

## IMPACT OF DIFFERENT COUNSELING ON THYROID PATIENTS

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### ABSTRACT

Thyroid disease is a common, widespread disease, which affects one third of world population. About 42 million people affected with thyroid disease in India. This study is on the nutritional status and lifestyle of thyroid patients with their dietary and herbal treatment in Bhopal city of Madhya Pradesh, India. Bhopal city is well known for world's worst industrial disaster. This clinical purposive study, with help of questionnaire and direct interview method reveals that, out of total 300 patients 15% regularly intake thyroid medicine, 16%, twice in a week intake thyroid medicine, 17.3 % intake thrice in a week and 31.6% never intake thyroid medicine. In this study, out of 300 thyroid patients, 50 patients were selected in the experimental groups. Dietary and Herbal counseling in experimental group improve resistance power and immunity. These herbs were provided in powder and recipe form in all experimental groups. There were many clinical symptoms improved in thyroid experimental patients.

**KEYWORDS:** Thyroid, Lifestyle, Hypothyroidism, Wethania Somnifera, Goitrogenic Food

### INTRODUCTION

Thyroid diseases become a common lifestyle health problem, which affects about 4 to 5 % total population in the world. Thyroid dysfunction prevalence increases by every year. Thyroid diseases are very common and affected 42 million people in India. An Abnormal secretion of thyroxin hormones lead to hypo or hyper thyroid disease, which impair normal functioning of the thyroid gland. Hypothyroidism can cause an increase in blood pressure, elevated cholesterol levels, decreased fertility, depression, bone deformity and cardiovascular complications. According to the survey, the disease is more prevalent among women, especially those in the age group of 46-54 years. Female are four times more likely to be affected by thyroid dysfunction than male, In pregnant women, thyroxin level in human body, basically pregnant mother can lead to birth abnormalities and increased risks for the infant's well-being.

Thousands of research and reports say, since symptoms of thyroid are often similar to other disorders, diagnosis is important. However, the survey revealed only 50%, of those aware of thyroid disorder, know that there are diagnostic tests for detection of the disease. Knowledge of thyroid disease among pregnant women is found to be higher than other women.

Thyroid diseases are commonly found in India in two forms, either hyper or hypo. Clinically, thyroid disease is defined as the state of high circulating TSH and normal free thyroxin levels in asymptomatic subjects; whereas others are defined as the state of high circulating TSH levels, accompanied by low circulating free thyroid hormone levels. (Singer *et al.*, 1995)

Subclinical hypothyroidism is defined as the state, in which thyroxin and triiodothyronine are within normal limits yet TSH is elevated.

It is defined as “an intervening system of cognitive structures that link situation specific Product perceptions to increasingly abstract cognitive categories and finally to personal values” (Scholderer *et al.*, 2004, p. 198). In other words, lifestyle refers to “patterns behavior or consumption, reflecting people’s choice of how to spend their time and money as well as their interests and beliefs?” (Goetzke and Spiller, 2014, p. 512). Lifestyle can be measured by its definitions or by the differing perspectives of researchers. Researchers have developed a Food-Related-Lifestyle (FRL) model that includes value concepts (Brunso and Grunert, 1995) and “value ”is defined as“ a desirable and fundamental standard which guides people’s actions (Jun, Kang and Arendt, 2014 p. 85). Value in food can be seen in various forms, since food is an essential element of daily sightings of individuals that differs from one to another. One of the various forms can be the nutrition information about the food, which can be easily found on food products and at restaurants in accordance with legal requirements. Although many studies have investigated FRL in association with food behavior, studies of FRL in relation to nutritional information–conscious behaviors are scarce. As interest in consuming healthier food increases, body satisfaction might be another area that can lead to a healthy life in association with FRL. Hence, this study aims to determine consumer segmentations in association with body satisfaction. Finally, this study looks for consumer segmentation with nutrient consciousness in association with FRL.

For proper management and diagnosis, Quality thyroid tests are essential to maintain the thyroid hormone level in the human body. Sub clinical hypo- and hyperthyroidism are recognized by their typified by an abnormal serum TSH concentration associated with normal range free thyroid hormone (FT4 and FT3) levels. (Demers & Spencer, 2002).

There have been numerous studies on the prevalence of goiter, but there is relatively little information on the prevalence of the whole range of autoimmune thyroid disorders in communities.

