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A STUDY TO ASSESS THE IMPACT OF TECHNOLOGY BASDED APPROACH TO IMPROVE KNOWLEDGE ON HEALTH PROMOTING BEHAVIOUR TOWARDS MATERNAL HYPOTHYROIDISM AMONG ANTENATAL MOTHERS WITH HYPOTHYROIDISM

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ABSTRACT

Background: Thyroid hormones are important in the development of the fetus and the placenta as well as in maintaining maternal wellbeing. Thyroid disorders are common in the population as a whole, particularly in women, and therefore are common during pregnancy and the puerperium. Biochemical derangements of thyroid function tests are present in approximately 2.5–5% of pregnant women. In addition to adverse obstetrical outcomes; maternal hypothyroidism is associated with adverse neonatal outcomes. As the fetus does not begin to produce its own thyroid hormones until approximately 12 weeks' gestation, it is solely dependent on maternal thyroxine (T4) during early gestation.

Aim of the study: To determine teaching the antenatal mothers with hypothyroidism on health promoting behaviors towards maternal hypothyroidism has efficacy in improving their knowledge.

Methods: Evaluative with Quasi experimental study one group pre and post-test design and Simple random sampling technique was used for the study. The knowledge questionnaire regarding health promoting behaviour towards maternal hypothyroidism was distributed among 60 antenatal mothers with hypothyroidism followed by the session of technology based education on health promoting behaviour regarding maternal hypothyroidism was given to the samples. The data were analysed by using descriptive, inferential statistical methods.

Result: In pre-test the mean score of knowledge level is 9.45 and the SD is 3.13. In the post test the mean score of knowledge level is 20.06 and the SD is 11.40, which shows that the technology based education on health promoting behaviour of maternal hypothyroidism is highly significant in improving knowledge.

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INTRODUCTION

Maternal hypothyroidism, in simple terms, refers to low thyroid hormone levels during pregnancy. The diagnosis is made by a TSH that is greater than normal, and this situation deserves therapy. Many studies have shown that maternal thyroid hormones are very important in pregnancy (Cleary-Goldman J et al 2008). Most importantly, emerging data seems to suggest that thyroid hormones are especially important for fetal brain development, especially during early pregnancy (Montoro MN 1997).

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Pregnancy has a profound impact on the thyroid gland and thyroid function. The gland increases 10% in size during pregnancy in iodine-replete countries and by 20%–40% in areas of iodine deficiency. Production of thyroxine (T4) and triiodothyronine (T3) increases by 50%, along with a 50% increase in the daily iodine requirement. These physiological changes may result in hypothyroidism in the later stages of pregnancy in iodine-deficient women who were euthyroid in the first trimester. The range of thyrotropin (TSH), under the impact of placental human chorionic gonadotropin (hCG), is decreased throughout pregnancy with the lower normal TSH level in the first trimester being poorly defined and an upper limit of 2.5 mIU/L. Ten percent to 20% of all pregnant women in the first trimester of pregnancy are thyroid peroxidase

(TPO) or thyroglobulin (Tg) antibody positive and euthyroid. Sixteen percent of the women who are euthyroid and positive for TPO or Tg antibody in the first trimester will develop a TSH that exceeds 4.0 mIU/L by the third trimester, and 33%–50% of women who are positive for TPO or Tg antibody in the first trimester will develop postpartum thyroiditis. In essence, pregnancy is a stress test for the thyroid, resulting in hypothyroidism in women with limited thyroidal reserve or iodine deficiency, and postpartum thyroiditis in women with underlying Hashimoto's disease who were euthyroid prior to conception. (Alex Stagnaro-Green 2011) Knowledge regarding the interaction between the thyroid and pregnancy/the postpartum period is advancing at a rapid pace. Only recently has a TSH of 2.5 mIU/L been accepted as the upper limit of normal for TSH in the first trimester.(Idris et al 2005) Emerging research indicates that thyroid hormones play a key role in fetal brain development, and asymptomatic hypothyroidism during pregnancy may have an adverse effect on fetal growth and neurologic development. Findings published in the past year call our attention to the importance of identifying and adequately treating thyroid-deficient gravidas: Maternal free thyroxine (FT4) concentration below the 10th percentile at 12 weeks is associated with significant impairment of psychomotor development at ages 1 and 2 years.(Pop VJ,et al 2003).The average serum thyroid-stimulating hormone (TSH) and FT4 levels of neonates born to hypothyroid mothers were significantly higher than those of controls; birth weight and head circumference were significantly lower. (Blazer S et al 2003)

