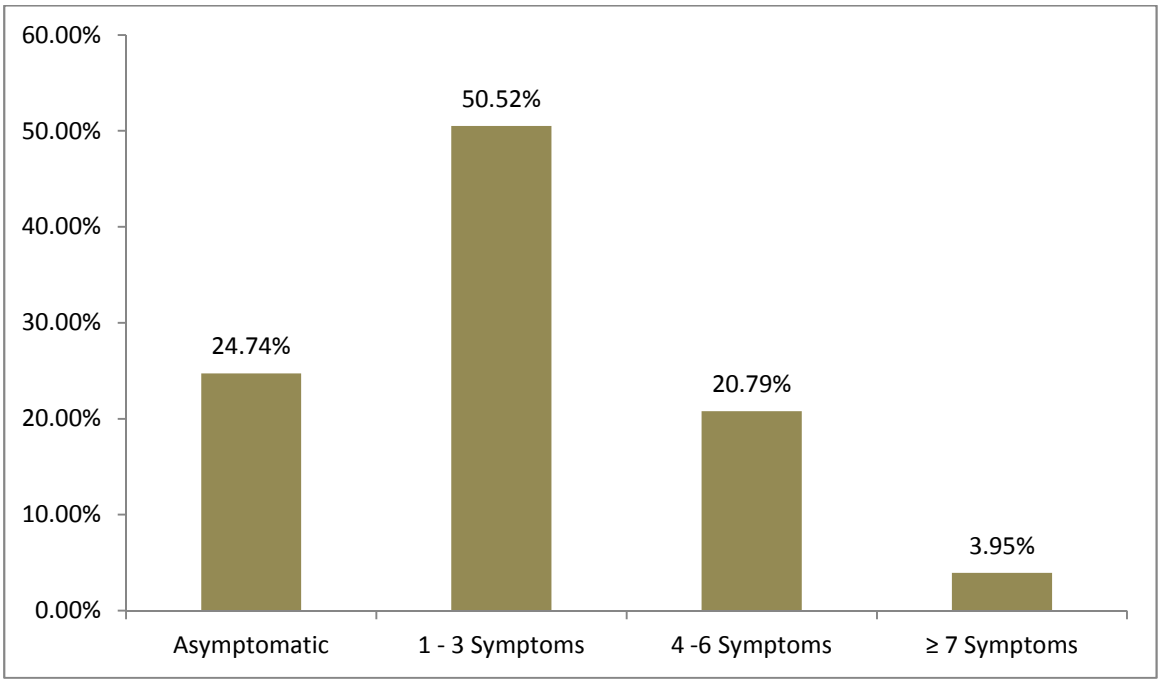
II. Distribution of participants based on clinical symptoms related to thyroid disorders

Table 9: Distribution of study participants according to the presence of symptoms related to thyroid disorders (n=380)

Symptoms	Number	Percentage
Asymptomatic	94	24.74%
1 – 3	192	50.52%
4 – 6	79	20.79%
7 & above	15	3.95%
Total	**380**	**100%**

Among 380 participants, history of 22 symptoms related to thyroid disorders was taken. Out of which, 94 (24.74%) of the subjects did not have any symptoms, 192 (50.52%) had 1 to 3 symptoms, 20.79% had 4 to 6 symptoms and 15 (3.95%) had 7 & above symptoms. The most common symptom reported by the participants were fatigue (48.60%), followed by sleep disturbances (31.12%), constipation (23.42%), muscle cramps (23.42%). The least common symptom reported was swelling in the neck (1.74%), difficult in tolerating heat (3.49%), facial puffiness (2.79%).

Graph 7: Distribution of study participants according to the presence of symptoms related to thyroid disorders (n=380)



III. Prevalence of associated co-morbidities and risk factors

Table 10: Distribution of study participants according to menstrual history (n = 229)

Menstrual History	Number	Percentage (%)
Attained menopause	159	64.43
Normal	35	15.28
Abnormal	35	15.28
Total	**229**	**100**

Among 229 female participants 159 (64.43%) had attained menopause; 35 (15.28%) had history of menstrual disturbances (either irregular menstrual cycle or excess or reduced bleeding).

Table 11: Distribution of the study participants according to duration of diabetes mellitus (n = 380)

Duration (in Years)	Number	Percentage (%)
<1	41	10.79
1-5	187	49.21
6-10	87	22.89
>10	65	17.11
Total	**380**	**100**

The duration of diabetes of the study participants varied;41 (10.79%) had diabetes since less than 1 year. Most of participants, 187 (49.21%) had diabetes from 1-5 years, 87(22.89%) had diabetes since 6-10 years and 65 (17.11%)were living with diabetes for more than 10 years. The mean duration of illness of the study participants was 4.61±5.17 years with the range between 6 months and 25 years.

Graph 8:Distribution of the study participant according to duration of diabetes mellitus (n = 380)

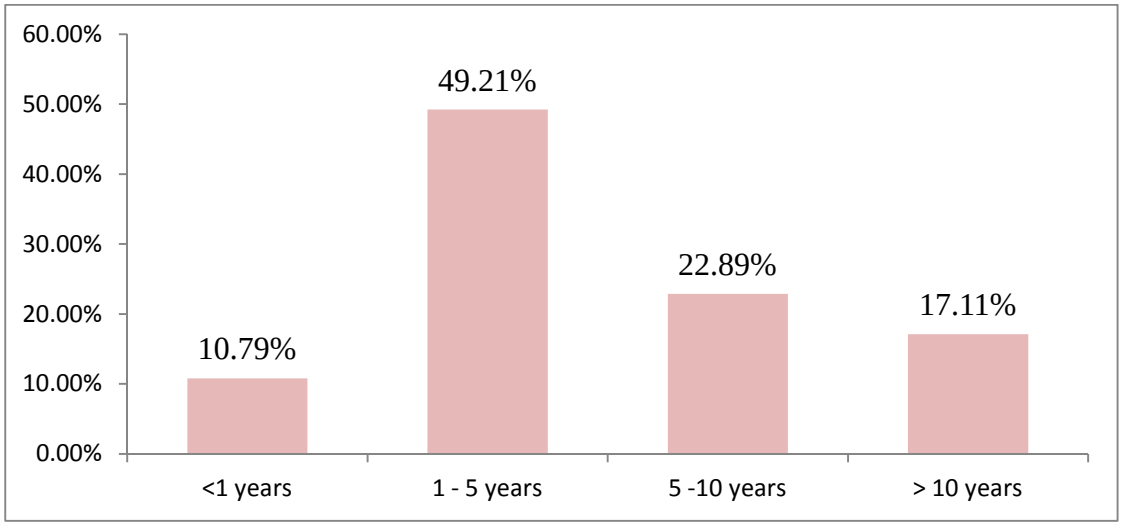


Table 12: Distribution of the study participant according to relevant past medical history (n = 380)

Past medical history	Number	Percentage (%)
Hypertension	151	39.74
CHD + Hypertension	9	2.36
SLE + Hypertension	3	0.79
No past history	217	57.11
Total	**380**	**100**

Among the study participants, we found out that 151(39.74%) of the participants had only hypertension, 9 (2.36%) had history of coronary artery disease and hypertension, 3 (0.79%) had SLE and hypertension. 217 (57.11%) had no relevant past illness. The overall self- reported hypertension among the study participants was 42.89%.

Table 13: Distribution of the study participants according to their family history of thyroid disorders (n = 380)

Family history of thyroid disorders	Number	Percentage (%)
Present	27	7.11
Absent	353	92.89
Total	**380**	**100**

353 (92.89%) of the study participant did not have a history of thyroid disorders in the family and 27 (7.11%) had a family history of thyroid disorders. Among them 19 (70.37%) had either of the parent with a positive history. 8 (29.63%) had their siblings with a history of thyroid disorders.

Table 14: Distribution of the study participants according to the tobacco consumption (n = 380)

Tobacco Consumption	Numbers	Percentage (%)
Yes	61	16.05
No	319	83.95
Total	**380**	**100**

Out of the 380 study participants, 61 (16.05%) had the habit of consuming tobacco in one form or the other. Rest of the 319 (83.95%) of the participants did not have habit of tobacco consumption. The mean duration years of tobacco consumption was 10.75 ± 4.72.

Table 15: Distribution of the study participant according to the history of use of alcohol consumption (n = 380)

Alcohol Consumption	Numbers	Percentage (%)
Yes	64	16.84
No	316	83.15
Total	**380**	**100**

In the present study 64 (16.84%) of the participants had history of use of alcohol and the remaining 316 (83.15%) had no history of use of alcohol. The mean duration years of history of alcohol use was 9.73 ± 4.28.

Table 16: Distribution of the study participants according to mode of treatment (n = 380)

Mode of treatment	Number	Percentage (%)
Oral Hypoglycemic drugs	349	91.84%
Insulin	26	6.84%
Both	5	1.32%
Total	**380**	**100%**

Most of the study participant, 349 (91.84%) were on Oral Hypoglycemic Agents that were provided by the Urban Health Centres. A few of them, 26 (6.84%) were only on insulin. 5 (1.32%) took both Oral Hypoglycemic Agents and Insulin.

Graph 9: Distribution of the study participants according to mode of treatment

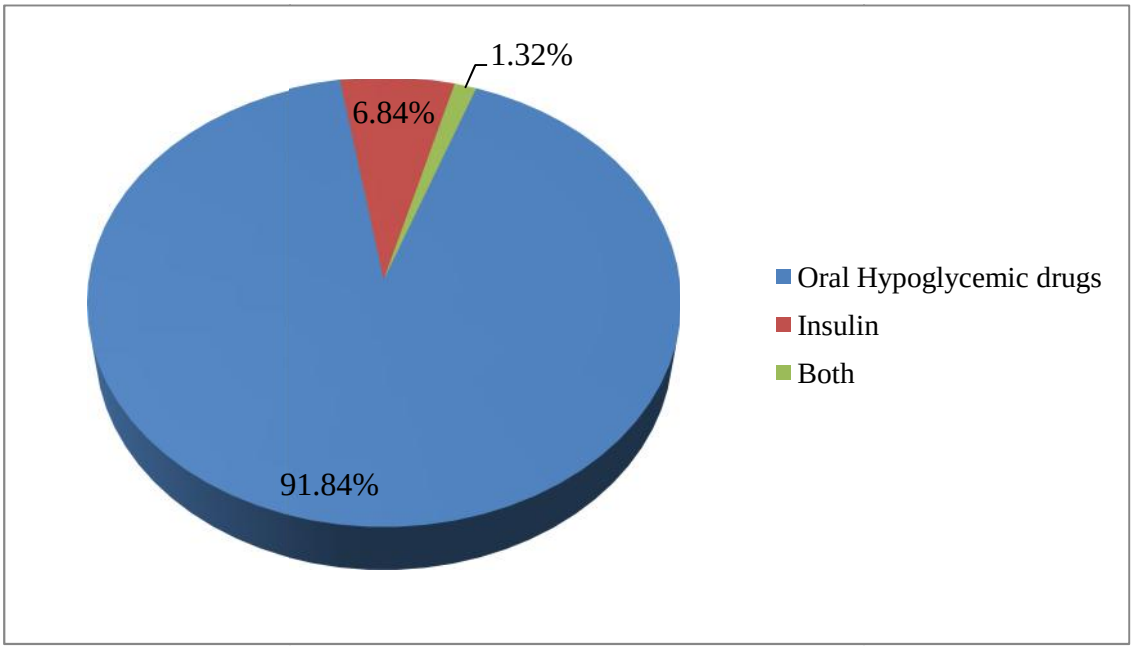


Table 17: Distribution of study participants according to type of physical activity practiced during leisure time (n = 380)

Physical activity during leisure time	Number	Percentage (%)
Walking	238	62.63
Yoga	23	6.05
Gym	3	0.79
No physical activity	116	30.53
Total	380	100

In our present study, 116 (30.53%) study participants did not practice any regular physical activity. 238 (62.63%) did regular walking, 23 (6.05%) practiced yoga and 3 (0.79%) went gym for physical activity during their leisure time. The mean duration of physical activity practiced were 46.06 ± 26.90 minutes

Table 18: Distribution of study participants according to usage of iodized salt (n = 380)

Type of Salt	Number	Percentage (%)
Iodized	365	96.05
Non Iodized	15	3.95
Total	**380**	**100%**

Most of our study participants, 365 (96.05%) purchased iodized salt for cooking. Very few of the participants, 15 (3.95%) purchased non iodized salt for cooking.

Table 19: Distribution of study participants according to extra salt consumption (n = 380)

Extra salt consumption	Number	Percentage (%)
Yes	50	13.58
No	330	86.84
Total	**380**	**100%**

In the present study 50 (13.58%) participants consumed extra salt other than that added to the cooked food.

Table 20: Distribution of study participants according to frequency of consumption of goitrogens per week (n = 380)

Goitrogens	Number	Percentage (%)
≤ 2	225	59.21
>2	155	40.79
Total	**380**	**100%**

In our study, 225 (59.21%) of the study participants consumed goitrogens 2 or less than 2 times per week and 155 (40.79%) of them consumed more than two times per week. The mean weekly consumption of goitrogens was 2.39 ± 0.8 times. The common goitrogens consumed were cauliflower and cabbage.

Table 21: Distribution of the study participant according to type of diet (n = 380)

Type of diet	Number	Percentage (%)
Vegetarian	187	49.21
Non – Vegetarian	193	50.79
Total	**380**	**100%**

It was observed that 193 (50.79%) consumed non-vegetarian food and 187 (49.21%) followed vegetarian diet

Table 22: Distribution of the study participant according to Body Mass Index(Kg/m^2) (n = 380)

BMI Categories	Number	Percentage (%)
Underweight (< 18.5)	7	1.84
Normal (18.5 – 22.9)	78	20.53
Overweight (23.0 – 27.5)	185	48.68
Obese (> 27.5)	110	28.95
Total	**380**	**100**

In the present study, prevalence of overweight and obesity were 48.68% and 28.95% respectively. Few of the participants, 7 (1.84%) had underweight. Only 78 (20.53%) of them were of the normal BMI. The mean BMI of the study participants was 25.89 ± 3.86 kg/m^2

Graph 10: Distribution of the study participant according to Body Mass Index(Kg/m^2)

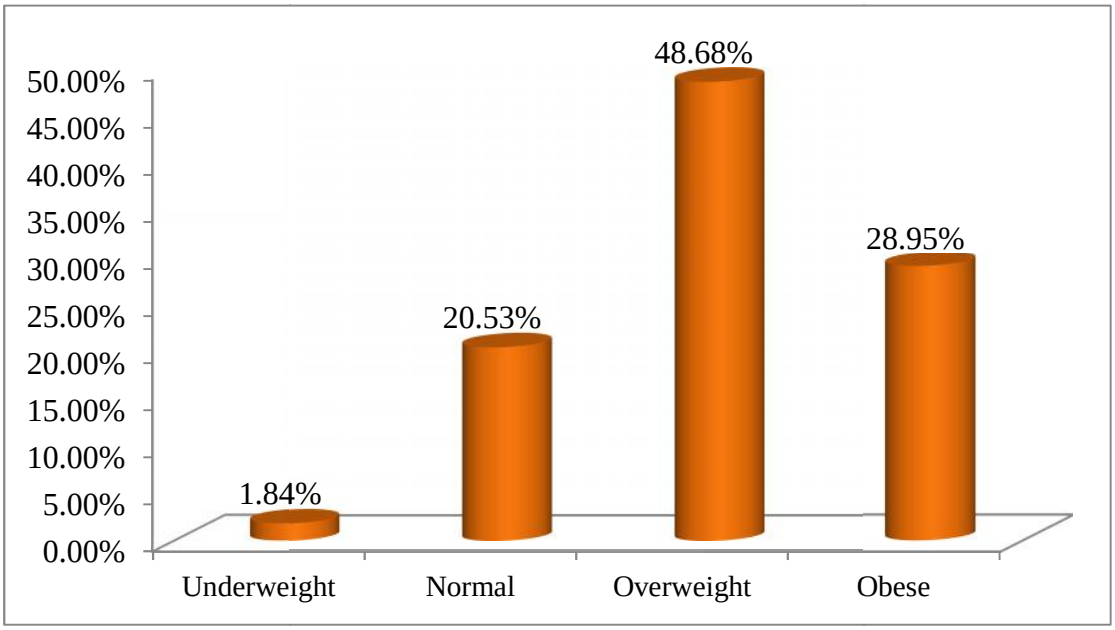


Table 23: Distribution of the study participants according to waist circumference (WC) (n = 380)

WC categories	Male (%)	Female (%)	Total (%)
Normal	51 (33.77)	27 (11.79)	78 (20.53)
Abnormal	100 (66.23)	202 (88.20)	302 (79.47)
Total	**151 (100)**	**229 (100)**	**380 (100)**

In the present study, the overall prevalence of abdominal obesity based on waist circumference criteria was 79.47%. Among men 100 (66.23%) and among women 202 (88.2%) had abdominal obesity.

Graph 11:Distribution of the study participants according to waist circumference (WC) (n = 380)

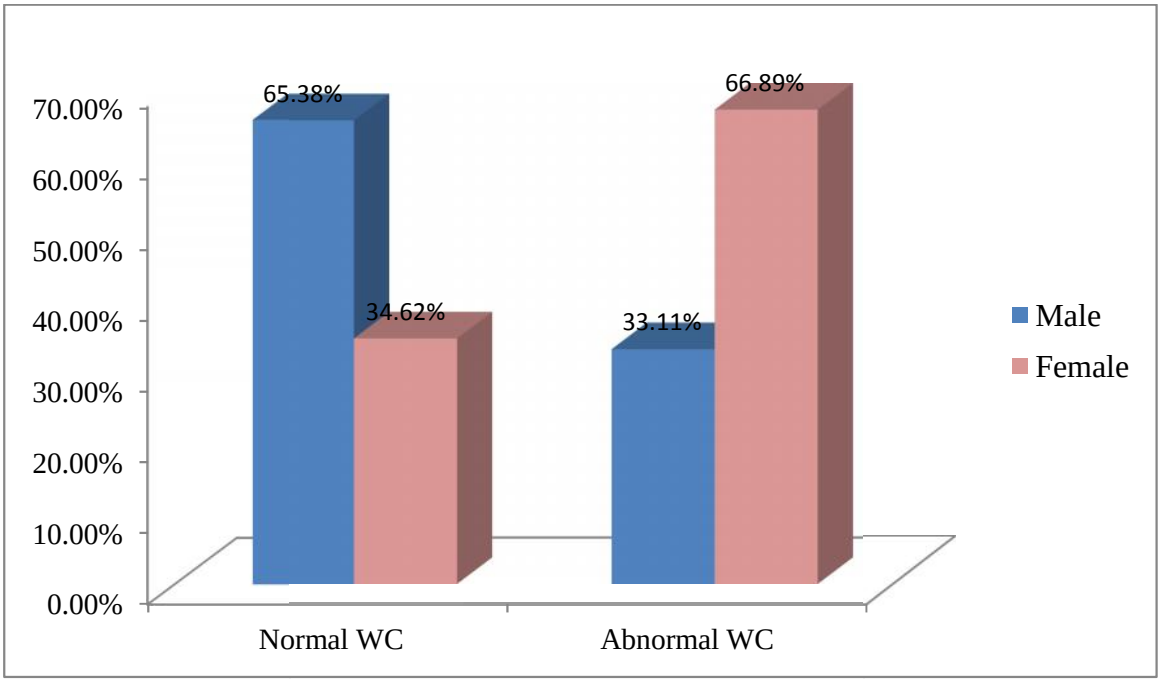


Table 24: Distribution of the study participants according to waist hip ratio (n = 380)

Waist hip ratio (WHR)	Male (%)	Female (%)	Total (%)
Normal	41 (27.15)	11 (4.81)	52 (13.68)
Abnormal	110 (71.85)	218 (95.19)	328 (86.32)
Total	**151 (100)**	**229 (100)**	**380 (100)**

In the present study, the overall prevalence of abdominal obesity based on waist-hip ratio criteria was 79.47%. The prevalence among women was higher than that of men (95.19% vs. 71.85%).

Graph 12: Distribution of the study participants according to waist hip ratio (n = 380)

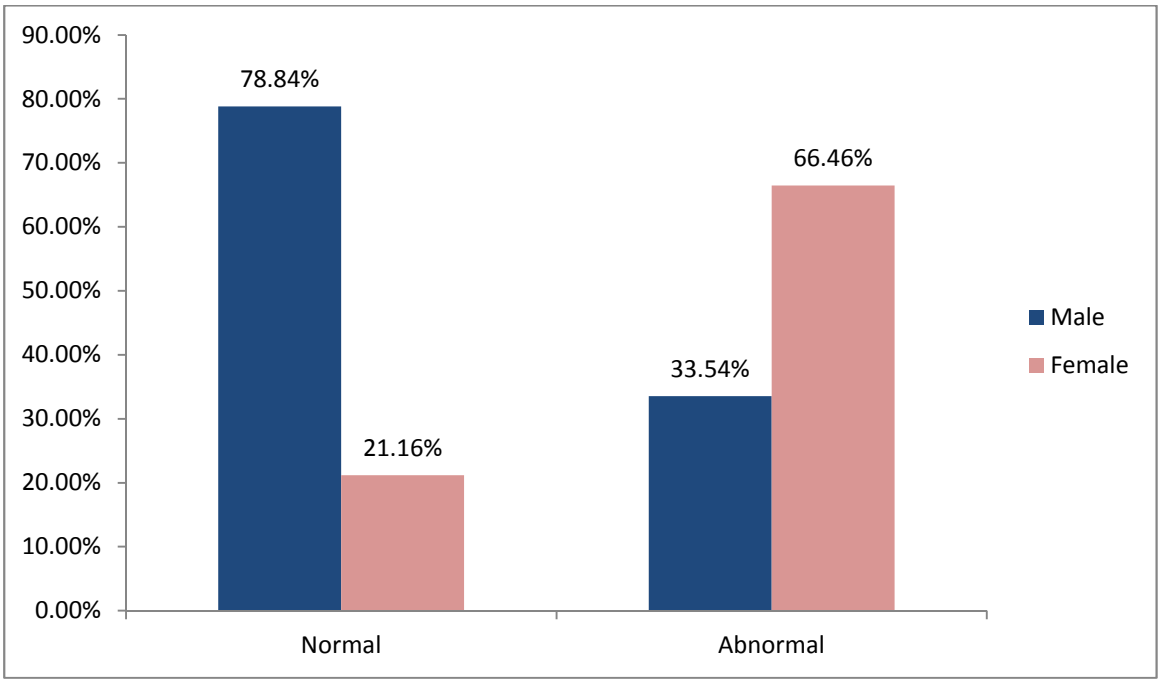


Table 25: Distribution of the participants according to systolic blood pressure (n = 380)

SBP categories	Numbers	Total (%)
Normal	147	38.68
Pre – hypertension	93	24.47
Hypertension grade I	86	22.63
Hypertension grade II	54	14.22
Total	**380**	**100**

In the present study the overall systolic prevalence of hypertension was 36.85%; grade I and grade II being 22.63% and 14.22% respectively. The overall prevalence of pre-hypertension was 24.47%.

Graph 13: Distribution of the participants according to systolic blood pressure (n = 380)

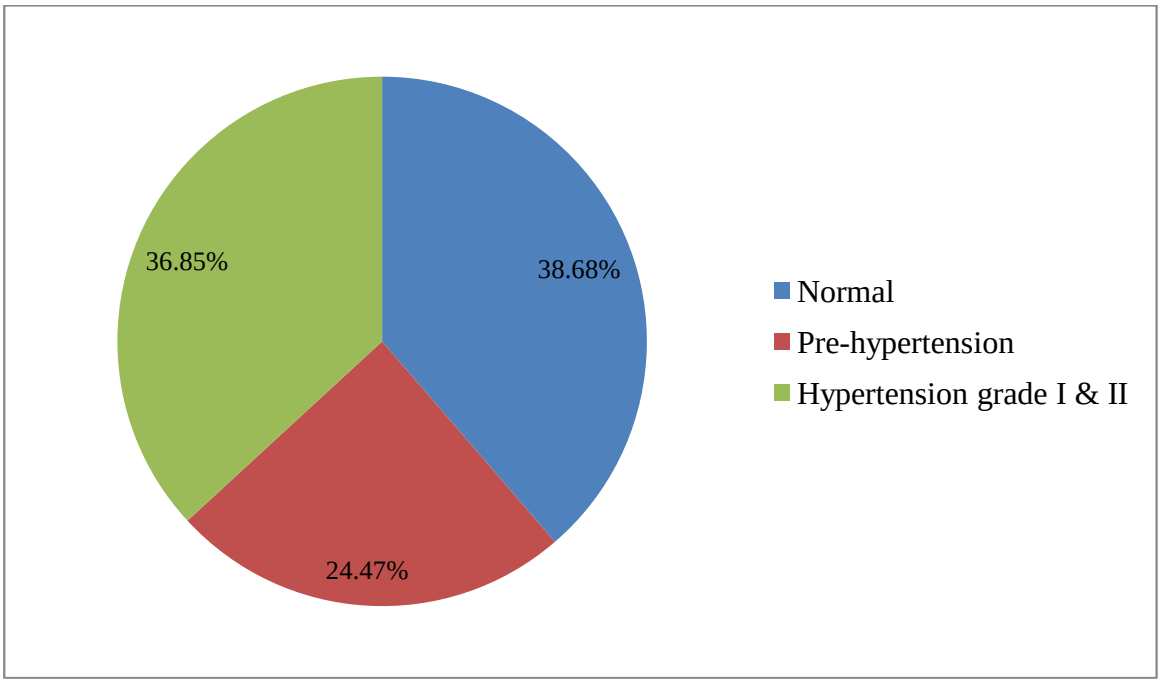


Table 26: Distribution of the participants according to diastolic blood pressure (n = 380)

DBP categories	Numbers	Total (%)
Normal	94	24.74
Pre – hypertension	167	43.95
Hypertension grade I	98	25.79
Hypertension grade II	21	5.52
Total	**380**	**100**

In the present study the prevalence of hypertension was 31.31%; grade I and grade II being 25.79% and 5.52% respectively. The overall prevalence of pre-hypertension was 43.95%.

Graph 14: Distribution of the participants according to diastolic blood pressure (n = 380)

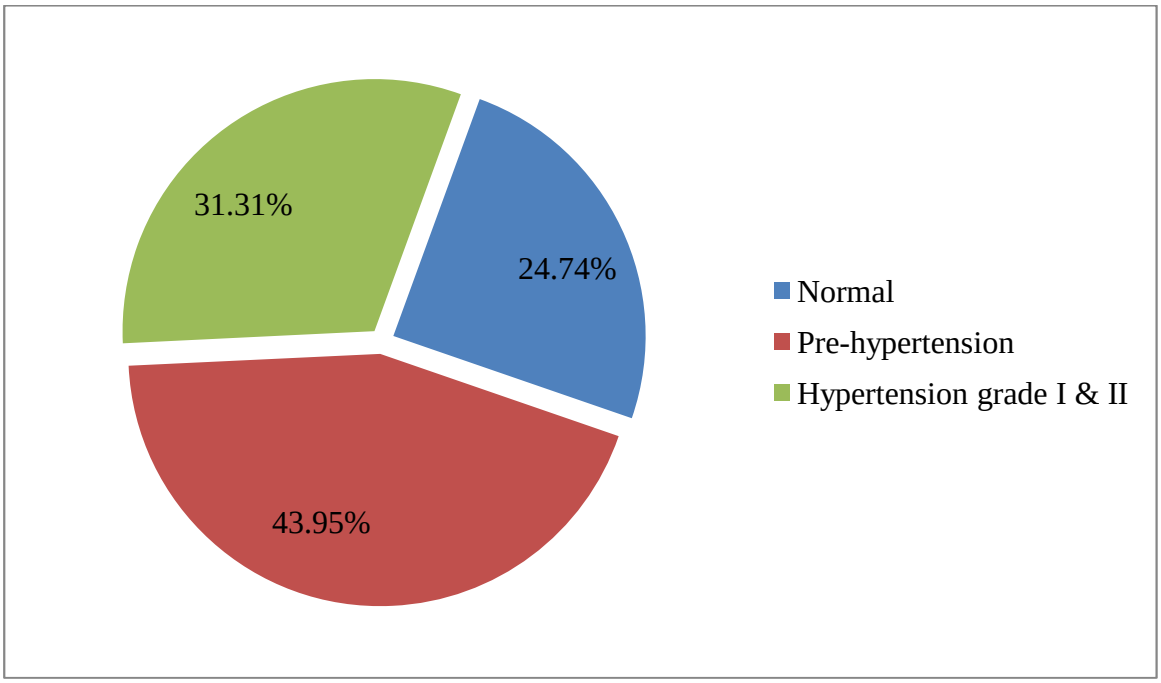
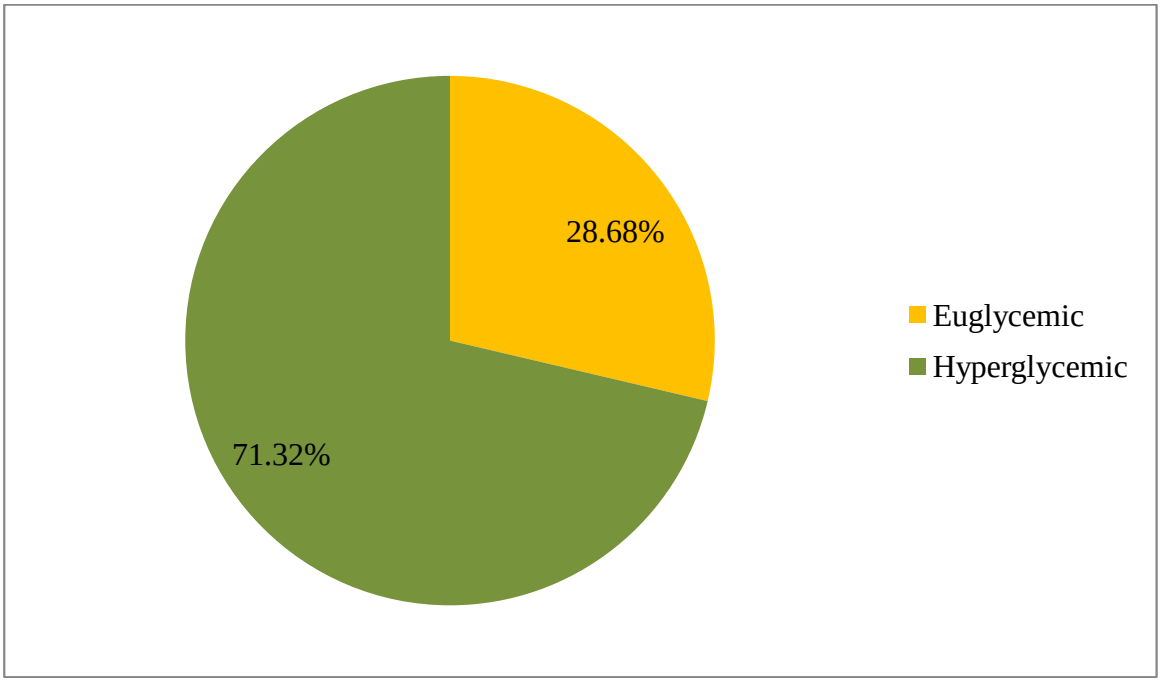


Table 27: Distribution of the participants according to glycemic status (n = 380)

Glycemic Status	Numbers	Percentage (%)
Euglycemic	107	28.16
Hyperglycemic	273	71.84
Total	**380**	**100 (%)**

In our study, out of 380 participants 107 (28.16%) were euglycemic and 273 (71.84%) were hyperglycemic. The mean serum FBS was 153.3 ± 46.25 and the mean serum PPBS was 229.18 ± 75.34.

