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RESEARCH ARTICLE

MATERNAL KNOWLEDGE ON PRECONCEPTION HEALTH CARE TOPICS AT MOI TEACHING AND REFERRAL HOSPITAL IN ELDORET, UASIN GISHU COUNTY, KENYA.

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Abstract

Preconception care is a set of interventions that identify and modify biomedical, behavioral and social risks to a woman's health and future pregnancies. Since its introduction through safe motherhood initiative, little is known about its existence in health care settings in Kenya yet adverse birth outcomes that may be prevented through preconception health are still prevalent. The study aimed at assessing women's knowledge on various preconception health care topics. Structured questionnaires were used to collect the data from a sample of 384 women attending reproductive health services at the hospital. The data was then analyzed quantitatively using the Statistical Package for Social Scientists (SPSS) program to obtain descriptive statistics and results presented using tables, bar charts and pie charts. The results revealed that very few women know about folic acid and its role in pre-pregnancy period. A significant number of the women are deficient in knowledge of the pre-pregnant risk factors that impact on maternal and fetal health. The study recommends that the importance and correct time of taking folic acid needs to be emphasized to all women of child bearing age. There is need for proper education on the specific pre-pregnancy risk factors that impact on maternal and fetal health.

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Introduction:-

Preconception health care has for a long time been perceived as a concept of the developed countries, but on the contrary preconception preparedness has existed since the "dark ages" in our setting. Preconception health is widely recognized as a critical component of maternal and child health care at the local and international levels (Gottesman, 2004). The main goal of preconception health care is to provide screening for risks, health promotion and education and interventions to address identified risks. The development of preconception health initiatives can be traced through the history of various international health movements, starting with the promotion of global primary health zone, safe motherhood initiatives and the women's rights and health movements (Abouzahr, 2003). Sheree, (2007) states that every minute around the world, 380 women become pregnant, 190 face unplanned pregnancies, 110 experience pregnancy related complications, 40 have unsafe abortions and 1 dies. Because of these facts, most developed nations have put in place preconception care programs to help reduce and or prevent pregnancy related

problems among women of reproductive age such as, low birth weight, congenital birth defects and premature births (Howse, 2008)

Folic acid supplementation for all women of reproductive age has achieved clear success in decreasing neural tube defects in developing fetuses. This accomplishment led to fortification of the US food supply with Folic acid in 1998 and the initiation of awareness campaign to educate women on the importance of taking Folic acid before pregnancy (Howse 2008). Since then the rates of neural tube defects have decreased by 26% in the US. Research on fetal origins of adult disease as reported by Elsinga *et al.*, (2008) demonstrated that certain adult onset diseases like hypertension and metabolic diseases are influenced by fetal epigenetic alterations in gene function Elsinga *et al.*, (2008) also asserts that gene silencing requires methyl groups and that Folic acid levels impact methyl group availability. She therefore concludes that Folic acid supplementation will impact not only the woman's future health and the immediate health of developing fetuses but also may have an impact on the future adult health status of the developing fetus.

Nutritional Risks:-

Overweight and obesity in pregnancy can lead to increased risk of hypertension, eclampsia, diabetes, miscarriage, premature delivery, birth injuries, neural tube defects and prenatal deaths (CDC, 2006). Women who are underweight may be at increased risk of having a premature or low birth weight baby (Berry *et al.*, 2000). Impaired fetal development and poor growth in infancy have been associated with increased risks of coronary heart disease, stroke, type 2 diabetes mellitus, the metabolic syndrome and osteoporosis in later life (De Kock & Walt, 2004). A woman can help reduce her risks of these complications by attaining a healthy weight before pregnancy.

Risky Behavior:-

On the other hand alcohol can readily cross the placenta and interfere with fetal development. High levels of alcohol are associated with harmful effects like fetal alcohol syndrome (De Kock & Walt, 2004). Smoking before pregnancy and during pregnancy is also associated with increased risk of ectopic pregnancy, miscarriage, stillbirth, placenta praevia and abruption, preterm birth, low birth weight and increased chances of genetic defects like cleft palate and lip (Howse 2008 and Gottesman, 2004).