Objectives

To assess and associate the pre and post intervention of knowledge on health promoting behaviour towards maternal hypothyroidism among pregnant women with hypothyroidism with the selected demographic variables.

Hypothesis

Hypothesis were tested at 0.05 level of significance

H1: There will be significant difference and association in the pre and post-test knowledge and score and their selected demographic variables.

METHODS AND MATERIALS

Research Methodology

Research Design: Evaluative with Quasi experimental study one group pre andpost-test design.

Setting: Narayana Health Hospital, Narayana health city, Bangalore.

Population: The target population for the study includes the antenatal mothers with hypothyroid with TSH level more than 2.5 mlU/L (I^{ST} trimester) and Free T4 ((thyroxin) decreased with compare to normal. Antenatal mothers attending antenatal OPD in Narayana Health Hospital at Bangalore

Sample Size: 60 Antenatal mothers with hypothyroidism

Sampling Technique: Simple random sampling technique

Independent Variable

In this research the independent variable refers to integrated approach that is Technology based education.

Dependent Variable

The dependent variable refers to Knowledge of health promoting behaviour towards maternal hypothyroidism.

Sampling criteria

Inclusion criteria

Antenatal mothers who have

- age above 20 years
- Willing to participate in the study.
- Gestational age 1- 12 weeks.
- Registered and attending the antenatal OPD for visits.
- Both primi and multi-gravida women
- The antenatal mother whose laboratory values falls below criteria:
- TSH level more than 2.5 mlU/L (I^{st} trimester)
- Free T4 ((thyroxin) decreased with compare to normal

(Normal reference range- 0.8 -2.8 nanograms per deciliter (ng/dL))

Exclusion criteria

- Health professional mothers
- Mothers coming in antenatal OPD in Gestational age of above 13 weeks

ETHICAL CONSIDERATION: The study was conducted after approval from the concerned institution. Assurance was given to the participants regarding the confidentiality.

DESCRIPTION AND DEVELOPMENT OF THE TOOL: The tool comprised of 3 sections:

Section A: The demographic variables of the clients.

Section B: Structured Questionnaire on Knowledge regarding Health Promoting Behaviour of Mothers with Hypothyroidism.

Section C: Technology Based Approach on Maternal Hypothyroidism (Intervention Module)

SL.no	Topics	Method of Technology
1	Meaning, causes, risk factors and symptoms of maternal hypothyroidism	Power Point
2	Adverse Outcomes of Maternal Hypothyroidism(Maternal &Foetal Disorders)	Presentation
3.	Screening & Monitoring	Video assisted
4.	Modification of Diet & Activity	teaching
5.	Guidelines for maternal and Newborn car	CD instruction

SCORING TECHNIQUE

Section A: Scoring key for demographic data variables

It consists of antenatal mothers profile such as age in years, type of family, type of food, occupation, monthly income,

educational status and source of awareness of maternal hypothyroidism.

Section B: Scoring key for structured interview schedule format

Knowledge questionnaire consists of 30 questions to assess knowledge. Each correct answer was given a score of one mark and wrong answer or unanswered was given a score of '0'. The maximum score was 30.

Classification of knowledge score based on arbitrary division

Below 50%	Inadequate knowledge
50-75%	Moderate adequate knowledge
76% and above	Adequate knowledge

Procedure for data collection

The data was collected after the written informed consent obtained from antenatal mothers with hypothyroidism. The pre-test was conducted for antenatal mothers during their first antenatal visit (3rd months) about 15 minutes followed by technology based training to the antenatal mothers with hypothyroidism for 30 minutes. The post test was conducted to the same samples during their 3rd antenatal visit at the month of 7th months.

