A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Pregnancy Induced Hypothyroidism and Hyperthyroidism Among ANC Mother's Attending Antenatal OPD In Selected Hospital of The City: Pre-Experimental Study

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***Abstract*—Background: The thyroid gland plays a crucial role in regulating metabolism, growth, and energy production in the body. It achieves this through the secretion of two primary hormones: thyroxine (T4) and triiodothyronine (T3). Any imbalance in these hormones can lead to thyroid dysfunction, categorized as either hyperthyroidism (overactive thyroid) or hypothyroidism (underactive thyroid). Thyroid disorders are a common endocrine problem affecting women of reproductive age, and their impact is even more significant during pregnancy. Objectives: 1) To assess effectiveness of Structured teaching programme on knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mother's attending antenatal OPD in selected hospitals of the city. 2) To assess the level of knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospitals of the city. 3) To find out association between pre-test knowledge score with selected demographic variables of ANC mothers in selected hospitals of the city. Methodology: The study was conducted in selected hospitals of the city. quantitative approach was used for the study 80 ANC mothers in selected hospitals of the city were selected for the study. Data were collected using a demographic proforma and a self- structured 25-item knowledge questionnaire. Results: The study findings showed that among all subjects, in pre-test score 10% of ANC mothers had poor level of knowledge score, 70% had average and 18.75% of ANC mothers had good level of knowledge score. In post-test score 2.5% of ANC mothers had good level of knowledge score, 35% had very good and 62.5% of ANC mothers had excellent level of knowledge score. Conclusion: The study concluded undoubtedly that the knowledge given by the researcher in the form of structured teaching programme helped the subjects to improve their knowledge regarding the pregnancy induced hypothyroidism and hyperthyroidism.**

***Index Terms*—Structured teaching programme, Hyperthyroidism, Hypothyroidism, ANC mothers, Effectiveness, Knowledge.**

I. INTRODUCTION

The thyroid disease hyperthyroidism and hypothyroidism are relatively common in pregnancy. The thyroid is an organ located in the front of the neck and is butterfly in shape that release hormones called thyroxine hormone which is important in pregnancy for fetal neuro-development and regulates your metabolism heat and nervous system, weight, body temperature and many other processes in the body. During pregnancy of a woman have pre-existing hyperthyroidism or hypothyroidism the woman may regain more medical attention to control this condition during pregnancy, especially in the first trimester occasionally, pregnancy may cause symptom similar to hyperthyroidism in the first trimester the woman should seek physician if experiencing palpitation, weight loss and persistent vomiting.

Pregnancy is a complex physiological state that significantly influences the endocrine system, particularly thyroid function. Thyroid disorders, especially hyperthyroidism and hypothyroidism, are among the most common endocrine complications encountered during pregnancy. In antenatal mothers, these conditions can lead to adverse maternal and fetal outcomes such as miscarriage, preeclampsia, preterm delivery, intrauterine growth restriction, and impaired neurodevelopment in the child. In India, the prevalence of thyroid dysfunction in pregnant women ranges between 4.8% and 11%, highlighting a growing public health concern. Despite its clinical importance, awareness and understanding of thyroid disorders among pregnant women remain limited, leading to delayed diagnosis and suboptimal management. Therefore, educating ANC mothers through structured teaching programs is essential to enhance their knowledge, promote early detection, and ensure better maternal and neonatal outcomes.

II. BACKGROUND OF THE STUDY

During pregnancy, significant hormonal and physiological changes occur, which can alter thyroid function. Human chorionic gonadotropin (HCG) stimulates thyroid hormone production, while increased estrogen levels elevate thyroxine-binding globulin, affecting free thyroid hormone levels[5]. If thyroid dysfunction is left untreated, it can lead to severe complications for both the mother and the developing fetus. Hyperthyroidism during pregnancy has been linked to gestational hypertension, preterm labor, intrauterine growth restriction (IUGR), and even stillbirth. Meanwhile, hypothyroidism is associated with miscarriage, anemia, preeclampsia, low birth weight, neurodevelopmental impairment, and cognitive dysfunction in children.

One of the major concerns in managing thyroid dysfunction during pregnancy is the lack of awareness among antenatal care (ANC) mothers regarding the symptoms, risks, and importance of timely diagnosis and treatment. Studies indicate that many pregnant women, particularly in developing countries, remain unaware of thyroid disorders, leading to late diagnosis and inadequate treatment.[7] Given the potential risks of untreated thyroid dysfunction, it is imperative to educate ANC mothers about the condition and its management.

III. NEED OF THE STUDY

Uncontrolled and inadequately treated maternal hyperthyroidism may also result in fetal and neonatal hyperthyroidism due to the trans-placental transfer of stimulatory TSH receptor antibodies. Clinical neonatal hyperthyroidism occurs in about 1% of infants born to mothers with Graves' disease. Rarely neonatal hypothyroidism may also be observed in the infants of mothers with Graves' hyperthyroidism. This may result from trans-placental transfer of circulating maternal anti-thyroid drugs, pituitary-thyroid axis suppression from transfer of maternal thyroxin.