Graph 15: Distribution of participants according to glycemic status



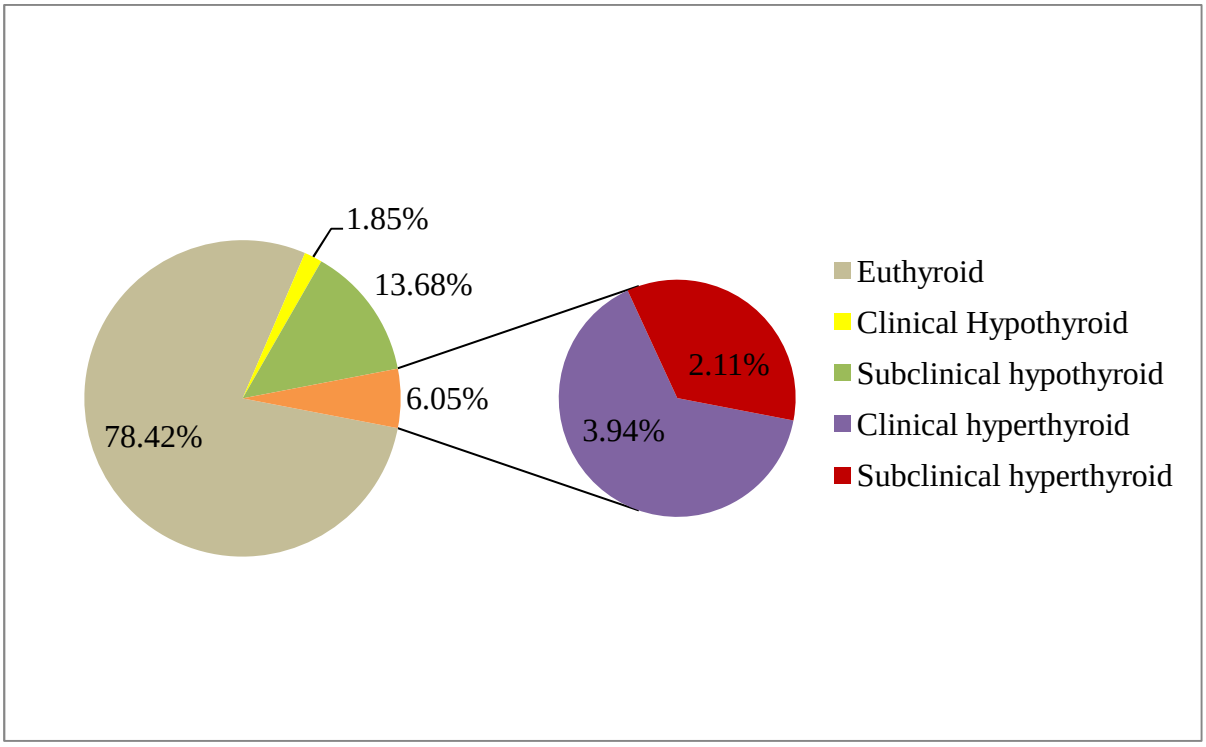
IV. Prevalence of thyroid disorders

Table 28: Distribution of the participants according to thyroid disorders (n = 380)

Thyroid Disorders	Numbers	Percentage (%)
Euthyroid	298	78.42
Clinical Hypothyroid	7	1.85
Subclinical Hypothyroid	52	13.68
Clinical Hyperthyroid	15	3.94
Subclinical Hyperthyroid	8	2.11
Total	**380**	**100**

In the present study, the overall prevalence of thyroid disorders among the study participants was 21.58% of which the most common thyroid disorder was subclinical hypothyroid with 13.68%. The overall prevalence of hypothyroid was 15.53 % and hyperthyroid was 6.05%. The mean T3 value was 1 ± 0.5 ng/ml with a range of 0.27 to 4.6ng/ml; mean T4 was 8.56 ± 1.48 µg/dl with a range between 3.01 and 16.4 µIU /ml. TSH value of the participants ranged between 0.01 and 28.3 µIU/ml with a mean value of 3.03 ± 2.85 µIU/ml.

Graph 16: Distribution of the participants according to thyroid disorders



V. Association of thyroid disorders with socio-demographic variables and risk factors

Table 29: Association of thyroid disorders with age (n = 380)

Age (years)	Euthyroid (%)	Thyroid disorders (%)	Total
31 – 40	33(73.33)	12(26.67)	45(100)
41 – 50	68(75.56)	22(24.44)	90(100)
51-60	77(79.39)	20(20.61)	97(100)
61-70	92(81.42)	21(18.58)	113(100)
>70	28(80.00)	7(20.00)	35(100)
Total	**298(78.42)**	**82(21.58)**	**380(100)**
$\chi 2 = 1.828$		df = 4	p = 0.767

The thyroid disorders among the study participants showed no age specific trend with maximum numbers of thyroid disorders, 45.05% was found in the age group 41 to 60 years. Hyperthyroid was found almost evenly distributed among all age groups. No statistical association (p = 0.76) was found between age and thyroid disorders.

Graph 17: Association of thyroid disorders with Age of the participants (n = 380)

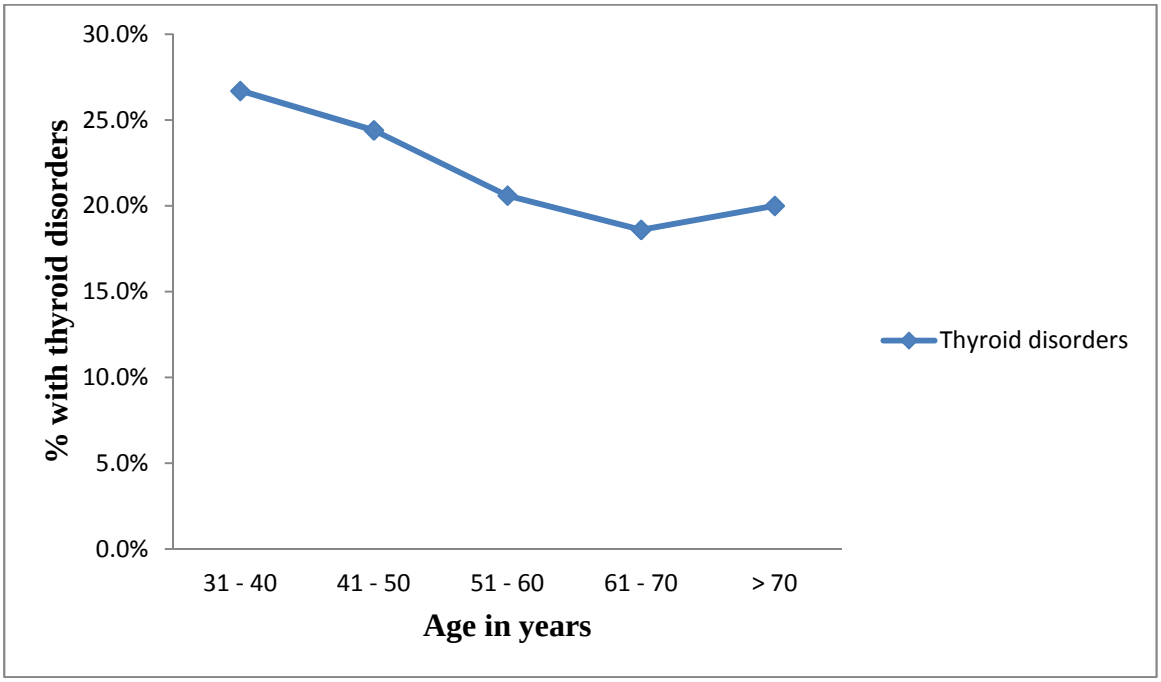


Table 30: Association of thyroid disorders withgender (n = 380)

Gender	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Male	128 (84.77)	23 (15.23)	**151(100)**
Female	170(74.24)	59(25.76)	**229 (100)**
Total	**298 (78.42)**	**82(21.58)**	**380(100)**
¡ 2 = 4.785	**df = 1**	**p = 0.031**	

In our study, female study participants showed significantly increased prevalence of thyroid disorders (χ 2 = 4.785; p= 0.031) than the male participants. Among 151 males, 23 (15.23%) had thyroid disorders and among 229 females, 59 (25.33%) had thyroid disorders.

Graph 18:Association of thyroid disorders with gender (n = 380)

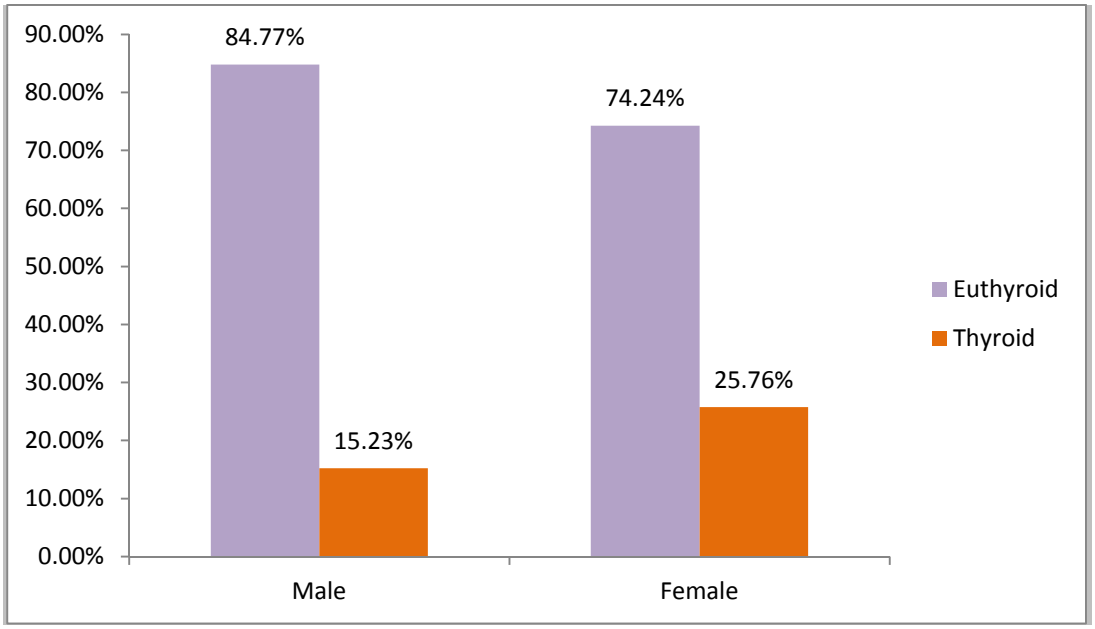


Table 31: Association of thyroid disorders withreligion (n = 380)

Religion	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Hindu	206(82.33)	43(17.27)	**249(100)**
Muslim	75(66.37)	38(33.63)	**113(100)**
Christian	5(83.33)	1(16.67)	**6(100)**
Jain	12(100)	0	**12(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
¡ 2 = 15.816		**df=3**	**p = 0.001**

In the present study, among 249 Hindu participants, 206 (82.33%) were euthyroid and 43 (17.27%) had thyroid disorders. Similarly, among 113 Muslim participants, 75 (66.37%) were euthyroid and 38 (33.63%) had thyroid disorders and among 6 Christian participants, 1 (16.67%) had thyroid disorders. The proportion of presence of thyroid disorders between different religion groups was found to be

statistically significant (χ 2 = 15.816; p = 0.001). However, the number of Christian and Jain participants was too low for a comparison

Graph 19: Association of thyroid disorders with religion (n = 380)

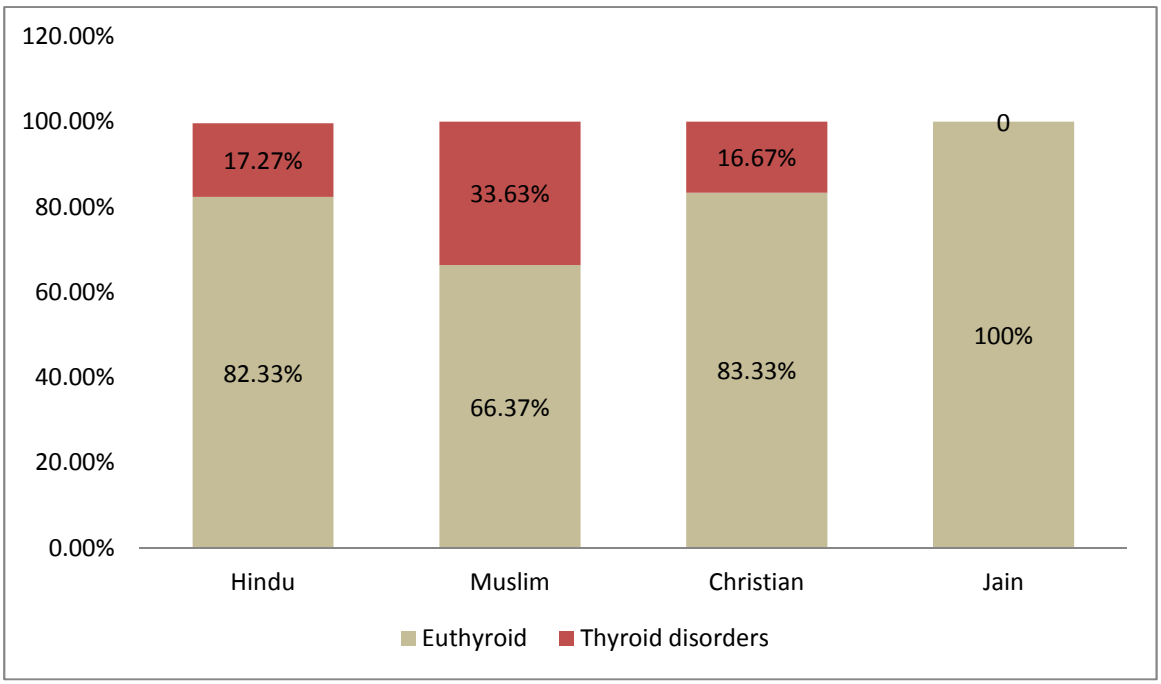


Table 32: Association of thyroid disorders with literacy (n = 380)

Literacy	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Illiterate	92(80.71)	22(19.29)	**114(100)**
Primary school	61(70.93)	25(20.07)	**86(100)**
Secondary school	68(76.41)	21(23.59)	**89(100)**
Pre-University II	25(80.65)	6(19.35)	**31(100)**
Graduate	52(86.67)	8(13.33)	**60(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 5.917$	df = 4	p = 0.205	

In the present study, among 114 illiterates, 92 (80.71%) were euthyroids and 22 (19.29%) had thyroid disorders, among 86 participants with primary school education, 61 (70.93%) were euthyroids and 25 (20.07%) had thyroid disorders, among 89 with secondary school education, 68 (76.41%) were euthyroids and 21 (23.59%) had thyroid disorders, among 31 with pre university education, 25 (80.65%) were euthyroids and 6 (19.35%) had thyroid disorders and among 60 who had higher education with a degree or diploma, 52 (86.67%) were euthyroids and 8 (13.33%) had thyroid disorders. There was no statistically significant association between education status and thyroid disorders.

Table 33: Association of thyroid disorders with occupation (n = 380)

Occupation	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Government employee	30 (81.08)	7(18.92)	**37(100)**
Non - government employee	15(100)	0	**15(100)**
Self-employee	63(81.82)	14(18.18)	**77(100)**
Home maker	158 (74.53)	54(25.47)	**212(100)**
Retired	32(82.05)	7(17.95)	**39(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
χ 2 = 6.253	df = 4	p = 0.181	

The prevalence of thyroid dysfunction was high among home makers (25.47%) followed by self-employed (18.18%). Non-government employee did not haveany thyroid disorders. However this association was not statistically significant ($\chi 2 = 6.253$, p = 0.181).

Table 34: Association of baseline data with socio-economic status (n = 380)

Socio-economic status	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Class I	49(79.03)	13(20.97)	62**(100)**
Class II	42(85.71)	7(14.29)	49**(100)**
Class III	79(80.61)	19(19.39)	98**(100)**
Class IV	87(70.73)	36(29.27)	123**(100)**
Class V	41(85.42)	7(14.58)	48**(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
χ 2 = 7.518	df = 4	p = 0.111	

The prevalence of thyroid disorder was found the most in the class IV with 36 (29.27%) followed by in class I and class III with 13 (20.97%) and 19 (19.39%). The least number of cases were observed in the class II with 7 (14.29%) and class V with 7 (14.58%).This study showed no statistical significance of association in presence of thyroid disorders and socioeconomic status of the study participant (χ^2 = 7.518; p = 0.111%).

Table 35: Association of the thyroid disorder with duration of diabetes mellitus (n = 380)

Duration (in Years)	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Less than 1	30(73.17)	11(26.83)	41 **(100)**
1-5	149(79.68)	38(20.32)	187**(100)**
5-10	70(80.56)	17(19.54)	87 **(100)**
More than 10	49(75.38)	16(24.62)	65 **(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 1.411$	df = 1		p = 0.702

In this study the presence of thyroid disorders was most commonly observed when the duration of diabetes was for 1 to 5 years with 38 (46.34%) of study participants with thyroid disorders. The mean duration of diabetes mellitus among the participants with abnormal thyroid dysfunction was 5.89 years and those with normal thyroid was. However there was no statistical significance ($\chi^2 = 1.411$; p = 0.702) noted between the presence of thyroid disorders and increasing duration of diabetes mellitus.

Table 36: Association of the study participant according to self-reported Hypertension (n = 380)

Self-reported Hypertension	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Present	136 (83.44)	27 (16.56)	163 **(100)**
Absent	162 (74.65)	55 (25.35)	217 **(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
¡ 2 = 4.241	**df = 1**	**p = 0.039**	

Among 163 study participants with self-reported Hypertension, 27 (16.56%) had thyroid disorders and 136 (83.44%) were euthyroids. Among 217 participants with no history of self- reported hypertension, 55 (25.35%) had thyroid disorders and 162 (74.65%) were euthyroids. There was no positive association observed between thyroid disorders and presence of self-reported hypertension.

Table 37: Association of the thyroid disorder according to their family history of thyroid disorders (n = 380)

Family history	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Present	19 (70.37)	8 (29.63)	27 **(100)**
Absent	279 (79.04)	74(20.96)	353 **(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 1.113$	df = 1		p = 0.291

In our study, among 27 study participants with family history of thyroid disorders 8 (29.63%) had thyroid disorders and 19 (70.37%) had no thyroid disorders. Among 353 study participants without family history of thyroid disorders 279

(79.04%) were euthyroids and 74 (20.96%) had thyroid disorders. However there was no statistical significance (χ^2 = 1.113; p = 0.291%) noted between the presence of thyroid disorders and family history of thyroid disorders.

Table 38: Association of the thyroid disorder with tobacco consumption (n = 380)

Tobacco Consumption	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Yes	51 (79.69)	13 (20.31)	64 **(100)**
No	247 (78.16)	69 (21.84)	316 **(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
χ2 = 0.003	df = 1	p = 0.956	

In our study, among 61 study participants with history of tobacco consumption 48 (78.69%) had no thyroid disorders and 13 (21.31%) had thyroid disorders. Among 319 study participants without history of tobacco consumption, 250 (78.37%) were euthyroids and 69 (21.63%) had thyroid disorders. Howeverthere was no statistical significance (χ^2 = 1.113; p = 0.291%) noted between the presence of thyroid disorders and tobacco consumption

Table 39: Association of the thyroid disorder with the history of use of alcohol (n = 380)

Alcohol Consumption	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Yes	50 (78.12)	14 (21.88)	64 **(100)**
No	248 (78.48)	68 (21.52)	316 **(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 0.004$	df = 1	p = 0.949	

Among 64 study participants with history of alcohol consumption, 50 (78.12%) were euthyroids and 14 (21.88%) had thyroid disorders. And out of 316 participants without history of alcohol consumption, 248 (78.48%) were euthyroids and 68 (21.52%) had thyroid disorders. No statistical significance ($\chi 2 = 4.241$; p = 0.039%) was found on associating thyroid disorders with history of alcohol consumption.

Table 40: Association of the thyroid disorder with the mode of treatment for diabetes (n = 380)

Mode of treatment	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Oral Hypoglycemic drugs	274 (78.51)	75 (21.49)	349 **(100)**
Insulin	21 (80.77)	5 (19.23)	26 **(100)**
Both	3 (60)	2(40)	5 **(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 1.089$	df = 2	p = 0.580	

The study showed presence of thyroid disorders among those on oral hypoglycemic agents were 75 (21.49%) and proportionately the thyroid disorders was found more among the participants who are both on OHA and insulin (40%). In this study the mode of treatment adapted by the study participants for diabetes and thyroid disorders was found not statistically significant ($\chi^2 = 1.089$; p = 0.580).

Table 41: Association of the thyroid disorder with physical activity during leisure time (n = 380)

Physical activity	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Yes	215 (81.44)	49 (18.56)	264 (100)
No	83 (71.55)	33 (28.45)	116 (100)
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
¡ 2 = 3.914	**df = 1**		**p = 0.047**

The presence of thyroid disorders was found more among those who did not practice any physical activity during leisure time (28.45%) and among those who practice physical activity the thyroid disorders was found in 18.56%. Statistical significance (χ^2 = 3.914; p = 0.047) noted between the presence of thyroid disorders and physical activity during leisure time.

Graph 20: Association of the thyroid disorder with physical activity during leisure time (n = 380)

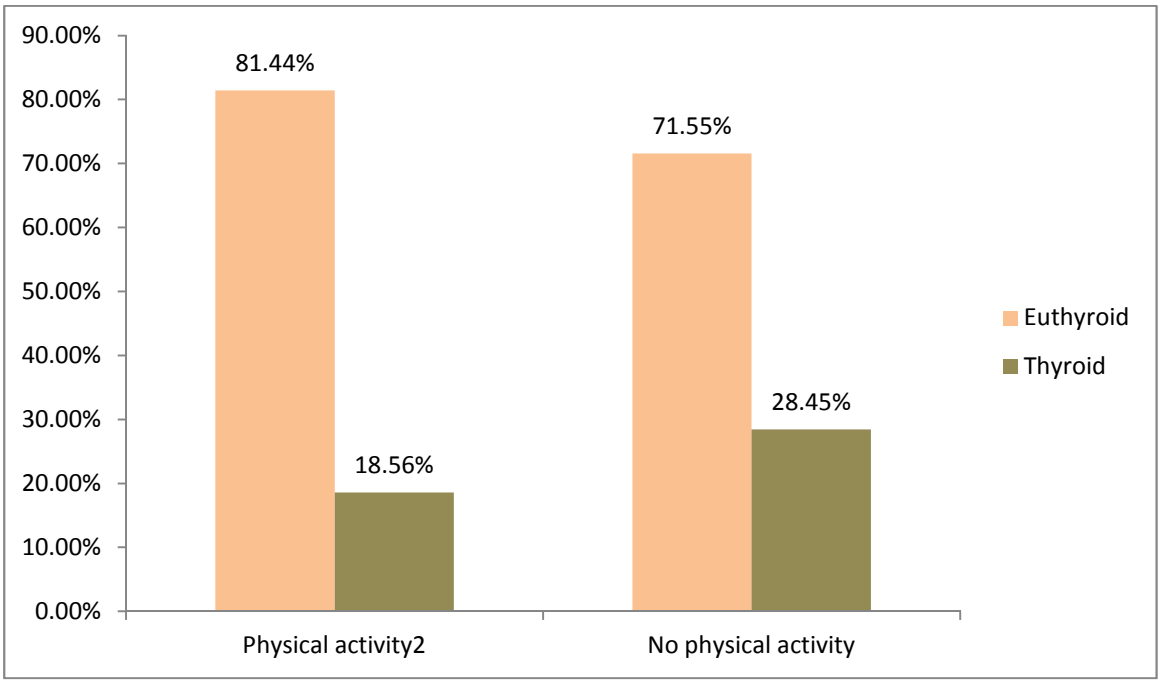


Table 42: Association of the thyroid disorder with extra salt consumption (n = 380)

Extra salt consumption	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Yes	41 (82)	9 (18)	50**(100)**
No	257 (77.88)	73 (22.12)	330 **(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 0.436$	df = 1	p = 0.584	

In our present study, among 50 participants who take extra salt in their diet 41 (82%) were euthyroids and 9 (18%) had thyroid disorders. And out of 257 participants who did not take extra salt in their diet, 257 (77.88%) were euthyroids and 73 (22.12%) had thyroid disorders. And no statistical significance ($\chi 2 = 0.436$; p = 0.584%) was found on associating thyroid disorders with extra salt consumption.

Table 43: Association of thyroid disorders with frequency of goitrogens intake per week (n = 380)

Goitrogens intake	Euthyroid (%)	Thyroid disorders (%)	Total (%)
≤ 2	165(73.33)	60(26.67)	225 (100)
More than 2	133(85.81)	22(14.19)	155(100)
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
¡ 2 = 8.438	**df = 1**	**p = 0.003**	

In the present study, out of 225 participants who take goitrogens ≤ 2 times per week 60 (26.67%) had thyroid disorders and 165 (73.33%) had no thyroid disorders. Among 155 participants who consumed more than 2 times per week, 22 (14.19%) had thyroid disorders and 133 (85.81%) were euthyroid. No positive association observed between increase in frequency of goitrogens consumption and thyroid disorders.

Table 44:Association of the thyroid disorder with type of diet(n = 380)

Type of diet	**Euthyroid (%)**	**Thyroid disorders (%)**	**Total (%)**
Vegetarian	152 (81.28)	35 (18.72)	187 **(100)**
Non - Vegetarian	146 (75.64)	47 (24.36)	193 (100)
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 1.783$	df = 1	p = 0.181	

In our present study, among 187 participants who take vegetarian diet 151 (81.28%) were euthyroids and 35 (18.72%) had thyroid disorders. And out of 257 participants who take non vegetarian diet, 146 (75.63%) were euthyroids and 47 (24.36%) had thyroid disorders. No statistical significance ($\chi 2 = 1.783$; p = 0.181) was found on associating thyroid disorders with the type of diet.

Table 45: Association of the thyroid disorder with presence of thyroid related symptoms (n = 380)

Symptoms	**Euthyroid (%)**	**Thyroid disorders (%)**	**Total (%)**
Asymptomatic	87(92.56%)	7(7.44%)	94 **(**100**)**
1 – 3	149(77.61%)	43(22.39%)	192 **(**100**)**
4 – 6	54(68.35%)	25(31.65%)	79 **(**100**)**
7 & above	8(53.33%)	7(46.67%)	15(100)
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 21.479$	df = 3		p = 0.0008

In our study, participants with presence of more than 7 symptoms had high proportion of thyroid disorders (46.67%) followed by the participants with with 4 – 6 symptoms (31.65%) and 1 – 3 symptoms (22.39%). This association between thyroid disorders and presence of increased number of symptoms was statistically significant ($\chi 2 = 21.479$, p = 0.0008).

Graph 21: Association of the thyroid disorder with presence of thyroid related symptoms (n = 380)

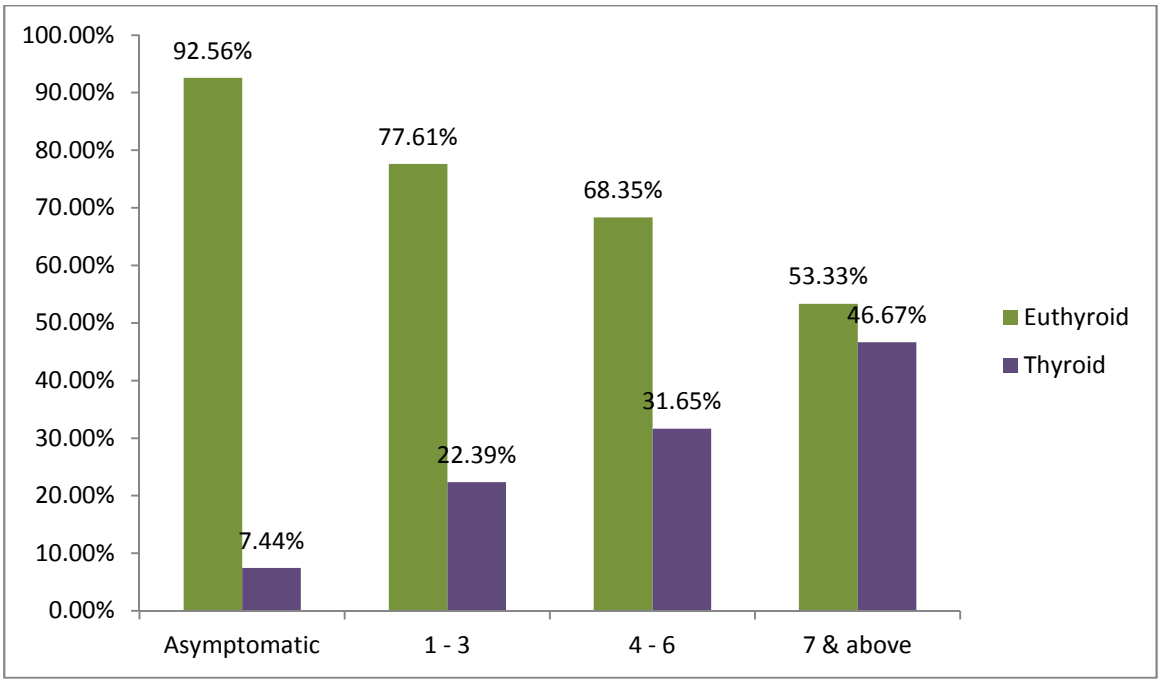


Table 46: Distribution of study participants with thyroid disorders according to symptoms of thyroid disorder (n = 82)

SYMPTOMS	HYPOTHYROID	HYPERTHYROID
Fatigue	32 (78.05%)	9 (21.95%)
Difficulty in tolerating cold	13 (81.25%)	3 (18.75%)
Swelling in the neck	2 (40%)	3 (60%)
Constipation	16 (94.12%)	1 (5.88%)
Dry Skin	8 (88.89%)	1(11.11%)
Dry Hair / Alopecia	17 (77.27%)	5 (22.73)
Thick brittle nails	7 (87.5%)	1 (12.5%)
Facial puffiness	5 (100%)	0
Excessive sleepiness (Daytime)	6 (100%)	0
Weight gain	9 (81.82%)	2 (18.18%)
Increased appetite	1 (12.5%)	7 (87.5%)
Weight loss	8 (34.78%)	15 (65.22%)
Difficulty falling asleep / Insomnia	9 (40.91%)	13 (59.09%)
Hand tremor	0	7 (100%)
Warm skin	1(11.11%)	8 (88.89%)
Difficulty in tolerating heat	0	7 (100%)
Increased sweating	12 (66.67%)	6 (33.33%)

Among the study participants with thyroid disorders, symptoms which were exclusively found in individuals with hypothyroid were facial puffiness and excessive daytime sleepiness. Symptoms which were exclusively seen among individuals with hyperthyroid were difficulty in tolerating heat, hand tremor. Warm skin, difficulty falling asleep, increased appetite and swelling in the neck were predominantly seen among hyperthyroid individuals where the other symptoms were more commonly seen among participants with hypothyroid.

Graph 22: Distribution of study participants with thyroid disorders according to symptoms of thyroid disorder

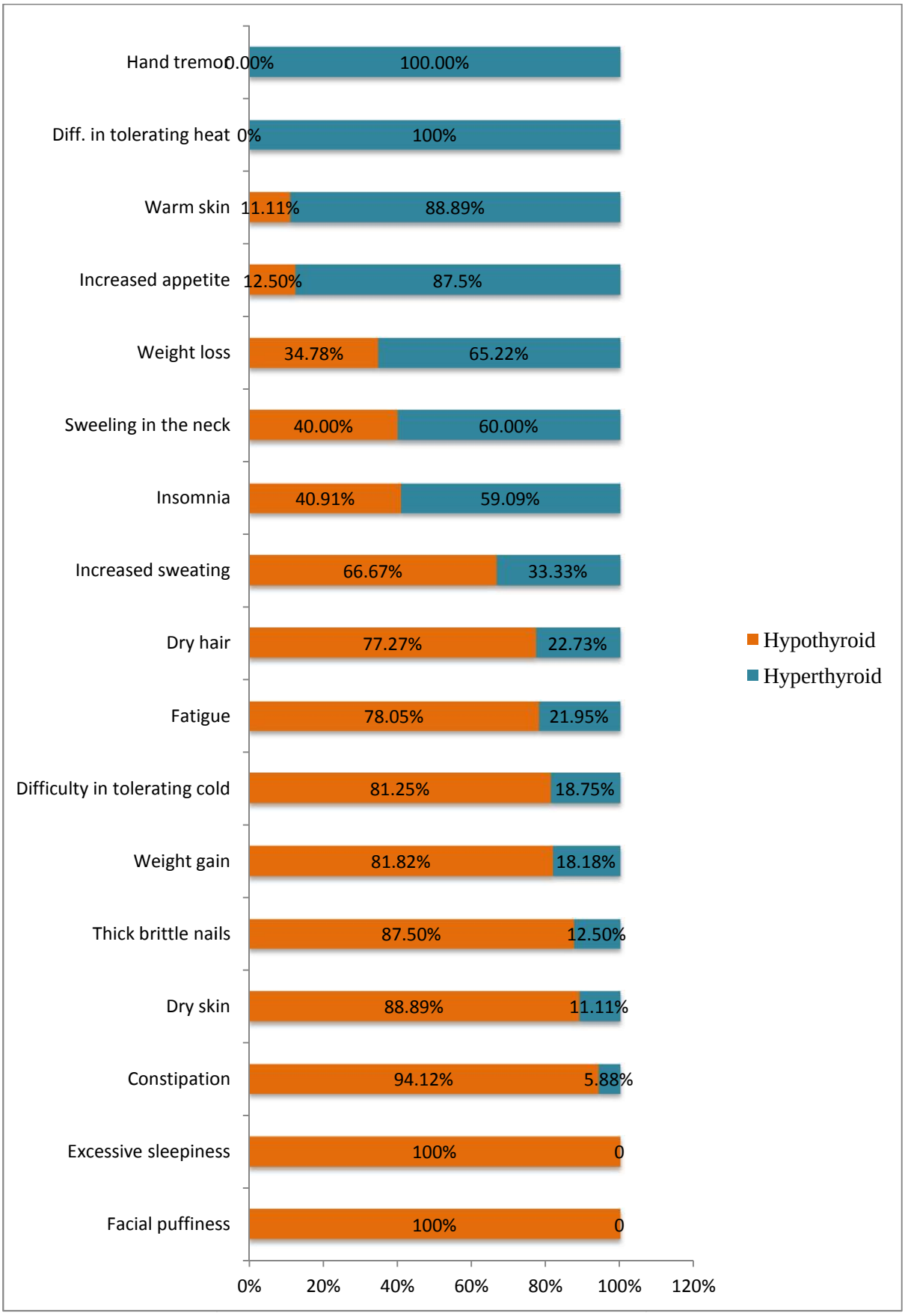


Table 47: Association of the thyroid disorder with Body Mass Index (n = 380)

BMI Categories	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Underweight (< 18.5)	5 (71.43)	2 (28.57)	7 (100)
Normal (18.5 – 22.9)	64 (82.05)	14 (17.95)	78 (100)
Overweight (23.0 – 27.5)	145 (78.37)	40 (21.63)	185 (100)
Obese (> 27.5)	84 (76.36)	26 (23.64)	110 (100)
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 1.085$	df = 3	p = 0.78	

The study showed that thyroid disorders were proportionately more among underweight (28.57%) participants, followed by obese (23.64%) and overweight (21.63%). Those with normal body mass index (17.95%) had least thyroid disorders. The mean BMI among those with normal thyroid profile was 25.9 kg/m^2 and for those with abnormal thyroid profile was 26.01 kg/m^2. And there was no statistical significance (χ 2 = 1.085; p = 0.780) on associating thyroid disorders with body mass index.