DATA ANALYSIS PLAN

The plan of data analysis was as follows:

- Organize data in a master sheet or computer.
- Demographic data would be analyzed in terms of frequency and percentage.
- The knowledge of maternal hypothyroid mothers regarding health promotion behaviour

Before and after intervention of technology based approach analyzed in terms of frequency and percentage, mean, Standard deviation.

- The significance of the difference between pretest and posttest knowledge score determined by paired 't' test.
- The association between the pre- test levels of knowledge score with demographic variables would be determined by using "Chi-Square".

The analysis of the data was mainly classified as

Section-A: Frequency and percentage distribution of socio demographic variables of antenatal mothers with hypothyroidism.

Section B: Structured Questionnaire on Knowledge regarding Health Promoting Behaviour of Mothers with Hypothyroidism.

Table No - 2 shows that overall pre-test level of knowledge scores regarding health promoting behaviour of antenatal mothers with Hypothyroidism. Majority 50 (83.3%) of them had inadequate level of knowledge, 10 (16.7 %) of them had moderate level of knowledge and none of them were had adequate knowledge.

Table 1. Frequency and percentage distribution of sample characteristics: n = 60

Sl.no	Sample characteristics	frequency	percentage
1. Age (in years):			
a.	20-25	10	16.67
b.	26-30	10	16.67
c.	31-35	18	30.00
d.	36 and above	22	36.66
2. Type of family:			
a.	Nuclear family	37	61.67
b.	Joint family	23	38.33
3. Occupation:			
a.	House wife	31	51.67
b.	Private employee	15	25.00
c.	Government employee	14	23.33
4. Educational status:			
a.	Primary school	36	60.00
b.	High school & above	18	30.00
c.	Graduation & above	6	10.00
5. Food habits:			
a.	Vegetarian	37	61.67
b.	Non vegetarian	23	38.33
6. Family Income per Month (in Rs):			
a.	Below 3000	21	35.00
b.	3001 – 6000	14	23.33
c.	6001-9000	15	25.00
d.	9001-12000	4	6.67
e.	Above 12000	6	10.00
7. Information sources about the illness:			
a.	Mass media (TV, Radio, News Paper, Magazine)	21	35.00
b.	Professionals (Doctor, Nurses, Health Personnel)	18	30.00
c.	Friends	13	21.67
d.	Relatives	8	13.33

Table 2. Pre- test level of knowledge regarding health promoting behaviour of antenatal mothers with Hypothyroidism

Knowledge level regarding health promoting behaviour maternal hypothyroidism	Knowledge levels					
Pre-test Overall level of knowledge	Inadequate Below 50%		Moderate 51 – 75%		Adequate Above 75%	
	No	%	No	%	No	%
	50	83.3	10	16.7	00	00

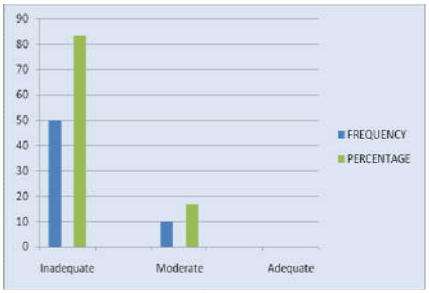

Fig. 1. Pre- test level of knowledge regarding health promoting behaviour of antenatal mothers with Hypothyroidism

Table No 3. Post- test level of knowledge regarding health promoting behaviour of antenatal mothers with Hypothyroidism

Knowledge regarding health promoting behaviour on maternal hypothyroidism	Knowledge levels					
Post-test Overall level of knowledge	Inadequate Below 50%		Moderate 51 – 75%		Adequate Above 75%	
	No	%	No	%	No	%
	00	00	15	25	45	75

Table - 3 shows that overall post-test level of knowledge scores regarding health promoting behaviour of antenatal mothers with Hypothyroidism

