

Knowledge Regarding Effect of Teratogens on Fetus among Eligible Couple

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Abstract: *A teratogen is any substance that is known to cause birth defects in humans. These substances promote birth defects by altering the actual environment within the womb, may result in fetal organ defects. Every woman has a 3-5% risk of having a baby born with a birth defect. Some teratogens will increase that risk, depending upon when in the pregnancy a woman has the exposure, the dose and route of the exposure. Only safe course of action is to actively avoid known teratogens before and during pregnancy. Care during pregnancy for women has been known to be very important and the need for necessary steps to be taken is always stressed. The study was undertaken to assess the knowledge regarding effect of teratogens on fetus among eligible couple at selected community areas. The overall knowledge of the subjects in regards to effects of teratogens showed that all most all eligible couple had inadequate knowledge on effects of teratogens among eligible couples.*

Keywords: Teratogens, Fetus, Eligible couple, Information booklet

1. Introduction

Pregnancy is one of the wonderful and Nobel services imposed by nature. The development of the fetus bring changes in women's physical and mental health. While carrying baby, the women needs to learn a lot regarding pregnancy. The gradual and proper development of fetus is most important for the child's health. The development of fetus depends totally on mother's health. During the crucial stages of foetal development, it is said that a woman needs to have a sound mind and be in good physical condition¹

Prenatal development is one of the most significant segments of our development. Throughout nine months, prenatal development is constantly under strong influences, largely governed by genetics and external factors. If a baby's development were regulated mainly by their genetic composition, prenatal development would be more orderly and precise. External factors, on the other hand, influence pregnancy either positively or negatively. There are many external factors that negatively impact both the fetus and the mother during pregnancy; some of which cause permanent prenatal abnormalities. These broad ranges of substances, known as teratogens, are readily found in almost any environment. Teratogens can be airborne contaminants, such as harmful gases, vapours, and pesticides drugs and medication, such as cocaine, anticonvulsants, and Thalidomide; congenital infections, such as human immunodeficiency virus and syphilis, consumption of alcohol, cigarette smoking, radiation, and stress. The critical period of organ and limb development occurs within the first trimester - more specifically, the first eight weeks of growth. Women who are exposed to high doses or high levels of teratogens during this sensitive stage in prenatal development can increase the risk of causing various mental and physical complications in the baby in most cases, these conditions are irreversible.²

According to global report on birth defect report shows that at least 3.3 million children under five years of age die from birth defects each year and an estimated 3.2 million of those who survive may be disabled for life, five common serious birth defects of genetic or partially genetic origin in 2001

were: (1) congenital heart defects (1,040,835 births); (2) neural tube defects (323,904 births); (3) the hemoglobin disorders, thalassemia and sickle cell disease (307,897 births); (4) Down syndrome (trisomy 21) (217,293 births); and (5) glucose-6-phosphate dehydrogenase (G6PD) deficiency (177,032 births). Combined, these five **conditions** account for about 25 percent of all of birth defects of genetic or partially genetic origin. Teratogens are a variety of substances found in the environment and, they are dangerous when a pregnant woman is exposed to them. Teratogens include radiation, certain antibiotics, street drugs, prescribed drugs, alcohol, or even an infection within the mother's body. The effects of teratogens include a host of birth defects and even the possibility of fetal death.³

Teratogens increase the chances of birth defects in babies. Teratogens are believed to begin affecting the fetus as early as 10 days after conception and cause major and minor birth defects as well as an infant mortality rate of two to three percent.³

Studies shows that approximately 10–15% of congenital structural anomalies are the result of the adverse effect of environmental factors on prenatal development. This means that approximately 1 in 250 newborn infants have structural defects caused by an environmental exposure and, presumably, a larger number of children have growth retardation or functional abnormalities resulting from non-genetic causes⁴

There are many sources of potential harm to both developing baby and mother, ranging from environmental concerns such as toxic chemicals, fumes and poisons to drugs including smoking and alcohol.⁵

More than 90% of pregnant women take prescription or nonprescription (over-the-counter) drugs or use social drugs (such as tobacco and alcohol) or illicit drugs at some time during pregnancy. In general, drugs should not be used during pregnancy unless absolutely necessary because many can harm the fetus. About 2 to 3% of all birth defects result from the use of drugs other than alcohol.⁴

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The effect produced by a teratogenic agent depends upon the developmental stage in which the foetus is exposed. Placental transfer depends in both maternal metabolism and specific characteristics of the drugs. Exposure within the first 8 weeks result in an embryopathy and after 8 weeks, a fetopathy. Exposure to teratogenic agents during this period has the greatest likelihood of causing a structural anomaly. Since teratogens are capable of affecting many organ systems, the pattern of anomalies produced depends upon which systems are differentiating at the time of teratogenic exposure.⁶