Table 48:Association of the thyroid disorder with waist circumference (n = 380)

WC categories	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Normal	62 (79.48)	16 (20.52)	78 (100)
Abnormal	236(78.15)	66 (21.85)	302(100)
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 0.066$	df = 1		p = 0.797

The study showed that thyroid disorders were seen more among participants with abdominal obesity (21.85%) and 236 (78.15%) participants with abdominal obesity had no thyroid disorders. And out of 78 participants with normal waist circumference, 62 (79.48%) were euthyroids and 16 (20.52%) had thyroid disorders. There was no statistical significance (χ 2 = 0.066; p = 0.797) on associating thyroid disorders with abdominal obesity based on waist circumference.

Table 49: Association of thyroid disorders with waist hip ratio(n = 380)

Waist hip ratio	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Normal	47 (90.38)	5 (9.62)	52 (100)
Abnormal	251 (76.52)	77 (23.48)	328(100)
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
¡ 2 = 5.095		**df = 1**	**p = 0.023**

The study showed that thyroid disorders were seen more among participants with abdominal obesity 77 (23.48%) than those with normal waist hip ratio (9.62%). And there was statistical significance (χ 2 = 5.095; p = 0.023) on associating thyroid disorders with abdominal obesity based on waist hip ratio.

Graph 23: Association of thyroid disorders with waist hip ratio (n = 380)

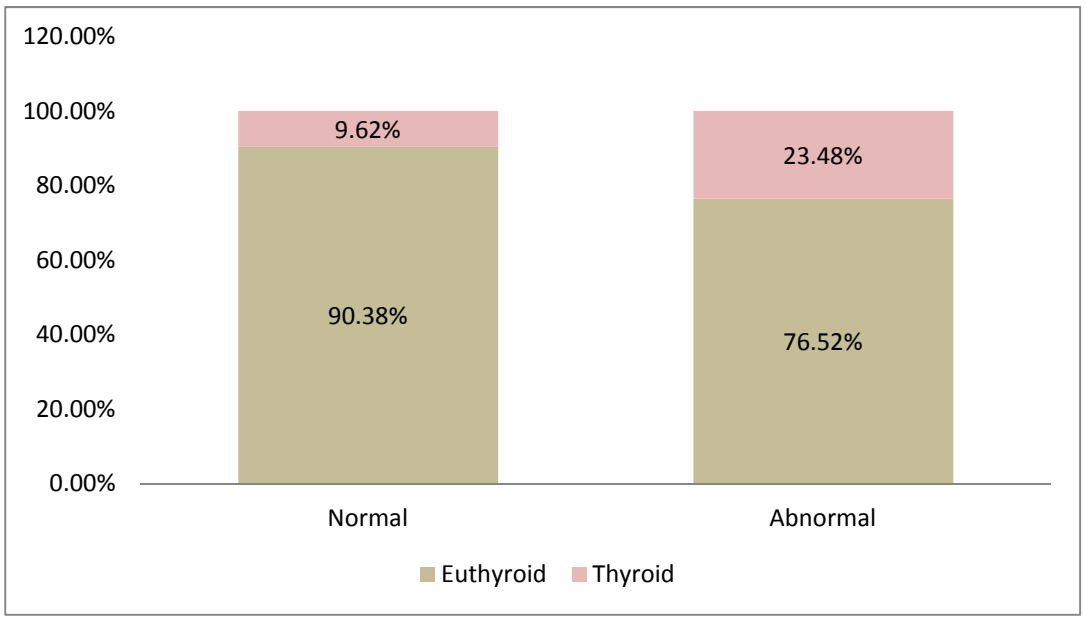


Table 50: Association of thyroid disorders with systolic blood pressure (n = 380)

SBP categories	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Normal	40 (64.52)	22 (35.48)	62 (100)
Pre – hypertension	145 (81.46)	33 (18.54)	178 (100)
Hypertension grade I&II	113 (80.71)	27 (19.29)	140 (100)
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
¡ 2 = 8.491	**df = 2**	**p = 0.014**	

In our study, among 62 participants with normal systolic blood pressure 22 (35.48%) had thyroid disorders and among 178 pre-hypertensive and 140 participants with hypertension grade I & II, 33 (18.54%) and 27 (19.29%) had thyroid disorders respectively. No positive association was observed between thyroid disorders and increased systolic blood pressure.

Table 51: Association with thyroid disorders with diastolic blood pressure (n = 380)

DBP categories	Euthyroid (%)	Thyroid disorders (%)	Total (%)
Normal	72 (76.59)	22(23.41)	94 **(100)**
Pre – hypertension	132 (79.04)	35 (20.96)	167 **(100)**
Hypertension grade I& II	94 (78.99)	25 (21.01)	119 **(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
$\chi 2 = 0.364$	df = 3		p = 0.947

In our study, among 72 participants with normal diastolic blood pressure 22 (23.41%) had thyroid disorders and among 167 pre-hypertensive and 119 participants with hypertension grade I & II, 35 (20.96%) and 25 (21.01%) had thyroid disorders respectively. The association between thyroid disorders and diastolic blood pressure was not statistically significant ($\chi 2 = 0.364$, $p = 0.947$)

Table 52: Association of the thyroid disorder with glycemic status (n = 380)

Glycemic Status	Euthyroid (%)	Thyroid Disorder (%)	Total (%)
Euglycemic	91 (85.05)	16 (14.95)	107 **(100)**
Hyperglycemic	207 (75.82)	66 (24.18)	273 **(100)**
Total	**298(78.42)**	**82 (21.58)**	**380(100)**
¡ 2 = 3.864	**df = 1**	**p = 0.049**	

The study showed that the prevalence of thyroid disorders was seen more among the participants with hyperglycemia (24.18%). The prevalence of thyroid disorders with euglycemic participants was 14.95%. The association of thyroid disorders with glycemic status was statistically significant (χ^2 = 3.864; p = 0.049).

Graph 24: Association of the thyroid disorder with glycemic status (n = 380)

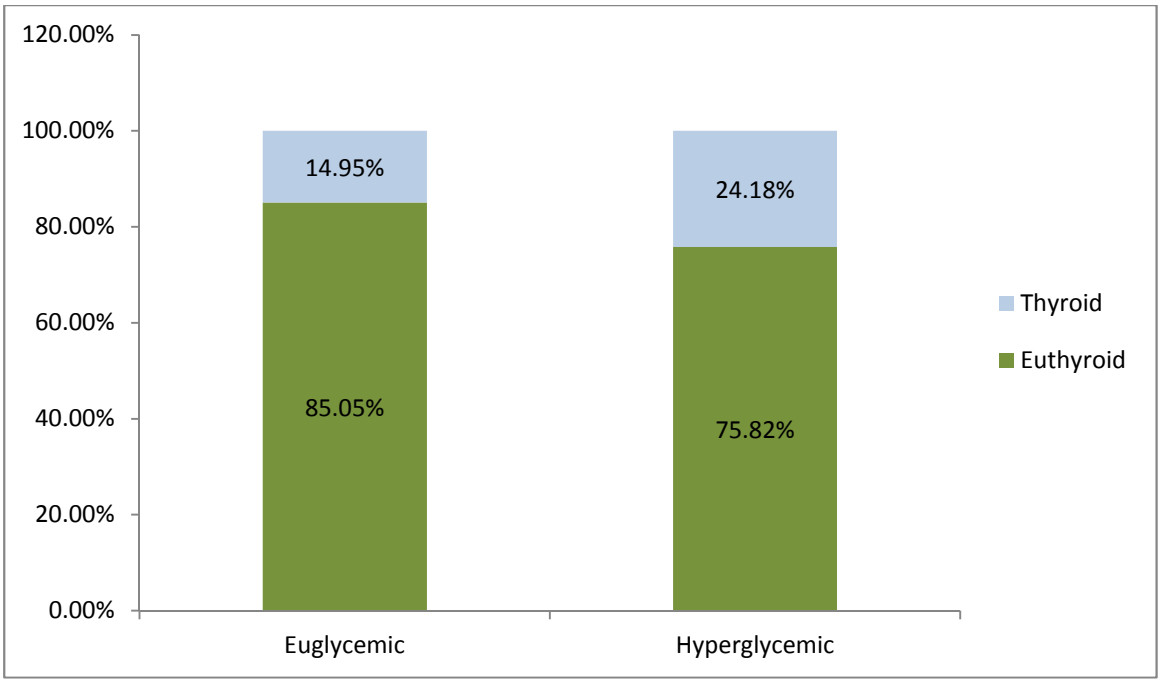


Table 53: Association of Hypothyroidism and Hyperthyroidism with age (n = 380)

Age (years)	Euthyroid (%)	Hypothyroidism (%)	Hyperthyroidism (%)	Total (%)
31 – 40	33 (73.33)	7 (15.56)	5 (11.11)	45 (100)
41 – 50	68 (79.56)	19 (21.11)	3 (3.33)	90 (100)
51 – 60	77 (79.39)	13 (13.40)	7 (7.21)	97 (100)
61 – 70	92 (81.42)	18 (15.93)	3 (2.65)	113 (100)
70 & above	28 (80.00)	2 (5.71)	5 (14.28)	35 (100)
Total	**298 (78.42)**	**59 (15.53)**	**23 (6.05)**	**380 (100)**
$\chi 2 = 13.961$		df = 8		p = 0.082

In our study, no age specific trend was observed with maximum number of Hypothyroidism, 21.11% was found in age group 41 to 50, followed by in the age group 61 to 70 (15.93%). Hyperthyroidism was found mostly among the age group 70 & above. No statistical association (p = 0.082) was found between age and hypothyroidism & hyperthyroidism

Graph 25: Association of Hypothyroidism and Hyperthyroidism with age (n = 380)

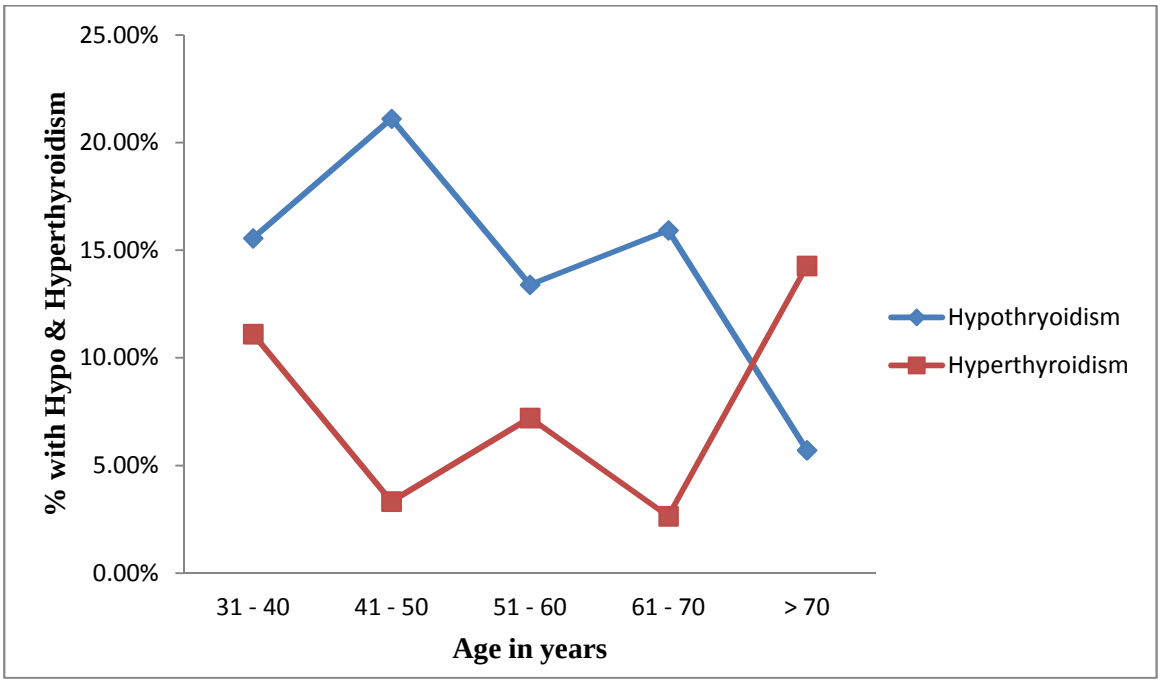


Table 54: Association of hypothyroidism and hyperthyroidism with gender (n = 380)

Gender	Euthyroid (%)	Hypothyroidism (%)	Hyperthyroidism (%)	Total (%)
Male	128 (84.77)	16 (10.59)	7 (4.64)	151 (100)
Female	170 (74.24)	43(18.78)	16 (6.98)	229 (100)
Total	**298 (78.42)**	**59 (15.53)**	**23 (6.05)**	**380 (100)**
¡2 = 6.041		**df = 2**		**p = 0.048**

In our study, female study participants showed significantly increased prevalence of hypothyroidism and hyperthyroidism ($\chi 2 = 6.041$; $p = 0.048$) than the male participants. Among 229 females, 43 (18.78%) were hypothyroid and 16 (6.98%) were hyperthyroid.

Graph 26: Association of hypothyroidism and hyperthyroidism with gender (n = 380)

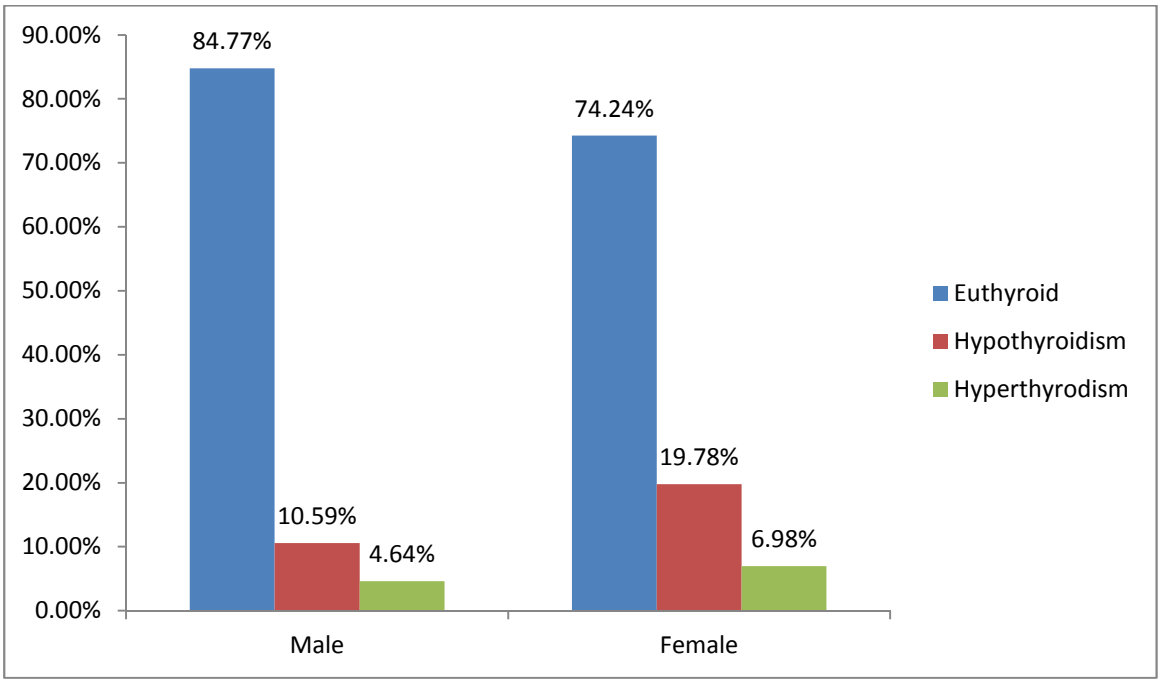


Table 55: Association of hypothyroidism and hyperthyroidism with duration of diabetes mellitus (n = 380)

Duration (years)	Euthyroid (%)	Hypothyroidism (%)	Hyperthyroidism (%)	Total (%)
Less than 1	30 (73.17)	7(17.07)	4(9.76)	41 (100)
1 – 5	149 (79.68)	29(15.51)	9(4.81)	187 (100)
5 - 10	70 (80.46)	11(12.64)	6(6.80)	87 (100)
More than 10	49 (75.38)	12(18.46)	4(6.15)	65 (100)
Total	**298 (78.42)**	**59 (15.53)**	**23 (6.05)**	**380 (100)**
¡ 2 = 2.701		**df = 1**		**p = 0.702**

In our present study, the presence of hypothyroidism was most commonly seen when the duration of diabetes was more than 10 years (18.46%) followed by less than 1 year duration (17.07%). Hyperthyroidism was found commonly when the duration was less than 1 year (9.76%) and 5 to 10 years (6.80%). There was no statistical significance ($\chi 2 = 6.041$, $p = 0.84$) noted between duration of diabetes mellitus and hypothyroidism & hyperthyroidism.

Table 56: Association of hypothyroidism and hyperthyroidism with family history of thyroid disorders (n = 380)

Family history	Euthyroid (%)	Hypothyroidism (%)	Hyperthyroidism (%)	Total (%)
Present	19 (70.37)	5(18.52)	3(11.11)	**27 (100)**
Absent	279 (79.04)	54(15.30)	20(5.66)	**353(100)**
Total	**298 (78.42)**	**59 (15.53)**	**23 (6.05)**	**380 (100)**
$\chi 2 = 2.02$		df = 2	p = 0.364	

In our study, among 27 study participants with family history of thyroid disorders, 5 (18.52%) were hypothyroid and 3 (11.11%) were hyperthyroid. No statistical significance was noted between them.

Table 57: Association of hypothyroidism and hyperthyroidism with physical activity during leisure time (n = 380)

Physical activity	Euthyroid (%)	Hypothyroidism (%)	Hyperthyroidism (%)	Total (%)
Yes	215 (81.44)	40 (15.15)	9(3.41)	264 (100)
No	83 (71.55)	19 (16.38)	14 (12.07)	116 (100)
Total	**298 (78.42)**	**59 (15.53)**	**23 (6.05)**	**380 (100)**
¡ 2 = 11.068		**df = 2**	**p = 0.003**	

In our study, hypothyroidism (16.38%) and hyperthyroidism (12.7) were observed more common in participants who do not practice any exercise during leisure time. This association was statistically significant ($\chi 2 = 11.068$, p = 0.03)

Graph 27:Association of hypothyroidism and hyperthyroidism with physical activity during leisure time (n = 380)

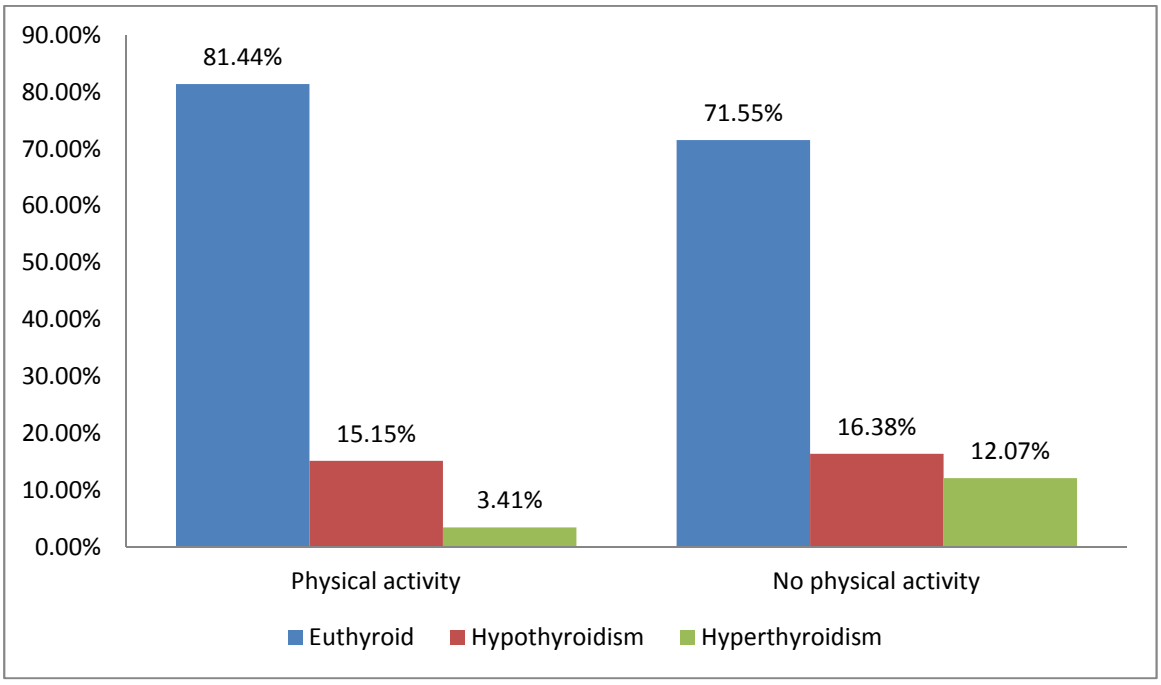


Table 58: Association of hypothyroidism and hyperthyroidism with type of diet (n = 380)

Type of diet	Euthyroid (%)	Hypothyroidism (%)	Hyperthyroidism (%)	Total (%)
Vegetarian	152 (81.28)	27 (14.44)	8(4.28)	187 (100)
Non – Vegetarian	146 (75.64)	29 (15.02)	15 (7.78)	193 (100)
Total	298 (78.42)	59 (15.53)	23 (6.05)	380 (100)
$\chi 2 = 2.581$		df = 2	p = 0.275	

In our present study, we found that both hypothyroidism and hyperthyroidism were more among non – vegetarians with 15.02% and 7.78% when compared with vegetarians with 14.44% and 4.28% respectively. However this association between hypothyroidism and hyperthyroidism and type of diet was not statistically significant ($\chi 2 = 2.581$ p = 0.275)

Table 59: Association of hypothyroidism and hyperthyroidism with Waist hip ratio (n=380)

Waist hip ratio	Euthyroid (%)	Hypothyroidism (%)	Hyperthyroidism (%)	Total (%)
Normal	47 (90.38)	4 (7.69)	1 (1.92)	52 (100)
Abnormal	251 (76.52)	55 (16.77)	22 (6.71)	328 (100)
Total	**298 (78.42)**	**59 (15.53)**	**23 (6.05)**	**380 (100)**
$\chi 2 = 5.178$		df = 1	p = 0.07	

The studied showed that hypothyroidism and hyperthyroidism was found more among those with abdominal obesity 55 (16.77%) and 22 (6.71%) than those with normal waist hip ratio and this association was not statistically significant ($\chi 2 = 5.178$, p = 0.07)

Table 60: Association of hypothyroidism and hyperthyroidism with glycemic status (n = 380)

Glycemic Status	Euthyroid (%)	Hypothyroidism (%)	Hyperthyroidism (%)	Total (%)
Euglycemic	91 (85.05)	12 (11.21)	4 (3.74)	**107 (100)**
Hyperglycemic	207 (75.82)	47(17.22)	19 (6.96)	**273 (100)**
Total	**298 (78.42)**	**59 (15.53)**	**23 (6.05)**	**380 (100)**
$\chi 2 = 3.935$		df = 2		p = 0.139

V. Multivariate Logistic regression Analysis: The association between various parameters With thyroid dysfunction in type 2 diabetes mellitus patients

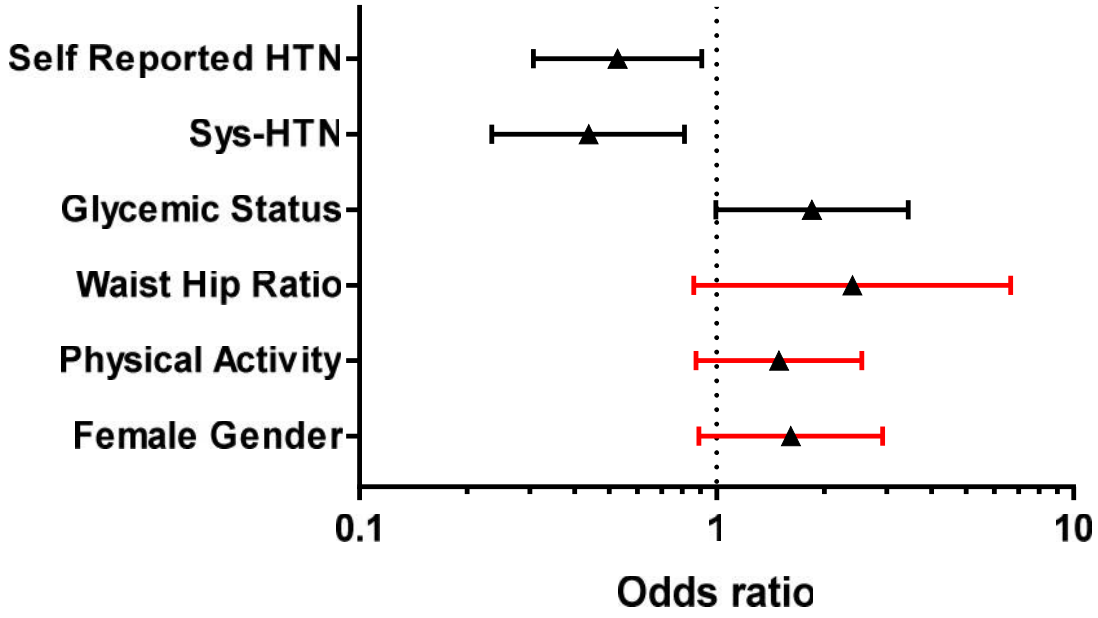
A multivariate logistic regression can be done on the association between thyroid disorders and parameter which are significant at$P \leq 0.05$ in the univariate analysis.

Table 61: Multivariate Logistic regression Analysis: Association between various parameters with thyroid dysfunction

RISK FACTORS	ODDS RATIO (OR)	CONFIDENCE INTERVALS (C.I)	P - VALUE
Gender	1.614	0.893 – 2.915	0.113
Self-reported Hypertension	0.528	0.307 – 0.909	0.021
Systolic Hypertension	0.438	0.235 – 0.814	0.009
No physical activity during leisure time	1.496	0.876 – 2.553	0.140
Waist Hip Ratio (WHR)	2.400	0.863 – 6.672	0.093
Glycemic status	**1.852**	0.996 – 3.443	**0.051**

Multivariate analysis demonstrated the odds ratio and 95% CI for different risk factors for thyroid dysfunction, hyperglycemic status was the strongest risk factor with a odds ratio (OR) 1.85 (95% CI, 0.996 – 3.443) with p value 0.05. Waist hip ratio had an odds ratio of 2.40 (95% CI 0.863 – 6.672) with p value 0.093. Female gender had an OR of 1.614 (95% CI 0.893 – 2.915) and p value 0.113. No physical activity during leisure time had an odds ratio of 1.496 (0.876 – 2.553) with p value 0.140. Self-reported hypertension and systolic hypertension had a low odd ratio of 0.528 (0.307–909), and 0.438 (0.235 – 0.814) with p value 0.021 and 0.009 respectively.

Graph 28: Forest plot of odds ratio of risk factors of thyroid dysfunction among the study participants



DISCUSSION

The present study was conducted in the Urban Health Centres of Ashok Nagar and Rukmini Nagar which are the field practice areas of Department of Community Medicine, Jawaharlal Nehru Medical College, KAHER, Belagavi. In total, 380 type 2 diabetes mellitus patients were recruited for the study. The duration of the study period was from January to December 2017.

Prevalence of thyroid dysfunction in type 2 diabetes mellitus patients become an attention in epidemiological studies in the field of endocrinology in the last decade. This study obtained proportion of hypothyroidism and hyperthyroidism in type 2 diabetes mellitus patients.