Majority 45(75 %) of them had adequate level of knowledge, 15 (25%) of them had moderate level of knowledge and none of them were had inadequate knowledge

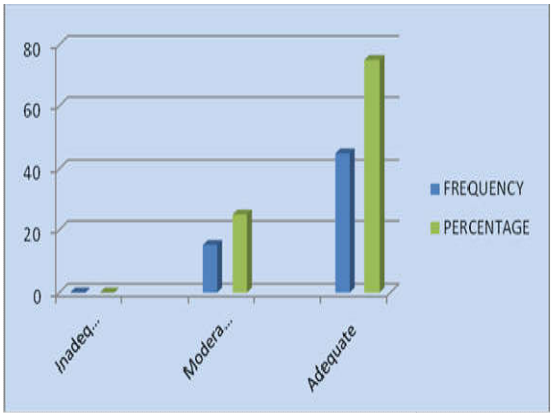

Fig. No 2. Post- test level of knowledge regarding health promoting behaviour of antenatal mothers with Hypothyroidism

Table No 4. Mean, standard deviation and paired‘t’ value of pretest and posttest knowledge scores regarding health promoting behaviour of antenatal mothers with Hypothyroidism

Test	Mean	Standard deviation	Paired ‘t’ value
Pre- test	9.45	3.13	19.68
Post- test	20.06	11.40	D f = 59

$T_{tab} = 2.2$, $P < 0.05$ level

Table no.4- Represents that the mean post-test knowledge score (20.06) is apparently higher than mean pre-test knowledge score (9.45). Standard deviation of post test score is (11.40) and standard deviation of pre-test score is (3.13) and the computed paired ‘t’ test value ($t59 = 19.68$, $P < 0.05$) is greater than the table value (t_{tab}=2.2) which represents significant gain in knowledge through the technology based approach.

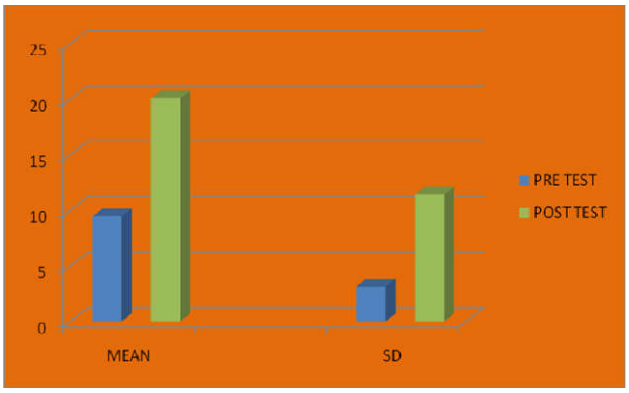

Fig. No 3 Mean, standard deviation and paired‘t’ value of pre-test and post-test knowledge scores regarding health promoting behaviour of antenatal mothers with Hypothyroidism

The hypothesis stated as follows

H1: The mean post-test knowledge score will be significantly higher than the mean pre-test knowledge score of the antenatal mother with hypothyroidism.

The findings indicated that the computed Paired‘t’ test value 19.68 is greater than t table value (2.2). So that the researcher reject the null hypothesis and accepted the research hypothesis The association between the pre- test levels of knowledge score with demographic variables would be determined by using “Chi-Square” revealed that there was no significant association between level of knowledge score and selected variables such as age, level of education, occupation, type of family and sources of information.

Conclusion

The findings reveal that the majority of antenatal mothers with hypothyroidism had inadequate knowledge regarding hypothyroidism during pregnancy. It indicates that there is a need for creating awareness and regular follow up. The researcher concludes that creating awareness through the technology based had more impact and the subjects were shown more interest and received the teaching content with highly motivated. Hypothyroidism in pregnancy is associated with adverse fetal and maternal outcomes. Women with thyroid disorders should be followed closely and motivate them throughout pregnancy by maintaining daily check, telephonic reminder, text messages to the antenatal mothers hypothyroidism for the prevention of maternal complications, and good perinatal outcome.

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