2. Literature Survey

Studies related to the effects of drug during pregnancy

A study conducted on effects of anticonvulsants among newborns that were exposed in utero, born to mothers with epilepsy and who did not take anticonvulsants, or born to mothers without epilepsy or a history of seizures were compared. Birth defects occurred most frequently in infants exposed to anticonvulsants. About 20% of neonates exposed to 1 drug had birth defects; 28% exposed to 2 or more drugs had birth defects. Major birth defects were found in 4% of 223 babies whose mothers had taken 1 drug during pregnancy and in 8.6% of 93 whose mothers had taken 2 or more drugs.⁷

A study conducted to identify effect of Smoking and caffeine and alcohol intake during pregnancy in a northern population included 162 women who presented for pre natal care in 10 communities in the western Region of the Northwest. Result shows that 64% of women smoked, 57% ingested more than 300 mg of caffeine daily, and binge drinking were most frequent. Smoking was significantly associated with decreased birth weight and length. Alcohol intake, especially binge drinking, was significantly associated with decreased head circumference.⁸

A study on effects of alcohol and alcohol addiction studies had indicated that no level of alcohol is safe for the fetus while others indicated that it was advisable to limit alcohol intake to a certain number per day or a certain type of drink. Every drink that a woman consumed during weeks 8 to 13 of pregnancy increased the risk of an abnormally shaped upper lip, a smaller than normal head, and low birth weight. Each drink consumed was responsible for a 25% increase in lip abnormality, a 12% increase in head-size abnormality, and a 16% increase in the chance of low birth weight.⁹

Problem Definition

A study to assess the knowledge regarding effect of teratogens on fetus among eligible couple at selected community areas of Bangalore in a view to prepare information booklet.

3. Methodology / Approach

Research design:

The research design selected for present study was non-experimental descriptive research design

Variables

Study variables: knowledge regarding effect of teratogens on fetus

Attribute variable: Age, gender, years of married life, educational status, occupation, place of residence, type of marriage, congenital abnormality in family, habits, and information regarding effect of teratogens on fetus

Setting of the study:

The area selected for the data collection was villages coming under Palace Guttahalli, Health Center, and Bangalore.

Population:

Population of the study is eligible couple residing at selected villages, Palace Guttahalli

Sample and Sampling Technique

80 eligible couple who fulfill the selection criteria were selected as samples for the study

Criteria for selection of sample:

Inclusion criteria: Eligible couple

- Who are willing to participate in study
- Able to read and write in English or Kannada.

Exclusion criteria: Eligible couple

- where wife is pregnant,
- Medically advised for teratogen exposure.

Sampling technique

In this study non-probability convenient sampling technique was used to select the samples based on inclusive and exclusive criteria.

Sample size: The sample size for the present study was 80 Eligible couple.

Development of the tool:

After an extensive review of literature and discussion with the experts, structured knowledge questionnaire regarding effect of teratogens on fetus among eligible couple was developed and validated.

Reliability

- Reliability for the structured knowledge questionnaire was done by using Split Half method.
- The Reliability of the tool was for Kannada tool, $r = 0.64$ For English tool, $r = 0.77$.

Procedure for data collection

Formal permission to conduct study was obtained from the concerned authorities. The study was conducted during the month of November-December 2012 with 80 parents selected as samples using convenient-sampling technique. After introducing about self and purpose of the study, written consent from the samples was obtained assuring maximum anonymity, investigator conducted study by assessing knowledge using structured knowledge questionnaire, about 30 to 45 minutes was spent by each subject for answering the questions each time.

Plan for data analysis

The data analysis was planned to include descriptive and inferential statistics.

Descriptive statistics

- Frequency and percentage distribution was used to describe knowledge, and socio-demographic data.
- Mean, mean percentage and standard deviation was used to describe level of knowledge.

Inferential statistics

Chi square test to find association between levels of knowledge and selected Socio-demographic variables.

4. Results & Discussion

Knowledge scores of the eligible couples revealed that 96% of eligible couples had inadequate knowledge, 4% had moderately adequate knowledge. The mean percentage score obtained for overall knowledge was 29.11 with SD of ± 2.79 which showed that majority of eligible couples had inadequate knowledge regarding effects of teratogens on fetus. The study finding was supported by a study was conducted to assess couple's knowledge about healthy pregnancy habits involving alcohol and substance use among 254 pregnant women and their male partners. Although the couples demonstrated good knowledge of healthy habits during pregnancy, they did not agree when the element of chance was considered. Median household income was more highly predictive of a pregnant woman's knowledge score than her partner's score. In turn, the subject's knowledge of healthy pregnancy habits as manifested in the assessment.

5. Conclusion

The present study assessed the knowledge regarding effect of teratogens on fetus among eligible couple. The overall knowledge of the samples in regards to effects of teratogens was found to be inadequate with mean percentage of 27.68% with SD of ± 4.02 , hence as the knowledge of samples improves. Study concluded that inadequate knowledge regarding effect of teratogens on fetus among eligible couple and the findings were influenced by selected demographic variables.

6. Future Scope

Exposure to teratogenic agents during pregnancy is a major concern. Broad Scope of this study is to identify deformity type and severity of abnormalities caused by teratogens, and make awareness to public, professionals, and especially pregnant mothers about ill effects of exposure to teratogens.

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