The primary aim of the present study was to determine the prevalence of thyroid disorder or disease using current diagnostic criteria, in a cross-section of a community. Several studies and report shows that an increased need for iodine supplementation in the diet or through medicine during pregnancy. There is increased demand for thyroxine (T4) during pregnancy as a result of several physiologic changes. (glineor D 1990)The prevalence of hyperthyroidism during pregnancy is approximately 0.2%, with most cases being due to Graves’ disease. Maternal complications may include eclampsia, placenta abruption, miscarriage, premature labor, congestive heart failure, and thyroid storm. Fetal complications associated with elevated thyroid hormone levels may include neonatal hyperthyroidism, intrauterine growth retardation, re maturity, stillbirth, and low birth weight. Davis LE, Lucas MJ, Hankins GD, et al. Hypothyroid women are best treated with a specific brand of levothyroxine. Hypothyroidism should ideally be treated prior to conception. If newly recognized during pregnancy, it should be fully treated as early as possible. Frequent monitoring of thyroid status is essential, as many women demonstrate an increased requirement for thyroid hormone during the first trimester. In the absence of such information, sound clinical judgment is essential. There is considerable overlap with the non-specific symptoms of hyperthyroidism and normal pregnancy. Hyperthyroidism is diagnosed, when the TSH is suppressed or undetectable and thyroid hormone levels are elevated. Care should be taken with making this diagnosis during the first trimester, as mild hyperthyroidism may be well tolerated

There are also studies that show that, even mild iodine deficiency can be associated with neurointellectual defects with children. (Vitti P, 1992) High concentrations of circulating iodine inhibit the release of stored thyroid hormone from the thyroid gland. Iodine can also reduce organification of iodine and consequently thyroid hormone synthesis.

Iodine is usually administered after antithyroid drugs have been used to inhibit thyroid hormone synthesis. Cold iodine is usually given orally as a saturated solution of potassium iodide 5 drops every 6 hours, or as legal solution 10 drops every 8 hours (Atkins, P, 2000). However, iodides can cross the placenta and cause fetal hypothyroidism and large goiters in the newborn (Mestman JH 1998). Low doses of iodide used to treat pregnant women with mild to moderate hyperthyroidism did not lead to fetal hypothyroidism in one study. Goiters were four times more common in females than in males and were most commonly found in younger rather than older females. TSH levels were slightly but not significantly lower in those, with goiter than in those without goiter. There was a weak association between goiter and antibodies in females but not males.

Nutrition education (NE) is often used as a strategy for nutrition intervention to improve nutritional status, health and nutrition knowledge, attitudes and practices (Perez-Rodigo and Aranceta, 2001). It is a viable effort towards reducing malnutrition among school children. Malnutrition poses a serious challenge to the nutritional well-being of children in developing nations, where the main nutritional problems are wasting, stunting, underweight and micronutrient deficiencies (Unicef, 2009; WHO, 2006). Malnutrition is an impediment to mental and psychomotor development in children, to productivity, economic growth and poverty eradication (UN Millennium Project, 2005). Underweight, overweight and obesity are risk factors for chronic diseases, which constitute public health concerns globally (FAO, 2005). In the developed Countries, overweight and obesity have reached the level of public health concerns, while developing countries are experiencing a double burden of underweight and overweight/obesity (De Onis *et al.*, 2010; Stevens *et al.*, 2012). According to De Onis and colleagues' report, the global prevalence of childhood overweight and obesity increased from 4.2 per cent in 1990 to 6.6 per cent in 2010, while that of Africa and Asia were 8.5 per cent and 4.9 per cent, respectively, in 2010. The prevalence of adult overweight and obesity in the last decade increased significantly with nearly one in every three adults in the world being overweight and one in every nine adults being obese in 2008 (WHO, 2013). Obesity in children is linked with higher chances of overweight and obesity in adulthood, besides an increased risk of ill health in the children (Lakshman *et al.*, 2010). The global figures of underweight (6.7 per cent), overweight (25.7 percent) and obesity (8.9 per cent) suggested that a concerted effort from all stakeholders is necessary to reduce the rising trend of diseases as a result of malnutrition.

Thyroid diseases become a major problem in the worldwide. Millions of people are detected with thyroid disease every year. Thyroid disease not just only affects in the thyroid gland, but in mind, heart, bones and all parts of the body. Ignorance about symptoms of thyroid disease increases the problem and can effect on heart, pancreas and many other glands of the body. Thyroid disease affects in pregnancy and fertility. There have been numerous studies of the prevalence of goiter, but there is relatively little information on the prevalence of the whole range of autoimmune thyroid disorders in communities as opposed to selected hospital populations. The primary aim of the present study was to determine the prevalence of hyperthyroidism, the different grades of hypothyroidism, and autoimmune thyroiditis as well as guitar, using current diagnostic criteria, in a cross-section of a community.