Maternal Chronic Conditions:-

Maternal chronic illnesses like diabetes, hypertension and HIV/AIDS have various adverse pregnancy outcomes including, increased risks for congenital anomalies, preterm birth, abortions, placenta abruption among others (De Kock & Walt, 2004). The ability of preconception activities to improve obstetric outcome depends upon the recognition of risks and availability of effective interventions that are acceptable to women and their families (Jack, 2001). Pregnancy oriented risk profile is developed based on a personal and psychological assessment for age extremes, smoking, alcohol or drugs, inadequate diets, inadequate social support, high stress levels, family violence, mental illness, exposure to teratogens, inadequate finances, extremes of physical work and exercise and pregnancy readiness. Preconception care of women with known medical disease may prevent anomalies or newborn illnesses (Curtis, 2008). There is evidence that management of medical conditions such as diabetes mellitus, hypertension and phenylketonuria before conception can positively influence pregnancy outcomes (Curtis 2008). Also, in certain conditions such as epilepsy, modification of therapeutic regime before pregnancy will have benefit. Tay-sachs disease and thalassaemias have also been effectively reduced or eliminated through preconception counseling and care (Cunningham *et al.*, 2005).

Statement of the problem:-

Preconception health care is an important component of Safe Motherhood Initiative to improve maternal and fetal outcomes in pregnancy. However little is known about its existence in the current reproductive health services offered in Maternal Child Health and family planning clinics.

Adverse pregnancy outcomes that can be reduced or eliminated such as prematurity, congenital birth defects and low birth weight remain a prevalent health problem in Kenya (Simiyu 2004). In the year 2009, of the total (1253) admissions in the newborn unit at MTRH, four hundred and eighty four (38.6%) were preterm deliveries, thirty seven (2.9%) had neural tube defects, sixty five (5.2%) had low birth weight, twenty eight (2.2%) were macrosomic and eighty one (6.5%) had either single or multiple congenital abnormalities (Records and registry office MTRH). At the same time Ayaya *et al.*, (2001) points out that low birth weight neonates account for 11% of all deliveries. This constitutes 60% of the admissions at Kenyatta National Hospital and 37% of all admissions at Moi Teaching

and Referral Hospital (MTRH). Most of these complications mentioned above are attributed to nutritional problems, poor management of maternal chronic illnesses, risky behaviors such as smoking, alcohol and drug use as well as untreated sexually transmitted infections during the pre-pregnancy and pregnancy period. Most women do not initiate prenatal care early enough to prevent a number of serious maternal and child health problems. Also, the fetus is most susceptible to developing certain problems in the first 2-10 weeks after conception before prenatal care is normally initiated (Gottesman, 2004). Indeed many women are not aware that they are pregnant until after this critical period. Therefore, they are unable to reduce the risks to their own health and that of their baby unless intervention begins before conception.

Rationale of the Study:-

A large proportion of women enter pregnancy with pre-existing risks for adverse pregnancy outcomes such as uncontrolled maternal chronic illnesses, risky behaviors and nutritional deficiencies (Springer 2008) limited studies exist in Kenya that have explored maternal knowledge on preconception health care topics. Adverse pregnancy outcomes avoided through preconception care represent both an alleviation of human suffering and a reduced burden on the health care system. Findings from this study would assist health care providers with information necessary for improving maternal and child health services and in planning and formulating of such services where they are lacking.

Objectives:-

Specific objectives of the study were formulated as follow.

1. To find out some adverse pregnancy outcomes among women attending Maternal Child Health& family planning services at Moi Teaching and Referral Hospital (MTRH).
2. To determine the gestation at first antenatal visit among women attending Maternal Child Health& family planning services at MTRH.
3. To find out if there is pregnancy planning among women attending Maternal Child Health& family planning services at MTRH.
4. To determine knowledge on various preconception health care topics to include: folic acid, risky behaviors, pre-pregnancy nutritional risks and maternal chronic conditions that impact on pregnancy outcome among women attending Maternal Child Health& family planning services at MTRH.

Methodology:-**Study Area:-**

The study was conducted in Moi Teaching and Referral Hospital (MTRH). The hospital is located in Uasin Gishu County along Nandi Road 1 kilometer from Eldoret town. It offers both in-patient and out-patient services and serves as a major referral hospital in Western Kenya. The hospital offers a variety of services including Maternal Child Health and Family planning. The study was conducted specifically at sites offering reproductive health services or maternal child health services to include antenatal ward & clinics, family planning clinic, well child clinic and postnatal wards. Arrangements were made at the various locations mentioned above for privacy where a special room was identified where women sampled for the study were interviewed.

Study population:-

The study population consisted of women attending reproductive health services at MTRH.

Data collection tool:-

A structured questionnaire was used to collect data on knowledge on specific preconception health care topics as well as data on adverse pregnancy outcomes and pregnancy gestation at first antenatal visit .

Data collection procedure:-

Interviewers were trained in the data collection procedure to include ethical considerations, how to read questions and responses and proper recording of responses on the questionnaire.