I. Socio-demographic profile of study participants

The mean age and standard deviation of the study participants was 56.25 ± 11.24. The distribution of the 380 study participants was such that most of them were between the age group 41 and 60 years 187(49.21%), 45 (11.85%) were up to 40 years, and 35 patients (9.21%) were 71 years or more. This shows that T2DM was more prevalent between 41 and 60 years of age. This observation was similar to WHO report which predicts that, in India and other developing countries the highest increase would occur in the age group of 41-60 year of age group.[21]

In a study conducted by Madavaram Sreelatha et al. in Warangal, Karnataka there were 108 participants with type 2 diabetes mellitus patients out of which 14 patients (13%) were up to 40 years, 78 patients (72.2%) were between 41 and 60 years, and 16 patients (14.8%) were 61 years or more which is on par with our studies.[21]In another study carried out by Navneet Agrawal et al. most of the patients

were above the age group of ≥50 years (66%) and mean age of the study population was 54.63±8.85 years.[37] (Table 1)

Most of the study participants were females, 229 (60.26%) and the remaining were males 151 (39.74%). Female to male ratio was 1.52:1. This observation was similar to a study conducted by Bilal Wani et al. who reported that prevalence of diabetes among women was higher than in men with female to male ratio of 1.41:1.[23]However,Jali et al. reported that diabetes was more prevalent in men (58.48%) than in women (41.51%) with the ratio 1.4:1 (M:F).[13] This contrast in observation was because the data collection was carried out during the working hours. (Table 2)

The religious division of the study participants showed that Hindus were the most with 249 (65.53%) and Muslims were 113 (29.73%). The least participants were Jains and Christians. This observation was similar to a study conducted in coastal Karnataka by Chythra R. Rao et al. 85.6% were Hindus, 8.6% were Muslims and 5.7% were Christians.[38] (Table 3)

The study participants were mostly illiterate with 114 (30%) participants and 89 (23.42%) had studied up to secondary school. 60 (15.79%) had a graduate degree. Chythra R. Rao et al. showed that, only 6.1% of the study participants were graduated and 18.8% of the study participants did not receive any kind of formal education which is lower than that was observed in our study.[38] (Table 4)

In the present study, majority of study participants were home makers (55.79%) and self-employed (20.26%). Only 9.74% of them were government employees. Out of the 1239 respondents in a study by Chythra R. Rao et al. 44% were housewives and 9.9% were unemployed an retired.[38] Similarly, another study

conducted by Iman Subekti et al in Indonesia showed that 41.1% were housewives and 32.4% were retired.[18] (Table 5)

In the present study, majority of study participants belonged to class IV SES (32.37%) followed by class III (25.79%) and the least belonged to class II (12.89%) and class V (12.63%). According to a study conducted by U. Padmanabha et al. in Mangalore 31.4% belonged to class IV and 29.2% class V socio-economic status.[39] (Table 6)

The proportion of married participants were similar in our study and in a study done at Mangalore, Karnataka which was 88.2% vs. 93.4% respectively.[39] This can be attributed to the fact that most of the participants in both the studies have mean age in the mid or late fifties and by this age most of the Indian would have been married. (Table 7)

In the present study, most of the study participants stayed either in joint families (52.37%) or nuclear families (39.47%). (Table 8)

Most of the study participants 192 (50.52%) had 1 to 3 symptoms, 20.79% had 4 to 6 symptoms and 15 (3.95%) had more than 7 symptoms. 94 (24.74%) of the subjects were asymptomatic. The most common symptom reported by the participants were fatigue (48.60%), followed by sleep disturbances (31.12%), constipation (23.42%), muscle cramps (23.42%). This observation could be due to overlapping clinical signs and symptoms between thyroid disorder and diabetes mellitus. (Table 9)

II. PREVALENCE AND DESCRIPTION OF THE RISK FACTORS

In our study, among 229 female participants 159 (64.43%) had attained menopause; 35 (15.28%) had normal menstrual cycle and 35 (15.28%) had history of menstrual disturbances. The higher proportions of the participants are those who had attained menopause in our study, since most of the study participants are above 50 years old. (Table 10)

Most of the study participants, 187 (49.21%) had 1-5 years of duration of diabetes mellitus. 87 (22.89%) had more than10 years of duration of diabetes mellitus. Only 41 (10.79%) had the duration less than 1 year duration of diabetes. The majority of people are in the age group between 41 and 60 years and have duration of disease up to 5 years. This observation is on par with a study conducted byMadavaram Sreelatha et al which showed that70.4% (76/108) of the patients had duration of diabetes up to 5 years, 18.5% (20/108)had duration between 6 and 10 years, and 11.1% (12/108)more than 10 years.[21]MaazOzair et al. studied 250 diabetics, 67.6% of them had the duration of diabetes up to 5 years, 20.4% had the duration 5-10 years and 12% of the patients the duration of illness were more than 10 years.[25] (Table 11)

In present study, overall prevalence of self-reported hypertension was 42.89%. Other illness found among the participants were Coronary Heart Disease [8(2.36%)], Systemic lupus erythematous [3 (0.79%)]. Among 393 type 2 diabetes mellitus patients studied by ShyamindaKahandawa et al. in Sri Lanka, the self-reported prevalence of hypertension was 72.63% which was higher than the reported prevalence in our study.[17] In a similar study conducted by V.Ueckermann et al. in South Africa the self-reported Hypertension was 78%.[14] This discrepancy in the result can be because the above mentioned study was conducted in a hospital setting

while our study was conducted in a community setting. Also the early screening and treatment for hypertension is yet to be well established at the community level. (Table 12)

Among the study participants, 27 participants (7.11%) had a family history of thyroid disorders. Among them 19 (70.37%) had either of the parent with a positive history. 8 (29.63%) had their siblings with a history of thyroid disorders. Family history as noted by Shyaminda Kahandawa et al. showed positive family history in first degree relatives as 6%.[17](Table 13)

Out of the 380 study participants, only 61 (16.05%) of them had the habit of consuming tobacco and 64 (16.84%) had the habit of alcohol consumption. Metab Al-Geffari et al. had reported similar findings of tobacco consumption (17.4%).[40] (Table14& 15)

Most of the study participant, 349 (91.84%) were on oral hypoglycemic agents and insulin was used by 26 (6.84%) and 5 (1.32%) were on both oral hypoglycemic agents and insulin. Imam Subekti et al. showed that relatively a higher proportion of the patients, 20.7% patients were only on insulin therapy whereas 48.4% patients were on oral hypoglycemic drugs and 30.4% on both insulin and oral hypoglycemic drugs. [14] This is because most of the study participants take their regular diabetic medications from the Urban Health Centres where there is no availability of Insulin. (Table 16)

A total of 264 (69.48%) patients practice regular leisure time physical activity out of which 238 (62.63%) did regular walking, 23 (6.05%) practiced yoga and 3 (0.79%) went gym. Others did not practice any regular physical activity. This

observation indicates participant's awareness towards importance of regular exercise in the management of diabetes. (Table 17)

Most of our study participants, 365 (96.05%) purchased iodized salt for cooking. This observation is higher when compared with an editorial article based on National Family Health Survey – 4 (NFHS-4) written by Kumar et al. which reported 86.8% iodised salt usage in Karnataka.[41] (Table 18)

Extra salt consumption documented in our study was 13.58% and 86.84% did not take extra salt consumption by the plate. (Table 19)

Most of the study participants consumed goitrogens, 59.21%less than 2 times per week and 40.79%more than two times per week. The common goitrogens consumed were cauliflower and cabbage. (Table 20)

It was observed that 187 (49.21%) consumed vegetarian food and 197 (50.79%) followed non- vegetarian diet. According to Sample Registration System (SRS) survey 79.1% of the population in Karnataka were non-vegetarians which is high when compared to our study.[42] (Table 21)

In the present study the overall prevalence of overweight and obesity were 48.68% and 28.95% respectively and the mean BMI of the study participants was 25.89. Study conducted in Warangal reported 59.2% of overweight and obese.[21]Similar observation was made in a study conducted by Shyaminda Kahandawa et al reported mean BMI of 26.4 kg/m^2.[17] (Table 22)

The overall prevalence of central obesity assessed by WC and WHR were 79.53% and 86.32% respectively, in our study. Women had higher values of WC and WHR. Similar findings using WHR showed, higher prevalence of central obesity

among women (97.8%) than among men (72.2%) with overall prevalence of central obesity among diabetic patients was 90.63% in a study done in rural area of Mangalore district of Karnataka.[39] "Asian Indian phenotype" is characterized by less of generalized obesity (measured by BMI) and greater central body obesity as shown by greater WC and WHR. This explains the difference in prevalence of obesity using BMI vs WHR and WC in our study. (Tables 23 & 24)

In the present study the prevalence of systolic and diastolic hypertension was 36.85% and 31.31% respectively. A study was done in Warangal which supports our findings of higher proportion of hypertension (50%). Mohammed Salman et al. in Mysore, India reported overall higher prevalence of hypertension (37.1%). [43] (Tables 25 & 26)

In our study, 271 (71.32%) participants had hyperglycemia with fasting blood sugar level of > 126 mg/dl or post prandial blood glucose level of > 200 mg/dl. The mean serum FBS was 153.3 ± 46.25 and that of PPBS was 229.18 ± 75.34 mg/dl. Similar high values of FBS and PPBS were observed in a study conducted by Palma CC et al. in Rio de Janerio, Brazil with mean FBS of 139 ± 74.9 and PPBS 213 ± 81.5 mg/dl.[2] Another study conducted by Bharat et al. in Manipur, India reported that the participants with FBS > 120 mg/dl were 43.3% with mean value of 126.17 ± 37.92 mg/dl.[44] (Table 27)

III. PREVALENCE OF THYROID DISORDERS

Among the 380 study participants, the overall prevalence of thyroid disorders was found to be 21.58% and the most common thyroid disorder was subclinical hypothyroid with 13.68%. Our observations are in consistence with the previous similar studies performed in India and other countries. Jali et al. reported a prevalence

of 16.2%.[13]Madavaram Sreelatha et al. reported a prevalence of 13.1% with most common thyroid disorder as subclinical hypothyroidism.[21] Bilal Wani et al. reported a prevalence of 17.3% with subclinical hypothyroidism (9%) as the most common disorder, in Delhi.[23] A study conducted in Assam by Anuradha Deurieta et al. reported 22.5% with subclinical hypothyroidism (14.1%).[45] Higher prevalence was observed in studies conducted by Maaz Ozair et al., in Aligarh (28%), Nidhi Kaely et al., in Uttarkhand (24%) and Navneet Agarwal et al., in Gwalior (27.8%).[25][19][37] Another study done by Palma CC et al had reported a prevalence of 14.7% in patients with diabetes.[2]Papazafiropalou et al did a similar study in Greek and reported that the overall prevalence of thyroid dysfunction in T2DM patients to be 12.3%.[15] (Table 28)

IV. ASSOCIATION OF THYROID DISORDERS WITH RISK FACTORS AND SOCIO – DEMOGRAPHIC VARIABLES

Among the patients with abnormal thyroid profile (82), 12 (14.63%)were found to be of age 40 or less, 22 (26.82%) were in between 41 and 50 years age group, 20 (24.39%) were found to be in between 51 and 60 years, and 29 (35.36%) of them were of age group 61 and above. Although there is a difference, when compared between patients with normal and abnormal thyroid profile, it has no statistical significance (P = 0.767). Madavaram Sreelatha et al. in their study found that thyroid disorders in diabetes mellitus patients had no significant association with the age of the study participants. This study supports our findings.[21] The present study findings contradict with that of Jali et al. who in their study found that age of the study participants had significant association with altered thyroid profile in diabetic patients.[13] (Table 29)

Among 229 female study participants, 58 (25.33%) showed presence of thyroid dysfunction. Thyroid disorder in female participants 71.95% (59/82) were more in number when compared with male participants 28.05% (23/82). Compared between patients with normal and abnormal thyroid profile the difference is statistically significant (P = 0.014). Jali et al., et al., and Madavaram Sreelatha et al. in their studies found that the prevalence of thyroid dysfunction was significantly higher in the female than in the male diabetic patients.[13][21] Furthermore, Metab Al-Geffari et al found a significant correlation between female gender and altered thyroid profile (RR of 1.95 (95% CI, 1.36–2.78) with *P* value < 0.0001).[46] (Table 30)

The study had more number of 249 (65.53%) Hindu participants and followed by 113 (29.73%) Muslim participants. The prevalence of thyroid disorders was found to be highest among the Hindu population with 52.44% (43/82) and the Muslim had 46.34% (38/82). The increased prevalence of thyroid disorders among the Hindu participants can be due to increased number of Hindu participants in our study. (Table 31)

In the present study, no significant relationship was found between presence of thyroid disorders and education level of the participants. (Table 32)

The prevalence of thyroid dysfunction was high among home makers (25%) followed by self-employed (19.48%). High prevalence among home makers can be because of high association of thyroid disorders among female participants found in our study. (Table 33)

The thyroid disorders were found to be the most in class IV with 36 (29.27) followed by in class I and class III with 13 (20.97%) and 19 (19.39%). The least number of cases were observed in the class II with 7 (14.29%) and class V with 7

(14.58%). This study coincides with the statement that non – communicable diseases are a global disease and not linked to a particular social class. (Table 34)

Among the 82 patients with abnormal thyroid profile, 46.34% had duration of diabetes for 1 to 5 years, 17 (20.73%) had duration between 6 and 10 years and 16 (19.5%) more than 10 years. The difference is statistically not significant when compared with normal and abnormal thyroid profile. Similarly, Madavaram Sreelatha et al., Jali et al., Maaz Ozair et al. in their study found that thyroid disorders had no significant association with the duration of diabetes mellitus. (Table 35)

In our study, among 27 study participants with family history of thyroid disorders 29.63% had thyroid disorders and 70.37% had no thyroid disorders whereas among 353 study participants without family history of thyroid disorders 20.96% had thyroid disorders. The association between the family history and thyroid disorders was not significant. In a study conducted by Kahandawa et al. showed significant association with family history of thyroid disorders with 59.09% (13/22) which was contrary to our findings. (Table 37)

In our study, no relationship was seen between abnormal thyroid profile with tobacco and alcohol consumption. A study conducted by Fei Song et al. in China showed a significant association between smoking and thyroid disorders. This difference in observation can be due to the fact the most of the study participants in our study were of female gender. Hardly very few females at this age group have the habit of smoking in India.[24] (Table 38 & 39)

Out of 82 patients with thyroid abnormality, 91.46% (75/82) were on OHA, 6.09% (5/82) were on insulin, and 2.44% (2/82) were on both OHA/insulin. Compared with normal thyroid profile group, it has no statistical significance. This

finding was on par with the study conducted by Madavaram Sreelatha et al. (Table 40)

In our study, prevalence of thyroid disorders was found more among those who did not practice any physical activity during leisure time (28.45%). Compared with normal thyroid profile group, it was statistically significant. (Table 41)

No significant association was found between thyroid disorders and extra salt consumption (Table 42)

The prevalence of thyroid disorders was more among the non-vegetarians (24.36%) when compared with vegetarians (18.72%). However, no significant association was found between thyroid disorders and type of diet. (Table 44)

In our study, participants with presence of more than 7 symptoms had high proportion of thyroid disorders (46.67%) followed by the participants with 4 – 6 symptoms (31.65%) and 1 – 3 symptoms (22.39%). This association between thyroid disorders and presence of increased number of symptoms was statistically significant ($\chi 2 = 21.479$, $p = 0.0008$).

The prevalence of thyroid disorders increased with increasing number of symptoms related to thyroid disorders. Symptoms which were seen in higher proportion in hypothyroid disorders participants were facial puffiness, excessive daytime sleepiness, and constipation, difficulty in tolerating cold, fatigue, dry skin and dry hair. Symptoms which were seen in mostly in individuals with hyperthyroid disorders were difficulty in tolerating heat, hand tremor, increased appetite, and swelling in the neck. A study conducted by Manjunath C et al. in Bangalore reported

that the common symptoms seen among subclinical hypothyroid were dry skin, fatigue and poorer memory. [22] (Table 45 &46)

Out of 82 patients with abnormal thyroid profile, 48.78% (40/82) had overweight and 31.71% (26/82) were obese. The mean BMI of the patients with altered thyroid profile was 26.01 Kg/m2 compared to 25.93 Kg/m2 in patients with normal thyroid profile. However, there was no significant correlation between BMI and abnormal thyroid profile. This observation was similar to the findings of the studies conducted by Madavaram Sreelatha et al. and Maaz Ozair et al.[21][25] (Table 47)

In our study, the prevalence of thyroid disorders with abdominal obesity assessed by WC and WHR were 21.85% and 23.48% respectively. No statistical significance was observed between WC abdominal obesity and normal thyroid profile, whereas the association of WHR and abnormal thyroid profile was statistically significant. (Table 48 & 49)

In the present study, no positive association was observed between thyroid disorders and systolic as well as diastolic hypertension. Similar studies, Madavaram Sreelatha et al. and Metab Al-Geffari et al. reported no significant association between systolic and diastolic hypertension.[21][46] (Table 50 & 51)

Out of 82 participants with abnormal thyroid profile, 66 (80.49%) of the participants were hyperglycemic and 16 (19.15%) were euglycemic. The mean FBS and PPBS of the participants among the participants with altered thyroid profile were 161.7 and 243.8 mg/dl and were 150.3 and 224.3 mg/dl among normal thyroid profile were respectively. The association between thyroid disorders and hyperglycemic state

was found statistically significant. This findings was on par with the study conducted by Bharat et al., Manipur.[44] (Table 52)

In our study, 55.93% (33/59) Hypothyroidism was found in age group of 51 and above and 44.07% (26/59) in the age group of 31 – 40 years. Similarly 65.22% (15/23) hyperthyroidism was found in age group of 51 and above and 34.78% (8/23). No statistically significant age specific trend was observed. (Table 53)

In our study hypothyroidism and hyperthyroidism in Type 2 Diabetes Mellitus was seen to be significantly associated with the gender of the participants and physical activity during leisure time with p value 0.048 and 0.03 respectively, whereas no association was noted with duration of diabetes (p value = 0.702), family history of thyroid disorders (p value= 0.364), type of diet (p value = 0.275), waist hip ratio (p = 0.07) and with glycemic status (p value =0.139). This observation is consistent with the study conducted by Jali et al. which showed females are at increased risk of developing hypothyroidism and hyperthyroidism.[13] (Table 54 - 60)

V. Multivariate Logistic regression analysis: Association between various parameters with thyroid dysfunction

In our study, univariate analysis showed significant association between thyroid disorders and gender, waist hip ratio, hyperglycemic status, and physical activity during leisure time. Multivariate analysis of these variables demonstrated hyperglycemic status with significant association with an odds ratio (OR) of 1.85 (95% CI, 0.996 – 3.443) with p value 0.05. Waist hip ratio had an odds ratio of 2.40 (95% CI 0.863 – 6.672) with p value 0.093. Female gender had an OR of 1.614 (95% CI 0.893 – 2.915) and p value 0.113. No physical activity during leisure time had an odds ratio of 1.496 (0.876 – 2.553) with p value 0.140. Self-reported hypertension and

systolic hypertension had a low odd ratio of 0.528 (0.307–909), and 0.438 (0.235 – 0.814) with p value 0.021 and 0.009 respectively. In a study conducted by Papazafiropoulou et al. multivariate analysis demonstrated, after controlling for BMI, that presence of thyroid dysfunction was related only with gender (OR: 0.220, 95% CI: 0.141 - 0.352) and LDL- cholesterol levels (OR: 0.990, 95% CI: 0.985 - 0.995).[15] Another study conducted by Metab Al-Geffari reported positive family history for thyroid diseases the strongest risk factor with a relative risk (RR) of 3.39 (95% CI, 2.47–4.63) with *P* value <0.0001, followed by female gender with RR of 1.95 (95% CI, 1.36–2.78) with *P* value < 0.0001.[46] (Table 61)

CONCLUSION

The present cross sectional study reported a high prevalence of thyroid disorders to be 21.58%. Sub-clinical hypothyroidism was more common than other conditions which constituted 13.68% of the thyroid dysfunction in the type 2 diabetes mellitus patients. Clinical hypothyroidism was (1.85%), hyperthyroidism was 6.05% [clinical hyperthyroidism (3.94%) and subclinical hyperthyroidism (2.11%)].

Thyroid disorders are more in females (25.33%) than males (15.89%). Hypothyroidism (18.78%) and hyperthyroidism (6.98%) in females and in males, hypothyroidism was 10.59% and hyperthyroidism 4.64%.

Though symptoms were overlapping between the hypothyroid and hyperthyroid subjects, symptoms which were predominantly seen among hypothyroid individuals were facial puffiness, excessive daytime sleepiness, constipation, dry skin and thick brittle nails, weight gain, difficulty in tolerating cold and fatigue. Similarly symptoms which were predominantly seen among hyperthyroid individuals were hand tremors and difficulty in tolerating heat.

Our study showed high hyperglycemic individuals (71.84%) based on FBS and PPBS even with regular treatment indicating poor management of type 2 diabetes mellitus in the community. Abnormal thyroid dysfunction with hyperglycemic status (80.49%) showed a significant association. In addition presence of thyroid dysfunction was significantly associated with not involving in any physical activity during leisure time, increased waist hip ratio. Multivariate analysis demonstrated the presence of thyroid disorder was related with glycemic status of the participants with odds ratio 1.85 (CI, 0.996 – 3.443)

Based on the high prevalence of thyroid dysfunction among type 2 diabetes mellitus patients regular screening and early intervention should be doneespecially in females with T2DM patients. Strong suspicion of thyroid dysfunction in patients with uncontrolled glycemic levels should be taken into account in the comprehensive management of diabetes mellitus.

STRENGTHS

1. This cross sectional study was conducted in a community based setting and very few such studies have been conducted so far

LIMITATIONS

The limitations of the present study are

1. Associated thyroid autoimmunity was not evaluated due to constraints. Hence, it was not able to refine the spectrum of thyroid dysfunction in Type 2 diabetes mellitus patient.
2. Glycemic status was assessed based on FBS and PPBS but HbA1c which is a better indicator was not done due to financial constraints.
3. Our study was a cross sectional study, follow up was not done for assessment of thyroid dysfunction during the course of diabetes and any possible relation thereof with respect to long term morbidity and mortality.
4. Temporality of the given associations was unclear because of the cross-sectional design.

RECOMMENDATIONS

1. Prospective cohort studies should be carried out to determine the possible causal relationship between thyroid dysfunction and type 2 diabetes mellitus.
2. Further studies should be carried out to determine the effect of thyroid dysfunction of the diabetic complications.
3. Higher prevalence of thyroid disorders with most common being subclinical hypothyroidism which is more common in females and in those with poor glycemic controls makes it mandatory to regularly screen patients of type 2 diabetes mellitus for thyroid dysfunction so as to guide clinicians on the optimal management of both these conditions.
4. Regular check-up of blood glucose, consultation with doctor and adherence to the line of treatment should be strictly followed.
5. Information, Education and Communication regarding diet, exercise and self-care of diabetes.

SUMMARY

The present study was a community based cross sectional study undertaken to determine the prevalence of thyroid disorders and its associated risk factors in type 2 diabetes mellitus. The study was conducted in urban field practice area of Ashok Nagar and Rukmini nagar which are the field practice areas of Department of Community Medicine, Jawaharlal Nehru Medical College, KAHER, Belagavi on 380 patients with type 2 diabetes mellitus during the period of January 2017 to December 2017.

In the present study, 29.73% were in the age group of 61 - 70 years and 25.52% were in the age group of 51 – 60 years forming the majority of the participants. The average age of the study participant was 56.25 ± 11.24 (mean ± S.D.) with a range of 32 to 80 years of age. 60.26% were females forming the major portion and 39.74% were males. Majority of the study participants were home makers (55.79%) and self-employed were 20.26%. 30% of the participants did not have any kind of formal education; 23.42% of them studied up to secondary and 22.63% primary school; Majority of study participants belonged to SES class IV (32.37%); 65.53% of participants were Hindus; most of them were married (88.15%) and 52.37% of the participants were living in a joint family.

24.74% of the participants were asymptomatic and 75.26% had presented with symptoms of thyroid related symptoms. 64.43% of the female participants had attained menopause and 15.28% had menstrual disturbances.

The study participants' duration of diabetes varied. 10.79% had diabetes since less than 1 year. Most of them, 49.21% had diabetes from 1-5 years, 22.89% had

diabetes since 5-10 years and 17.11% were living with diabetes for more than 10 years. 91.84% were on Oral Hypoglycemic Agents. 7.11% had family history of thyroid disorders.

The prevalence of tobacco consumption and alcohol consumption was 16.05% and 16.84% respectively. The prevalence of self-reported hypertension was 39.74% and coronary heart disease was 2.36%. 69.47% of the participants practiced regular physical activity during leisure time and 30.53% did not practice any regular physical activity. 96.05% of the participants use iodized cooking salt, 13.58% consumed extra salt other than that added to the cooked food. Mean weekly consumption of goitrogens was 2.39 ± 0.8 times. The common goitrogens consumed were cauliflower and cabbage; Vegetarians were 49.21% and non-vegetarians were 50.79%.

The overall prevalence of overweight and obesity was 48.68% and 28.95% respectively. The mean BMI was 25.89 ± 3.86 kg/m^2. Prevalence of central obesity assessed by WC and WHR were 79.47% and 86.32% respectively. This prevalence among women was higher than that of men.

The prevalence of systolic pre-hypertension was (24.47%) and systolic hypertension (36.85%) among the participants. The prevalence diastolic pre-hypertension and hypertension was 43.95% and 31.31% respectively. The mean serum FBS was 153.3 ± 46.25 and the mean serum PPBS was 229.18 ± 75.34. 71.84% of the participants were hyperglycemic and 28.16% were euglycemic.

The prevalence of thyroid disorders among the participants was 21.58%. Sub-clinical hypothyroidism was more common than other conditions which constituted 13.68% of the thyroid dysfunction in the type 2 diabetes mellitus patients. Clinical

hypothyroidism was 1.85%; hyperthyroidism was 6.05% [clinical hyperthyroidism (3.94%) and subclinical hyperthyroidism (2.11%)]. The mean T3 value was 1 ± 0.5 ng/ml with a range of 0.27 to 4.6ng/ml; mean T4 was 8.56 ± 1.48 µIU /ml with a range between 3.01 and 16.4 µIU /ml. TSH value of the participants ranged between 0.01 and 28.3 µg /dl with a mean value of 3.03 ± 2.85 µg/dl

Statistically significant association was observed with factors such as gender, physical activity during leisure time, waist hip ratio and glycemic status with p value less than 0.05. Multivariate analysis demonstrated the presence of thyroid disorder was related with glycemic status of the participants with odds ratio 1.85 (CI, 0.996 – 3.443) with p value 0.05.

Screening for thyroid disease among T2DM patients should be routinely considered, as it is found to be an additional commorbidity

BIBLIOGRAPHY

1. International Diabetes Foundation. International Diabetes Foundation. 2017.

2. Palma CC, Pavesi M, Nogueira VG, Clemente EL, Pereira MD, Pereira LC, Pacheco FF, Braga TG, de Faria Bello L, Soares JO dos SS. Prevalence of thyroid dysfunction in patients with diabetes mellitus. Diabetol Metab Syndr 2013;5(1):1–5.

3. Delphine W, Cr S, U KM. Inter-Relationship of Glycemic Control and Thyroid Status in Type – 2 Diabetes Mellitus. 2(4):2–7.

4. Udiong CEJ, Udoh AE, Etukudoh ME. Evaluation of Thyroid Function in Diabetes Mellitus in Calabar , Nigeria. Thyroid 2007;22(2):74–8.

5. Kanwar G, Shekhawat M, Meena S, Saxena N, Mehra MC, Rathore M. A Study Of Thyroid Disorders Among The Patients Of Type 2 Diabetes Mellitus. 2016;2(5):33–6.

6. Witting V, Bergis D, Sadet D BK. Thyroid disease in insulin-treated patients with type 2 diabetes : a retrospective study. Thyroid Res 2014;7(2):1–6.

7. Wang C. The relationship between type 2 diabetes mellitus and related thyroid diseases. J Diabetes Res 2013;2013.

8. Al-Geffari M, Ahmad NA, Al-Sharqawi AH, Youssef AM, Alnaqeb D, Al-Rubeaan K. Risk factors for thyroid dysfunction among type 2 diabetic patients in a highly diabetes mellitus prevalent society. Int J Endocrinol 2013;2013:1–6.

9. Yadav SC, Saldhana A, Majumdar B. Status of thyroid profile in type -2 diabetes mellitus. J Nobel Med Coll 2012;1(2):64–71.

10. Dora JM, Machado WE, Rheinheimer J, Crispim D, Maia AL. Association of the type 2 deiodinase Thr92Ala polymorphism with type 2 diabetes: Case-control study and meta-analysis. Eur J Endocrinol 2010;163(3):427–34.

11. Hage M, Zantout MS, Azar ST. Thyroid disorders and diabetes mellitus. J. Thyroid Res.2011;

12. Duntas LH, Orgiazzi J, Brabant G. The interface between thyroid and diabetes mellitus. Clin Endocrinol (Oxf) 2011;75(1):1–9.

13. Jali M V., Kambar S, Jali SM, Pawar N, Nalawade P. Prevalence of thyroid dysfunction among type 2 diabetes mellitus patients. Diabetes Metab Syndr Clin Res Rev 2017;11(2016):S105–8.

14. Ueckermann V, Zyl DG Van. The prevalence of subclinical hypothyroidism among patients with diabetes mellitus at the Kalafong Hospital Diabetes Clinic : a cross-sectional study The prevalence of subclinical hypothyroidism among patients with diabetes mellitus at the Kalafong Hospit. 2014;9677(2): 6–8.

15. Papazafiropoulou A, Sotiropoulos A, Kokolaki A, Kardara M, Stamataki P, Pappas S. Prevalence of thyroid dysfunction among greek type 2 diabetic patients attending an outpatient clinic. J Clin Med Res 2010;2(2):75–8.

16. Diez JJ, Sanchez P, Iglesias P. Prevalence of thyroid dysfunction in patients with type 2 diabetes. Exp Clin Endocrinol Diabetes 2011;119(4):201–7.

17. Kahandawa S, Somasundaram NP, Ediriweera DS, Kusumsiri DP, Ellawala S, Chandrika GHTNK, et al. Prevalence of thyroid dysfunction among type 2 diabetic patients attending the Diabetes Clinic, National Hospital of Sri Lanka. Sri Lanka J … 2014;4(1):43–8.

18. Subekti I, Pramono LA, Dewiasty E, Harbuwono DS. Thyroid Dysfunction in Type 2 Diabetes Mellitus Patients. Acta Med Indones 2018;49(4):314.

19. Kaeley N, Bhatia R, Dhar M, Ahmed S. National Journal of Medical and Allied Sciences Association Of Thyroid Disorders And Type 2 Diabetes Mellitus – Beyond Coincidence-A Hospital Based Study From Sub-Himalayan. 2015;4(1).

20. Khurana A, Dhoat P, Jain G, Resident S. Prevalence of thyroid disorders in patients of type 2 diabetes mellitus Procedure. Jiacm 2016;17(1):12–5.

21. Sreelatha M, Kumar VS, Shekar GC, Shekar VC. Study of Thyroid Profile in Patients with Type 2 Diabetes Mellitus. 2017;5(2):211–20.

22. Manjunath. Prevalence of subclinical thyroid disorders in type 2 diabetes mellitus. Int J Med Public Heal 2013;3(4):330–4.

23. Khan MA, Hafiz N, Kohli S. Research Article Prevalence Of Thyroid Dysfunction In Patients Of Type 2 Diabetes Mellitus : Resident Department of General Medicine Hamdard Institute of Medical Sciences and Research t of Obsteterics and Gynecology , ESIC Hospital Okhla , New Delhi 4 Hea. 2018;4–7.

24. Song F, Bao C, Deng M, Xu H, Fan M, Paillard-Borg S, et al. The prevalence and determinants of hypothyroidism in hospitalized patients with type 2 diabetes mellitus. Endocrine 2017;55(1):179–85.

25. Ozair M, Noor S, Raghav A, Siddiqi SS, Chugtai AM, Ahmad J. Prevalence of thyroid disorders in North Indian Type 2 diabetic subjects: A cross sectional study. Diabetes Metab Syndr Clin Res Rev 2018;12(3):301–4.

26. World Health Organization. The WHO STEPwise approach to noncommunicable disease risk factor surveillance. World Heal Organ 2017;36(10):1–474.

27. Park K. Park's Textbook of Preventive and Social Medicine. 24th ed. Jabalpur, India; 2017.

28. Singh T, Sharma S, Nagesh S. Socio-economic status scales updated for 2017. Int J Res Med Sci 2017;5(7):3264.

29. Data WLC-P. Who. Igarss 2014 2014;(1):1–65.

30. International Diabetes Institute/ Western Pacific World Health Organization/ International, Force A for the study of OIOT. The Asia-Pacific perspective: redefining obesity and its treatment. Geneva, Switz. World Heal. Organ.2000;56.

31. WHO. Waist Circumference and Waist-Hip Ratio: Report of a WHO Expert Consultation. World Heal Organ 2008;(December):8–11.

32. Verdecchia P, Angeli F, Mancia G, Fagard R, Narkiewicz K, Redon J, et al. How can we use the results of ambulatory blood pressure monitoring in clinical practice? Hypertension 2016;11(3):102–7.

33. Human TSH, Kit C. TSH (Human) CLIA Kit. :1–9.

34. Joshi SR. Laboratory evaluation of thyroid function. J Assoc Physicians India 2011;59 Suppl(January):14–20.

35. Hsio- M, Wiedmeyer M. Laboratory Procedure Manual Plasma Glucose Enzyme Hexokinase (HK). :1–14.

36. WHO. Definition and Diagnosis of Diabetes Mellitus and Intermediate Hyperglycemia. Who2 2006;50.

37. Agrawal N, Gulati M. Study of Prevalence of Thyroid Dysfunction in Patients with Type 2 Diabetes Mellitus. Int J Contemp Med Res 2016;343(8Online):2393–915.

38. Rao C, Kamath V, Shetty A, Kamath A. A study on the prevalence of type 2 diabetes in coastal Karnataka. Int J Diabetes Dev Ctries 2010;30(2):80.

39. Padmanabha UR, Nalam U, Badiger S, Nagarajaiah P, Rani U. Prevalence and Risk Factors of Type 2 Diabetes Mellitus in the Rural Population of Mangalore, South India. Natl J Community Natl J Community Med 2017;8(8):456–61.

40. S.N DR, Champakamalini D, Venkatesh D, Mohsin D. A prospective study of thyroid - dysfunction in patients with Type 2 diabetes in general population. Arch Med 2013;5(1):1–9.

41. Kumar A, Kalra S, Unnikrishnan A. Iodized salt in India: Insights from National Family Health Survey-4. Thyroid Res Pract 2016;13(2):49.

42. Sample Registration System Baseline Survey 2014. Regist Gen India 2014;22.

43. Salman M, Dasgupta S, D'Souza CJM, Xaviour D, Raviprasad B V, Rao J, et al. Impact of Hypertension on Type 2 Diabetes in Mysore Population of South India. Int J Clin Med 2013;4(December):561–70.

44. David Gangte DH. Thyroid Status in Diabetes Mellitus. J Glycomics Lipidomics 2013;03(01):1–4.

45. Deuri DA, Thakuria DJ, Kalita DD`. A Prospective Study of Thyroid Dysfunction in Patients with Type2 Diabetes Mellitus in A Tertiary Care Hospital (Faamch, Barpeta, Assam, India). IOSR J Dent Med Sci 2016;15(07):21–5.

46. Al-Geffari M, Ahmad NA, Al-Sharqawi AH, Youssef AM, Alnaqeb D, Al-Rubeaan K. Risk factors for thyroid dysfunction among type 2 diabetic patients in a highly diabetes mellitus prevalent society. Int J Endocrinol 2013;2013:1–7.

ANNEXURE – I – ETHICAL CLEARANCE LETTER

K.L.E.UNIVERSITY'S
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
(Accredited 'A' Grade by NAAC)

Website: http//www.jnmc.edu
E-Mail : dome@jnmc.edu

Phone: (+ 91-(0)831 Office : 2471350
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref: MDC/DOME/ 25 **Date: 17/10/2016**

To,

Dr
PG student in Community Medicine,
J.N.Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"PREVALENCE OF THYROID DYSFUNCTION AMONG TYPE 2 DIABETES MELLITUS PATIENTS IN URBAN AREAS OF BELAGAVI – ONE YEAR COMMUNITY BASED CROSS SECTIONAL STUDY"**, is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee on Human Subjects Research.

(Dr. Arathi Darshan)
Member Secretary
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

(Dr. Ganga Pilli)
Chairman,
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

ANNEXURE-II- INFORMED CONSENT

Prevalence of thyroid dysfunction among type 2 diabetes mellitus patients in urban areas of Belagavi

INVESTIGATORS: **DR.**

DR.