## **MATERIAL METHODS**

The present study was conducted in Bhopal city. Bhopal is the capital city of Madhya Pradesh, situated amidst the emerald lakes. The city is known for its distinctive and picturesque landscape. The captivating beauty of Bhopal with its beautiful gardens and lakes has a glorious past. Bhopal is famous as the city of lake. The study was conducted in three

different hospitals of Bhopal city, which is representing old and new area of Bhopal city. It is unfortunate that the city of Bhopal is known to the world by one of the biggest chemical disasters, which took place on 3<sup>rd</sup> December 1984. All details showed that Bhopal city had pollution, population and chemical disaster problem which give stress and strain disorder in Bhopal people. The Bhopal gas tragedy is undoubtedly one of the worst industrial disasters in the history of mankind resulting in mortality of 2500–6000 and debilitating over 200 000 people. Inhabitants in the township were exposed to different degrees, and there are more than 500 000 registered victims that survived the tragedy. Clinical studies have shown chronic illnesses such as pulmonary fibrosis, bronchial asthma, chronic obstructive pulmonary disease (COPD), emphysema, recurrent chest infections, keratopathy and corneal opacities in exposed cohorts. Survivors continue to experience higher incidence of reported health problems, including febrile illnesses, respiratory, neurologic, psychiatric and ophthalmic symptoms. *In-utero* exposure to methyl isocyanate in the first trimester of pregnancy caused a persistent immune system hyper-responsiveness, which was in an evident way genetically linked with the organic exposure. The methodology includes many techniques, devices and procedure for conducting the survey. Keeping this in mind, this methodology has been designed for the present study. The following steps of the methodology have been used in thyroid study. The nature of the study was diagnostic. All thyroid patients were selected in two phases in 1<sup>st</sup> phase all 300 patients were selected through purposive sampling, in 2<sup>nd</sup> phase 50 thyroid patient were selected randomly among selected subjects of 1<sup>st</sup> phase as the experimental group for dietary, herbal and lifestyle treatment along with 50 people from the same area group were selected for control groups.

All three areas of the study have three wards and hospitals. All 300 thyroid patients were collected from these three area groups. The age groups of the present study were between 25 to 65 years.

**Table 1: Area of Samples**

Area Groups	Ward No.	Hospital	Location
Group A	51	Ayushmaan hospital	C sector Sapporo, Bhopal (M.P.)
Group B	13	Hamidia hospital	A Royal market near G. P. O. Bhopal (M.P.)
Group C	06	Mayo hospital	Sultan road, Bhopal (M.P.)

### Method of Sampling

Thyroid disease, especially is seen in adult man and woman. Overweight people have great occurrences of thyroid disease. Random purposive sampling technique was used for sample selection. The study was carried out in the department of endocrinology of all above mentioned three hospitals. The general and specific information was asked by an investigator by interviewing the patients.

### Sample Size

Three hundred thyroid patients were selected for the research purpose. All information was collected from 300 thyroid patients. Out of 300 thyroid patient, 50 thyroid patients were selected as the experimental group of thyroid patients. Control groups, free from thyroid disease were selected from same area group.

### Criteria for Case Selection (300 Patients)

- The patient should have established thyroid as proved by investigation.
- The patient should take antithyroid treatment for more than one month.

**Experimental Groups (50 Patients)**

- The patient should be suffering from thyroid disorder.
- All experiments should be obese.
- Male and female, both should come in this group.

**Control Groups (50 Patients)**

- Patient resides in same area groups
- All men and woman should be free from thyroid disease.

**Phase 1**

After a pilot study, the data collection regarding general and specific information about thyroid patients were done in the first phase of the research work. These data of thyroid patients were collected from three different hospitals of Bhopal city.

**Phase 2**

Out of 300 patients, 50 thyroid patients were selected for experimental study. Dietary, herbal, lifestyle, treatment with clinical and biochemical assessment were done of thyroid patients. Selection of control groups of the same area of this study was done in this phase.

**Phase 3**

Counseling, follow-up and feedback were taken from thyroid patients. After 6 months, feedback was obtained from 50 experimental groups. All feedback of experimental groups has been compared with control group and standards. Statistical analyses were done in the last phase of this study.