Validity and reliability of the tool:-

Content validity of the questionnaire was ascertained by an obstetrician and midwife to ensure that the tool truly measured the knowledge on the various preconception health care topics. a. The tools were pre-tested at Uasin Gishu County hospital using 30 women attending reproductive health services.

Sampling and sample size:-

A sample size of 384 women was determined based on the Fisher' *et al.*, (1998) formula. Stratified sampling was used to group the respondents into homogeneous subsets. These included antenatal mothers, women seeking family planning methods, mothers who had brought their babies for immunization and post natal mothers. Data on attendance in the previous three months in each stratum was collected to guide the technique for sampling by getting the sampling frame since the population under study was dynamic. Data was collected for 2 weeks in each stratum. An extension beyond two weeks in each stratum was to be considered if the required sample size was not achieved by the end of the two weeks. Out of the sample size of 384 women, 100 were from postnatal ward, 50 from the family planning clinic, 134 from antenatal clinic and 100 from well child clinic. The numbers in each category was based on the previous attendance. Data collected included:

- Demographic data including age, parity, residence, level of education, religion, marital status.
- Past history of the client to include past medical, obstetric & gynecological history and family history. Gestational age at first antenatal visit (if ever pregnant or was pregnant). Pregnancy planning (at the correct time) planned but (not at the correct time) or unplanned.
- Specific knowledge regarding preconception care in the following areas: Folic acid use and supplementation, nutritional status (underweight or overweight prior to pregnancy), risky behaviors that can affect pregnancy outcomes (alcohol and smoking) and maternal chronic conditions and their effect on pregnancy outcomes

Data Analysis:-

Data collected was analyzed quantitatively using the Statistical Package for Social Scientists (SPSS) program. All the completed questionnaires were put into a database and cleaned. The questions and responses were then coded. The proportions and frequencies of the study participants on specific responses stated were computed. These were then tabulated or presented in bar charts or pie charts for illustration. Descriptive statistics such as mean, standard deviation, median and range were used for the continuous variables like age, while frequency listings were used for categorical variables like marital status.

Results and Discussion:-**Socio-Demographic Characteristics:-**

The socio-demographic characteristic of the sampled population interviewed is depicted in table 1 below. This table indicates the frequency and percentages of the age, marital status, occupation, level of education and religious affiliation of the respondents. Of the 384 women studied, 283 (73.7%) were married. Their mean age in years was 25.5 ± 6.7 . A third of them i.e. 129 (33.6%) were housewives and only 43 (11.2%) had tertiary level of education. Three quarters 287 (75%) were protestants.

Table 1:- Socio-demographic characteristics.

| Characteristic | Number /Percentage | |
|-----------------------------------|--------------------|---------|
| Age (yrs) | | |
| 18-24 | 197 | (51.3%) |
| 25-34 | 157 | (40.9%) |
| 35-49 | 30 | (7.8%) |
| Marital status | | |
| Single | 91 | (23.7%) |
| Married | 283 | (73.7%) |
| Separated/divorced | 10 | (2.6%) |
| Occupation | | |
| Employed | 100 | (26.0%) |
| Business women | 71 | (18.5%) |
| Housewife | 164 | (42.7%) |
| Student | 49 | (12.8%) |
| Highest level of education | | |
| None | 124 | (32.3%) |
| Primary | 148 | (38.5%) |
| Secondary | 69 | (18%) |
| Tertiary level | 27 | (7%) |
| University | 16 | (4.2%) |

| Religious affiliation | | |
|-----------------------|-----|---------|
| Catholic | 92 | (24%) |
| Protestant | 287 | (74.7%) |
| Muslim | 3 | (0.8%) |
| Others | 2 | (0.5%) |

The socio-demographic data revealed that majority of the interviewees were between the ages 18-24, married, housewives, below secondary level of education and majority were also Protestants. The young age with no income and low level of education could have also contributed to knowledge gap on preconception care.

Past obstetric History:-

Adverse Pregnancy outcomes:-

The study revealed some adverse pregnancy outcomes among the women interviewed from their past obstetric history. Among the 384 women interviewed 144 (37.7%) had had a previous adverse pregnancy outcome of which majority 63 (43.8%) had a preterm baby, 26 (36.4%) had a miscarriage and 9 (13.2%) had a baby with congenital birth defect as shown in figure 1 below.

