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A Study to Assess the Effectiveness of Structured Teaching Program on Teratology during Pregnancy among Antenatal Mothers at SMVMCH, Puducherry.

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ABSTRACT

Introduction: Teratology is the scientific study of congenital abnormalities and the developmental disturbances leading to structural or functional defects in the fetus. During pregnancy, teratology plays a crucial role in understanding how maternal exposures, genetic abnormalities, nutritional deficiencies, infections, medications, and environmental toxins influence fetal development. The first trimester, particularly the 3rd to 8th weeks of gestation, is the most vulnerable period when organogenesis occurs. Lack of maternal awareness about teratogenic factors increases the risk of birth defects and pregnancy complications. **Objectives:**
1) To evaluate the effectiveness of a structured teaching program on teratology during pregnancy among antenatal mothers at smvmch, puducherry. 2).Association between pre-test knowledge level on teratology during pregnancy among antenatal mothers with their selected demographic variables. **Research methodology:** A quantitative research approach with a pre-experimental (one-group pre-test post-test design) was used. The study was conducted among 100 antenatal mothers attending the antenatal OPD at SMVMCH. Sampling technique was convenience sampling technique. Data were collected by using a structured questionnaire. A structured teaching program was administered, followed by a post-test after one week. **Result:** Data were analyzed using descriptive and inferential statistics. In the pre-test, 3(3%) had mothers having adequate knowledge, 28 (28%) had a moderate level, and a majority of 69 mothers (69%) having inadequate level of knowledge. In posttest, after administering structured teaching programme 26(26%) had mothers having adequate knowledge, 61(61%) had a moderate level, and 13 mothers (13%) having inadequate level of knowledge.it shows that STP was very effective teaching methods in nursing research.
Keywords: Teratology, pregnancy, Antenatal Mothers, Structured Teaching Program.

Introduction

Pregnancy is typically divided into three trimesters, each marked by different stages of fetal growth and maternal adjustments. The health of both the mother and the fetus is crucial during this time, with maternal health influencing fetal development. Proper prenatal care, nutrition, and the avoidance of harmful substances are vital for ensuring a healthy pregnancy and a healthy baby.

Teratology is the scientific study of congenital abnormalities (birth defects) and the developmental disruptions that lead to such abnormalities. In the context of pregnancy, teratology focuses on understanding how certain factors during pregnancycan cause malformations in the developing fetus. These abnormalities can range from minor physical malformations to severe functional impairments, affecting

various organs and systems. Teratogenic effects can occur at any point in pregnancy, but the embryo is particularly vulnerable during the first trimester, when the major organs and structures are forming.

Need for the study

According to the **World Health Organization (2022),** congenital abnormalities affect approximately 3-6% of infants globally, leading to significant morbidity and mortality. It is estimated that around 295,000 newborn deaths occur annually due to birth defects. These congenital anomalies include a wide range of structural or functional disorders that arise during intrauterine development and can lead to chronic disabilities or even death. The burden of congenital abnormalities is higher in low- and middle-income countries, where the prevalence is often exacerbated by factors such as maternal malnutrition, lack of access to healthcare, exposure to infections, and insufficient prenatal care.

Arup Pramanick et al. (2023) conducted a study on teratogenic effect of drugs at different stages of pregnancy. He states that teratogens cause abnormalities in 4-5% of infants, with the highest risk occurring during the critical organogenesis period (15-60 days of gestation). In pregnancy, 70% of women use multiple medications, including both prescription and over-the-counter drugs, which can contribute to teratogenic effects. Pregnancy alters drug metabolism, impacting the risk of teratogenicity based on the stage of pregnancy. Therefore, careful management of medication use is essential to minimize risks and reduce the incidence of birth defects. Understanding how pregnancy affects drug metabolism and identifying critical periods of susceptibility are crucial for safeguarding fetal development.

Statement of the Problem:

A study to assess the effectiveness of structured teaching program on teratology during pregnancy among antenatal mothers at SMVMCH.

Objectives:

1) To evaluate the effectiveness of a structured teaching program on teratology during pregnancy among antenatal mothers at smvmch, puducherry.

2) Association between pre-test knowledge level on teratology during pregnancy among antenatal mothers with their selected demographic variables.

Operational Definition

Effectiveness:
In this study, it refers to the outcome of the structured teaching program, which is measured by the difference in knowledge levels of antenatal mothers before and after the programme, by using self-structured questionnaire.

Structured Teaching Program:
In this study, it refers to planned, organized, and systematically delivered educational intervention on teratology, consisting of lectures, visual aids, and interactive sessions lasting over a specific time period, designed to improve knowledge among antenatal mothers.

Teratology:
In this study, it refers to the branch of science that studies congenital abnormalities or birth defects, focusing on the causes, development, and prevention of fetal malformations in pregnancy.

Pregnancy:
In this study, it refers to the physiological condition in which a woman carries a developing fetus in her uterus, typically lasting about 40 weeks from the last menstrual period to birth.

Antenatal Mothers:
In this study it refers to a pregnant woman who is receiving medical care and monitoring during the period of pregnancy, specifically before the birth of her baby.