Introduction

Diabetes mellitus and thyroid dysfunction are the two most common endocrine disorders. Both hyperthyroidism and hypothyroidism can affect the course of diabetes. Having diabetes increases a person's risk for heart disease, and many people with diabetes have a heart condition such as coronary heart disease or heart failure. Since hyperthyroidism causes rapid heart rate and increases the risk of abnormal heart rhythm, it may also bring on angina (chest pain), worsen heart failure or interfere with the treatment of heart failure, as well as further increase the risk of other heart problems. The abnormal lipid pattern typical of Type 2 diabetes (low HDL, or "good" cholesterol; high triglycerides; and a high proportion of small, dense LDL particles) is usually worsened by hypothyroidism. These changes further raise the already high risk of cardiovascular diseases such as heart disease and stroke among people with diabetes. Therefore this study is being conducted to find out the prevalence of thyroid dysfunction among diabetes mellitus individuals residing in the areas under Ashok Nagar Urban Health Centre and Rukmini Nagar Urban Primary Health Centre, Belagavi and you are invited to participate in this study. Participation in this study is completely voluntary.

Explanation of procedures

In this study you will have to answer a few questions about your general health information, socio-demographic details, nutritional health status and interventional procedure. The entire procedure may take 1 – 2hours.

Possible benefits

The investigator does not promise or guarantee that you will receive direct benefit being in the study. It will benefit the whole community because by this study we will know the prevalence of thyroid dysfunction in type 2 diabetes mellitus, and accordingly the preventive and control measures can be taught.

Possible risks

1. Haematoma
2. Swelling, tenderness and inflammation at the site
3. Persistent bleeding
4. Vasovagal response – dizziness, sweating, coldness of skin, numbness and tingling of hands and feet, nausea, vomiting, possible visual disturbance, syncope and injury fall from fainting.
5. Rare adverse effects: Thrombosis of the vein due to trauma and thrombophlebitis due to infection.

Confidentiality

Your identity will not be revealed. All information collected will be collected and coded so that no one will know your identity.

Withdrawal

Participation in this study is voluntary. If you do not wish to participate in this study, you will not lose benefits to which you are entitled.

Costs of participation

The cost of the study will be borne by the investigator. There will be no additional cost to you for participating in this study.

Payment of participation

There will be no incentives to you for participating in this study.

Authorization to publish results

The Investigators may use the information gathered from this study for presentation in scientific journals. However your identity will not be disclosed in such presentation or publication.

Legal rights

By signing this consent form, you are not waiving any of your legal rights.

Questions

If you have any questions about this study, you may contact DR._____ If you have any questions about your rights as a study participant, you may contact Dr Ganga S. Pilli, Chairman, JNMC Institutional Ethics Committee on human subjects research at 9480275601.

Consent statement

"I have been explained all the contents of this consent form in my local language and have understood and clarified all my queries about the study to the best of my knowledge. Furthermore I recognise that I have the complete right to withdraw this consent at any point during the study. I understand that the information given by me will be confidential and will be used for research purpose only, further I am aware that the result of this research will be presented/published without disclosing any personal identification of the participants.

I hereby give my voluntary consent for participation in the study. I do sign the informed consent form in front of an eyewitness whom I recognise."

Name of the participant:_____ Signature/ left thumb impression

Name of the eyewitness:_____ Signature/ left thumb impression

Name of the investigator: _____ Signature

Signature of the guide:

Date:

ANNEXURE - III

QUESTIONNAIRE

Prevalence of thyroid dysfunction among type 2 diabetes mellitus patients in urban areas of Belagavi

PART - I SOCIO DEMOGRAPHIC DATA

Name :

Age : _____years

Sex: 1. Male

2. Female

Area of residence :

1. Religion: 1. Hindu

2. Muslim

3. Christian

4. Others (specify).

2. Education: 1. Illiterate

2. Primary school

3. High school

4. Pre-university I & II

5. Degree

3. Occupation:

4. Marital status: 1. Unmarried

2. Married

3. Widowed

4. Divorced / Separated

5. Type of Family: 1. Joint

2. Nuclear

3. Broken family

4. Problem family

6. a. Monthly income of the family:

b. Total number of family members:

c. Monthly per capita income:

7. Socioeconomic status – Modified B.G Prasad classification

1. Class I

2. Class II

3. Class III

4. Class IV

5. Class V

8. Menstrual History: 1. Last menstrual period?

2. Irregular/regular

3. Excessive/Reduced menstrual flow

9. Do you have children?

a. Yes

b. No

If the answer is yes, do you have any history of miscarriage?

a. Yes
b. No
c. If yes, how many times?

10. Complaints of/history of:

HYPOTHYROIDISM:

- Fatigue/sluggish – Yes/No
- Inability to exercise - Yes/No
- Difficult in tolerating cold – Yes/No
- Swelling at the front of the neck – Yes/No
- Difficulty/Infrequent bowel movements (constipation) – Yes/No
- Dry skin - Yes/No
- Dry hair – Yes/No
- Thick brittle nails – Yes/No
- Facial puffiness - Yes/No
- Swelling at the extremities - Yes/No
- Muscles cramps – Yes/No
- Excessive sleepiness (Daytime) - Yes/No
- Weight gain – Yes/No
- Hair loss on - ☐Scalp ☐Face ☐ Genitals /No

HYPERTHYROIDISM

- Palpitations – Yes/No
- Increased appetite - Yes/No
- Weight loss – Yes/No
- Difficulty falling asleep/Insomnia - Yes/No
- Abnormal protrusion of eyeball - Yes/No
- Hand tremor - Yes/No
- Warm skin - Yes/No
- Difficult in tolerating heat - Yes/No
- Increased sweating - Yes/No

PART IV- PAST HISTORY

11. How long have you been diagnosed with type 2 diabetes mellitus? _____

12. Any past history of chronic illness/tuberculosis/cardiac disease/liver disease?

    a. Yes

    b. No

    c. If yes, specify

PART V-FAMILY HISTORY

13. Does anyone in your family have thyroid disorders?

a. Yes

b. No

c. If yes, specify_____

PART V- PERSONAL HEALTH HABITS

14. Do you have a history of tobacco use?

a. Yes

b. No

c. if yes, specify smoke/smokeless and duration_____

15. Do you consume Alcohol?

a. Yes

b. No

c. if yes, duration_____

PART VI- DRUG HISTORY

16. List of prescribed drugs taken regularly?

Drugs	Strength	Frequency

PART VII- PHYSICAL ACTIVITY AND NUTRITIONAL HISTORY

17. Do you participate in regular physical activity or exercise?

a. Yes

b. No

If yes, what kind of physical activity?

a. Walking

b. Running

c. Yoga

d. Others, specify_____

17. How long you do exercise? _____

18. Do you follow a meal plan?

a. Yes

b. No

19. How frequent do you eat daily? _____

20. What type of salt do you take?

a. Iodized

b. Non iodized

21. Do you store iodized salt in a closed container?

a. Yes

b. No

22. Do you add salt to the food while cooking?

a. Yes

b. No

23. Do you take iodized salt separately by the plate?

a. Yes

b. No

24. Do you consume the following? (Goitrogens)

☐Cabbage ☐Cauliflower ☐Peanuts ☐Radish ☐Sweet potatoes ☐ soya

25. How many days in a week you consume them? _____

26. Which type of diet you consume?

a. Vegetarian

b. Non- Vegetarian

c. Both Vegetarian and Non-Vegetarian

PART VIII – CLINICAL EXAMINATION

General Physical Examination

1. Built and nourishment: Poor / Moderate / Fair
2. Height: _____ cm Weight: _____ Kgs.
3. BMI:_____
4. Waist/Hip ratio: _____
5. Pallor: Present/Absent
6. Icterus: Present/Absent
7. Pedal oedema: Present/Absent
8. Lymphadenopathy: Present/Absent
9. Cyanosis: Present/Absent
10. Clubbing: Present/Absent

Vital signs:

Respiration rate: _____/min. Blood pressure: At supine position –

At standing position -

Pulse rate: _____/min. Temperature: __^{0}C Febrile / Afebrile

Local Examination:

Thyroid Examination:

- Inspection-
- Palpation-
- Percussion-
- Auscultation-

Systemic Examination:

1. Cardiovascular system:
   _____
2. Respiratory system:
   _____
3. Central Nervous system:
   _____
4. Per abdomen:
   _____

PART IX – INVESTIGATION PROFILE

TEST	Result
Thyroid Function Test	T3- T4- TSH-
Fasting Plasma Glucose	
Post Prandial Plasma Glucose	

ANNEXURE IV – KEY TO MASTER CHART

A. Patient Id

B. Age in years

C. Gender

1. Male
2. Female

D. Religion

1. Hindu
2. Muslim
3. Christian
4. Jain

E. Education

1. Illiterate
2. Primary school
3. Highschool
4. Pre-university I & II
5. Degree

F. Occupation

1. Government employee
2. Non-government employee
3. Self-employee
4. Home maker
5. Retired
6. Unemployed

G. Marital status

1. Married
2. Unmarried
3. Widowed
4. Divorced

H. Type of family

1. Joint
2. Nuclear
3. Broken family
4. Problem family

I. Monthy income of the family

Rs._____

J. Total number of family members _____ persons

K. Per capita income _____ Rs.

L. Socio economic status

1. Class I
2. Class II
3. Class III
4. Class IV
5. Class V

M. History of miscarriage

0. Not applicable
1. Yes
2. No

N. No. of times of miscarriage _____ times

O. History of fatigue

1. Yes
2. No

P. History of inability to exercise

1.Yes

2.No

Q. History of difficulty in tolerating cold

1.Yes

2.No

R. History of Swelling in the front of the neck

1.Yes

2.No

S. History of constipation

1.Yes

2.No

T. History of dry skin

1.Yes

2.No

U. History of dry hair

1.Yes

2.No

V. History of thick brittle nails

1.Yes

2.No

W. History of facial puffiness

1.Yes

2.No

X. History of swelling in the extremities

1.Yes

2.No

Y. History of muscle cramps

1.Yes

2.No

Z. Excessive daytime sleepiness

1.Yes

2.No

AA. Weight gain

1.Yes

2.No

AB. Hair loss

1. Yes
2. No

AC. Palpitations

1. Yes
2. No

AD. Increased appetite

1. Yes
2. No

AE. Weight loss

1. Yes
2. No

AF. Insomnia / difficulty falling asleep

1. Yes
2. No

AG. Abnormal protrusion of eyeball

1. Yes
2. No

AH. Hand tremor

1. Yes
2. No

AI. Warm skin

1. Yes
2. No

AJ. Difficult in tolerating heat

1. Yes
2. No

AK. Increased sweating

1. Yes
2. No

AL. Regularity of menstrual history

0. Not applicable
1. Regular
2. Irregular

AM. Blood flow history of menstrual cycle

1. Not applicable
2. Normal
3. Reduced
4. Excess

AN. Attained Menopause?

1. Not applicable
2. Yes
3. No

AO. Duration of diabetes mellitus _____ years

AP. Past history of medical illness

1. Yes
2. No

AQ. If yes, specify

1. Not applicable
2. HTN
3. HTN + CHD
4. HTN + SLE

AR. Duration of past history _____ years

AS. Family history of thyroid disorders

1. Yes
2. No

AT. History of tobacco consumption

1. Yes
2. No

AU. History of alcohol consumption'

1. Yes
2. No

AV. Mode of treatment of Diabetes mellitus

1. Oral hypoglycemic agents
2. Insulin

AW. Physical activity during leisure time

1. Yes
2. No

AX. Type of physical activity

1. Walking
2. Yoga
3. Gym

AY. Duration of physical activity _____ minutes

AZ. Type of salt

1. Iodized
2. Non Iodized

BA. Extra salt consumption

1. Yes
2. No

BB. How many varieties of Goitrogens consumption _____ number of goitrogens

BC. Frequency of goitrogens consumption _____ times per week

BD. Type of diet

1. Vegetarian
2. Non – Vegetarian

BE. Height _____ cms

BF. Weight _____ Kg

BG. BMI _____ Kg/m^2

BH. Waist _____ cms

BI. Hip _____ cms

BJ. Waist hip ratio _____ cms

BK. Systolic Blood pressure _____ mmHg

BL. Diastolic Blood pressure _____ mmHg

BM. T3 _____ng/ml

BN. T4 _____µg/dl

BO. TSH _____µIU/ml

BP. Interpretation of thyroid values

0. Euthyroid
1. Clinical hypothyroid
2. Sub clinical hypothyroid
3. Clinical hyperthyroid
4. Sub clinical hyperthyroid

BQ. FBS _____ mg/dl

BR. PPBS _____ mg/dl

SOCIO DEMOGRAPHIC														Thyroid related symptoms																										PAST HISTORY								PHYSICAL & NUTRITION																INVESTIGATIONS					
PT. ID.	AGE	SEX	RELIGION	EDUCATION	OCCUPATION	MARITAL STATUS	FAMILY	MONTHY INCOME	TOTAL MEMBERS	PER CAPITA	SES	MISCARRIAGE	No. of Miscarriage	FATIGUE	INABILITY TO EXERCISE	DIFF.TOLERATING COLD	SWELLING IN NECK	CONSTIPATION	DRY SKIN	DRY HAIR	THICK BRITTLE NAILS	FACIAL PUFFINESS	SWELLLING EXTREMITIES	MUSCLES CRAMPS	EXCESSIVE SLEEPINESS	WEIGHT GAIN	HAIR LOSS ON	PALPITATIONS	INCREASED APPETITE	WEIGHT LOSS	INSOMNIA	AB PROT EYEBALL	HAND TREMOR	WARM SKIN	DIFF IN TOLERATING HEAT	INCREASE SWEATING	REGULARITY	BLOOD FLOW	MENOPAUSE	DURATION OF DM(yrs)	PAST HISTORY	IF YES,SPECIFY	DURATION(yrs)	FAMILY HISTORY	TOBACCO	ALCOHOL	DRUG HISTORY	EXERCISE	IF YES	HOW LONG (min)	SALT	PLATE SALT	GOITROGENS	FREQUENCY GOITROGENS	TYPE OF DIET	HEIGHT(Cm)	WEIGHT(Kg)	BMI	WAIST(cm)	HIP(cm)	RATIO	Systole	Diastole	T3(0.59-1.78)	T4(4.5-10.87)	TSH(0.5-4.7)	Thyroid Disorders	FBS	PPBS
1	37	1	1	3	5	2	1	5000	9	555.5555556	5	0	0	2	2	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	2	2	0	0	2	2	2	1	1	1	30	1	2	4	2	2	151	65	28.5075216	89	96	0.927083333	120	80	0.93	9.22	1.08	0	126	186
2	48	1	1	1	3	2	2	5000	3	1666.666667	4	0	0	2	2	2	2	2	2	1	1	2	2	2	2	2	1	1	1	2	1	2	1	2	2	2	0	0	0	1	2	0	0	2	1	1	1	1	1	90	1	1	3	3	1	162	52	19.81405274	78	66	1.181818182	120	80	**1.01**	**8.94**	**1.86**	0	125	193
3	38	2	2	3	4	2	2	10000	4	2500	3	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	3	1	1	2	1	2	2	1	1	1	20	1	2	2	2	2	167	60	21.51385851	88	90	0.977777778	110	70	0.91	9.65	2.28	0	168	287
4	60	1	4	1	3	2	1	40000	9	4444.444444	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	4	2	0	0	2	2	2	1	2	0	0	1	1	2	3	1	168	71	25.15589569	99	91	1.087912088	160	80	1.12	8.9	1.83	0	104	151
5	55	1	4	3	3	2	1	10000	5	2000	3	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	5	1	1	5	2	1	1	1	1	1	60	1	1	3	4	1	157	59	23.93606231	90	93	0.967741935	180	90	0.99	8.41	2.13	0	96	152
6	62	1	4	3	3	2	1	60000	10	6000	2	0	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0.5	1	2	1	2	1	2	1	2	0	0	1	2	2	2	1	158	63	25.23634033	96	99	0.96969697	120	90	1.14	9.06	1.02	0	158	198
7	76	1	1	2	3	2	1	20000	11	1818.181818	4	0	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	10	2	0	0	2	2	2	2	2	0	0	2	1	4	4	1	161	49	18.90359168	72	78	0.923076923	110	70	0.88	9.02	1.55	0	188	317
8	42	2	4	2	4	2	1	16000	8	2000	3	2	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	1	2	2	2	2	1	1	2	2	2	2	1	2	0	0	1	2	2	2	1	152	65	28.13365651	104	98	1.06122449	140	90	0.97	8.01	3.46	0	192	335
9	60	2	1	2	4	2	1	12000	8	1500	4	1	2	2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	2	1	1	2	2	2	2	1	1	1	30	1	2	2	3	1	154	62	26.14268848	92	93	0.989247312	110	70	0.95	8.47	1.12	0	172	253
10	50	2	4	1	4	2	1	8000	5	1600	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	1	1	1	1	2	2	2	1	1	1	40	1	2	4	4	1	152	67	28.99930748	108	99	1.090909091	130	80	0.99	8.31	2.54	0	124	184
11	71	2	2	1	4	2	1	8000	8	1000	4	1	2	1	1	1	2	2	2	2	2	2	1	1	2	2	2	1	1	1	1	2	1	1	2	2	0	0	1	15	2	0	0	2	2	2	1	2	0	0	1	2	2	1	2	160	60	23.4375	96	98	0.979591837	150	90	**1.53**	**13.9**	**0.01**	3	214	386
12	70	1	2	3	5	2	1	10000	6	1666.666667	4	0	0	1	2	2	2	1	2	1	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	0	0	0	2	1	1	2	2	1	1	1	1	1	30	1	2	3	2	2	178	79	24.93372049	90	96	0.9375	150	100	0.82	4.81	**19.48**	2	134	168
13	76	1	2	3	5	2	1	15000	12	1250	4	0	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	1	1	0	0	0	8	2	0	0	2	2	2	3	1	1	60	1	2	2	2	2	176	75	24.21229339	92	96	0.958333333	140	80	**1.53**	**14**	**0.01**	3	120	184
14	40	2	2	2	4	2	1	5000	6	833.3333333	5	2	0	1	2	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	2	2	2	2	1	3	2	0.58	1	1	7	2	2	2	1	2	0	0	1	2	2	1	2	165	86	31.58861341	104	98	1.06122449	110	80	0.78	6.45	**8.16**	2	131	194
15	48	2	2	5	4	2	2	20000	4	5000	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	7	1	3	3	2	2	2	1	1	1	40	1	2	2	1	2	162	69	26.29172382	96	98	0.979591837	120	80	0.88	9.1	2.57	0	142	203
16	45	2	2	1	4	2	1	5000	5	1000	4	2	0	1	2	2	2	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	10	2	0	0	2	2	2	1	2	0	0	1	1	1	2	2	160	65	25.390625	92	94	0.978723404	130	70	0.89	10.5	2.74	0	186	334
17	45	2	2	3	4	2	1	26000	6	4333.333333	2	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	5	2	0	0	2	2	2	1	1	1	30	1	1	1	2	2	164	66	24.5389649	98	96	1.020833333	120	80	0.89	8.44	1.07	0	115	168
18	62	2	2	1	4	3	1	5000	5	1000	4	2	0	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	4	2	0	0	1	2	2	1	2	0	0	1	2	2	2	2	168	70	24.8015873	101	99	1.02020202	120	80	1	9.11	0.69	0	135	174
19	68	1	2	5	5	2	2	15000	2	7500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	0	0	0	9	1	2	9,3	2	2	2	2	1	1	40	1	2	3	2	2	170	65	22.49134948	96	98	0.979591837	160	100	1.01	8.2	1.2	0	156	198
20	63	1	2	2	3	2	1	10000	9	1111.111111	4	0	0	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	2	1	1	2	2	2	2	1	1	1	40	1	1	1	2	2	172	84	28.39372634	100	96	1.041666667	130	70	0.99	8.24	1.72	0	102	153
21	70	2	1	1	4	3	1	5000	5	1000	4	2	0	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	4	1	1	4	2	2	2	1	2	0	0	2	1	3	3	1	163	66	24.84098009	98	99	0.98989899	120	80	1.13	9.12	0.68	0	128	158
22	66	1	1	5	1	2	2	25000	3	8333.333333	1	0	0	1	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	20	1	2	20,7	1	2	1	1	1	1	60	1	2	4	3	1	161	65	25.07619305	100	97	1.030927835	130	80	0.94	8.31	1.4	0	108	149
23	60	2	2	1	3	3	1	8000	6	1333.333333	4	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	0.5	2	0	0	2	1	2	1	1	1	40	1	2	2	2	2	158	49	19.6282647	78	80	0.975	110	70	0.99	9.01	2.3	0	96	142
24	65	1	2	2	5	2	1	7000	5	1400	4	0	0	2	2	2	2	1	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	0	0	0	2	2	0	0	2	2	2	1	2	0	0	1	2	2	2	2	164	72	26.76977989	99	97	1.020618557	130	80	0.97	8.26	3.11	0	168	234
25	45	2	2	4	4	2	2	10000	4	2500	3	1	2	1	2	2	2	2	1	1	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	12	2	0	0	2	2	2	1	1	1	40	1	2	3	2	2	166	80	29.03178981	102	100	1.02	140	80	0.95	8.1	**5.34**	2	116	156
26	60	1	2	3	5	2	1	15000	7	2142.857143	3	0	0	1	1	1	2	1	2	2	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	1	0	0	0	11	1	2	5,3	2	1	1	1	2	0	0	1	2	1	2	2	169	70	24.50894577	101	99	1.02020202	140	90	0.89	7.11	**6.45**	2	122	164
27	48	2	2	2	4	3	1	22000	10	2200	3	2	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	3	2	0	0	2	2	2	1	1	1	30	1	2	2	1	2	164	72	26.76977989	98	99	0.98989899	110	70	0.93	7.99	**5.58**	2	165	198
28	62	1	2	2	5	2	2	9000	4	2250	3	0	0	1	1	2	2	1	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	0	0	0	3	1	1	3	2	1	1	2	1	3	60	1	1	4	3	2	177	83	26.49302563	102	97	1.051546392	160	90	0.98	7.12	**6.63**	2	145	202
29	47	2	2	2	4	2	2	10000	5	2000	3	1	2	1	2	2	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	15	2	0	0	2	2	2	1	1	1	30	1	2	2	2	2	167	46	16.49395819	79	83	0.951807229	140	70	0.83	7.54	**6.05**	2	173	253
30	65	2	2	2	4	3	1	20000	5	4000	2	2	0	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	0.5	1	1	5	2	2	2	1	2	0	0	1	2	3	3	2	159	56	22.15102251	99	100	0.99	100	60	0.8	6.45	**10.64**	2	165	215
31	64	1	1	3	3	2	2	22000	3	7333.333333	1	0	0	2	2	1	2	2	2	2	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	0	0	0	5	1	1	9	2	2	2	1	1	1	120	1	2	2	2	2	160	64	25	97	98	0.989795918	120	80	0.89	6.4	2.96	0	116	138
32	47	2	1	1	4	2	1	10000	6	1666.666667	4	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	1	1	1	1	2	3	1	1	0.16	2	2	2	1	1	1	30	1	2	4	4	1	161	87	33.56351993	107	99	1.080808081	160	100	1.21	9.69	2.59	0	173	262
33	74	1	1	3	3	2	1	14000	6	2333.333333	3	0	0	2	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	5	1	1	5	2	1	1	1	1	1	60	1	2	3	3	1	155	65	27.05515088	98	101	0.97029703	130	80	1.02	10	2.24	0	156	217
34	49	2	2	2	4	2	2	10000	5	2000	3	2	0	1	2	2	2	2	1	2	2	2	2	1	2	1	2	1	2	2	2	2	2	1	1	1	1	1	2	2	1	1	2	1	2	2	1	1	1	20	1	1	2	2	2	150	80	35.55555556	108	105	1.028571429	140	90	1.24	8.56	2.53	0	175	233
35	50	2	3	3	4	2	2	10000	4	2500	3	2	0	1	1	2	2	2	1	1	2	2	1	1	1	2	1	2	2	2	2	2	2	1	1	1	0	0	1	4	1	1	4	2	2	2	1	2	0	0	1	1	4	4	1	145	62	29.48870392	100	94	1.063829787	130	80	0.95	9.24	1.07	0	145	198
36	76	1	1	2	1	2	2	12000	2	6000	2	0	0	2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	10	1	1	10	2	2	2	1	1	1	60	1	2	4	3	1	159	54	21.35991456	96	97	0.989690722	130	80	0.95	8.53	3.83	0	202	383
37	67	2	1	1	4	2	2	4000	2	2000	3	2	0	2	2	2	2	2	1	1	1	2	2	1	2	2	1	2	2	1	2	2	2	2	2	2	0	0	1	8	2	0	0	2	2	2	1	2	0	0	2	1	2	2	2	164	62	23.05175491	56	58	0.965517241	120	80	0.96	10.3	2.45	0	181	245
38	56	2	2	2	4	2	2	3000	2	1500	4	1	2	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	1	1	30	1	2	2	2	2	143	56	27.38520221	102	97	1.051546392	140	80	0.8	7.54	**6.86**	2	181	236
39	72	1	1	4	5	2	2	7000	3	2333.333333	3	0	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	0	0	0	0.5	2	0	0	2	2	2	1	1	1	20	1	1	2	2	2	156	48	19.72386588	82	92	0.891304348	100	70	0.82	8.52	1.86	0	196	325
40	58	1	2	5	3	2	2	5000	5	1000	4	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	0	0	0	2	2	0	0	2	2	2	1	1	1	30	1	2	2	2	2	151	57	24.99890356	96	97	0.989690722	120	80	**0.67**	**7.14**	**6.348**	2	186	278
41	63	1	2	5	3	2	1	20000	8	2500	3	0	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	1	1	1	1	2	2	1	1	2	0	0	1	2	3	2	2	171	79	27.01685989	54	49	1.102040816	130	90	1.07	9.14	1.66	0	107	223
42	35	2	2	2	4	2	2	8000	6	1333.333333	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	2	2	1	1	2	1	2	0	0	2	2	2	1	2	0	0	1	2	4	2	2	146	55	25.8022143	92	102	0.901960784	120	80	1.03	8.14	**0.33**	4	123	174
43	50	1	2	4	3	2	2	8000	6	1333.333333	4	0	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2	0	0	0	0.5	1	1	3	2	2	2	1	2	0	0	1	2	2	2	2	157	79	32.04998174	108	106	1.018867925	150	90	0.95	8.63	1.62	0	96	136
44	48	2	1	1	3	2	1	3000	7	428.5714286	5	1	2	1	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	0	0	1	3	2	0	0	2	2	2	1	1	1	30	2	1	2	2	2	155	61	25.39021852	96	98	0.979591837	120	80	0.98	7.48	3.91	0	88	128
45	62	2	2	2	4	2	1	5000	8	625	5	1	2	1	2	2	2	2	2	2	2	1	2	2	2	2	2	1	1	1	2	2	2	2	2	2	0	0	1	4	1	1	4	2	2	2	1	2	0	0	1	2	3	2	2	143	62	30.31933102	105	103	1.019417476	140	90	0.96	7.41	**6.93**	2	146	192
46	55	2	2	1	4	2	2	2000	2	1000	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	0	0	1	2	1	1	2	1	2	2	1	2	0	0	1	2	2	2	2	146	75	35.18483768	119	92	1.293478261	140	80	1.11	9.01	1.93	0	165	248
47	60	2	3	1	4	2	1	5000	5	1000	4	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	0	0	1	1	2	0	0	2	1	2	1	2	0	0	1	2	3	3	2	149	75	33.78226206	113	105	1.076190476	110	70	1.01	7.39	2.66	0	148	230
48	52	1	2	1	3	2	1	8000	5	1600	4	0	0	1	2	1	2	1	2	2	2	1	2	2	1	2	2	2	2	1	2	2	2	1	2	1	0	0	0	20	2	0	0	2	2	1	2	1	1	60	1	2	4	3	1	167	52	18.64534404	96	98	0.979591837	150	90	0.97	9.14	2.81	0	136	184
49	48	2	2	3	4	2	1	12000	6	2000	3	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	4	2	0	0	2	2	2	1	2	0	0	1	1	2	2	2	165	72	26.44628099	82	99	0.828282828	120	84	0.93	8.01	2.04	0	148	172
50	48	1	2	2	2	2	2	4000	3	1333.333333	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	0	0	0	2	2	0	0	2	2	2	1	1	1	120	1	2	4	4	1	152	77	33.32756233	115	110	1.045454545	130	90	0.99	9.01	1.28	0	117	157
51	58	1	1	1	3	2	1	5000	8	625	5	0	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0.5	2	0	0	2	2	2	1	2	0	0	1	2	3	2	1	164	65	24.1671624	100	96	1.041666667	140	90	0.89	7.66	3.41	0	138	203
52	73	1	1	2	5	2	1	8000	7	1142.857143	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	0	0	0	4	1	1	4	2	2	1	1	1	1	20	1	1	2	1	2	155	54	22.47658689	82	84	0.976190476	120	80	0.87	7	**8.2**	2	113	155
53	50	1	1	2	2	2	1	8000	6	1333.333333	4	0	0	2	2	1	2	2	1	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	0	0	0	10	2	0	0	2	2	1	3	1	1	60	1	1	2	2	2	161	42	16.20307858	80	82	0.975609756	110	70	1.12	9.21	1.01	0	143	167
54	67	1	2	4	5	2	2	15000	3	5000	2	0	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	0	0	0	5	1	1	5	2	1	2	1	2	0	0	1	2	1	1	2	164	66	24.5389649	94	101	0.930693069	140	90	1.13	9.47	0.66	0	177	243
55	62	1	1	3	5	2	1	11000	7	1571.428571	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	4	1	1	0.16	2	2	2	1	1	1	60	1	2	2	2	1	167	66	23.66524436	98	99	0.98989899	120	80	0.9	7.99	3.3	0	106	144
56	68	1	2	2	3	2	1	7000	10	700	5	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	1	1	1	1	2	2	2	1	1	1	30	1	2	5	5	2	157	71	28.80441397	99	110	0.9	134	90	1.01	8.33	2.56	0	137	175
57	48	1	1	3	1	2	2	30000	4	7500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	0.25	2	0	0	2	2	1	1	1	1	40	1	2	2	3	2	162	68	25.91068435	99	100	0.99	180	90	0.91	8.03	**5.36**	2	183	240
58	72	2	1	3	4	3	3	5000	2	2500	3	1	1	2	2	2	2	1	2	1	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	0	0	1	12	1	1	12	1	2	2	1	1	1	30	1	1	2	4	1	155	66	27.47138398	101	102	0.990196078	130	80	0.96	9.01	2.85	0	107	160
59	40	2	2	2	4	2	2	11000	4	2750	3	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	0	0	2	2	2	1	1	1	30	1	2	3	2	2	148	50	22.82688093	99	74	1.337837838	150	90	0.97	9.1	1.95	0	157	193
60	53	2	2	1	4	2	1	5000	6	833.3333333	5	1	3	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	0	0	1	7	1	1	8	2	2	2	3	2	0	0	1	1	4	3	2	162	64	24.38652644	98	97	1.010309278	130	90	0.99	8.65	1.61	0	143	175
61	62	2	1	2	4	2	2	5000	2	2500	3	2	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	6	1	1	6	2	2	2	1	2	0	0	1	1	4	5	1	140	64	32.65306122	120	109	1.100917431	140	76	0.99	8.11	3.37	0	237	388
62	43	1	1	2	2	2	2	15000	4	3750	4	0	0	1	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	2	2	2	0	0	0	4	2	0	0	2	1	1	1	2	0	0	1	2	3	2	2	168	72	25.51020408	62	59	1.050847458	120	80	1.12	9.44	1.38	0	127	177
63	53	2	1	1	4	2	2	6000	4	1500	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	2	1	1	2	2	2	2	1	2	0	0	1	2	4	4	1	145	65	30.91557669	74	76	0.973684211	160	100	1.08	8.65	1.94	0	173	228
64	56	2	1	1	4	2	1	6000	10	600	5	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	0	0	1	2	1	1	1	2	2	2	1	1	1	20	2	2	2	4	2	141	50	25.14964036	98	99	0.98989899	138	74	1.01	9.24	1.53	0	101	153
65	70	2	1	1	4	3	3	2000	1	2000	3	1	2	1	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	6	1	1	10	2	2	2	1	1	1	40	1	2	3	2	2	155	62	25.80645161	75	70	1.071428571	130	80	0.87	9.31	1.34	0	87	134
66	66	2	1	3	4	2	1	8000	8	1000	4	2	0	1	2	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	0	0	1	2	1	1	5	2	2	2	1	1	1	30	1	1	4	3	2	168	77	27.28174603	99	102	0.970588235	126	86	0.93	8.15	2.45	0	173	245
67	49	1	1	4	1	2	2	25000	3	8333.333333	1	0	0	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	1	2	0	0	2	2	2	1	1	1	30	1	2	2	2	1	157	76	30.83289383	57	59	0.966101695	120	60	1.14	9.16	0.7	0	120	227
68	51	2	1	2	4	2	2	10000	4	2500	3	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	1	0	0	1	4	2	0	0	2	2	2	1	2	0	0	1	2	3	2	2	150	63	28	109	104	1.048076923	130	90	1.16	10.19	**0.34**	4	216	429
69	54	2	3	1	4	3	3	6000	1	6000	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	10	2	0	0	2	2	2	1	2	0	0	1	2	4	2	1	153	59	25.20398137	104	105	0.99047619	108	70	1.51	12.1	0.33	3	186	367
70	58	1	1	1	1	2	1	15000	6	2500	3	0	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	8	1	1	5	2	1	1	1	1	1	40	1	2	3	2	2	164	69	25.6543724	103	102	1.009803922	120	80	0.85	7.02	**8.36**	2	85	148
71	70	2	2	2	4	3	3	5000	3	1666.666667	4	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	1	1	0	0	1	5	2	0	0	2	2	2	2	2	0	0	1	1	3	2	1	149	49	22.07107788	56	57	0.98245614	110	80	1.34	11.6	0.14	3	134	214
72	70	2	2	1	4	3	3	5000	3	1666.666667	4	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	0	0	1	20	1	1	20	2	2	2	1	1	1	30	1	2	2	2	2	148	50	22.82688093	109	98	1.112244898	130	80	1.01	8.94	1.86	0	101	186
73	48	1	2	3	3	1	2	11000	3	3666.666667	2	0	0	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	3	2	0	0	2	2	2	2	1	1	60	1	2	3	2	2	147	55	25.45235781	92	96	0.958333333	120	80	0.82	7.17	**4.89**	2	82	136