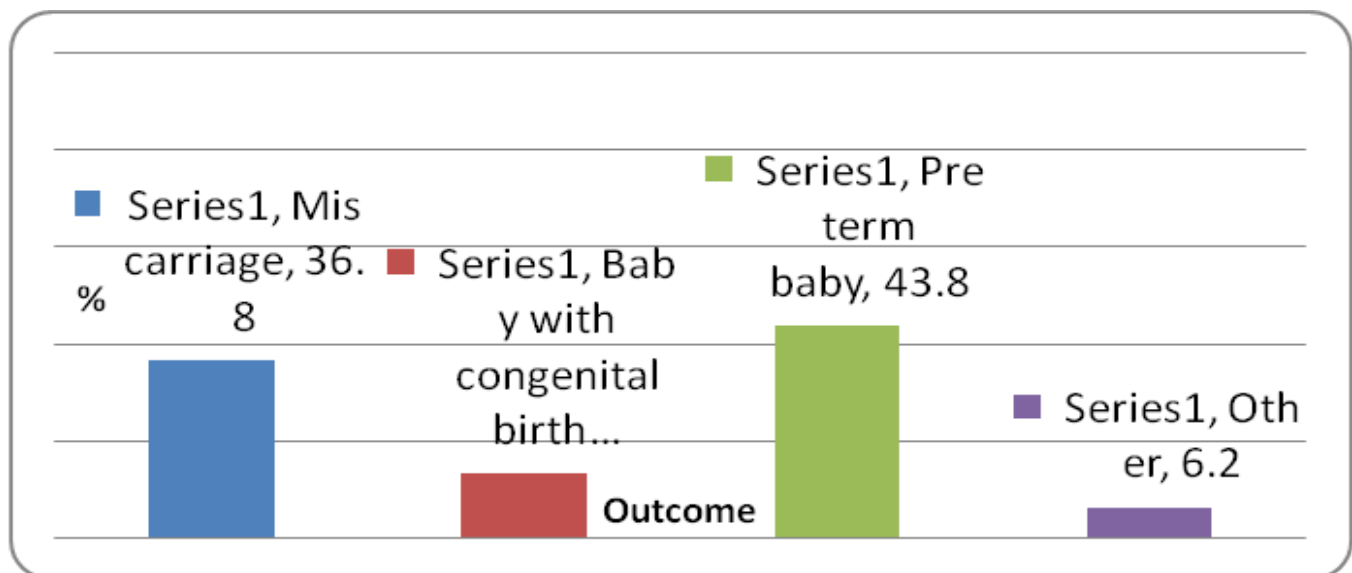


Figure 1:- Adverse pregnancy outcomes among women interviewed (N=144).

Planning of pregnancy and gestation at first antenatal visit:-

Majority of the women 224(58.3%) initiated their first antenatal visits at 3-5 months pregnancy gestation either for the current pregnancy if pregnant or last pregnancy if ever been pregnant. Also more than half of the women interviewed, 205 or 53.4% had unplanned pregnancy either for the current pregnancy if pregnant or the last pregnancy if they have ever been pregnant. Assessment on the gestation at first antenatal visit showed results as presented in the histogram in figure 2 below. Most women are therefore at risk of not being able to prevent some birth defects that occur during the embryonic stage hence need for education and awareness on preconception health care which can prevent or reduce major birth defects i.e. neural tube defects. Still a significant number did not attend antenatal care. This shows that some women are at a higher risk of having adverse pregnancy outcomes due to lack of basic care in pre-pregnancy and pregnancy period.