Tools for data collection Questionnaire: in the preparation of the questions, utmost care was taken to ensure that, the objectives of the study should be achieved. The questionnaire was developed with the help of a supervisor and expert of related field. It has been designed in such a manner that, relevant information could be collected through the questions in minimum time. Weighing machine made from biochem laboratory of India, this is 100 k.g The weighing machine was square in shape and digital based, set in 0 k. g., and shows the appropriate weight, when an individual stands straight on a machine without shoes. For anthropometric assessment, the height scalar was used, This is made up of steel and plastic, and coded with the numbers in inches and centimeters. This was put in to the patient (from leg to head) and noted down the heights of the patients. Sales Hemoglobinometer was used for hemoglobin estimation of thyroid patients in this study. These are instrument of Hb. Pipette, comparator box and hub test tube. These were made by Biochem Laboratory. Sphygmomanometer instrument was used for Blood pressure testing. This was a combination of stethoscope, pump and mercury meter. This was made of Bio Chem. Laboratory. Samsung digital camera model no PL55 was used, it was a 12 mega pixel digital Camera with many advance features. It helped in clicking 30-35 photographs for selection of data of Thyroid patients. Personal computers were used for statistical computation, editing, typing and scanning of data with the help of Microsoft office 2010 software for the study.

Techniques for data collection: the questionnaire was prepared by the investigator, which was divided into following parts

*General information:* This is beginning of thyroid study, which gives a brief profile of all thyroid patients. It included details of age area, sex, height weight, educational status, occupation religion of thyroid patient. This was done by questionnaire method.

*Anthropometry information:* Anthropometric measurements are measurement of various part of the body, such as height, weight mid arm circumference and chest circumference. Height and Weight both measurements were used in anthropometric measurement of the present study.

*Height measurement:* In the anthropometric measurement, height is an important indicator to know the actual growth of the individual. Height is the linear measurement made up of four center legs, pelvis, spine, and skull.

*Recording of height:* The height is measured by steel measuring tape. The respondents stood in straight position without footwear's. They were standing against the wall, with feet parallel and shoulder at the back of head touching the wall. When the head was completely touched the wall, then mark was made on the wall with the help of a scale and pencil, or the steel measuring tape. Height was recorded with a good steel measuring tape to the nearest half centimeters.

### **Weight Measurement**

Body weight is one of the most convenient and useful indicators of nutritional status. This is generally a good index of the growth potential and a delicate measure of the health of an individual. Weight is regarded as a meaningful method because, weight directly related to nutritional deficiency. The weight was recorded to the nearest of 100gm. *Recording of weight:* The scale was adjusted to zero before weighing. Weights of individual were taken by weighing machine with minimum clothing. Accuracy of the weight need not necessarily be more than fraction of 100 grams, especially. The machine was used in plain surface.

### **Body Mass Index**

It is one of the major tools for weight measurement and obesity checking. In thyroid disease, BMI is an important measurement method to know obesity grade.

### **BMI Calculation**

After collection of weight and height of thyroid patients, BMI calculation was done. In the BMI calculation of respondents, the investigator needs height and weight of all respondents. This was done pathological laboratory and clinics of the proposed hospital. Body mass index was calculated from the weight in kg of each individual, which was divided by the square of height in meters ( $m^2$ ). On the basis of BMI results, the subjects were classified in different grade.

### **Clinical Information**

Clinical examination is an essential part of nutritional survey, since their ultimate objective is to assess levels of health of thyroid patients in relation to food they consume. There were two types of clinical assessment done in this part:

### **24 Hours Recall Method**

This method has been done in clinic of hospitals with direct interaction of each patient.

This method has been applied in all thyroid patients to know their food intake and habits. The 24 hours recall method based on the oral questionnaire method that gives information on food consumption at the individual level. The 24-h recall has been recommended as a suitable method for the study of groups. This method was used for collection of daily food intake by oral questionnaire and personal interview method. This method was used to assess the nutrient intake in all thyroid patients, and the following data were collected by 24 hours recall method

- Intake of food groups
- Intake of nutrients
- Intake of functional food
- Intake of beverages
- Intake of goitrogenic food

*Food frequency:* This is another way of data collection regarding frequency of any one food. A set of questions has been planned regarding timing, amount, and frequency of food in their routine life of the patient. Above two methods were used to collect dietary information of 300 thyroid patients. After the data collection of dietary information, counseling was planned on dietary intake for 50 thyroid patients. Following data were collected by food frequency method.