Globally, thyroid disorders are prevalent among pregnant women, with hypothyroidism affecting 6–9% and hyperthyroidism occurring in 4.6–7.4% of pregnancies. In India, the prevalence of hypothyroidism during pregnancy has been estimated to be around 10–30%, with variations across different regions. Studies from Maharashtra report a prevalence of 9.13% for hyperthyroidism and around 8–25% for hypothyroidism among pregnant women [4]. Despite these figures, awareness regarding thyroid dysfunction in pregnancy remains low, leading to undiagnosed and untreated cases. Hence, it is important for the married women to know about the thyroid disorder and its effect on pregnancy. Here, the researcher is interested in assessing the knowledge of the married woman regarding thyroid disorder and to enhance their knowledge by proving structured teaching programme to help them to ensure a safe pregnancy.

IV. OBJECTIVES OF THE STUDY

Primary Objective

- To assess effectiveness of Structured teaching programme on knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mother's attending antenatal OPD in selected hospitals of the city.

Secondary Objective

- To assess the level of knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospitals of the city.
- To find out association between pre-test knowledge score with selected demographic variables of ANC mothers in selected hospitals of the city.

V. HYPOTHESIS

The hypothesis tested at 0.05 level of significance
H0: There is no significant difference between pre and post-test knowledge scores regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospital of the city by using self-structured knowledge questionnaire.

H1: There is significant difference between pre-test and post-test knowledge scores regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospital of the city.

LIMITATION

- This study limited to ANC mothers attending antenatal OPD in selected hospitals of the city.
- The study is limited to 80 samples.

INCLUSION CRITERIA

ANC mothers who are:

- Age group between 20-40 years.
- Willing to participate in study.
- Available at the time of data collection.
- Understand or read and write the Marathi, Hindi and English language.

VI. REVIEW OF LITERATURE

Review of Literature are divided into following category:

1. Literature related to prevalence of thyroid disorder in pregnancy.
2. Literature related to knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism.
3. Literature related to prevention and its management of pregnancy induced hypothyroidism and hyperthyroidism.

VII. METHODOLOGY

A quantitative research approach was adopted for this study. The research design used was a pre-experimental one-group pre-test and post-test design. A non-probability convenient sampling technique was utilized to select participants. The study population comprised antenatal mothers who are attending antenatal OPD in selected hospitals of the city, with a sample size of 80. Data were collected using a demographic variables and self-structured knowledge questionnaire, the reliability of which was tested using Cochran's formula and validated by experts. The data were analyzed and interpreted using descriptive and inferential statistics.
Data were collected in three steps: Pré-test, structured teaching programme and post-test after 7 days. Analysis and interpretation were done by using descriptive statistics (mean, standard deviation, percentage) and inferential statistics (t-test, chi-square).

VIII. RESULTS

The analysis and interpretation of the observations are given in the following section:
Section A: Distribution of ANC Mothers with regards to demographic variables.

Section B: Assessment of level of pre-test and post-test knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospital of the city.

Section C: Assessment of effectiveness of Structured Teaching Programme on knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospital of the city.

Section D: Association of post-test knowledge score regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospital of the city with their selected demographic variables.

SECTION A

This section deals with percentage wise distribution ANC mothers with regards to their demographic characteristics. A convenient sample of 80 subjects was drawn from the study population, who were from selected hospitals of the city.
The data obtained to describe the sample characteristics including age, religion, area of residence, educational status, occupation, family income and gravida respectively.

Table 1: Percentage wise distribution of ANC Mothers according to their demographic characteristics.

n=80

Demographic Variables	No. of ANC Mothers	Percentage (%)
Age(yrs)		
20-24 yrs	19	23.8
25-29 yrs	29	36.3
30-35 yrs	24	30.0
36-40 yrs	8	10.0
Religion		
Hindu	41	51.3
Christian	0	0
Muslim	6	7.5
Buddhist	27	33.8
Other	6	7.5
Area of residence		
Urban	47	58.8
Rural	33	41.3
Educational Status		
Primary School	6	7.5
Secondary School	25	31.3
Higher Secondary	21	26.3
Graduate and above	28	35.0
Illiterate	0	0
Occupation		
Housewife	46	57.5
Business	11	13.8
Private Sector Employee	23	28.8
Government Employee	0	0
Family Income (Rs)		
Less than 10000 Rs	5	6.3
10001-25000 Rs	21	26.3
25001-50000 Rs	29	36.3
>50000 Rs	25	31.3
Gravida		
Primigravida	44	55.0
Multigravida	36	45.0

SECTION B: Assessment of level of the knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospitals of the city.