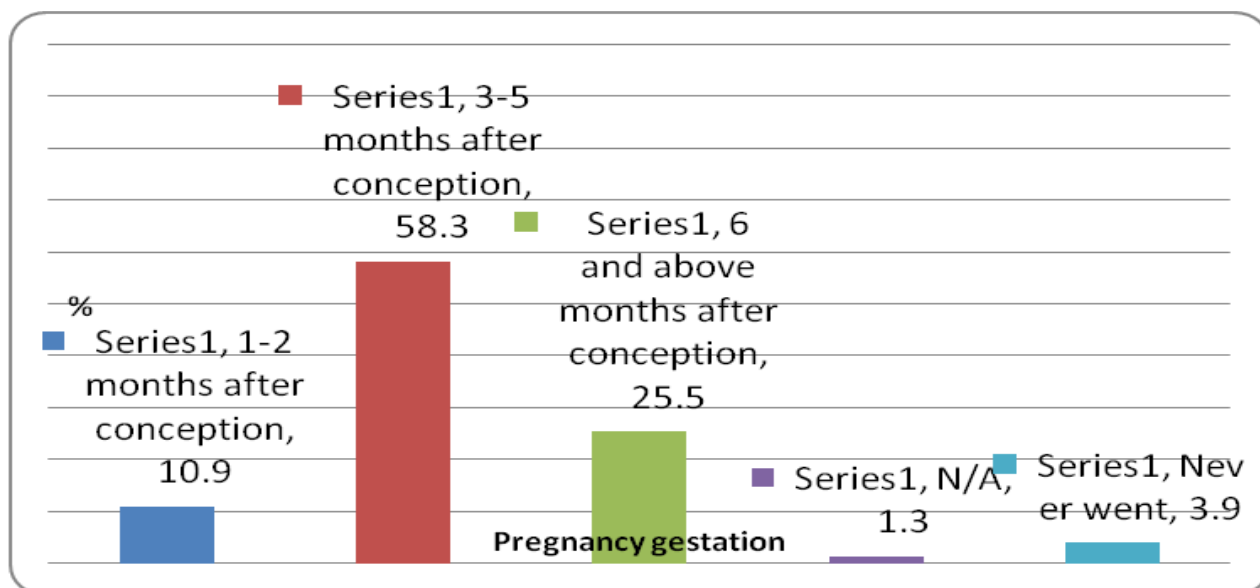


Figure 2:- Pregnancy gestation at first antenatal visit (N=384).

Knowledge on folic acid and nutritional risks:-

Folic Acid:-

Among the 384 women studied, 196 (51%) had never heard about folic acid and 278 (72.4%) did not know the right time to take it. A quarter of the women 79 (20.6%) said folic acid helps in formation of blood, 61(15.8%) associated it with prevention of neural tube defects while 244 (63.5%) did not know its role. The information gathered on knowledge about the correct time of taking folic acid was presented in a histogram shown in figure 3 below. Majority of the women who knew about folic acid got the information from the health care provider or the radio. These findings could be attributed to poor communication between health care workers and women of reproductive age about the importance of taking folic acid. Most of the time health care workers give women drugs/supplements without telling them the name and the specific function of the drug or supplements. Most women could describe folic acid by color and size and not by name This study results contradicts Prue (2006) who found out that most women had heard about folic acid 99%and knew the right time to take it. however the results of this study are similar to Yousef *et al*, (2002) who found out that women in the United Arab Emirates had low knowledge on folic acid and its role.