Assumption

The antenatal mother will have adequate knowledge about teratology after the structured teaching program.

Research Methodology:

A quantitative research approach was adopted for the present study.

Research design:

A pre-experimental design (one group pre-test and post-test research design was adopted for the present study.

Research variables:

Independent Variable:

The Independent variable of the study is structured teaching programme.

Dependent Variable:

The dependent variable of the study is teratology during pregnancy.

Population:

The study population comprised of all antenatal mothers at SMVMCH

Sample

The antenatal mother who attending antenatal OPD

Sample size:

The sample size consists of 100 antenatal mothers

Sampling Technique:

A purposive sampling technique was used for the present study.

Setting of the study:

The study was conducted at Sri Manakula Vinayagar Medical College and Hospital

Sample selection criteria:

Inclusion criteria:

- ✓ Antenatal mothers who are attending AN OPD at SMVMCH.
- ✓ Antenatal mothers who are willing to participate in this study
- ✓ Antenatal mothers who can able to speak and read English and tamil language

Exclusion criteria:

Antenatal mothers who were not willing to participate in this study

DESCRIPTION OF THE TOOL:

Section A:

Demographic variables include age, education level, occupation, income, religion, residential area, gravida, parity, gestational age, substance use, and access to antenatal care.

Section B:

It consists of self - structured knowledge questionnaire on teratology in pregnancy.

Scoring interpretation:

S.No	Score	Level of knowledge
1	< 50	Mild
2	50 - 75	Moderate
3	75 - 100	Adequate

Data collection procedure:

Formal approval was obtained from the SMVMCH. The purpose of the study was explained to the antenatal mothers before starting the data collection. 100 antenatal mothers were selected by convenience sampling technique. Informant consent was obtained. Structured knowledge questionnaire was administered to the pregnant mother. The collected data were noted. The researcher assured the participants of the confidentiality of their responses.

Ethical consideration:

Ethical clearance was obtained from the ethical committee of SMVMCH. Informed consent will be obtained from the antenatal mothers in SMVMCH.

PLAN FOR DATA ANALYSIS:

The collected data were coded and analyzed by using descriptive and Inferential Statistics. Demographic variable was expressed in frequency and percentage. Chi-squared test was used to find out the association between the knowledge of antenatal mothers withSelected demographic variables.

ORGANISATION OF THE DATA

Section-A Description of demographic variables of antenatal mothers.

Section –B Effectiveness of a structured teaching program on teratology during pregnancy among antenatal mothers at smvmch, puducherry.

Section –C Association between pre-test level of knowledge on teratology during pregnancy among antenatal mothers with their selected demographic variables.

Section –B Effectiveness of a structured teaching program on teratology during pregnancy among antenatal mothers at smvmch, puducherry.

Table-2 Effectiveness of a structured teaching program on teratology during pregnancy among antenatal mothers at smvmch, puducherry. (N= 100)

S.no	Effectiveness of structured teaching programme	Pre test		Post test	
		(N)	**%**	**(N)**	**%**
1.	Adequate	3	3	26	26
2.	Moderate	28	28	61	61
3.	Inadequate	69	69	13	13

Table-2 shows that effectiveness of structured teaching programme, in pre-test, 3(3%) mothers had adequate level of knowledge, and 28 (28%) mothers had a moderate level of knowledge and 69 (69%) mothers having inadequate level of knowledge.

In posttest shows that 26(26%) mothers had adequate level of knowledge, 61(61%) mothers had a moderate level of knowledge and 13 (13%) mothers having inadequate level of knowledge.

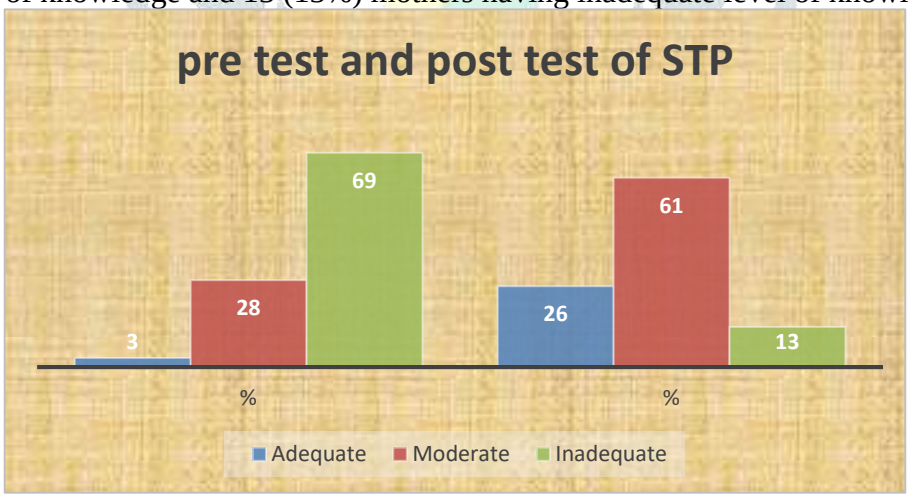

FIGURE-1 bar diagram shows that Effectiveness of a structured teaching program on teratology during pregnancy among antenatal mothers at smvmch, puducherry.