SOCIO DEMOGRAPHIC														Thyroid related symptoms																										PAST HISTORY								PHYSICAL & NUTRITION																INVESTIGATIONS					
PT. ID.	AGE	SEX	RELIGION	EDUCATION	OCCUPATION	MARITAL STATUS	FAMILY	MONTHY INCOME	TOTAL MEMBERS	PER CAPITA	SES	MISCARRIAGE	No. of Miscarriage	FATIGUE	INABILITY TO EXERCISE	DIFF.TOLERATING COLD	SWELLING IN NECK	CONSTIPATION	DRY SKIN	DRY HAIR	THICK BRITTLE NAILS	FACIAL PUFFINESS	SWELLLING EXTREMITIES	MUSCLES CRAMPS	EXCESSIVE SLEEPINESS	WEIGHT GAIN	HAIR LOSS ON	PALPITATIONS	INCREASED APPETITE	WEIGHT LOSS	INSOMNIA	AB PROT EYEBALL	HAND TREMOR	WARM SKIN	DIFF IN TOLERATING HEAT	INCREASE SWEATING	REGULARITY	BLOOD FLOW	MENOPAUSE	DURATION OF DM(yrs)	PAST HISTORY	IF YES,SPECIFY	DURATION(yrs)	FAMILY HISTORY	TOBACCO	ALCOHOL	DRUG HISTORY	EXERCISE	IF YES	HOW LONG (min)	SALT	PLATE SALT	GOITROGENS	FREQUENCY GOITROGENS	TYPE OF DIET	HEIGHT(Cm)	WEIGHT(Kg)	BMI	WAIST(cm)	HIP(cm)	RATIO	Systole	Diastole	T3(0.59-1.78)	T4(4.5-10.87)	TSH(0.5-4.7)	Thyroid Disorders	FBS	PPBS
74	66	1	1	4	5	2	2	14000	4	3500	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	0	0	0	20	2	0	0	2	2	1	1	1	1	60	1	2	3	2	1	165	90	33.05785124	113	118	0.957627119	130	80	0.86	8.15	3.06	0	127	355
75	60	2	1	4	4	3	3	6000	2	3000	3	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	1	0	0	1	3	2	0	0	2	2	2	1	1	1	60	1	2	3	4	2	142	55	27.27633406	102	101	1.00990099	120	80	0.99	8.01	3.05	0	99	147
76	64	2	1	2	4	2	1	10000	5	2000	3	2	0	1	2	2	2	1	1	1	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	10	1	1	10	2	2	2	1	1	1	90	1	2	3	3	2	144	46	22.18364198	95	89	1.06741573	166	90	1.15	9.21	2.02	0	115	202
77	55	2	2	3	4	3	3	5000	3	1666.666667	4	2	0	1	1	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	5	1	1	5	2	2	2	1	1	1	30	1	2	2	3	2	145	76	36.14744352	119	124	0.959677419	160	100	0.92	8.36	2.24	0	155	224
78	50	2	2	2	4	3	3	5000	3	1666.666667	4	1	1	1	1	2	2	2	2	2	2	2	2	1	2	1	2	1	2	2	1	2	2	2	2	1	0	0	1	1	1	1	1	2	2	2	1	1	1	30	1	2	3	2	2	154	74	31.20256367	112	104	1.076923077	160	90	0.89	8.01	3.38	0	138	189
79	60	2	1	1	4	3	3	2000	1	2000	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	10	1	3	10,3	2	2	2	1	2	0	0	1	2	1	1	1	157	62	25.15315023	73	76	0.960526316	110	70	1	9.03	1.82	0	100	182
80	69	2	1	5	4	2	2	30000	6	5000	2	2	0	1	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	15	2	0	0	2	2	2	1	1	1	30	1	2	2	2	1	150	60	26.66666667	103	109	0.944954128	130	80	1.17	9.63	0.97	0	197	331
81	63	2	1	3	4	2	1	10000	6	1666.666667	4	2	0	1	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	17	1	1	10	2	2	2	2	1	1	60	1	2	3	4	1	152	60	25.96952909	111	104	1.067307692	116	62	1.01	8.77	1.91	0	140	202
82	62	1	1	4	1	2	2	20000	4	5000	1	0	0	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	7	1	1	2	2	2	1	1	1	1	60	1	2	2	2	1	162	60	22.86236854	96	98	0.979591837	170	80	0.9	7.96	3.44	0	98	130
83	42	2	2	3	4	2	1	5000	6	833.3333333	5	2	0	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	1	1	1	2	3	2	0	0	2	2	2	1	1	1	60	1	2	2	2	1	154	70	29.51593861	107	114	0.938596491	124	80	1.17	10.1	0.65	0	171	291
84	80	1	1	3	5	2	1	30000	8	3750	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	1	1	1	1	2	1	1	1	1	1	20	1	2	2	2	2	158	66	26.43807082	98	102	0.960784314	170	110	0.93	8.77	2.12	0	123	212
85	45	2	2	2	1	3	3	3000	1	3000	3	1	1	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	6	2	0	0	2	2	2	1	2	0	0	1	2	2	3	1	157	64	25.96454217	98	100	0.98	110	70	0.86	6.58	**8.33**	2	86	134
86	35	2	1	3	4	2	2	25000	3	8333.333333	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	2	0	0	2	2	2	1	1	1	30	1	2	2	3	1	167	67	24.02380867	105	104	1.009615385	110	70	0.9	8.33	2.17	0	164	217
87	47	2	2	2	4	2	2	10000	4	2500	3	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	9	2	0	0	2	2	2	1	2	0	0	1	2	3	3	2	148	49	22.37034332	96	93	1.032258065	110	70	1.07	9.04	1.23	0	212	376
88	65	2	2	1	4	2	1	10000	6	1666.666667	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	0	0	1	20	1	1	20	2	2	2	1	2	0	0	1	2	3	2	2	143	52	25.42911634	103	110	0.936363636	148	80	1	9.02	2.95	0	243	374
89	52	2	1	2	4	2	1	10000	6	1666.666667	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	0	0	1	2	2	0	0	2	2	2	1	1	1	30	1	2	2	3	1	140	56	28.57142857	103	101	1.01980198	140	90	0.93	9	2.66	0	93	166
90	69	1	2	3	3	2	2	10000	4	2500	3	0	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	0	0	0	3	1	3	3,5	2	1	2	1	2	0	0	1	2	2	4	2	155	60	24.97398543	101	99	1.02020202	110	70	0.93	8.11	3.02	0	193	302
91	60	1	3	1	3	2	1	4000	7	571.4285714	5	0	0	1	1	2	2	2	1	1	2	2	2	1	2	2	2	2	2	1	1	2	2	2	2	2	0	0	0	4	2	0	0	2	1	1	1	1	1	20	1	2	3	2	1	178	55	17.35891933	56	59	0.949152542	110	80	1.14	9.33	0.61	0	114	155
92	44	2	1	3	4	2	2	30000	4	7500	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	5	1	1	5	2	2	2	1	1	2	60	1	2	3	2	1	158	84	33.64845377	112	107	1.046728972	90	78	0.99	8.44	2.61	0	155	261
93	73	1	1	2	5	2	1	12000	8	1500	4	0	0	2	2	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	0	0	0	10	1	1	15	2	1	1	1	2	0	0	1	1	4	2	1	159	54	21.35991456	92	113	0.814159292	110	70	0.9	8.32	2.61	0	90	161
94	50	2	2	5	4	2	1	5000	5	1000	4	2	0	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	6	1	1	6	2	2	2	1	1	1	60	2	2	3	2	2	165	75	27.54820937	115	117	0.982905983	110	70	0.98	8.7	2.56	0	198	258
95	46	2	1	3	4	2	2	25000	3	8333.333333	1	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	0	0	1	7	2	0	0	2	2	2	1	1	1	45	1	2	3	2	1	154	55	23.19109462	95	97	0.979381443	138	90	0.94	3.01	5.25	1	138	194
96	65	2	1	1	4	3	3	500	1	500	5	1	1	1	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	3	1	1	3	2	2	1	1	2	0	0	1	2	2	2	1	140	40	20.40816327	74	79	0.936708861	160	70	1.11	8.67	1.9	0	111	190
97	75	2	2	1	4	3	3	3000	1	3000	3	1	2	1	2	2	2	1	2	2	2	2	2	1	2	2	2	1	2	2	2	2	2	2	2	2	0	0	1	20	1	1	20	2	2	2	1	2	0	0	1	2	3	2	2	156	56	23.01117686	95	97	0.979381443	120	80	1.03	9.02	1.76	0	166	205
98	45	1	1	5	1	2	2	36000	4	9000	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	2	2	0	0	2	2	2	2	2	0	0	1	2	2	3	2	161	69	26.61934339	92	96	0.958333333	130	90	0.93	8	2.39	0	166	249
99	65	2	2	2	4	2	1	10000	8	1250	4	1	2	1	1	2	2	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	2	1	0	0	1	11	1	1	8	2	2	2	1	2	0	0	1	2	3	2	2	155	65	27.05515088	99	95	1.042105263	110	70	0.85	6.33	**8.48**	2	168	275
100	63	1	2	1	2	2	2	8000	4	2000	3	0	0	1	2	2	2	1	2	2	1	2	2	2	2	2	2	1	2	2	1	2	2	2	2	2	0	0	0	0.67	2	0	0	2	2	2	1	2	0	0	1	2	1	1	2	157	72	29.21010994	108	98	1.102040816	138	96	0.97	8.11	2.1	0	97	151
101	65	2	2	1	4	2	1	8000	5	1600	4	2	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	7	1	1	7	2	1	2	1	1	1	60	1	2	3	3	2	167	65	23.30668005	98	100	0.98	140	80	1.12	8.97	1.36	0	156	263
102	40	2	1	1	4	2	2	5000	4	1250	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	1	1	2	2	4	2	0	0	2	2	2	1	1	1	60	1	2	5	2	2	155	65	27.05515088	95	98	0.969387755	120	80	1.03	9	1.27	0	147	206
103	63	2	1	1	4	2	1	20000	8	2500	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	0	0	1	10	1	1	4	2	2	2	1	1	1	30	1	2	2	2	1	144	59	28.4529321	93	102	0.911764706	140	90	1.18	8.05	4.22	0	118	157
104	65	1	1	2	5	2	1	14000	8	1750	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	8	1	1	8	2	2	2	1	1	1	30	1	2	2	3	1	153	67	28.62147037	50	53	0.943396226	150	90	1.12	8.9	1.62	0	112	162
105	61	2	1	1	4	2	1	20000	5	4000	2	2	0	1	2	2	2	1	2	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	0	0	1	20	1	1	2	2	2	2	3	2	0	0	1	2	2	3	1	145	60	28.53745541	91	102	0.892156863	120	80	0.99	8.31	**4.93**	2	233	354
106	65	2	2	1	4	2	1	10000	9	1111.111111	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	2	1	1	6	2	2	2	1	1	1	120	1	2	3	3	2	157	68	27.58732606	106	111	0.954954955	130	90	0.81	9.2	4.17	0	160	231
107	63	1	1	1	2	2	1	8000	8	1000	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	0	0	0	15	1	1	10	2	1	1	2	1	1	60	1	2	2	3	1	159	65	25.71100827	96	100	0.96	150	100	1.02	8.54	4.62	0	164	284
108	60	2	2	1	4	2	2	4000	2	2000	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	1	1	60	1	2	4	2	2	145	54	25.68370987	99	102	0.970588235	120	80	0.86	8.11	1.58	0	130	220
109	60	2	1	2	4	2	1	5000	8	625	5	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	0.58	2	0	0	2	2	2	1	1	1	60	1	2	2	2	1	140	58	29.59183673	94	100	0.94	120	80	0.83	7.2	3.17	0	164	257
110	40	1	1	3	3	2	1	15000	6	2500	3	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	2	2	0	0	2	2	1	1	2	0	0	1	2	2	2	1	170	80	27.6816609	107	104	1.028846154	125	81	1.07	9.31	1.92	0	293	411
111	46	1	1	5	2	2	2	40000	3	13333.33333	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	5	1	1	2	2	1	1	1	1	1	60	1	1	3	3	1	174	80	26.42356982	103	109	0.944954128	129	87	1.31	10	1.03	0	153	227
112	54	2	1	4	4	2	2	6000	2	3000	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	15	2	0	0	2	2	2	1	1	2	60	1	2	2	3	1	154	53	22.34778209	98	83	1.180722892	116	74	1.01	9.32	1.19	0	74	155
113	60	1	1	5	3	2	2	50000	4	12500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	4	2	0	0	2	2	2	1	1	2	60	1	2	2	3	1	166	76	27.58020032	102	105	0.971428571	144	82	1.14	9.35	0.91	0	145	219
114	55	1	1	3	1	2	2	5000	4	1250	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	8	2	0	0	2	2	2	1	1	1	60	1	2	2	3	1	157	60	24.34175829	85	96	0.885416667	120	80	0.95	8.37	2.23	0	154	230
115	32	1	1	5	3	2	1	40000	9	4444.444444	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	6	2	0	0	2	2	2	1	1	1	60	1	2	2	3	2	175	74	24.16326531	94	86	1.093023256	140	80	0.96	8.71	3.24	0	324	457
116	47	2	1	3	4	2	2	20000	4	5000	2	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	2	0	0	2	2	2	1	1	1	30	1	2	3	3	1	159	70	27.68877813	93	105	0.885714286	150	90	0.98	8.39	2.52	0	130	188
117	61	1	1	5	1	4	3	50000	4	12500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	12	2	0	0	2	2	2	1	1	2	60	1	2	2	3	1	174	80	26.42356982	107	101	1.059405941	150	80	0.86	7	**4.77**	2	154	221
118	57	1	1	5	1	2	2	30000	4	7500	1	0	0	2	2	2	2	2	2	2	2	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	0	0	0	3	2	0	0	2	2	2	2	1	1	45	1	2	3	3	2	164	68	25.2825699	96	93	1.032258065	160	80	0.93	8.71	2.5	0	178	251
119	78	1	1	5	3	2	1	50000	6	8333.333333	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	11	2	0	0	2	2	2	1	1	2	60	1	2	2	2	1	174	76	25.10239133	105	108	0.972222222	190	108	0.99	8.16	4	0	173	286
120	48	1	1	4	1	2	2	30000	4	7500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	5	2	0	0	2	2	2	1	1	1	30	1	2	4	3	2	173	66	22.05219018	88	94	0.936170213	170	106	1.13	9.37	1.53	0	113	163
121	52	1	1	5	3	2	1	10000	6	1666.666667	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	7	2	0	0	2	2	2	1	1	1	30	1	2	2	2	1	171	65	22.22906193	84	95	0.884210526	120	72	0.91	8.36	3.25	0	162	278
122	58	2	1	2	4	2	2	5000	2	2500	3	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	2	0	0	1	2	3	3	1	156	55	22.60026298	91	100	0.91	170	80	0.97	8.11	2.61	0	161	212
123	53	2	1	3	4	2	2	8000	3	2666.666667	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	9	2	0	0	2	2	2	1	1	1	30	1	2	2	2	1	159	60	23.7332384	92	97	0.948453608	130	70	0.96	8.41	3.86	0	141	254
124	63	1	1	3	5	2	2	22000	4	5500	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	4	2	0	0	2	2	2	1	1	1	60	1	2	4	2	2	164	60	22.30814991	86	92	0.934782609	160	90	0.94	8	3.37	0	137	184
125	67	1	1	5	3	2	2	50000	4	12500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	8	2	0	0	2	2	2	1	1	2	30	1	2	2	3	1	154	72	30.35925114	109	110	0.990909091	160	90	0.95	8.14	2.02	0	202	382
126	45	2	1	5	4	2	2	20000	4	5000	2	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	1	2	0	0	2	2	2	1	1	1	35	1	2	2	2	1	156	60	24.65483235	93	97	0.958762887	150	90	0.97	8.01	2.9	0	167	200
127	76	1	1	5	3	2	2	10000	2	5000	2	0	0	1	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	2	2	0	0	2	1	1	1	2	0	0	1	2	3	1	1	170	66	22.83737024	91	100	0.91	118	74	0.81	6.14	**9.63**	2	121	181
128	60	1	1	2	1	2	1	15000	9	1666.666667	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0.08	2	0	0	2	1	1	1	1	1	60	1	2	2	3	2	171	81	27.70083102	113	108	1.046296296	160	80	0.93	8.56	2.33	0	165	215
129	67	1	1	5	5	2	1	15000	6	2500	3	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	10	2	0	0	2	2	2	1	1	2	60	1	2	2	3	1	167	60	21.51385851	90	94	0.957446809	140	80	0.94	8.56	2.63	0	145	194
130	64	1	1	5	5	2	1	40000	4	10000	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	5	2	0	0	2	2	2	1	1	1	45	1	2	2	2	1	175	65	21.2244898	106	102	1.039215686	120	80	1.31	9.74	1.54	0	154	229
131	51	2	1	2	4	2	2	10000	2	5000	2	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	0.25	2	0	0	2	2	2	1	1	1	60	1	2	2	3	1	165	75	27.54820937	102	110	0.927272727	140	80	1.14	9.55	1.15	0	126	155
132	78	2	1	5	5	3	3	10000	2	5000	2	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	20	1	1	20	2	2	2	1	1	1	45	1	2	2	2	1	152	48	20.77562327	82	90	0.911111111	140	76	1.11	9.66	1.09	0	125	166
133	60	1	1	5	3	2	1	20000	4	5000	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0.25	2	0	0	1	2	2	1	1	1	60	1	2	2	3	1	163	60	22.58270917	87	94	0.925531915	130	80	0.92	7.62	4.15	0	151	212
134	50	2	1	5	4	2	1	26000	4	6500	1	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	3	2	0	0	1	2	2	1	1	1	30	1	2	3	3	1	156	63	25.88757396	94	103	0.912621359	140	90	0.99	8.64	2.73	0	146	189
135	80	1	1	5	5	2	1	80000	6	13333.33333	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0.17	2	0	0	2	2	2	1	2	0	0	1	2	2	3	1	161	50	19.28937927	90	102	0.882352941	150	90	1.01	7.64	4.42	0	176	242
136	48	1	1	5	3	2	1	60000	4	15000	1	0	0	1	2	1	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	0	0	0	0.08	2	0	0	2	2	2	1	1	1	60	1	2	2	3	1	174	74	24.44180209	95	99	0.95959596	120	80	0.8	5.31	**16.6**	2	98	153
137	67	1	1	5	5	2	1	15000	6	2500	3	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	25	2	0	0	2	2	2	1	1	2	60	1	2	2	2	1	173	60	20.04744562	85	93	0.913978495	130	60	0.96	7.92	3.88	0	138	207
138	41	2	1	3	4	2	3	26000	4	6500	1	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	0.17	2	0	0	2	2	2	1	1	1	60	1	2	2	3	1	155	74	30.8012487	95	113	0.840707965	120	70	0.96	8.01	3.04	0	124	196
139	65	1	1	5	1	2	1	30000	5	6000	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	15	2	0	0	1	2	1	1	1	2	60	1	2	3	3	1	176	80	25.82644628	101	102	0.990196078	160	80	1.14	9.97	1.89	0	166	214
140	65	1	1	5	5	2	1	20000	3	6666.666667	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	15	2	0	0	2	2	1	1	1	1	60	1	2	3	2	1	171	67	22.91303307	107	97	1.103092784	120	60	1.3	10.2	1.28	0	168	276
141	36	2	1	5	1	2	1	25000	12	2083.333333	3	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	4	2	0	0	2	2	2	1	2	0	0	1	2	2	3	1	160	64	25	86	102	0.843137255	126	70	1.21	10	1.54	0	104	154
142	57	2	1	2	4	2	1	15000	7	2142.857143	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	15	2	0	0	2	2	2	2	1	1	30	1	2	3	4	1	155	62	25.80645161	99	106	0.933962264	160	80	1	9.4	1.36	0	256	372
143	68	1	1	5	3	2	1	50000	6	8333.333333	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	5	2	0	0	2	2	2	1	1	2	60	1	2	3	3	1	170	64	22.14532872	91	95	0.957894737	150	80	1.14	9.66	1.23	0	189	271
144	55	2	1	4	4	2	2	20000	2	10000	1	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	0.08	2	0	0	2	2	2	1	1	1	30	1	2	2	2	1	149	67	30.17882077	95	106	0.896226415	130	70	1.12	9.11	0.95	0	159	192
145	51	1	1	5	1	2	1	35000	4	8750	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	2	2	0	0	2	2	2	1	1	1	60	1	1	3	3	1	166	96	34.83814777	118	115	1.026086957	150	86	0.99	8.71	2.27	0	171	249
146	54	1	1	5	3	2	2	10000	4	2500	3	0	0	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	2	2	0	0	2	2	2	1	1	1	120	1	2	2	3	1	169	70	24.50894577	64	63	1.015873016	130	70	0.79	5.01	**28.3**	2	179	236

SOCIO DEMOGRAPHIC														Thyroid related symptoms																										PAST HISTORY								PHYSICAL & NUTRITION																INVESTIGATIONS					
PT. ID.	AGE	SEX	RELIGION	EDUCATION	OCCUPATION	MARITAL STATUS	FAMILY	MONTHY INCOME	TOTAL MEMBERS	PER CAPITA	SES	MISCARRIAGE	No. of Miscarriage	FATIGUE	INABILITY TO EXERCISE	DIFF.TOLERATING COLD	SWELLING IN NECK	CONSTIPATION	DRY SKIN	DRY HAIR	THICK BRITTLE NAILS	FACIAL PUFFINESS	SWELLLING EXTREMITIES	MUSCLES CRAMPS	EXCESSIVE SLEEPINESS	WEIGHT GAIN	HAIR LOSS ON	PALPITATIONS	INCREASED APPETITE	WEIGHT LOSS	INSOMNIA	AB PROT EYEBALL	HAND TREMOR	WARM SKIN	DIFF IN TOLERATING HEAT	INCREASE SWEATING	REGULARITY	BLOOD FLOW	MENOPAUSE	DURATION OF DM(yrs)	PAST HISTORY	IF YES,SPECIFY	DURATION(yrs)	FAMILY HISTORY	TOBACCO	ALCOHOL	DRUG HISTORY	EXERCISE	IF YES	HOW LONG (min)	SALT	PLATE SALT	GOITROGENS	FREQUENCY GOITROGENS	TYPE OF DIET	HEIGHT(Cm)	WEIGHT(Kg)	BMI	WAIST(cm)	HIP(cm)	RATIO	Systole	Diastole	T3(0.59-1.78)	T4(4.5-10.87)	TSH(0.5-4.7)	Thyroid Disorders	FBS	PPBS
147	65	2	1	1	4	2	2	8000	4	2000	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	1	1	2	0	0	1	10	1	1	8	2	2	2	1	1	1	60	1	2	4	3	2	151	69	30.26183062	92	93	0.989247312	160	90	**1.53**	**13.2**	**0.05**	3	160	388
148	74	1	1	5	3	2	1	10000	11	909.0909091	5	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	2	2	0	0	2	2	2	1	1	1	30	1	2	2	2	1	165	62	22.77318641	95	99	0.95959596	140	60	0.97	8.84	2.55	0	155	223
149	66	1	1	3	1	2	1	7000	5	1400	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	18	2	0	0	1	2	2	1	1	1	60	1	1	2	3	1	161	64	24.69040546	99	100	0.99	160	90	0.98	7.99	2.57	0	198	346
150	41	1	1	4	3	2	1	20000	6	3333.333333	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	2	2	0	0	2	1	1	1	2	0	0	1	2	4	3	1	174	71	23.45091822	96	102	0.941176471	130	80	0.96	8.77	2.36	0	163	213
151	68	1	1	3	5	2	1	15000	5	3000	3	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	11	1	1	11	2	1	1	1	1	1	60	1	2	2	1	1	172	69	23.32341806	100	90	1.111111111	140	80	0.99	8.34	3.97	0	179	266
152	73	1	2	5	5	2	1	100000	7	14285.71429	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	3	2	0	0	2	1	2	1	1	1	60	1	2	4	2	2	171	76	25.99090318	52	50	1.04	110	70	0.99	8.01	3.79	0	143	197
153	57	2	1	5	4	2	2	100000	2	50000	1	1	2	1	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	2	0	0	1	2	2	2	1	144	70	33.75771605	112	114	0.98245614	160	80	0.81	7	**6.48**	2	293	486
154	50	2	1	1	3	2	1	2400	6	400	5	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	0.5	1	1	2	2	2	2	1	1	1	30	1	2	4	3	2	160	75	29.296875	98	100	0.98	120	80	0.97	8.61	2.08	0	161	208
155	60	2	1	1	4	2	1	2400	6	400	5	2	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	1	2	2	2	2	2	0	0	1	6	1	1	6	2	2	2	1	1	1	30	1	2	2	1	1	158	54	21.63114885	90	100	0.9	140	90	0.99	8.34	3.97	0	183	294
156	60	2	1	1	4	2	1	5000	7	714.2857143	5	2	0	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	3	2	0	0	2	1	2	1	2	0	0	1	2	4	3	2	133	32	18.09033863	56	59	0.949152542	140	90	1.12	9.2	1.53	0	112	153
157	70	2	1	1	4	2	1	1000	2	500	5	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	1	1	40	1	2	2	3	1	138	46	24.15458937	87	102	0.852941176	150	74	0.84	8.35	1.83	0	148	183
158	65	1	1	1	3	2	1	6000	9	666.6666667	5	0	0	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	0	0	0	4	1	1	4	2	2	2	1	1	1	30	1	2	2	3	1	162	55	20.95717116	87	93	0.935483871	120	80	0.9	8.32	1.2	0	137	179
159	45	2	1	1	4	2	1	50000	6	8333.333333	1	2	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	5	2	0	0	2	2	2	1	1	1	30	1	2	4	3	2	139	46	23.8082915	56	54	1.037037037	140	90	0.8	7.31	3.52	0	125	185
160	60	2	1	1	4	2	1	1500	2	750	5	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	2	0	0	2	2	2	3	1	138	64	33.60638521	92	93	0.989247312	130	90	0.85	7.08	3.13	0	158	205
161	55	1	1	3	1	4	3	1800	3	600	5	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	0	0	0	1	2	0	0	2	2	2	1	1	1	60	1	2	2	3	2	168	78	27.63605442	95	100	0.95	120	70	0.92	8.29	1.98	0	149	290
162	41	2	1	5	3	2	2	200000	4	50000	1	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	0	0	2	2	2	1	1	1	30	1	2	4	2	2	151	60	26.31463532	103	100	1.03	154	90	0.84	8.15	2.14	0	95	154
163	50	1	1	2	1	2	1	10500	5	2100	3	0	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	1	2	0	0	2	1	2	1	2	0	0	1	2	2	2	2	159	61	24.12879237	99	95	1.042105263	120	80	1.02	9.26	0.92	0	102	167
164	64	1	2	1	3	2	1	15000	11	1363.636364	4	0	0	1	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	11	2	0	0	2	1	1	1	1	1	60	1	2	3	2	2	171	94	32.14664341	116	111	1.045045045	140	80	0.81	7.45	**5.31**	2	145	199
165	40	2	2	3	4	2	2	5000	5	1000	4	2	0	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2	1	1	2	3	2	0	0	2	2	2	1	2	0	0	1	2	4	3	2	167	84	30.11940191	113	111	1.018018018	120	80	1.02	9.01	1.38	0	112	158
166	57	1	1	5	3	2	1	50000	5	10000	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0.5	2	0	0	1	1	1	1	1	2	30	1	2	2	2	2	163	63	23.71184463	97	91	1.065934066	130	80	1.04	9	1.26	0	162	221
167	66	2	1	2	4	2	1	10000	6	1666.666667	4	2	0	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	10	1	1	10	2	2	2	1	1	1	60	1	2	2	3	2	156	64	26.29848784	87	105	0.828571429	110	70	1.23	10.1	0.76	0	133	212
168	65	2	1	1	4	3	3	2000	3	666.6666667	5	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	12	1	1	10	2	2	2	1	1	1	30	1	2	4	3	1	160	72	28.125	97	104	0.932692308	150	90	1	9.31	1.55	0	113	155
169	50	2	1	1	4	2	2	10000	4	2500	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	6	1	1	6	2	2	2	1	1	1	30	1	2	2	2	1	154	64	26.98600101	94	109	0.862385321	130	80	1.11	9.01	1.98	0	114	141
170	57	2	1	3	4	2	1	8000	6	1333.333333	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	6	1	1	6	2	2	2	1	1	1	60	1	2	2	3	1	154	61	25.72103221	97	119	0.81512605	160	80	0.98	8.12	3.03	0	181	248
171	60	2	2	1	4	2	1	4500	7	642.8571429	5	2	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	0	0	1	3	1	1	2	2	2	2	1	2	0	0	1	2	4	3	2	153	57	24.34960912	83	96	0.864583333	130	80	1.12	9.67	0.44	4	264	460
172	45	2	1	3	1	2	1	10000	4	2500	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2	1	2	2	6	2	0	0	2	2	2	1	1	1	40	1	2	2	3	1	155	62	25.80645161	88	98	0.897959184	120	80	1.01	7.91	2.53	0	153	229
173	53	2	1	2	4	2	1	9000	7	1285.714286	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	2	1	1	3	2	2	2	1	2	0	0	1	2	4	3	2	148	66	30.13148283	101	112	0.901785714	130	80	0.97	8.01	2.99	0	168	229
174	40	2	1	1	4	3	2	5000	5	1000	4	2	0	2	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	4	2	0	0	2	2	2	1	1	1	30	1	2	2	2	2	152	72	31.1634349	93	98	0.948979592	128	90	0.79	6.12	**8.28**	2	179	228
175	44	2	1	3	4	2	1	9000	6	1500	4	2	0	2	2	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	0	0	2	2	2	1	1	1	120	1	2	2	2	1	150	60	26.66666667	95	99	0.95959596	120	80	0.8	6.01	**6.95**	2	176	215
176	60	2	2	1	4	2	2	2000	2	1000	4	1	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	2	1	1	2	2	2	2	1	1	1	30	1	2	2	2	2	154	68	28.67262608	93	91	1.021978022	110	70	0.89	8.12	3.91	0	128	191
177	40	2	2	1	4	2	1	6000	10	600	5	2	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	3	2	2	2	0	0	2	2	2	1	2	0	0	1	2	2	3	2	150	58	25.77777778	85	99	0.858585859	120	80	1.02	9.14	1.5	0	201	300
178	62	2	1	2	4	2	1	12000	6	2000	3	2	0	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	10	1	1	10	2	2	2	1	1	1	60	1	2	3	2	2	158	62	24.8357635	85	108	0.787037037	136	80	1.02	7.71	2.3	0	234	330
179	60	2	1	1	4	2	2	8000	2	4000	2	2	0	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	1	2	2	2	2	2	0	0	1	5	1	1	2	2	2	2	1	2	0	0	1	1	2	1	2	153	54	23.06805075	75	63	1.19047619	130	90	1.13	10.1	0.65	0	265	410
180	60	2	1	2	4	2	1	10000	10	1000	4	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	4	2	0	0	2	2	2	1	1	1	30	2	2	3	2	1	140	47	23.97959184	67	69	0.971014493	110	70	0.99	7.16	3.81	0	138	190
181	37	2	1	4	4	2	2	10000	4	2500	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	0	0	2	2	2	1	2	0	0	1	2	3	2	1	155	48	19.97918835	86	89	0.966292135	134	90	1.1	10.3	0.52	0	100	152
182	35	2	2	2	3	2	2	5000	4	1250	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	1	2	0.5	2	0	0	2	2	2	1	2	0	0	1	2	3	3	2	160	57	22.265625	94	97	0.969072165	126	84	**1.51**	**12.13**	**0.33**	3	105	**157**
183	63	2	1	1	4	2	2	3500	3	1166.666667	4	2	0	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1	6	2	0	0	2	2	2	1	1	1	30	1	2	3	2	2	160	70	27.34375	91	95	0.957894737	130	80	0.91	9.65	2.28	0	167	211
184	55	1	1	3	3	2	1	5000	3	1666.666667	4	0	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	10	2	0	0	2	1	1	1	1	1	60	1	2	3	2	1	168	65	23.03004535	86	89	0.966292135	110	70	**1.53**	**13.2**	**0.05**	3	135	178
185	45	1	1	5	3	2	1	25000	5	5000	2	0	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	0	0	0	3	2	0	0	2	2	2	1	1	2	90	1	2	2	2	1	159	57	22.54657648	77	83	0.927710843	154	90	0.97	8.84	2.55	0	127	155
186	75	1	4	5	5	2	1	24000	5	4800	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	0	0	0	14	2	0	0	2	2	2	2	1	1	20	1	2	2	3	1	171	70	23.93898977	101	94	1.074468085	131	75	0.98	7.99	2.57	0	123	193
187	45	2	2	2	4	2	2	10000	5	2000	3	2	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	0.67	2	0	0	2	2	2	1	1	1	30	1	2	2	2	1	164	68	25.2825699	98	96	1.020833333	120	90	0.96	8.77	2.36	0	145	189
188	65	1	2	2	3	2	2	8000	8	1000	4	0	0	1	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	0	0	0	15	2	0	0	2	1	2	1	1	1	40	1	2	2	1	3	180	72	22.22222222	103	99	1.04040404	130	80	0.99	8.34	3.97	0	143	197
189	60	1	1	4	3	2	1	13000	5	2600	3	0	0	1	2	2	2	2	1	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	0	0	0	15	2	0	0	2	2	2	1	1	1	60	1	2	2	2	1	163	95	35.75595619	95	94	1.010638298	163	76	0.99	8.01	3.79	0	255	374
190	60	1	1	4	3	2	1	50000	5	10000	1	0	0	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	0	0	0	15	2	0	0	2	2	2	1	1	2	60	1	2	3	3	1	163	60	22.58270917	90	94	0.957446809	163	76	0.81	7	**6.48**	2	248	374
191	72	2	1	2	4	2	2	10000	5	2000	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	10	1	1	10	2	2	2	1	1	1	30	1	2	3	2	1	150	63	28	86	81	1.061728395	130	90	0.98	8.14	2.36	0	183	265
192	65	2	1	1	4	2	1	12000	6	2000	3	2	0	1	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	0.5	1	1	15	2	2	2	1	2	0	0	2	2	2	2	2	154	64	26.98600101	98	93	1.053763441	130	80	0.9	8.77	3.59	0	189	255
193	65	2	1	1	4	2	1	2000	6	333.3333333	5	1	1	1	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	1	2	2	2	0	0	1	4	2	0	0	2	2	2	2	2	0	0	1	1	2	3	2	150	45	20	82	79	1.037974684	120	70	0.87	8.51	**4.69**	0	187	263
194	60	2	1	1	4	3	1	12000	7	1714.285714	4	2	0	1	2	2	2	2	1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	1	0	0	1	2	1	1	2	1	2	2	2	1	1	60	1	2	1	1	2	163	80	30.1102789	113	107	1.056074766	140	90	1.07	9.53	1.35	0	130	225
195	34	2	1	3	4	2	1	12000	7	1714.285714	4	2	0	2	2	2	1	2	2	1	2	2	2	2	2	2	1	2	2	1	2	2	2	2	1	2	2	2	2	0.5	2	0	0	1	2	2	1	2	0	0	1	2	2	2	2	140	68	34.69387755	89	93	0.956989247	120	70	1.1	10.3	0.35	4	128	173
196	67	1	1	3	3	2	2	6000	4	1500	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	0	0	0	15	2	0	0	2	2	2	1	1	1	60	1	2	3	3	1	156	64	26.29848784	106	105	1.00952381	134	80	0.89	7.68	3.41	0	243	358
197	61	2	1	1	4	3	1	8000	6	1333.333333	4	1	1	1	2	2	2	2	2	1	2	2	2	1	2	2	1	2	2	2	1	2	2	2	2	2	0	0	1	5	1	1	5	2	2	2	1	1	1	30	1	2	2	2	2	141	46	23.13766913	81	83	0.975903614	160	90	1.12	10	0.57	0	82	138
198	45	1	3	3	3	2	2	5000	2	2500	3	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	0	0	0	9	1	1	2	2	2	1	1	1	1	60	1	2	2	2	2	164	53	19.70553242	96	99	0.96969697	120	80	1.03	9.97	0.84	0	248	362
199	40	2	2	2	4	2	2	10000	4	2500	3	2	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	1	1	2	0.33	2	0	0	1	2	2	1	2	0	0	1	2	2	2	2	144	45	21.70138889	78	82	0.951219512	120	80	0.96	8.13	3.61	0	93	155
200	45	2	1	1	4	2	1	8000	10	800	5	2	0	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	1	1	30	1	1	3	4	2	159	55	21.75546853	72	75	0.96	120	80	1.03	9.21	0.88	0	137	182
201	48	2	1	1	4	3	2	6000	3	2000	3	1	1	2	2	2	2	2	2	1	2	2	1	2	2	1	1	2	2	2	2	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	2	0	0	1	2	2	2	2	141	45	22.63467632	83	86	0.965116279	120	80	0.98	9.01	1.67	0	113	167
202	52	2	1	1	4	2	1	5000	6	833.3333333	5	2	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	5	1	1	3	2	2	2	1	1	1	30	1	2	3	3	1	140	64	32.65306122	88	90	0.977777778	120	80	0.97	8.11	4.03	0	86	157
203	45	1	1	3	1	2	2	5000	3	1666.666667	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0	12	1	2	2	1	1	2	2	1	1	60	1	2	2	2	2	172	63	21.29529475	98	103	0.951456311	120	80	**4.6**	**16.4**	**0.18**	3	302	452
204	40	1	1	3	3	2	2	6000	2	3000	3	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	1	2	0	0	2	2	2	1	1	1	30	1	2	3	2	1	165	95	34.89439853	115	107	1.074766355	160	100	0.98	9.01	1.67	0	146	251
205	32	2	1	3	4	2	2	12000	4	3000	3	2	0	2	2	2	1	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	0.5	2	0	0	1	2	2	1	2	0	0	1	2	2	2	2	150	45	20	72	68	1.058823529	100	90	0.8	6.31	**9.75**	2	123	197
206	48	2	1	1	4	2	1	8000	7	1142.857143	4	1	1	2	2	2	1	2	2	2	2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2	0	0	1	3	1	1	5	1	2	2	1	1	1	30	1	2	1	1	2	150	76	33.77777778	109	105	1.038095238	150	100	0.9	7.94	**4.87**	2	319	402
207	60	2	2	1	4	2	1	5000	8	625	5	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	10	1	1	10	2	2	2	1	1	1	30	1	2	1	1	2	146	85	39.87614937	95	100	0.95	150	90	0.99	7.42	2.22	0	142	222
208	75	1	1	3	5	2	2	9000	2	4500	3	0	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	13	2	0	0	2	1	1	2	2	0	0	1	2	2	2	2	163	50	18.81892431	83	85	0.976470588	120	80	0.96	7.45	1.43	0	143	207
209	40	2	1	2	4	2	1	15000	6	2500	3	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	1	1	2	3	2	0	0	2	2	2	1	1	1	40	1	2	2	1	2	145	51	24.2568371	84	94	0.893617021	130	90	1.21	8.41	1.66	0	121	166
210	73	1	1	3	5	2	2	10000	2	5000	2	0	0	1	2	2	2	2	2	1	2	2	2	1	2	2	1	2	2	2	2	2	2	2	2	2	0	0	0	15	1	1	5	2	1	1	1	1	1	30	1	1	3	2	1	155	56	23.30905307	88	94	0.936170213	160	90	0.86	6.53	3.63	0	153	261
211	65	2	1	1	4	2	2	10000	2	5000	2	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	0	0	1	10	1	1	2	2	2	2	1	1	1	30	1	2	3	2	1	144	57	27.48842593	96	95	1.010526316	160	88	1.13	7.5	1.43	0	113	143
212	52	2	2	2	4	2	1	9000	9	1000	4	2	0	1	2	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	2	0	0	1	5	2	0	0	2	2	2	1	2	0	0	1	2	2	1	2	157	80	32.45567772	106	107	0.990654206	110	70	0.89	7.21	2.91	0	121	191
213	41	2	2	3	4	2	1	8000	6	1333.333333	4	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	3	2	0	0	2	2	2	1	2	0	0	1	2	3	2	1	148	49	22.37034332	88	96	0.916666667	140	70	1.01	9.55	3.89	0	155	238
214	63	2	1	2	4	2	2	15000	2	7500	1	2	0	1	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	1	0	0	1	10	1	1	5	2	2	2	1	1	1	30	1	2	3	2	1	140	50	25.51020408	86	96	0.895833333	140	80	0.95	6.56	1.64	0	164	259
215	45	1	2	3	3	2	1	12000	10	1200	4	0	0	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	0	0	0	2	2	0	0	2	1	1	1	1	1	60	1	1	1	2	2	176	70	22.5981405	91	98	0.928571429	130	80	0.99	8.12	2.65	0	181	265
216	40	2	2	2	4	2	2	16000	4	4000	2	2	0	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	4	2	0	0	2	2	2	1	2	0	0	1	1	3	2	1	144	55	26.52391975	87	80	1.0875	110	80	1.14	8.95	1.97	0	114	189
217	75	2	2	1	4	2	2	15000	2	7500	1	1	1	2	2	2	2	2	1	1	2	2	2	1	2	2	1	2	2	2	2	2	2	2	2	2	0	0	1	11	1	1	13	2	2	2	1	2	0	0	1	2	2	1	2	141	56	28.1675972	96	99	0.96969697	140	90	0.82	6.89	2.61	0	182	269
218	64	2	2	2	4	2	2	11000	4	2750	3	2	0	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	0	0	1	11	2	0	0	2	2	2	1	1	1	30	1	2	2	1	2	140	51	26.02040816	95	96	0.989583333	130	70	0.88	7.25	1.07	0	107	188
219	59	2	2	2	4	2	2	15000	4	3750	2	2	0	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1	6	2	0	0	2	2	2	1	1	1	15	1	2	3	2	1	156	85	34.92767916	116	110	1.054545455	120	70	1.2	9.07	1.65	0	120	165