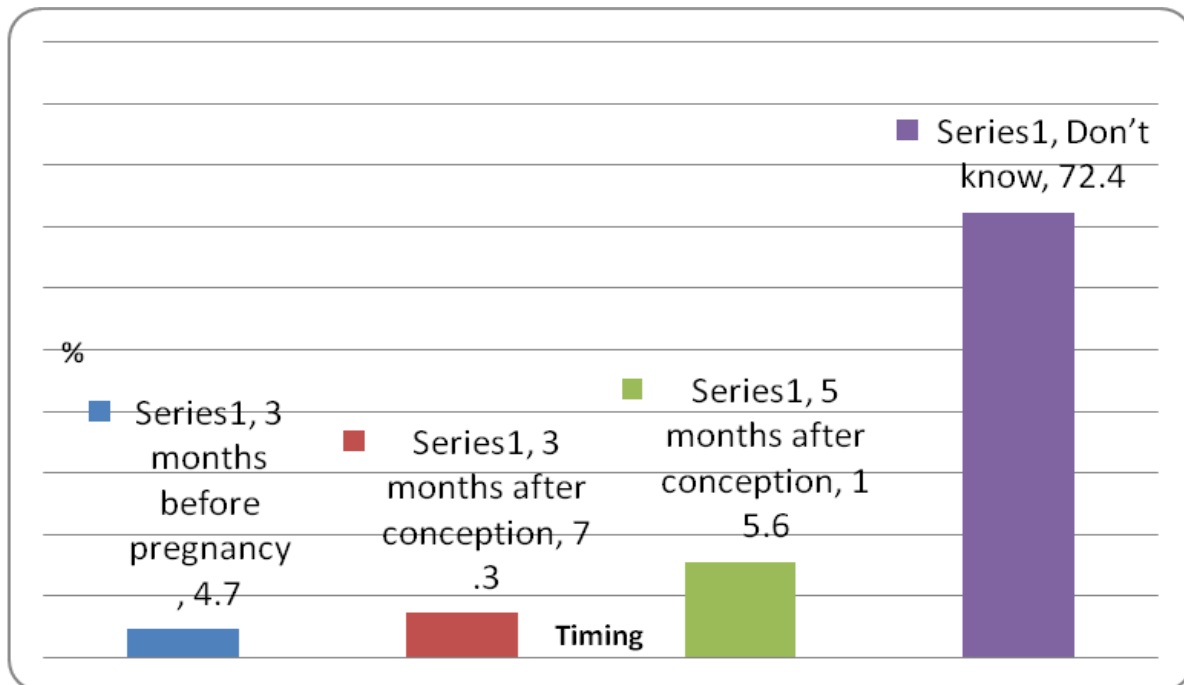


Figure 3:- Correct time of taking folic acid Nutritional risks

Respondents' choice of risks that need intervention before pregnancy and nutritional risks that need modification were presented in the histogram shown in figure 4 below. Giving birth to a low birth weight baby was chosen by women as the most common consequence of being underweight before pregnancy or gaining little weight throughout pregnancy (53%). Still a significant percentage (42%) did not know the consequences. Of the nutritional risks that need modification or treatment before pregnancy, anemia (37.2%) and obesity (45.1%) were the two most common risks chosen by the women. But 10.2% did not identify any of the risks. These results may be attributed to health care providers not communicating effectively to women about specific nutritional risks that may impact on pregnancy outcome. These results are similar to those done by the Revere Pregnant Weight management study at Massachusetts General Hospital on Nutrition Intervention for the promotion of a healthy weight gain during pregnancy (2008), which concluded that that women know little if anything about the impact of overweight and obesity on pregnancy and health care providers are unsure how to effectively address the problem with their patients.

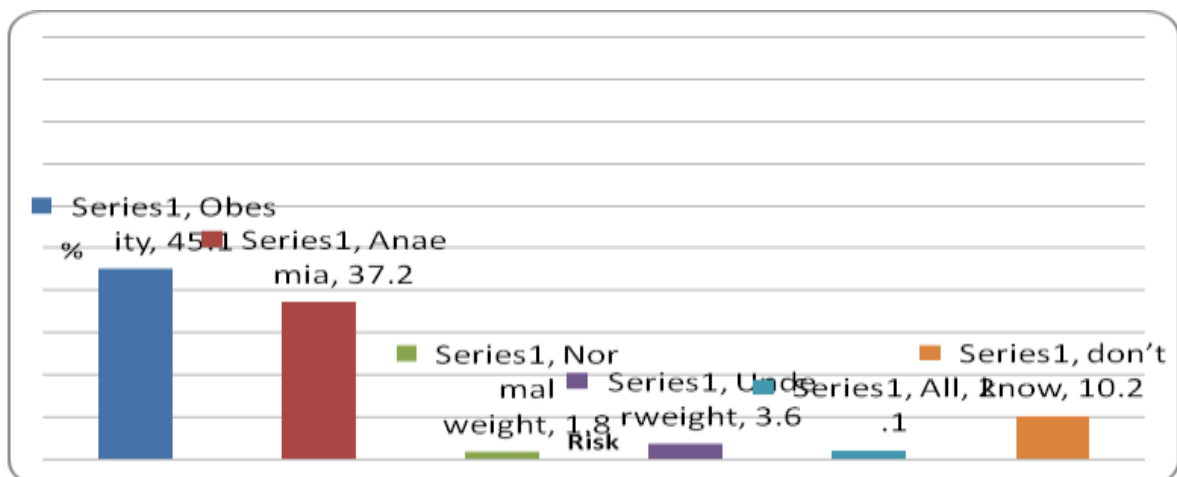


Figure 4:- Nutritional risks that need modification before pregnancy.

Knowledge on risky behavior (Alcohol and Smoking):-

Majority of the interviewees (97.1%) said that women should not drink alcohol in the pre-pregnancy and pregnancy period and that alcohol can lead to certain illness in the baby (83.4%). Most of the women (75.3%) had not been spoken to by a health care provider about the effects of alcohol in pregnancy. Responses on smoking in the pre-pregnancy and pregnancy period are shown in figure 5 below. Majority (92.2%) of the women knew it is unsafe to smoke in the pre-pregnancy and pregnancy period. Most women (87.4%) also knew that smoking could lead to complications in the mother and the fetus, and that they can be affected by passive smoking. Few women (25.2%) had been informed by a health care provider about smoking and its effects in pregnancy. These results could be due to health care providers assuming that majority of the women do not drink nor smoke and therefore do not educate women on the effects of alcohol and smoking in the pre-pregnancy and pregnancy period.