- Frequency of food groups
- Frequency of major nutrient
- Frequency of major nutrient

*Lifestyle information:* The lifestyle information was done in direct interaction with the help of questionnaire method. The following Questions were asked to collect lifestyle information of thyroid patients

- Intake of thyroid medicine,
- Frequency of medicine,
- Frequency of meal,
- Eating time,
- Sleeping time,
- Wake up time of thyroid patients.
- Type of exercise done by thyroid patients,
- Type of yoga done by thyroid patient
- Addictive habits of thyroid patients

The above questions were asked by an investigator to thyroid patients. After the lifestyle data collection of all thyroid patients, alternative treatment like exercise, meditation, yoga treatment were suggested to 50 thyroid patients. The pamphlets were designed with the help of a supervisor, and given to thyroid experimental patients.

The lifestyle pamphlets were given during counseling of thyroid patients.

*Counseling on experimental groups:* After data collection of thyroid patients, the treatment was planned to give 50 thyroid patients, which were known as counseling on experimental group. Counseling was given to all 50 thyroid patients. Counseling was based on dietary, herbal and lifestyle management treatment.

*Distribution of diet chart & pamphlet:*

Pamphlet and diet chart were developed with the help of a supervisor and given during counseling of thyroid 50 patients. There were following type of pamphlets distributed among all experimental groups:

- Hypothyroid Diet chart
- Pamphlet for herbal information
- Pamphlet on Life style management

*Follow-up and feedback:* After counseling of thyroid patients, patients were on follow-up study i.e. First follow-up after 3 months and second follow-up of 6 months. After 6-months, investigator contacted the respondents for knowing their health status. The pathology reports were taken and evaluated after 6 months for getting results on feedback. The impact of counseling to see the changes in food intake and health status were studied in feedback. All feedback reports after counseling were compared with standards. The standards were taken from Recommended Dietary Allowances by ICMR 2009 and standard height weight chart from LIC 2009.

### Statistical Analysis of Data

The statistical method was applied by investigators, after feedback and data collection. Collected data were, tabulated and compiled systematically. Appropriate statistical tool and test were applied to draw inferences. Analysis of data shows the quantitative and statistical results of the whole thyroid study. For statistical calculations, the percentage, mean, deviation, standard deviation, P value, mean differences and chi square test were done.

### OBSERVATION & RESULTS

**Table 2: Area Wise Distribution of Thyroid Patient**

Ward no.	Study Area	Study Groups	Thyroid patient	
			No.	%
51	Ayushman Hospital	Group A	120	40%
13	Hamida hospital	Group B	95	31.7%
06	Mayo hospital	Group C	85	28.3%
<b>Total</b>			<b>300</b>	<b>100%</b>

Above table shows that there were three types of area groups. Group A, Group B, Group C., Ayushman hospital (ward no.51) represented as Group A,

Hamidia hospital (ward no. 13) represented as Group B,

Mayo hospital (ward no. 6) represented as Group C.

Group A from new area of Bhopal, Group B and Group C from old area of Bhopal. Out of 300 patients, 120 patients from GroupA, 95 patients from Group B and 85 patients from group.



Table 3: Sex Wise Distribution of Thyroid Patient

Age Groups	Group A		Group B		Group C	
	Female	Male	Female	Male	Female	Male
25-35 year	20	4	15	2	15	2
35-45 year	15	3	20	1	15	3
45-55 year	20	5	40	4	20	2
55-65 year	50	3	10	3	25	3
%	35	5	28.3	3.3	25	3.3
<b>Total</b>	<b>105</b>	<b>15</b>	<b>85</b>	<b>10</b>	<b>75</b>	<b>10</b>

Out of 300 thyroid patients, 265 female cases and 35 male cases of thyroid diseases were found in this study. Thyroid disease is more prone in women, so female cases were higher in this study.

Table 4: Family History of Thyroid Disease in Thyroid Patients

Area Groups	Thyroid Disease Present in Family	Thyroid Disease Absent in Family
Group A	78	42
Group B	70	25
Group C	40	45
<b>Total</b>	<b>188</b>	<b>112</b>
%	63	37

Above table shows that, out of 300 total patients 188 patient had their family history of thyroid disease. 112 patients were free from thyroid disease.

Table 5: Food Habits of Thyroid Patient

Food Habits	Group A		Group B		Group C		Total	%
	M	F	M	F	M	F		
Vegetarian	10	75	8	55	7	60	215	72
Non-vegetarian	05	30	2	30	3	15	85	28
<b>Total</b>	<b>120</b>		<b>95</b>		<b>85</b>		<b>300</b>	

Above table no.24 shows that out of 300 thyroid patients, 215 patients are vegetarian and 85 patient are no vegetarian.