SOCIO DEMOGRAPHIC														Thyroid related symptoms													
PT. ID.	AGE	SEX	RELIGION	EDUCATION	OCCUPATION	MARITAL STATUS	FAMILY	MONTHY INCOME	TOTAL MEMBERS	PER CAPITA	SES	MISCARRIAGE	No. of Miscarriage	FATIGUE	INABILITY TO EXERCISE	DIFF.TOLERATING COLD	SWELLING IN NECK	CONSTIPATION	DRY SKIN	DRY HAIR	THICK BRITTLE NAILS	FACIAL PUFFINESS	SWELLLING EXTREMITIES	MUSCLES CRAMPS	EXCESSIVE SLEEPINESS	WEIGHT GAIN	HAIR LOSS ON
220	37	2	1	4	1	2	2	18000	3	6000	1	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
221	35	2	1	4	4	2	2	100000	5	20000	1	2	0	1	2	2	2	2	2	2	2	2	2	2	1	1	2
222	38	1	1	5	2	2	2	80000	4	20000	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
223	40	1	1	4	1	2	2	8000	4	2000	3	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
224	48	2	1	3	4	2	2	100000	4	25000	1	2	0	2	2	2	2	2	2	2	2	2	2	2	2	1	2
225	55	1	1	3	1	2	2	20000	5	4000	2	0	0	2	2	2	2	2	1	2	2	2	2	2	2	1	2
226	61	2	1	1	4	2	1	12000	7	1714.285714	4	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2
227	66	2	1	2	4	2	2	5000	4	1250	4	1	2	2	2	2	2	2	1	2	2	2	2	1	2	2	2
228	61	2	2	1	4	2	1	15000	6	2500	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
229	45	2	1	4	4	2	2	5000	3	1666.666667	4	1	1	1	1	2	2	2	2	2	2	2	2	1	2	2	2
230	70	2	2	3	4	2	1	9000	9	1000	4	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2
231	72	2	1	2	4	2	2	8000	3	2666.666667	3	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
232	50	2	2	1	4	2	1	12000	6	2000	3	2	0	2	2	2	2	1	1	1	2	1	2	2	2	2	1
233	65	2	1	2	4	2	2	20000	2	10000	1	2	0	1	2	2	2	1	1	1	2	2	2	2	2	2	2
234	49	2	1	3	4	2	2	30000	3	10000	1	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
235	58	1	2	3	3	2	1	30000	9	3333.333333	2	0	0	1	2	1	2	2	2	2	2	2	2	2	2	2	2
236	62	2	2	2	4	2	1	12000	6	2000	3	2	0	2	2	2	2	1	1	1	2	2	2	2	2	2	2
237	65	2	1	3	4	2	1	11000	9	1222.222222	4	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2
238	60	2	1	1	4	2	1	12000	8	1500	4	1	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2
239	62	1	1	5	3	2	2	15000	3	5000	1	0	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2
240	32	2	1	5	4	2	2	20000	3	6666.666667	1	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2
241	40	1	1	4	2	2	1	15000	6	2500	3	0	0	2	2	2	2	2	2	2	2	2	1	2	2	2	2
242	50	2	1	2	4	2	2	9000	4	2250	3	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
243	67	1	2	3	5	2	2	15000	10	1500	4	0	0	2	2	2	2	2	1	1	2	2	2	2	2	2	2
244	33	2	1	4	1	2	2	12000	4	3000	2	2	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2
245	55	1	1	3	2	2	2	6000	4	1500	4	0	0	2	2	2	2	2	2	2	2	2	2	2	1	2	2
246	37	1	1	4	2	2	2	30000	4	7500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
247	53	1	1	5	2	2	2	60000	3	20000	1	0	0	2	2	1	2	2	2	1	2	2	2	2	1	2	1
248	39	2	1	1	4	3	2	12000	3	4000	2	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2
249	48	2	1	5	3	2	1	25000	6	4166.666667	2	2	0	1	1	2	2	2	2	2	2	2	1	1	2	1	2
250	37	1	1	3	5	2	1	5000	9	555.5555556	5	0	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2
251	48	1	1	1	3	2	2	5000	3	1666.666667	4	0	0	2	2	2	2	2	2	1	2	2	2	2	2	2	1
252	38	2	2	3	4	2	2	10000	4	2500	3	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
253	60	1	4	1	3	2	1	40000	9	4444.444444	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
254	55	1	4	3	3	2	1	10000	5	2000	3	0	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2
255	62	1	4	3	3	2	1	60000	10	6000	2	0	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2
256	76	1	1	2	3	2	1	20000	11	1818.181818	4	0	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2
257	42	2	4	2	4	2	1	16000	8	2000	3	2	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2
258	60	2	1	2	4	2	1	12000	8	1500	4	1	2	2	2	1	2	2	1	2	2	2	2	1	2	2	2
259	50	2	4	1	4	2	1	8000	5	1600	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
260	71	2	2	1	4	2	1	8000	8	1000	4	1	2	1	1	1	2	2	2	2	2	2	1	1	2	2	2
261	62	1	1	3	5	2	1	11000	7	1571.428571	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
262	68	1	2	2	3	2	1	7000	10	700	5	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
263	48	1	1	3	1	2	2	30000	4	7500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
264	72	2	1	3	4	3	3	5000	2	2500	3	1	1	2	2	2	2	1	2	1	2	2	2	2	2	2	1
265	40	2	2	2	4	2	2	11000	4	2750	3	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2
266	53	2	2	1	4	2	1	5000	6	833.3333333	5	1	3	1	1	2	2	2	2	2	2	2	2	2	2	2	2
267	62	2	1	2	4	2	2	5000	2	2500	3	2	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2
268	43	1	1	2	2	2	2	15000	4	3750	4	0	0	1	2	2	2	1	2	2	2	2	2	1	2	2	2
269	53	2	1	1	4	2	2	6000	4	1500	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
270	56	2	1	1	4	2	1	6000	10	600	5	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
271	70	2	1	1	4	3	3	2000	1	2000	3	1	2	1	2	2	2	1	1	1	2	2	2	2	2	2	2
272	66	2	1	3	4	2	1	8000	8	1000	4	2	0	1	2	1	2	2	2	2	2	2	2	1	2	2	2
273	41	1	1	4	3	2	1	20000	6	3333.333333	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
274	68	1	1	3	5	2	1	15000	5	3000	3	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
275	73	1	2	5	5	2	1	100000	7	14285.71429	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
276	57	2	1	5	4	2	2	100000	2	50000	1	1	2	1	2	2	2	2	2	2	2	2	2	1	2	2	2
277	50	2	1	1	3	2	1	2400	6	400	5	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
278	60	2	1	1	4	2	1	2400	6	400	5	2	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2
279	60	2	1	1	4	2	1	5000	7	714.2857143	5	2	0	2	2	2	2	2	1	1	2	2	2	2	2	2	2
280	70	2	1	1	4	2	1	1000	2	500	5	2	0	2	2	2	2	2	2	2	1	2	2	2	2	2	2
281	65	1	1	1	3	2	1	6000	9	666.6666667	5	0	0	2	2	2	2	2	1	2	2	2	2	2	2	2	2
282	45	2	1	1	4	2	1	50000	6	8333.333333	1	2	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2
283	60	2	1	1	4	2	1	1500	2	750	5	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
284	55	1	1	3	1	4	3	1800	3	600	5	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
285	41	2	1	5	3	2	2	200000	4	50000	1	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2
286	50	1	1	2	1	2	1	10500	5	2100	3	0	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2
287	64	1	2	1	3	2	1	15000	11	1363.636364	4	0	0	1	2	2	2	2	2	2	1	2	1	2	2	2	2
288	40	2	2	3	4	2	2	5000	5	1000	4	2	0	1	2	2	2	2	2	2	2	2	2	1	2	1	2
289	57	1	1	5	3	2	1	50000	5	10000	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
290	66	2	1	2	4	2	1	10000	6	1666.666667	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2
291	65	2	1	1	4	3	3	2000	3	666.6666667	5	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2
292	50	2	1	1	4	2	2	10000	4	2500	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2

	Thyroid related symptoms												PAST HISTORY								PHYSICAL & NUTRITION							
PT. ID.	PALPITATIONS	INCREASED APPETITE	WEIGHT LOSS	INSOMNIA	AB PROT EYEBALL	HAND TREMOR	WARM SKIN	DIFF IN TOLERATING HEAT	INCREASE SWEATING	REGULARITY	BLOOD FLOW	MENOPAUSE	DURATION OF DM(yrs)	PAST HISTORY	IF YES,SPECIFY	DURATION(yrs)	FAMILY HISTORY	TOBACCO	ALCOHOL	DRUG HISTORY	EXERCISE	IF YES	HOW LONG (min)	SALT	PLATE SALT	GOITROGENS	FREQUENCY GOITROGENS	TYPE OF DIET
220	2	2	2	2	2	2	2	2	2	1	3	2	1	2	0	0	1	2	2	1	1	1	30	1	2	1	2	2
221	2	2	2	2	2	2	2	2	2	1	3	2	2	2	0	0	1	2	2	1	1	1	20	1	2	2	2	2
222	2	2	2	2	2	2	2	2	2	0	0	0	2	1	1	0.5	2	1	1	1	1	3	60	1	2	1	1	2
223	2	2	2	2	2	2	2	2	2	0	0	0	0.5	2	0	0	2	1	1	1	1	1	90	1	2	1	1	2
224	2	2	2	2	2	2	2	2	2	2	2	2	5	1	1	5	2	2	2	1	1	1	60	1	2	3	3	1
225	2	2	2	2	2	2	2	2	2	0	0	0	7	1	1	5	2	1	1	1	1	1	45	1	2	2	3	1
226	2	2	2	2	2	2	2	2	2	0	0	1	8	1	1	8	2	2	2	1	1	1	30	1	2	2	2	1
227	2	2	2	2	2	2	2	2	2	0	0	1	15	2	0	0	2	2	2	2	2	0	0	1	2	1	2	2
228	2	2	2	1	2	2	2	2	1	0	0	1	7	2	0	0	2	2	2	1	1	1	40	1	2	2	2	2
229	1	2	2	2	2	2	1	2	2	2	2	2	4	2	0	0	1	2	2	1	1	1	60	1	1	2	2	1
230	2	2	2	2	2	2	2	2	1	0	0	1	15	1	1	5	2	2	2	1	1	1	30	1	2	2	2	1
231	2	2	2	2	2	2	2	2	2	0	0	1	8	1	1	8	2	2	2	1	1	1	40	1	2	2	1	1
232	2	2	2	2	2	2	2	2	2	0	0	1	3	2	0	0	2	2	2	1	2	0	0	1	2	2	1	2
233	1	2	2	2	2	2	2	2	1	0	0	1	10	1	1	8	2	2	2	1	1	1	30	1	2	2	2	1
234	2	2	2	2	2	2	2	2	2	1	2	2	3	2	0	0	2	2	2	1	1	1	30	1	2	2	2	1
235	2	2	1	1	2	2	2	2	2	0	0	0	15	1	1	15	2	2	2	1	1	1	20	1	2	2	3	1
236	2	2	2	2	2	2	2	2	1	0	0	1	7	2	0	0	2	2	2	1	1	1	30	1	2	2	3	1
237	2	2	1	1	2	2	2	2	2	0	0	1	10	1	1	7	2	2	2	1	2	0	0	1	1	3	2	1
238	2	2	2	2	2	2	2	2	2	0	0	1	8	1	1	2	2	2	2	1	1	1	20	1	2	2	2	1
239	2	2	2	2	2	2	2	2	2	0	0	0	6	1	1	6	2	2	2	1	1	1	40	1	2	2	2	1
240	2	2	2	2	2	2	2	2	2	2	2	2	3	2	0	0	1	2	2	1	1	2	60	1	2	2	2	1
241	2	2	2	2	2	2	2	2	2	0	0	0	0.67	2	0	0	2	2	1	1	1	1	40	1	2	2	2	2
242	2	2	2	2	2	2	2	2	1	0	0	1	1	2	0	0	2	2	2	1	1	1	20	1	2	2	2	1
243	2	2	1	2	2	2	2	2	2	0	0	0	12	1	1	10	2	1	2	1	1	1	40	1	2	2	1	2
244	2	2	2	2	2	2	2	2	2	1	1	2	0.5	2	0	0	2	2	2	1	1	1	30	1	2	2	1	2
245	2	2	1	2	2	2	2	2	2	0	0	0	7	1	1	5	2	1	1	1	1	1	40	1	2	2	2	1
246	2	2	2	1	2	2	2	2	2	0	0	0	2	2	0	0	2	2	1	1	1	2	30	1	2	4	1	1
247	2	2	2	2	2	2	2	2	2	0	0	0	7	2	0	0	2	2	1	1	1	3	60	1	2	3	2	1
248	1	2	2	1	2	2	2	2	2	1	1	2	0.5	2	0	0	2	2	2	1	1	1	60	1	1	1	1	2
249	2	2	2	2	2	2	2	2	2	1	1	2	5	1	1	5	2	2	2	1	2	0	0	1	2	3	3	2
250	2	2	2	1	2	2	2	2	2	0	0	0	2	2	0	0	2	2	2	1	1	1	30	1	2	4	2	2
251	1	1	2	1	2	1	2	2	2	0	0	0	1	2	0	0	2	1	1	1	1	1	90	1	1	3	3	1
252	2	2	2	2	2	2	2	2	2	1	1	2	3	1	1	2	1	2	2	1	1	1	20	1	2	2	2	2
253	2	2	2	2	2	2	1	2	2	0	0	0	4	2	0	0	2	2	2	1	2	0	0	1	1	5	3	1
254	2	2	2	2	2	2	2	2	1	0	0	0	5	1	1	5	2	1	1	1	1	1	60	1	1	3	4	1
255	2	2	2	2	2	2	2	2	2	0	0	0	0.5	1	2	1	2	1	2	1	2	0	0	1	2	2	2	1
256	2	2	2	1	2	2	2	2	2	0	0	0	10	2	0	0	2	2	2	2	2	0	0	2	1	4	4	1
257	1	2	2	2	2	2	2	2	1	2	2	2	2	1	1	2	2	2	2	1	2	0	0	1	2	2	2	1
258	2	2	2	2	2	2	2	2	2	0	0	1	2	1	1	2	2	2	2	1	1	1	30	1	2	2	3	1
259	2	2	2	2	2	2	2	2	2	0	0	1	1	1	1	1	2	2	2	1	1	1	40	1	2	4	4	1
260	1	1	1	1	2	1	1	1	2	0	0	1	15	2	0	0	2	2	2	1	2	0	0	1	2	2	1	2
261	2	2	2	1	2	2	2	2	2	0	0	0	4	1	1	0.16	2	2	2	1	1	1	60	1	2	2	2	1
262	2	2	2	1	2	2	2	2	2	0	0	0	1	1	1	1	2	2	2	1	1	1	30	1	2	5	5	2
263	2	2	2	1	2	2	2	2	2	0	0	0	0.25	2	0	0	2	2	1	1	1	1	40	1	2	2	3	2
264	2	2	2	2	2	2	2	2	2	0	0	1	12	1	1	12	1	2	2	1	1	1	30	1	1	2	4	1
265	2	2	2	2	2	2	2	2	2	1	1	2	2	2	0	0	2	2	2	1	1	1	30	1	2	3	2	2
266	2	2	1	2	2	2	2	2	1	0	0	1	7	1	1	8	2	2	2	1	2	0	0	1	1	4	3	2
267	2	2	2	1	2	2	2	2	2	0	0	1	6	1	1	6	2	2	2	1	2	0	0	1	1	4	5	1
268	2	2	1	2	2	1	2	2	2	0	0	0	4	2	0	0	2	1	1	1	2	0	0	1	2	3	2	2
269	2	2	2	2	2	2	2	2	2	0	0	1	2	1	1	2	2	2	2	1	2	0	0	1	2	4	4	1
270	2	2	1	2	2	2	2	2	1	0	0	1	2	1	1	1	2	2	2	1	1	1	20	2	2	2	4	2
271	2	2	2	2	2	2	2	2	2	0	0	1	6	1	1	10	2	2	2	1	1	1	40	1	2	3	2	2
272	2	2	2	2	2	2	1	2	2	0	0	1	2	1	1	5	2	2	2	1	1	1	30	1	1	4	3	2
273	2	2	2	2	2	2	2	2	2	0	0	0	2	2	0	0	2	1	1	1	2	0	0	1	2	4	3	1
274	2	2	2	2	2	2	2	2	2	0	0	0	11	1	1	11	2	1	1	1	1	1	60	1	2	2	1	1
275	2	2	2	2	2	2	2	2	2	0	0	0	3	2	0	0	2	1	2	1	1	1	60	1	2	4	2	2
276	2	2	2	2	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	2	0	0	1	2	2	2	1
277	2	2	2	2	2	2	2	2	2	2	1	2	0.5	1	1	2	2	2	2	1	1	1	30	1	2	4	3	2
278	2	2	1	1	2	2	2	2	2	0	0	1	6	1	1	6	2	2	2	1	1	1	30	1	2	2	1	1
279	2	2	2	1	2	2	2	2	2	0	0	1	3	2	0	0	2	1	2	1	2	0	0	1	2	4	3	2
280	2	2	2	1	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	1	1	40	1	2	2	3	1
281	2	2	2	2	2	1	2	2	2	0	0	0	4	1	1	4	2	2	2	1	1	1	30	1	2	2	3	1
282	2	2	2	1	2	2	2	2	2	0	0	1	5	2	0	0	2	2	2	1	1	1	30	1	2	4	3	2
283	2	2	2	1	2	2	2	2	2	0	0	1	2	2	0	0	2	2	2	1	2	0	0	2	2	2	3	1
284	2	2	2	2	2	2	2	2	2	0	0	0	1	2	0	0	2	2	2	1	1	1	60	1	2	2	3	2
285	2	2	2	2	2	2	2	2	2	1	2	2	2	2	0	0	2	2	2	1	1	1	30	1	2	4	2	2
286	2	2	2	2	2	2	2	2	2	0	0	0	1	2	0	0	2	1	2	1	2	0	0	1	2	2	2	2
287	2	2	2	2	2	2	2	2	2	0	0	0	11	2	0	0	2	1	1	1	1	1	60	1	2	3	2	2
288	2	2	2	2	2	2	2	2	2	1	2	2	3	2	0	0	2	2	2	1	2	0	0	1	2	4	3	2
289	2	2	2	2	2	2	2	2	2	0	0	0	0.5	2	0	0	1	1	1	1	1	2	30	1	2	2	2	2
290	2	2	2	1	2	2	2	2	2	0	0	1	10	1	1	10	2	2	2	1	1	1	60	1	2	2	3	2
291	2	2	2	1	2	2	2	2	2	0	0	1	12	1	1	10	2	2	2	1	1	1	30	1	2	4	3	1
292	2	2	2	2	2	2	2	2	2	0	0	1	6	1	1	6	2	2	2	1	1	1	30	1	2	2	2	1