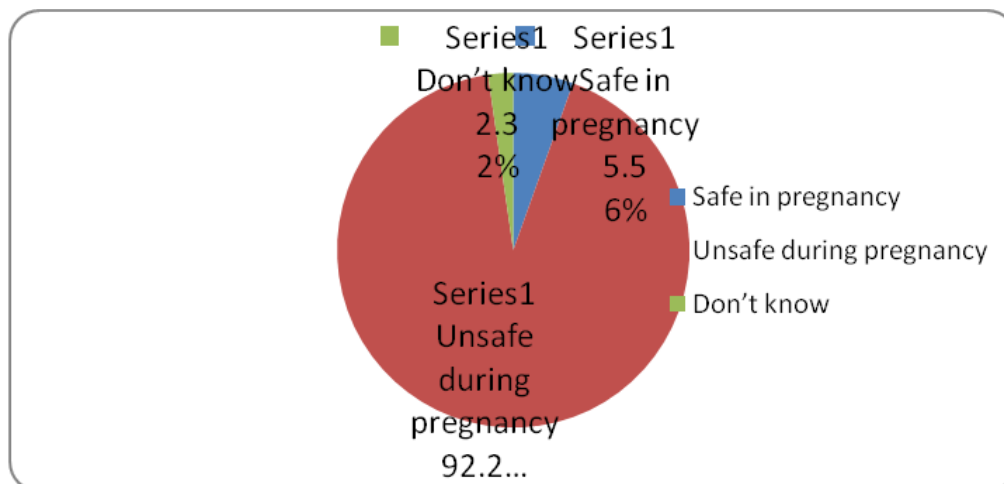


Figure 5:- Opinion about smoking in pregnancy

Knowledge on maternal chronic conditions:-

Diabetic women and pregnancy:-

Slightly more than half of the women interviewed 195 (51.2%) did not know what women with diabetes should do before pregnancy. However 48% of the women interviewed agreed that women with diabetes should seek medical attention before conception. Analysis of the responses gave the following results as shown in the pie chart in figure 6 below. This result could be attributed to lack of education on the specific chronic conditions that affect pregnancy outcome among women of reproductive age.

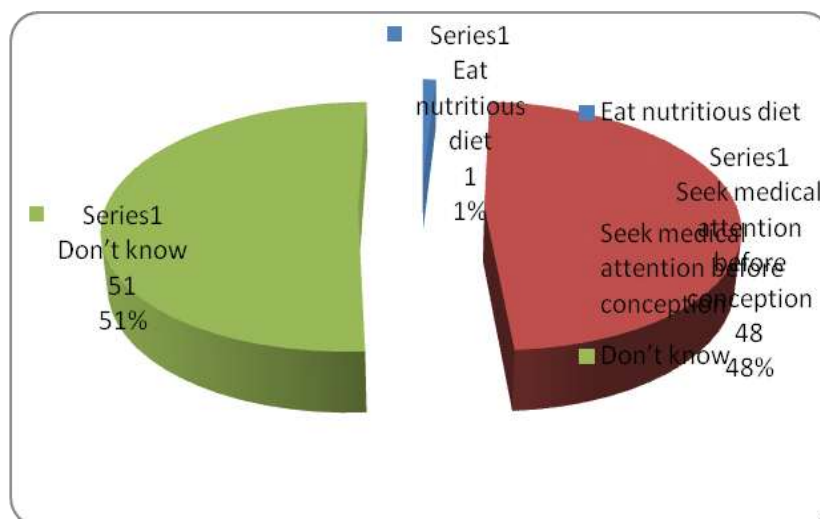


Figure 6:-What diabetic women should do before pregnancy?

Knowledge on risk of mother being HIV positive in pregnancy:-

With regard to the knowledge about the major risk associated with HIV positive condition in pregnancy, majority of the mothers 356 (93.2%) chose Mother to Child Transmission of HIV as the major risk of a mother being HIV positive in pregnancy as shown in figure 7 below. However 2.4% did not know the risk of a mother being HIV positive in pregnancy. This could be attributed to the fact that Prevention of Mother to Child Transmission (PMTCT) of HIV has been integrated into reproductive health services as well as provider initiated counseling and testing of HIV, hence most women are more knowledgeable about mother to child transmission of HIV.