Section C: Mean, mean percentage and slandered deviation score on teratology during pregnancy among antenatal mothers at smvmch, puducherry.

Table 3: Mean, mean percentage and slandered deviation score on teratology during pregnancy among antenatal mothers at smvmch, puducherry**. (N=100)**

S.NO	Teratology in pregnancy	Mean	SD	Mean Difference	Paired 't' value
1.	pre-test	43.6	13.6	21.56	t = 12.209 p<0.001
2.	post-test	65.1	12.6		

***p<0.05 - Significant; p<0.01 - Highly Significant**

Table-4 depicts that mean pre-test score was 43.6 with a standard deviation (SD) of 13.6, whereas the mean post-test score increased to 65.1 with an SD of 12.6. The mean difference between the scores was 21.56.The paired 't' test value was calculated as t = 12.209, which was statistically significant at $p < 0.001$, indicating a highly significant improvement following the educational intervention. These results confirm that the structured teaching programme was effective in enhancing the understanding of teratology during pregnancy among antenatal mothers.

SECTION D: Association between pre-test level of knowledge on teratology during pregnancy among antenatal mothers with their selected demographic variables.

Table 3: Association between pre-test level of knowledge on teratology during pregnancy among antenatal mothers with their selected demographic variables. **(N = 100)**

S. No	Demographic variables	Structured teaching program						X^2 value
		Adequate		Inadequate		Moderate		
1	**Age**	**N**	**%**	**N**	**%**	**N**	**%**	
	Below 18 years	0	0	0	0	0	0	X^2 = 2.428 Df= 4 p =0.658 (NS)
	18–25 years	10	10	8	8	27	27	
	26–35 years	15	15	5	5	33	33	
	Above 35 years	1	1	0	0	1	1	
2.	**Education Level**							
	Illiterate	5	5	1	1	9	9	X^2 = 6.260 Df = 6 p = 0.395 (NS)
	Primary education	9	9	7	7	15	15	
	Secondary education	8	8	4	4	21	21	
	Graduate or higher	4	4	1	1	16	16	
3.	**Occupation**							
	Employed	11	11	6	6	29	29	X^2 = 0.682 Df = 4 p = 0.954 (NS)
	Homemaker	10	10	5	5	19	19	
	Unemployed	5	5	2	2	13	13	
4.	**Income**							
	Below ₹10,000	13	13	7	7	25	25	X^2 =8.562 Df = 6 p =0.200 (NS)
	₹10,000–₹25,000	5	5	1	1	16	16	
	₹25,001–₹50,000	8	8	2	2	14	14	
	Above ₹50,000	0	0	3	3	6	6	

*** Significant at P≤ 0.05 level**

.	**Religion**							
	Hindu	23	23	9	9	50	50	X^2 = 5.846 df = 4 p = 0.211 (NS)
	Muslim	1	1	1	1	0	0	
	Christian	2	2	3	3	11	11	
	Other	0	0	0	0	0	0	
6.	**Residential Area**							

	Rural	26	26	13	13	61	61	NA
	Urban	0	0	0	0	0	0	
7.	**Gravida:**							X^2 =4.527 Df = 6 p = 0.606 (NS)
	First pregnancy	21	21	10	10	37	37	
	Second pregnancy	3	3	2	2	14	14	
	Third pregnancy	2	2	1	1	8	8	
	Four or more pregnancies	0	0	0	0	2	2	
8.	**Parity**							X^2 = 7.343 Df = 4 p = 0.119 (NS)
	Nulliparous	23	23	10	10	39	39	
	One live birth	2	2	2	2	20	20	
	Two live births	1	1	1	1	2	2	
	Three or more live births	0	0	0	0	0	0	
9.	**Gestational Age**							X^2 = 11.443 Df = 6 p = 0.076 (NS)
	Less than 12 weeks	4	4	2	2	16	16	
	12–24 weeks	9	9	0	0	19	19	
	25–36 weeks	10	10	10	10	19	19	
	37 weeks or more	3	3	1	1	7	7	
10.	**Substance Use**							NA
	None	26	26	13	13	61	61	
	Tobacco	0	0	0	0	0	0	
	Alcohol	0	0	0	0	0	0	

	Other drugs	0	0	0	0	0	0	
11.	**Access to Antenatal Care**							
	Regular (Monthly visits as recommended)	18	18	10	10	48	48	$X^2 = 2.448$ Df = 4 p = 0.654 (NS)
	Irregular (Skipped some visits)	5	5	3	3	9	9	
	Not at all	3	3	0	0	4	4	

Table-5 shows that there is no significance association of level of structured teaching program regarding teratology during pregnancy among antenatal mothers with selected demographic variables.

Recommendations

1. The study can be replicated with a larger sample.
2. A comparative study can be conducted between urban and rural antenatal mothers.
3. A quasi-experimental study with a control group can be undertaken.
4. Long-term follow-up studies can assess behavioral change after education.
5. Awareness programs should be regularly included in antenatal clinics.

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