Table 6: Average BMI Grade of Total Thyroid Patient (Both Male and Female)

Area Group	BMI Grade →	Under wt. >20.9	Normal 21-24.9	Grade A 25-29.9	Grade B 30-39.9	Grade C 40<	Total
Group A	Male	2	3	5	3	2	15
	Female	25	20	40	10	10	105
Group B	Male	0	2	4	2	2	10
	Female	0	20	40	15	10	85
Group C	Male	2	3	2	2	1	10
	Female	13	10	26	20	6	75
Total	Male	4	8	11	7	5	35
	%	11.4	22.8	31.4	20	14.2	11.6
	Female	38	50	106	45	26	265
	%	14.33	18.86	40	16.9	9.6	88.3
Chi Square=		0.6425		1.004	9.036145	9.157028	
P Value=		0.4227		0.3163	0.002647	0.002478	

Above table shows that, out of 300 thyroid patients, 38 female are underweight, 50 females are normal, 106 females are obese grade 1, 45 females are in obese grade 2 and 26 females are in grade 3 obese. In male thyroid patients, out of 35 patients, 4 males are underweight, 8 are innormal, 11 patient are in obese grade 1, 7 patient are in grade 2 and 5 patient are in grade 3 obese thyroid patient.

**Table 7: Specific Clinical Symptom of Thyroid Patient (Both Male and Female)**

Specific Clinical Symptoms	Group A		Group B		Group C		Total	
	Male	Female	Male	Female	Male	Female	No.	%
Puffy Face	5	16	3	18	7	21	70	23%
Puffy eyes	4	13	24	22	6	32	101	34%
Oedema	7	18	25	21	5	38	114	38%
Joint Pain	5	21	26	22	6	34	114	38%
Feeling of cold and shivering	4	28	31	24	9	31	127	42%
Constipation	5	29	26	28	4	28	120	40%
Todeness of skin	4	32	24	31	8	27	126	9%
Voice Changes	7	31	32	36	4	26	136	45%
Memory Fluctuation	3	28	31	28	8	22	120	40%

Above shows that, the maximum patients of thyroid disease have a problem of cold cough, edema, and joint pain. Few patient of thyroid disease have a problem of toed skin. Out of 300 thyroid patients, 23% having puffy face problem, 34% patient having puffy eyes problem and 38% patient having oedema problem. These problems were major problem among thyroid patients.

**Table 8: Average Cholesterol Level of Thyroid Patient (Male)**

S. No.	Lipid profile		Group A			Group B			Group C		
	Level	St.(mg/dl) Value	Mean	Mean differences	Deviation	Mean	Mean differences	Deviation	Mean	Mean differences	Deviation
1	Total Cholesterol	<200	260	60	3600	184	76	256	258	58	3364
2	HDL Cholesterol	>40	33	7	49	40	7	0	46	13	36
3	LDL	<150	160	10	100	171	11	441	160	0	100
4	VLDL	<40	48	8	64	43	3	9	42	6	4
S.D.			S.D.= 30.87			S.D.=13.28			S.D.=29.59		
Chi square=			0.0000832098			0.217249			0.000349035		
P value=			0.999999798			0.974758			0.999998266		

Above table shows that, out of 35 male thyroid patients, the mean value of total cholesterol was 260 in Group A, 184 in Group B and 258 in Group C. The mean value of HDL cholesterol was 33 in Group A, 40 in Group B, 46 in Group C. The mean value of LDL cholesterol was 160 in Group A, 171 in group B, 160 in group C. The mean value of VLDL cholesterol was 48 in Group A, 43 in Group B and 42 in Group C. The standard value of total cholesterol was in Group A - 30.87, Group B-13.28 and Group C -29.59

After prolonged data collection and observation of all 300 thyroid patients, there were 50 patients on experimental groups. These experimental patients were from total 300 thyroid patients. Both men and women were included in this experimental group of thyroid patients.

There were counseling treatments given to thyroid experimental groups. The following tables show the type of counseling and treatment on thyroid experimental groups.

**Table 9: Effect of Counseling**

Counseling	Mode of Counseling	No. of Patient					
		Given to		Followed by			
		Male	Female	Male		Female	
				No.	%	No.	%
Dietary counseling	Direct interaction	10	40	8	80	38	95
Herbal counseling	Direct interaction	10	40	9	90	34	85
Lifestyle management counseling	Direct interaction	10	40	8	80	38	95

Above table shows that, there were three type of counseling given to thyroid experimental groups i.e. 50 patients. Out of 50 patients given treatment, 80% to 95% of patients were followed that dietary, herbal and lifestyle counseling treatments.