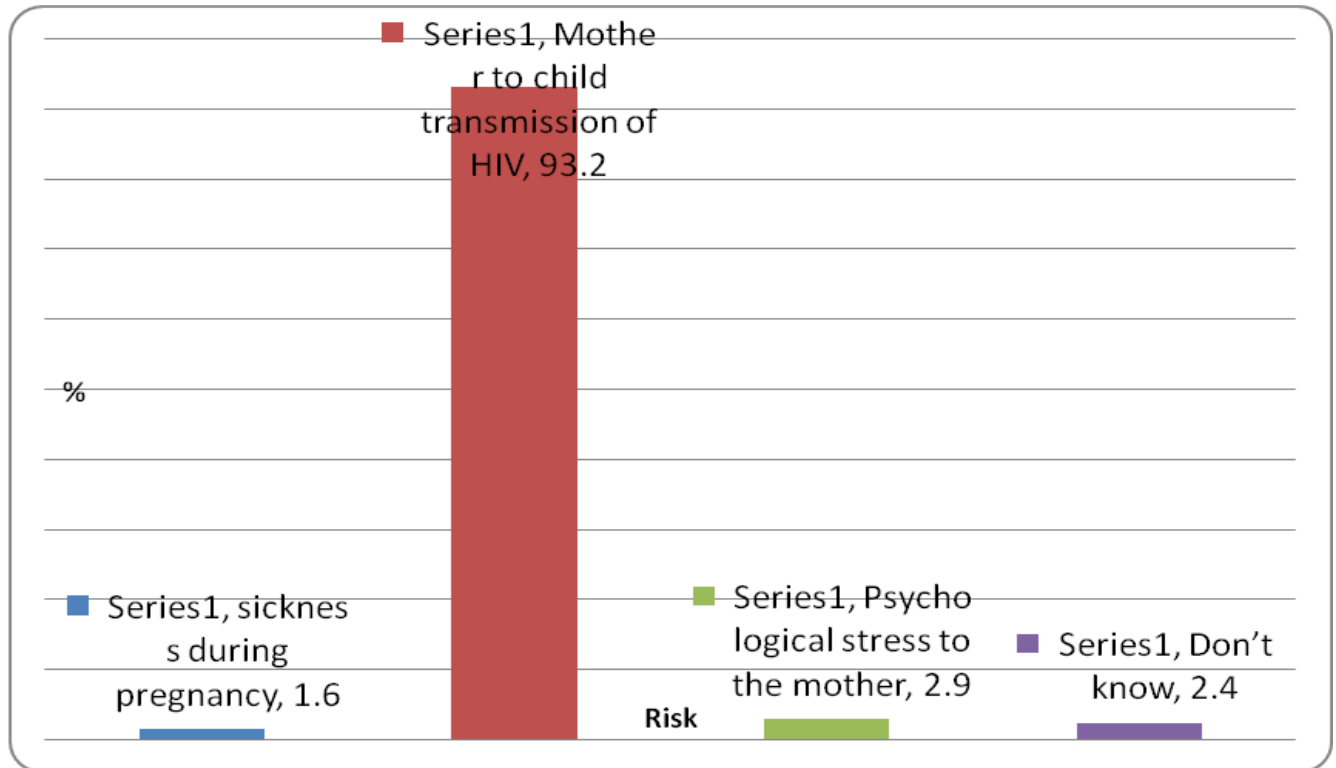


Figure 7:- Knowledge of Risks of a mother being HIV positive in pregnancy

Knowledge on uncontrolled hypertension in pregnancy:-

Most women (57.2%) chose miscarriage as a major risk for a woman with uncontrolled hypertension before and during pregnancy. A significant percentage (36.1%) did not know the risk of uncontrolled hypertension. These results could be attributed to lack of education among women on chronic maternal conditions that impact on pregnancy outcome.

- The study specifically sought to determine the gestational age at which pregnant mothers go for antenatal care as well as pregnancy planning among women of reproductive age. Knowledge regarding various preconception health care topics like folic acid, pre-pregnancy nutritional risks, risky behaviors and maternal chronic conditions that impact on pregnancy outcome was also sought among the women. The study established that:
- Most women do not plan their pregnancies and seek for antenatal care late in the second and third trimester.
- Most of the women seeking Maternal Child Health and family planning services at the hospital know little about folic acid and its role in pregnancy despite the availability of folic acid in most health care systems.
- A significant number of the women are deficient in knowledge of the risk factors that impact on maternal and fetal health.

Conclusion:-

In view of these Findings, the study concludes that:-

- Preconception health care clinics should be established within the maternal child health and family planning services to address risks that may impact negatively on pregnancy outcome and to be accessible to most women in need of the service.
- The importance and correct time of taking folic acid and pregnancy planning needs to be encouraged among women of child bearing age so that they are able to benefit from preconception health care services and be able to seek for early antenatal care.
- There is also the need for proper education on the specific risk factors that impact on maternal and fetal health to all women of child bearing age.

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