									INVESTIGATIONS					
PT. ID.	HEIGHT(Cm)	WEIGHT(Kg)	BMI	WAIST(cm)	HIP(cm)	RATIO	Systole	Diastole	T3(0.59-1.78)	T4(4.5-10.87)	TSH(0.5-4.7)	Thyroid Disorders	FBS	PPBS
220	160	60	23.4375	86	88	0.977272727	110	70	0.89	7.33	**6.79**	2	133	208
221	162	60	22.86236854	86	88	0.977272727	110	60	0.89	7.33	**6.79**	2	173	267
222	168	80	28.3446712	90	92	0.97826087	120	80	1	9.55	1.4	0	95	140
223	170	78	26.98961938	88	90	0.977777778	110	80	1.01	9.34	1.18	0	118	193
224	160	68	26.5625	91	87	1.045977011	150	80	0.87	8.96	**9.38**	2	110	170
225	151	40	17.54309022	69	86	0.802325581	130	90	0.97	9.33	1.12	0	134	177
226	158	75	30.0432623	105	115	0.913043478	160	100	0.93	8.71	1.73	0	160	248
227	146	67	31.43178833	106	109	0.972477064	160	94	0.92	7.24	3.99	0	133	168
228	148	60	27.39225712	89	109	0.816513761	120	80	0.99	8.31	2.58	0	238	362
229	151	64	28.06894434	101	109	0.926605505	160	100	0.85	6.34	**9.76**	2	314	450
230	146	50	23.45655845	87	102	0.852941176	140	70	0.97	9	1.2	0	297	360
231	151	47	20.613131	72	93	0.774193548	160	70	0.99	8.11	2.53	0	120	199
232	159	77	30.45765595	103	114	0.903508772	120	70	0.91	3.07	6.08	1	143	209
233	158	65	26.03749399	103	102	1.009803922	130	100	0.83	6.17	**8.38**	2	147	267
234	158	63	25.23634033	89	97	0.917525773	120	80	1.11	9.28	1.43	0	142	280
235	174	79	26.0932752	99	108	0.916666667	150	90	0.89	7.94	2.65	0	182	261
236	163	80	30.1102789	115	102	1.12745098	120	80	0.99	8.01	4.71	2	126	168
237	160	74	28.90625	90	102	0.882352941	130	80	0.91	7.31	**5.77**	2	168	248
238	148	70	31.95763331	112	115	0.973913043	140	90	0.86	7.45	0.59	0	238	360
239	161	65	25.07619305	83	89	0.93258427	156	94	0.27	6.01	**15.6**	1	160	256
240	159	62	24.52434635	86	88	0.977272727	118	70	0.93	8.11	3.1	0	131	189
241	168	77	27.28174603	98	101	0.97029703	140	90	0.95	9.31	2.07	0	131	207
242	154	62	26.14268848	99	95	1.042105263	130	90	0.76	7.15	**6.22**	2	171	262
243	168	77	27.28174603	105	109	0.963302752	150	90	0.87	8.01	3.12	0	108	141
244	155	68	28.30385016	85	90	0.944444444	140	90	0.87	8.17	1.59	0	159	215
245	161	59	22.76146754	88	95	0.926315789	110	70	0.99	8.1	2.13	0	181	299
246	163	65	24.4646016	85	87	0.977011494	120	80	1.04	9.31	1.26	0	104	169
247	155	62	25.80645161	85	92	0.923913043	116	70	0.93	8.61	3.78	0	132	193
248	163	56	21.07719523	88	85	1.035294118	130	90	0.95	8.17	2.34	0	109	181
249	160	84	32.8125	95	92	1.032608696	110	70	1.14	10.6	0.61	0	161	214
250	151	65	28.5075216	89	96	0.927083333	120	80	0.93	9.22	1.08	0	126	186
251	162	52	19.81405274	78	66	1.181818182	120	80	**1.51**	**12.13**	**0.33**	3	147	193
252	167	60	21.51385851	88	90	0.977777778	110	70	0.91	9.65	2.28	0	168	287
253	168	71	25.15589569	99	91	1.087912088	160	80	1.12	8.9	1.83	0	104	151
254	157	59	23.93606231	90	93	0.967741935	180	90	0.99	8.41	2.13	0	96	152
255	158	63	25.23634033	96	99	0.96969697	120	90	1.14	9.06	1.02	0	158	210
256	161	49	18.90359168	72	78	0.923076923	110	70	0.88	9.02	1.55	0	188	317
257	152	65	28.13365651	104	98	1.06122449	140	90	0.97	8.01	3.46	0	192	335
258	154	62	26.14268848	92	93	0.989247312	110	70	0.95	8.47	1.12	0	172	253
259	152	67	28.99930748	108	99	1.090909091	130	80	0.99	8.31	2.54	0	124	184
260	160	60	23.4375	96	98	0.979591837	150	90	**1.53**	**13.9**	**0.01**	3	214	386
261	167	66	23.66524436	98	99	0.98989899	120	80	0.9	7.99	3.3	0	106	144
262	157	71	28.80441397	99	110	0.9	134	90	1.01	8.33	2.56	0	137	175
263	162	68	25.91068435	99	100	0.99	180	90	0.91	8.03	**3.36**	0	183	240
264	155	66	27.47138398	101	102	0.990196078	130	80	0.96	9.01	2.85	0	107	160
265	148	50	22.82688093	99	74	1.337837838	150	90	0.97	9.1	1.95	0	157	193
266	162	64	24.38652644	98	97	1.010309278	130	90	0.99	8.65	1.61	0	143	175
267	140	64	32.65306122	120	109	1.100917431	140	76	0.99	8.11	3.37	0	237	388
268	168	72	25.51020408	62	59	1.050847458	120	80	1.12	9.44	1.38	0	127	177
269	145	65	30.91557669	74	76	0.973684211	160	100	1.08	8.65	1.94	0	173	228
270	141	50	25.14964036	98	99	0.98989899	138	74	1.01	9.24	1.53	0	101	153
271	155	62	25.80645161	75	70	1.071428571	130	80	0.87	9.31	1.34	0	87	134
272	168	77	27.28174603	99	102	0.970588235	126	86	0.93	8.15	2.45	0	173	245
273	174	71	23.45091822	96	102	0.941176471	130	80	0.96	8.77	2.36	0	163	213
274	172	69	23.32341806	100	90	1.111111111	140	80	0.99	8.34	3.97	0	179	266
275	171	76	25.99090318	52	50	1.04	110	70	0.99	8.01	3.79	0	143	197
276	144	70	33.75771605	112	114	0.98245614	160	80	0.81	7	**6.48**	2	293	486
277	160	75	29.296875	98	100	0.98	120	80	0.97	8.61	2.08	0	161	208
278	158	54	21.63114885	90	100	0.9	140	90	0.99	8.34	3.97	0	183	294
279	133	32	18.09033863	56	59	0.949152542	140	90	1.12	9.2	1.53	0	112	153
280	138	46	24.15458937	87	102	0.852941176	150	74	0.84	8.35	1.83	0	148	183
281	162	55	20.95717116	87	93	0.935483871	120	80	0.9	8.32	1.2	0	137	179
282	139	46	23.8082915	56	54	1.037037037	140	90	0.8	7.31	3.52	0	125	185
283	138	64	33.60638521	92	93	0.989247312	130	90	0.85	7.08	3.13	0	158	205
284	168	78	27.63605442	95	100	0.95	120	70	0.92	8.29	1.98	0	149	290
285	151	60	26.31463532	103	100	1.03	154	90	0.84	8.15	2.14	0	95	154
286	159	61	24.12879237	99	95	1.042105263	120	80	1.02	9.26	0.92	0	102	167
287	171	94	32.14664341	116	111	1.045045045	140	80	0.81	7.45	**4.31**	0	145	199
288	167	84	30.11940191	113	111	1.018018018	120	80	1.02	9.01	1.38	0	112	158
289	163	63	23.71184463	97	91	1.065934066	130	80	1.04	9	1.26	0	162	221
290	156	64	26.29848784	87	105	0.828571429	110	70	1.23	10.1	0.76	0	133	212
291	160	72	28.125	97	104	0.932692308	150	90	1	9.31	1.55	0	113	155
292	154	64	26.98600101	94	109	0.862385321	130	80	1.11	9.01	1.98	0	114	141

SOCIO DEMOGRAPHIC | Thyroid related symptoms

PT. ID.	AGE	SEX	RELIGION	EDUCATION	OCCUPATION	MARITAL STATUS	FAMILY	MONTHY INCOME	TOTAL MEMBERS	PER CAPITA	SES	MISCARRIAGE	No. of Miscarriage	FATIGUE	INABILITY TO EXERCISE	DIFF.TOLERATING COLD	SWELLING IN NECK	CONSTIPATION	DRY SKIN	DRY HAIR	THICK BRITTLE NAILS	FACIAL PUFFINESS	SWELLLING EXTREMITIES	MUSCLES CRAMPS	EXCESSIVE SLEEPINESS	WEIGHT GAIN	HAIR LOSS ON	PALPITATIONS	INCREASED APPETITE	WEIGHT LOSS	INSOMNIA	AB PROT EYEBALL	HAND TREMOR	WARM SKIN	DIFF IN TOLERATING HEAT	INCREASE SWEATING	REGULARITY	BLOOD FLOW	MENOPAUSE
293	57	2	1	3	4	2	1	8000	6	1333.333333	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
294	60	2	2	1	4	2	1	4500	7	642.8571429	5	2	0	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	0	0	1
295	45	2	1	3	1	2	1	10000	4	2500	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2	1	2	2
296	53	2	1	2	4	2	1	9000	7	1285.714286	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
297	40	2	1	1	4	3	2	5000	5	1000	4	2	0	2	1	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2
298	44	2	1	3	4	2	1	9000	6	1500	4	2	0	2	1	2	2	2	2	1	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2
299	60	2	2	1	4	2	2	2000	2	1000	4	1	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
300	40	2	2	1	4	2	1	6000	10	600	5	2	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	3	2
301	62	2	1	2	4	2	1	12000	6	2000	3	2	0	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
302	60	2	1	1	4	2	2	8000	2	4000	2	2	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	1	2	2	2	2	2	0	0	1
303	60	2	1	2	4	2	1	10000	10	1000	4	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
304	37	2	1	4	4	2	2	10000	4	2500	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	1	1	2
305	35	2	2	2	3	2	2	5000	4	1250	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	1	2
306	63	2	1	1	4	2	2	3500	3	1166.666667	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1
307	55	1	1	3	3	2	1	5000	3	1666.666667	4	0	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	1	2	0	0	0
308	45	1	1	5	3	2	1	25000	5	5000	2	0	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	0	0	0
309	75	1	4	5	5	2	1	24000	5	4800	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0
310	45	2	2	2	4	2	2	10000	5	2000	3	2	0	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2
311	65	1	2	2	3	2	2	8000	8	1000	4	0	0	1	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	0	0	0
312	60	1	1	4	3	2	1	13000	5	2600	3	0	0	1	2	1	2	2	1	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	0	0	0
313	60	1	1	4	3	2	1	50000	5	10000	1	0	0	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	0	0	0
314	72	2	1	2	4	2	2	10000	5	2000	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
315	65	2	1	1	4	2	1	12000	6	2000	3	2	0	1	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
316	65	2	1	1	4	2	1	2000	6	333.3333333	5	1	1	1	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	1	2	2	2	0	0	1
317	60	2	1	1	4	3	1	12000	7	1714.285714	4	2	0	1	2	2	2	2	1	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	1	0	0	1
318	34	2	1	3	4	2	1	12000	7	1714.285714	4	2	0	2	2	2	1	2	2	1	2	2	2	2	2	2	1	2	2	1	2	2	2	2	2	2	2	2	2
319	67	1	1	3	3	2	2	6000	4	1500	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	0	0	0
320	61	2	1	1	4	3	1	8000	6	1333.333333	4	1	1	1	2	2	2	2	2	1	2	2	2	1	2	2	1	2	2	2	1	2	2	2	2	2	0	0	1
321	45	1	3	3	3	2	2	5000	2	2500	3	0	0	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	0	0	0
322	40	2	2	2	4	2	2	10000	4	2500	3	2	0	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	1	1	2
323	45	2	1	1	4	2	1	8000	10	800	5	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
324	58	1	1	1	1	2	1	15000	6	2500	3	0	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0
325	70	2	2	2	4	3	3	5000	3	1666.666667	4	2	0	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	1	2	1	0	0	1
326	70	2	2	1	4	3	3	5000	3	1666.666667	4	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	0	0	1
327	48	1	2	3	3	1	2	11000	3	3666.666667	2	0	0	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0
328	66	1	1	4	5	2	2	14000	4	3500	2	0	0	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	0	0	0
329	60	2	1	4	4	3	3	6000	2	3000	3	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	1	0	0	1
330	64	2	1	2	4	2	1	10000	5	2000	3	2	0	1	2	1	2	1	1	1	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1
331	55	2	2	3	4	3	3	5000	3	1666.666667	4	2	0	1	1	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
332	50	2	2	2	4	3	3	5000	3	1666.666667	4	1	1	1	1	2	2	2	2	2	2	2	2	1	2	1	2	1	2	2	1	2	2	2	2	1	0	0	1
333	60	2	1	1	4	3	3	2000	1	2000	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
334	69	2	1	5	4	2	2	30000	6	5000	2	2	0	1	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
335	63	2	1	3	4	2	1	10000	6	1666.666667	4	2	0	1	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
336	62	1	1	4	1	2	2	20000	4	5000	1	0	0	1	1	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0
337	42	2	2	3	4	2	1	5000	6	833.3333333	5	2	0	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	1	1	1	1	2
338	80	1	1	3	5	2	1	30000	8	3750	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0
339	45	2	2	2	1	3	3	3000	1	3000	3	1	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1
340	35	2	1	3	4	2	2	25000	3	8333.333333	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	2
341	47	2	2	2	4	2	2	10000	4	2500	3	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2
342	65	2	2	1	4	2	1	10000	6	1666.666667	4	2	0	2	2	2	2	2	2	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	0	0	1
343	52	2	1	2	4	2	1	10000	6	1666.666667	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	0	0	1
344	69	1	2	3	3	2	2	10000	4	2500	3	0	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	0	0	0
345	60	1	1	1	3	2	1	4000	7	571.4285714	5	0	0	1	1	2	2	2	1	1	2	2	2	1	2	2	2	2	2	1	1	2	2	2	2	2	0	0	0
346	44	2	1	3	4	2	2	30000	4	7500	1	1	1	1	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2
347	73	1	1	2	5	2	1	12000	8	1500	4	0	0	2	2	1	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	0	0	0
348	50	2	2	5	4	2	1	5000	5	1000	4	2	0	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
349	46	2	1	3	4	2	2	25000	3	8333.333333	1	2	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	0	0	1
350	65	2	1	1	4	3	3	500	1	500	5	1	3	1	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	1
351	75	2	2	1	4	3	3	3000	1	3000	3	1	2	1	2	2	2	1	2	1	2	2	2	1	2	2	2	1	2	2	2	2	2	2	2	2	0	0	1
352	45	1	1	5	1	2	2	36000	4	9000	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0
353	65	2	2	2	4	2	1	10000	8	1250	4	1	2	1	1	1	2	1	2	2	1	2	2	2	2	2	2	1	2	1	2	2	2	2	2	1	0	0	1
354	63	1	2	1	2	2	2	8000	4	2000	3	0	0	1	2	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	2	0	0	0
355	65	2	2	1	4	2	1	8000	5	1600	4	2	0	1	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
356	40	2	1	1	4	2	2	5000	4	1250	4	2	0	2	2	2	2	2	2	1	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	1	1	2	2
357	63	2	1	1	4	2	1	20000	8	2500	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	0	0	1
358	65	1	1	2	5	2	1	14000	8	1750	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	0
359	61	2	1	1	4	2	1	20000	5	4000	2	2	0	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
360	65	2	2	1	4	2	1	10000	9	1111.111111	4	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
361	63	1	1	1	2	2	1	8000	8	1000	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	0	0	0
362	60	2	2	1	4	2	2	4000	2	2000	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
363	60	2	1	2	4	2	1	5000	8	625	5	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	1
364	40	1	1	3	3	2	1	15000	6	2500	3	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0
365	46	1	1	5	2	2	2	40000	3	13333.33333	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0

PAST HISTORY | PHYSICAL & NUTRITION | INVESTIGATIONS

PT. ID.	DURATION OF DM(yrs)	PAST HISTORY	IF YES,SPECIFY	DURATION(yrs)	FAMILY HISTORY	TOBACCO	ALCOHOL	DRUG HISTORY	EXERCISE	IF YES	HOW LONG (min)	SALT	PLATE SALT	GOITROGENS	FREQUENCY GOITROGENS	TYPE OF DIET	HEIGHT(Cm)	WEIGHT(Kg)	BMI	WAIST(cm)	HIP(cm)	RATIO	Systole	Diastole	T3(0.59-1.78)	T4(4.5-10.87)	TSH(0.5-4.7)	Thyroid Disorders	FBS	PPBS
293	6	1	1	6	2	2	2	1	1	1	60	1	2	2	3	1	154	61	25.72103221	97	119	0.81512605	160	80	0.98	8.12	3.03	0	181	248
294	3	1	1	2	2	2	2	1	2	0	0	1	2	4	3	2	153	57	24.34960912	83	96	0.864583333	130	80	1.12	9.67	0.64	0	264	460
295	6	2	0	0	2	2	2	1	1	1	40	1	2	2	3	1	155	62	25.80645161	88	98	0.897959184	120	80	1.01	7.91	2.53	0	153	229
296	2	1	1	3	2	2	2	1	2	0	0	1	2	4	3	2	148	66	30.13148283	101	112	0.901785714	130	80	0.97	8.01	2.99	0	168	229
297	4	2	0	0	2	2	2	1	1	1	30	1	2	2	2	2	152	72	31.1634349	93	98	0.948979592	128	90	0.79	6.12	**8.28**	2	179	228
298	2	2	0	0	2	2	2	1	1	1	120	1	2	2	2	1	150	60	26.66666667	95	99	0.95959596	120	80	0.8	6.01	**6.95**	2	176	215
299	2	1	1	2	2	2	2	1	1	1	30	1	2	2	2	2	154	68	28.67262608	93	91	1.021978022	110	70	0.89	8.12	5.91	2	128	191
300	2	2	0	0	2	2	2	1	2	0	0	1	2	2	3	2	150	58	25.77777778	85	99	0.858585859	120	80	1.02	9.14	1.5	0	201	300
301	10	1	1	10	2	2	2	1	1	1	60	1	2	3	2	2	158	62	24.8357635	85	108	0.787037037	136	80	1.02	7.71	2.3	0	234	330
302	5	1	1	2	2	2	2	1	2	0	0	1	1	2	1	2	153	54	23.06805075	75	63	1.19047619	130	90	1.13	10.1	0.09	4	265	410
303	4	2	0	0	2	2	2	1	1	1	30	2	2	3	2	1	140	47	23.97959184	67	69	0.971014493	110	70	0.99	7.16	6.81	2	138	190
304	2	2	0	0	2	2	2	1	2	0	0	1	2	3	2	1	155	48	19.97918835	86	89	0.966292135	134	90	1.1	10.3	0.52	0	100	152
305	0.5	2	0	0	2	2	2	1	2	0	0	1	2	3	3	2	160	57	22.265625	94	97	0.969072165	126	84	**1.51**	**12.13**	**0.33**	3	105	**157**
306	6	2	0	0	2	2	2	1	1	1	30	1	2	3	2	2	160	70	27.34375	91	95	0.957894737	130	80	0.91	9.65	2.28	0	167	211
307	10	2	0	0	2	1	1	1	1	1	60	1	2	3	2	1	168	65	23.03004535	86	89	0.966292135	110	70	**1.53**	**13.2**	**0.05**	3	135	178
308	3	2	0	0	2	2	2	1	1	2	90	1	2	2	2	1	159	57	22.54657648	77	83	0.927710843	154	90	0.97	8.84	2.55	0	127	155
309	14	2	0	0	2	2	2	3	1	1	20	1	2	2	3	1	171	70	23.93898977	101	94	1.074468085	131	75	0.98	7.99	2.57	0	123	193
310	0.67	2	0	0	2	2	2	1	1	1	30	1	2	2	2	1	164	68	25.2825699	98	96	1.020833333	120	90	0.96	8.77	2.36	0	145	189
311	15	2	0	0	2	1	2	1	1	1	40	1	2	2	1	3	180	72	22.22222222	103	99	1.04040404	130	80	0.99	8.34	3.97	0	143	197
312	15	2	0	0	2	2	2	1	1	1	60	1	2	2	2	1	163	95	35.75595619	95	94	1.010638298	163	76	0.99	8.01	3.79	0	255	374
313	15	2	0	0	2	2	2	1	1	2	60	1	2	3	3	1	163	60	22.58270917	90	94	0.957446809	163	76	0.81	7	**4.48**	0	248	374
314	10	1	1	10	2	2	2	1	1	1	30	1	2	3	2	1	150	63	28	86	81	1.061728395	130	90	0.98	8.14	2.36	0	183	265
315	0.5	1	1	15	2	2	2	1	2	0	0	2	2	2	2	2	154	64	26.98600101	98	93	1.053763441	130	80	0.9	8.77	3.59	0	189	255
316	4	2	0	0	2	2	2	2	2	0	0	1	1	2	3	2	150	45	20	82	79	1.037974684	120	70	0.87	8.51	**4.69**	0	187	263
317	2	1	1	2	1	2	2	2	1	1	60	1	2	1	1	2	163	80	30.1102789	113	107	1.056074766	140	90	1.07	9.53	1.35	0	130	225
318	0.5	2	0	0	1	2	2	1	2	0	0	1	2	2	2	2	140	68	34.69387755	89	93	0.956989247	120	70	1.1	10.3	0.15	4	128	173
319	15	2	0	0	2	2	2	1	1	1	60	1	2	3	3	1	156	64	26.29848784	106	105	1.00952381	134	80	0.89	7.68	3.41	0	243	358
320	5	1	1	5	2	2	2	1	1	1	30	1	2	2	2	2	141	46	23.13766913	81	83	0.975903614	160	90	1.12	10	0.57	0	82	138
321	9	1	1	2	2	2	1	1	1	1	60	1	2	2	2	2	164	53	19.70553242	96	99	0.96969697	120	80	1.03	9.97	0.84	0	248	362
322	0.33	2	0	0	1	2	2	1	2	0	0	1	2	2	2	2	144	45	21.70138889	78	82	0.951219512	120	80	0.96	8.13	3.61	0	93	155
323	2	2	0	0	2	2	2	1	1	1	30	1	1	3	4	2	159	55	21.75546853	72	75	0.96	120	80	1.03	9.21	0.88	0	137	182
324	8	1	1	5	2	1	1	1	1	1	40	1	2	3	2	2	164	69	25.6543724	103	102	1.009803922	120	80	0.85	7.02	**3.36**	0	85	148
325	5	2	0	0	2	2	2	2	2	0	0	1	1	3	2	1	149	49	22.07107788	56	57	0.98245614	110	80	1.34	11.6	0.14	3	134	214
326	20	1	1	20	2	2	2	1	1	1	30	1	2	2	2	2	148	50	22.82688093	109	98	1.112244898	130	80	1.01	8.94	1.86	0	101	186
327	3	2	0	0	2	2	2	2	1	1	60	1	2	3	2	2	147	55	25.45235781	92	96	0.958333333	120	80	0.82	7.17	**4.56**	0	82	136
328	20	2	0	0	2	2	1	1	1	1	60	1	2	3	2	1	165	90	33.05785124	113	118	0.957627119	130	80	0.86	8.15	3.06	0	127	355
329	3	2	0	0	2	2	2	1	1	1	60	1	2	3	4	2	142	55	27.27633406	102	101	1.00990099	120	80	0.99	8.01	3.05	0	99	147
330	10	1	1	10	2	2	2	1	1	1	90	1	2	3	3	2	144	46	22.18364198	95	89	1.06741573	166	90	1.15	9.21	2.02	0	115	202
331	5	1	1	5	2	2	2	1	1	1	30	1	2	2	3	2	145	76	36.14744352	119	124	0.959677419	160	100	0.92	8.36	2.24	0	155	224
332	1	1	1	1	2	2	2	1	1	1	30	1	2	3	2	2	154	74	31.20256367	112	104	1.076923077	160	90	0.89	8.01	3.38	0	138	189
333	10	1	2	10,3	2	2	2	1	2	0	0	1	2	1	1	1	157	62	25.15315023	73	76	0.960526316	110	70	1	9.03	1.82	0	100	182
334	15	2	0	0	2	2	2	1	1	1	30	1	2	2	2	1	150	60	26.66666667	103	109	0.944954128	130	80	1.17	9.63	0.97	0	197	331
335	17	1	1	10	2	2	2	2	1	1	60	1	2	3	4	1	152	60	25.96952909	111	104	1.067307692	116	62	1.01	8.77	1.91	0	140	202
336	7	1	1	2	2	2	1	1	1	1	60	1	2	2	2	1	162	60	22.86236854	96	98	0.979591837	170	80	0.9	7.96	3.78	0	98	130
337	3	2	0	0	2	2	2	1	1	1	60	1	2	2	2	1	154	70	29.51593861	107	114	0.938596491	124	80	1.17	10.1	0.45	4	171	291
338	1	1	1	1	2	1	1	1	1	1	20	1	2	2	2	2	158	66	26.43807082	98	102	0.960784314	170	110	0.93	8.77	2.12	0	123	212
339	6	2	0	0	2	2	2	1	2	0	0	1	2	2	3	1	157	64	25.96454217	98	100	0.98	110	70	0.86	4.3	**8.33**	1	186	234
340	2	2	0	0	2	2	2	1	1	1	30	1	2	2	3	1	167	67	24.02380867	105	104	1.009615385	110	70	0.9	8.33	2.17	0	164	217
341	9	2	0	0	2	2	2	1	2	0	0	1	2	3	3	2	148	49	22.37034332	96	93	1.032258065	110	70	0.86	7	4.77	2	212	376
342	20	1	1	20	2	2	2	1	2	0	0	1	2	3	2	2	143	52	25.42911634	103	110	0.936363636	148	80	0.9	8	5.78	2	243	374
343	2	2	0	0	2	2	2	1	1	1	30	1	2	2	3	1	140	56	28.57142857	103	101	1.01980198	140	90	0.93	9	2.66	0	93	166
344	3	1	2	3,5	2	1	2	1	2	0	0	1	2	2	4	2	155	60	24.97398543	101	99	1.02020202	110	70	0.93	8.11	3.02	0	193	302
345	4	2	0	0	2	1	1	1	1	1	20	1	2	3	2	1	178	55	17.35891933	56	59	0.949152542	110	80	1.14	9.33	0.41	4	133	198
346	5	1	1	5	2	2	2	1	1	2	60	1	2	3	2	1	158	84	33.64845377	112	107	1.046728972	90	78	0.99	8.44	2.61	0	155	261
347	10	1	1	15	2	1	1	1	2	0	0	1	1	4	2	1	159	54	21.35991456	92	113	0.814159292	110	70	0.9	8.32	2.61	0	90	161
348	6	1	1	6	2	2	2	1	1	1	60	2	2	3	2	2	165	75	27.54820937	115	117	0.982905983	110	70	0.98	8.7	2.56	0	198	258
349	7	2	0	0	2	2	2	1	1	1	45	1	2	3	2	1	154	55	23.19109462	95	97	0.979381443	138	90	0.94	3.01	4.95	1	138	194
350	3	1	1	3	2	2	1	1	2	0	0	1	2	2	2	1	140	40	20.40816327	74	79	0.936708861	160	70	1.11	8.67	1.9	0	111	190
351	20	1	1	20	2	2	2	1	2	0	0	1	2	3	2	2	156	56	23.01117686	95	97	0.979381443	120	80	1.03	9.02	1.76	0	166	205
352	2	2	0	0	2	2	2	2	2	0	0	1	2	2	3	2	161	69	26.61934339	92	96	0.958333333	130	90	0.93	8	2.39	0	166	249
353	11	1	1	8	2	2	2	1	2	0	0	1	2	3	2	2	155	65	27.05515088	99	95	1.042105263	110	70	0.49	4.1	**8.48**	1	168	275
354	0.67	2	0	0	2	2	2	1	2	0	0	1	2	1	1	2	157	72	29.21010994	108	98	1.102040816	138	96	0.97	8.11	2.1	0	97	151
355	7	1	1	7	2	1	2	1	1	1	60	1	2	3	3	2	167	65	23.30668005	98	100	0.98	140	80	1.12	8.97	1.36	0	156	263
356	4	2	0	0	2	2	2	1	1	1	60	1	2	5	2	2	155	65	27.05515088	95	98	0.969387755	120	80	1.03	9	1.27	0	147	206
357	10	1	1	4	2	2	2	1	1	1	30	1	2	2	2	1	144	59	28.4529321	93	102	0.911764706	140	90	1.18	8.05	7.22	2	118	157
358	8	1	1	8	2	2	2	1	1	1	30	1	2	2	3	1	153	67	28.62147037	50	53	0.943396226	150	90	1.12	8.9	1.62	0	112	162
359	20	1	1	2	2	2	2	1	2	0	0	1	2	2	3	1	145	60	28.53745541	91	102	0.892156863	120	80	0.99	8.31	**4.93**	2	233	354
360	2	1	1	6	2	2	2	1	1	1	120	1	2	3	3	2	157	68	27.58732606	106	111	0.954954955	130	90	0.81	9.2	6.48	2	160	231
361	15	1	1	10	2	1	1	2	1	1	60	1	2	2	3	1	159	65	25.71100827	96	100	0.96	150	100	1.02	8.54	4.62	0	164	284
362	2	2	0	0	2	2	2	1	1	1	60	1	2	4	2	2	145	54	25.68370987	99	102	0.970588235	120	80	0.86	8.11	8.36	2	130	220
363	0.58	2	0	0	2	2	2	1	1	1	60	1	2	2	2	1	140	58	29.59183673	94	100	0.94	120	80	0.83	7.2	4.89	2	164	257
364	2	2	0	0	2	2	1	1	2	0	0	1	2	2	2	1	170	80	27.6816609	107	104	1.028846154	125	81	1.07	9.31	1.92	0	293	411
365	5	1	1	2	2	1	1	1	1	1	60	1	1	3	3	1	174	80	26.42356982	103	109	0.944954128	129	87	1.31	10	1.03	0	153	227

SOCIO DEMOGRAPHIC															Thyroid related symptoms																						
PT. ID.	AGE	SEX	RELIGION	EDUCATION	OCCUPATION	MARITAL STATUS	FAMILY	MONTHY INCOME	TOTAL MEMBERS	PER CAPITA	SES	MISCARRIAGE	No. of Miscarriage	FATIGUE	INABILITY TO EXERCISE	DIFF.TOLERATING COLD	SWELLING IN NECK	CONSTIPATION	DRY SKIN	DRY HAIR	THICK BRITTLE NAILS	FACIAL PUFFINESS	SWELLLING EXTREMITIES	MUSCLES CRAMPS	EXCESSIVE SLEEPINESS	WEIGHT GAIN	HAIR LOSS ON	PALPITATIONS	INCREASED APPETITE	WEIGHT LOSS	INSOMNIA	AB PROT EYEBALL	HAND TREMOR	WARM SKIN	DIFF IN TOLERATING HEAT	INCREASE SWEATING
366	54	2	1	4	4	2	2	6000	2	3000	3	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
367	60	1	1	5	3	2	2	50000	4	12500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
368	55	1	1	3	1	2	2	5000	4	1250	4	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
369	32	1	1	5	3	2	1	40000	9	4444.444444	2	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
370	47	2	1	3	4	2	2	20000	4	5000	2	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
371	61	1	1	5	1	4	3	50000	4	12500	1	0	0	1	2	1	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
372	57	1	1	5	1	2	2	30000	4	7500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
373	78	1	1	5	3	2	1	50000	6	8333.333333	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
374	48	1	1	4	1	2	2	30000	4	7500	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
375	71	2	2	1	4	2	1	8000	8	1000	4	1	2	1	1	1	2	2	2	2	2	2	1	1	2	2	2	1	1	1	1	2	1	1	2	2
376	70	1	2	3	5	2	1	10000	6	1666.666667	4	0	0	1	2	1	2	1	2	1	1	2	2	2	2	1	1	1	2	2	2	2	2	2	2	2
377	76	1	2	3	5	2	1	15000	12	1250	4	0	0	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	1	2	2	1	1	2	1
378	40	2	2	2	4	2	1	5000	6	833.3333333	5	2	0	1	2	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	2	2	2	2
379	48	2	2	5	4	2	2	20000	4	5000	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
380	45	2	2	1	4	2	1	5000	5	1000	4	2	0	1	2	1	2	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2

				PAST HISTORY								PHYSICAL & NUTRITION																INVESTIGATIONS					
PT. ID.	REGULARITY	BLOOD FLOW	MENOPAUSE	DURATION OF DM(yrs)	PAST HISTORY	IF YES,SPECIFY	DURATION(yrs)	FAMILY HISTORY	TOBACCO	ALCOHOL	DRUG HISTORY	EXERCISE	IF YES	HOW LONG (min)	SALT	PLATE SALT	GOITROGENS	FREQUENCY GOITROGENS	TYPE OF DIET	HEIGHT(Cm)	WEIGHT(Kg)	BMI	WAIST(cm)	HIP(cm)	RATIO	Systole	Diastole	T3(0.59-1.78)	T4(4.5-10.87)	TSH(0.5-4.7)	Thyroid Disorders	FBS	PPBS
366	0	0	1	15	2	0	0	2	2	2	1	1	2	60	1	2	2	3	1	154	53	22.34778209	98	83	1.180722892	116	74	1.01	9.32	5.12	2	174	255
367	0	0	0	4	2	0	0	2	2	2	1	1	2	60	1	2	2	3	1	166	76	27.58020032	102	105	0.971428571	144	82	1.14	9.35	0.91	0	145	219
368	0	0	0	8	2	0	0	2	2	2	1	1	1	60	1	2	2	3	1	157	60	24.34175829	85	96	0.885416667	120	80	0.95	8.37	2.23	0	154	230
369	0	0	0	6	2	0	0	2	2	2	1	1	1	60	1	2	2	3	2	175	74	24.16326531	94	86	1.093023256	140	80	0.96	8.71	3.24	0	324	457
370	1	2	2	1	2	0	0	2	2	2	1	1	1	30	1	2	3	3	1	159	70	27.68877813	93	105	0.885714286	150	90	0.98	8.39	6.78	2	130	188
371	0	0	0	12	2	0	0	2	2	2	1	1	2	60	1	2	2	3	1	174	80	26.42356982	107	101	1.059405941	150	80	0.86	7	**4.67**	0	154	221
372	0	0	0	3	2	0	0	2	2	2	2	1	1	45	1	2	3	3	2	164	68	25.2825699	96	93	1.032258065	160	80	0.93	8.71	2.5	0	178	251
373	0	0	0	11	2	0	0	2	2	2	1	1	2	60	1	2	2	2	1	174	76	25.10239133	105	108	0.972222222	190	108	0.99	8.16	4	0	173	286
374	0	0	0	5	2	0	0	2	2	2	1	1	1	30	1	2	4	3	2	173	66	22.05219018	88	94	0.936170213	170	106	1.13	9.37	1.53	0	113	163
375	0	0	1	15	2	0	0	2	2	2	1	2	0	0	1	2	2	1	2	160	60	23.4375	96	98	0.979591837	150	90	**1.83**	**13.9**	**0.01**	3	214	386
376	0	0	0	2	1	1	2	2	1	1	1	1	1	30	1	2	3	2	2	178	79	24.93372049	90	96	0.9375	150	100	0.48	4.81	**19.48**	1	134	168
377	0	0	0	8	2	0	0	2	2	2	1	1	1	60	1	2	2	2	2	176	75	24.21229339	92	96	0.958333333	140	80	**1.89**	**14**	**0.01**	3	142	202
378	1	3	2	0.58	1	1	7	2	2	2	1	2	0	0	1	2	2	1	2	165	86	31.58861341	104	98	1.06122449	110	80	0.78	6.45	**8.16**	2	131	194
379	1	1	2	7	1	3	3	2	2	2	1	1	1	40	1	2	2	1	2	162	69	26.29172382	96	98	0.979591837	120	80	0.88	9.1	2.57	0	142	203
380	1	1	2	10	2	0	0	2	2	2	1	2	0	0	1	1	1	2	2	160	65	25.390625	92	94	0.978723404	130	70	0.89	10.5	2.74	0	186	334