**Table 10: Mean Weight of Thyroid Patients Before and After Counseling (Both Male Female)**

No. of patient	Age group	Before Counseling				Std. Weight	Mean wt.	After Counseling		
		Mean wt.	Mean Difference	Deviation	S.D			Mean Difference	Deviation	S.D
15	25 – 35 yrs	58	8	960	8.39	50	52	2	60	2.9 3
10	35 – 45 yrs	56	4	160		52	50	2	40	
15	45 – 55 yrs	62	8	960		54	58	2	240	
10	55 – 65 yrs	68	6	1440		56	59	3	90	
Chi Square= 0.893235 P Value=0.82706										

\*sources St. Ht. & Wt. by LIC 2009

Above table shows that, the mean weight of experimental thyroid patients before counseling is 58 kg and after counseling is 52 kg in the 25-35 years age group. In the age group of 35 -45 years, the mean weight of experiment group is 56kg, before counseling and 50 after counseling. In the same way, 62 kg. weight was before counseling and 58 kg. after counseling. The results show that, weight of experimental group after counseling improved and touched the standard value of weight. The chi square value 0.89 and P value 0.8 shows the goodness of work after counseling treatment of experimental group.

**Table 11: Mean TSH Level of Thyroid Patients Before and after Counseling (Female)**

No. of patient	Age Group	Before (MIU/ml)				Std	After (MIU/ml)			
		Mean	Mean Difference	Deviation	S.D		Mean	Mean Difference	Deviation	S.D
13	25 – 35	10.8	7.5	770.77	7.85	0.3 to 6.0miu/ml	4.0	1	10.53	1.30
7	35 – 45	9.7	6.4	304.92			4.3	1	10.08	
13	45 – 55	11.4	7.1	895.57			4.7	1.4	33.28	
7	55 – 65	11.5	7.2	493.92			4.5	1.2	13.72	
Chi square =0.535132 P Value=0.911108										

TSH value is the indicator of thyroid disease. P value of after counseling result shows the positive improvement in

experimental group. The standard deviation of after treatment results is very close to standard value, and shows the accuracy of results.

**Table 12: Comparison of Mean TSH Level of Experimental & Control Group(Female)**

Age Group	Experimental Group					Standard Range (TSH)	Control Group				
	No. of Patient	Mean TSH	Mean Difference	Deviation	S.D		No. of Patient	Mean TSH	Mean Difference	Deviation	S.D
25 – 35	13	4.0	0.7	6.37	1.10	0.3 to 6 MIU per 100ml =3.3	11	9.8	6.5	464.75	7.10
35 – 45	7	4.3	1	7			10	9.7	6.4	409.6	
45 – 55	13	4.7	1.4	25.48			8	10.4	7.1	403.28	
55 – 65	7	4.5	1.2	10.08			11	11.5	8.2	739.64	
Chi Square= 0.721233375 P Value= 0.868198644											

Above table shows that the mean TSH level S.D value of experimental group was 1.106 and control group was 7.10. The Chi square value of experimental group was 0.721233375, and in the same time, the P value of experimental group was 0.868198644.

Thyroid disease is a continuous hormonal metabolic disorder, which can be controlled only with the help of exercise, herbs, control diet and medicine. Hypothyroidism is a condition, where the thyroid is underactive, chemically destroyed, or surgically removed, and therefore unable to produce sufficient levels of thyroid hormone. 17 million people of Madhya Pradesh have overactive or underactive thyroid glands, but more than half remain undiagnosed. One out of every five thousand babies born in the M.P. has hypothyroidism. Diet therapy is considered to be the basis of treatment of hypothyroid disease. The main goal of the dietary regime is to normalize the blood cholesterol level, and to try to prevent or reduce the incidence of long term complications. Results of the data comes in this conclusion that, intake of medicine under medical supervision with balanced life style, diet and stress free living style make control thyroid hormonal level.