Table 2: Assessment with level of pre-test knowledge

n= 80

vel of pre-test knowledge	Score Range	Level of Pre-test Knowledge Score	
		No of ANC mothers	Percentage
Poor	0-5	8	10
Average	6-10	56	70
Good	11-15	15	18.75
Very Good	16-20	1	1.25
Excellent	21-30	0	0
Minimum score		3	
Maximum score		16	
Mean knowledge score		8.45 ± 2.40	
Mean % Knowledge Score		33.80 ± 9.62	

The above table shows that 10% of ANC mothers had poor level of knowledge score, 70% had average and 18.75% of ANC mothers had good level of knowledge score.

Minimum knowledge score in pretest was 3 and maximum knowledge score in pretest was 16.

Mean knowledge score in pretest was 8.45 ± 2.40 and mean percentage of knowledge score in pre-test was 33.80 ± 9.62.

Table 3: Assessment with level of post-test knowledge

n= 80

vel of post-test knowledge	Score Range	Level of Post test Knowledge Score	
		No of ANC mothers	Percentage
Poor	0-5	0	0
Average	6-10	0	0
Good	11-15	2	2.5
Very Good	16-20	28	35
Excellent	21-30	50	62.5
Minimum score		12	
Maximum score		23	
Mean knowledge score		20.51 ± 1.90	
Mean % Knowledge Score		82.05 ± 7.61	

The above table shows that 2.5% of ANC mothers had good level of knowledge score, 35% had very good and 62.5% of ANC mothers had excellent level of knowledge score.

Minimum knowledge score in posttest was 12 and

maximum knowledge score in posttest was 23.
Mean knowledge score in posttest was 20.51 ± 1.90 and mean percentage of knowledge score in post-test was 82.05 ± 7.61.

Table 4: Significance of difference between knowledge score in pre and post-test of ANC Mothers
n=80

Test	Mean	SD	Mean Difference	t-value	p-value
Pre-Test	8.45	2.40	12.06±2.78	38.67	0.0001
Post Test	20.51	1.90			S,p<0.05

SECTION C: Evaluation of the effectiveness of structured teaching programme on knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospitals of the city.

SECTION D: Association of level of post-test knowledge score regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospital of city in relation to their demographic variables.

Table 5: Overall association of Post test knowledge score regarding Pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD with their demographic variables.
n=80

Demographic variables	F- value	Degree of freedom	Level of significance	Significance
Age	9.29	2.68(df=3,76)	0.0001 S,p<0.05	S
Religion	0.58	2.68(df=3,76)	0.62 NS,p>0.05	NS
Residence	1.18	1.98(df=78)	0.23 NS,p>0.05	NS
Educational Status	7.68	2.68(df=3,76)	0.0001 S,p<0.05	S
Occupation	0.04	3.07(df=2,77)	0.95 NS,p>0.05	NS
Family Income	2.20	3.07(df=2,77)	0.11 p>0.05	NS
Gravida	1.01	2.68(df=78)	0.31 NS,p>0.05	NS

IX. DISCUSSION

This section presents the discussion of the findings against the main objectives of the investigator behind the study that was undertaken to assess the structured teaching programme on knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers.
Mean knowledge score in pretest was 8.45 ± 2.40 and mean percentage of knowledge score in pretest was 33.80 ± 9.62.

In posttest it was found pregnancy induced hyperthyroidism and hypothyroidism clients gained knowledge with the mean score in posttest was 20.51 ± 1.90 and mean percentage of knowledge score in posttest was 82.05 ± 7.61. The overall findings of the study showed that structured teaching programme is very effective in improving the knowledge on pregnancy induced hypothyroidism and hyperthyroidism with t value 1.01 0.31 at p>0.05 level. The comparison of pretest and post-test knowledge scores of ANC mothers regarding pregnancy induced hypothyroidism and hyperthyroidism from antenatal OPD in selected hospital of the city. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n=80-1 i.e., 79 degrees of freedom was 1.98.
The calculated 't' value i.e., 38.67 are much higher than the tabulated value at 5% level of significance for overall knowledge score of adults which is statistically acceptable level of significance. Hence it is statistically interpreted that the Structured Teaching Programme on knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism among ANC mothers attending antenatal OPD in selected hospital of the city was effective. Thus, the H1 is accepted.

X. CONCLUSION

After the detailed analysis, this study leads to the following conclusion assess the effectiveness of structured teaching programme on knowledge regarding pregnancy induced hypothyroidism and

hyperthyroidism among ANC mother's attending antenatal OPD in selected hospitals of the city was effective in improving the knowledge of subjects its show association in relation to their demographic variables. Hence, based on the above finding, it was concluded undoubtedly that the written prepared material by the researcher in the form of assessment of knowledge helped the subjects to improve their knowledge regarding pregnancy induced hypothyroidism and hyperthyroidism.

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