## DISCUSSIONS

In the present study, out of 300 thyroid patients, 20% male and 27% female have hypertension disease and 14% male and 19% female have Arthritis problem. Diabetes, which is very common in thyroid patient was seen in 29% of thyroid patients. In this study, there was 8% to 13% of older women in 50 years of age have biochemical evidence of thyroid dysfunction and 30% are osteoporotic, according to bone density criteria. Although osteoporotic fractures have long been associated with fluoride hyperthyroidism and, more recently, with a history of hyperthyroidism in older women the relationship between biochemical evidence of excess thyroid hormone and fracture risk is known. The present study revealed that, out of total thyroid patients, 9% males and 11% females have bone related problems. Maximum thyroid woman have joint pain, leg pain, knees pain problems. Serum calcium deficiency were higher in thyroid female patients when compare to male patients, in the same way, the serum calcium levels of thyroid woman were more low when compared to serum level of thyroid disease affected men. During the study of 3 years, data conversational report showed that in thyroid affected patients, the families have record of fracture in their families. 1% women had a first hip fracture, 1.9% had an incident vertebral fracture detected on paired spinal radiographs. Women, who had incident hip, vertebral, or any nonspine fractures were older and had lower bone mass. Women with hip fractures were more likely to report previous hyperthyroidism. Mean TSH levels were similar among women with and without fracture, but the proportion of women with a low TSH level ( $\leq 0.1$  MIU/L) was significantly greater among those with hip or vertebral fracture. The present study shows that, out of 300 thyroid male and female patient s,72%patient are vegetarian and 28% are non-vegetarian patients.

Life style plays major role in any individual's health. People are confused with good lifestyle and bad lifestyle, as many think, to eat and dress well is good life style! "Perfect and Proper time of getup, sleep, exercise, eating and daily working comes in the category of life style; if anyone does not match the standard mark, it is poor or bad life style." Careful investigation and observation of data shows that totally, 68.33% thyroid patients intake thyroid medicine in their routine life. Out of the total 300 patients, 15% regularly intake thyroid medicine, 16% twice in a week intake thyroid medicine, 17.3 % intake thrice in a week and 31.6% never intake thyroid medicine. Also, it was found that 49% patients take breakfast on time and 51% took their breakfast at late times.

In this study, out of 300 thyroid patients, 50 patients were selected in the experimental groups. They came from three different areas of Bhopal, aged 25 to 65 years of age group. Out of 50 patients, 15 were from 25 to 35 years of age group, 10 from 35 to 45 years of age group, 15 from 45 to 55 years of age group and 10 from 55 to 65 years of age group.

It is found that, Ashwagandha and guggul oral dose were given in powder form in 7-8am morning time. Both herbs were given 10gm/day with lukewarm water. The duration of treatment was 6 month for both herbs. Few patients sometimes took in the form of halva, kheer, laddoo, of both herbs. These recipes were used in older times, by ayurvedic doctors. After intake of both herbs by thyroid patients, counseling was done for getting feedback, this says that these herbal treatments reduce the stress level and increase immune system in all the experimental group patients.

Firstly dietary treatments were given to experimental thyroid patients. These dietary treatments were suggested to thyroid experimental patients for 6 month with dietary pamphlets. the diet chart, herbal, lifestyle pamphlets etc. The dietary treatment diet chart with counseling was given to the group. Diet and herbal counseling treatment were provided with the support of pamphlet methods. As almost all the patients taken for the study were literate, the pamphlets were written in English. If any patients had a problem in understanding of tips regarding lifestyle and herbs from the pamphlets, then counseling was provided. Counseling was done bilingually.

The present study shows that the Control groups of 50 patients were free from any dietary, herbal and lifestyle treatment. In control group 50 patients were selected from three same areas group of this study. Control group patient were selected for accurate comparison and of perfect results. 25-65 age group patients were selected in control group. Maximum patient in control were belongs to grade one and grade two obesity level.

The experimental group patients were under the dietary, herbal, lifestyle and counseling treatment for 7-8 month. During this time, follow-up checkup was done after 3 months followed by checkups during 6th month.

There were comparisons of weight, BMI, TSH, Hemoglobin and Serum calcium of thyroid patients in the experimental group. Effective control of weight, eating habits and lifestyle of patient can reduce the symptoms of thyroid disease. The positive effect of this thyroid disease is, after proper medication, lifestyle control and with dietary support, the patient can live normal people. There are many celebrities and politician in national and international levels, facing hypothyroidism. Thyroid patients can live good life with families, when they know their symptoms and treatment for this disease. In this study, a long evaluatory treatment of experimental group thyroid patients gave drastic improvements in their eating habits and weight control. Weight reduction is necessary for thyroid control.

## CONCLUSIONS

Results of the data leads to the conclusion that, intake of medicine under medical supervision with balanced life style, diet and stress free living style would control thyroid hormonal level. Thyroid complications and symptoms should be explored in village and slum areas, to stop thyroid deficiency based disorders among the public.

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