The Role of Health Education in Promotion of Antenatal care among Women in Wad Medani Health Centers, Gezira state, Sudan (2015-2016)

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A Dissertation

Submitted to the University of Gezira in partial fulfillment of the Requirements for the Award of the Degree of Master of Science in
Health Education
Primary Health Care and Health Education Center
Faculty of Medicine

November, 2017
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DEDICATION

This research is dedicated to the memory of my father who suddenly died in 10/10/2010.

And to the wisdom of my mother not only encouraged me to finish this research but inspired me to do more.
ACKNOWLEDGMENT

I wish to thank Allah for offering me good health strength, wisdom and courage to carry out this study,

Again I would like to thank Gazira university faculty of medicine primary health care, health education center for giving me this opportunity

My thanks to my supervisor Dr. Salwa Elsanousi Hussein and CO. Supervisor Dr. Yasir Mohamed Elhassan For their unlimited consultation and construction criticism.

My thanks to owed to directors of health centers who granted me permission to carry out the Research Special thanks to my mother which encouraged me and supported me and my brothers & sisters without them wouldn't have been possible.
Abstract

Improving maternal health is one of the eight millennium development goals it is widely accepted that the use of maternal health services helps in reducing maternal morbidity and mortality. Mothers' ignorance of antenatal care during pregnancy follow up may lead to antenatal complications which lead to the mothers' death. Health education is one of the used tools for stapling mothers' knowledge and behaviors. This study was carried out in Wad Medani town. The objective of this study was to study the effect of health education in promotion of antenatal care among pregnant women in the first and second trimester. Initial surveys for evaluating the knowledge and attitude and practices among the study group and the control group for pregnant women at the first and second trimester who come to the clinic intervention program carried out for a month. Different ways were used including lectures. Evaluating the results of intervention using pre questionnaire that was used in the initial survey in order to compare the pre and post results. The latest intervention showed high results in a visit to the doctor in the first, second trimesters and knowledge about the vaccination against tetanus and knowledge about the benefit and use of folic acid and iron. Also there was a big impact on the knowledge of mothers for exclusive breast feeding and solving problems faced by mothers in the first few days of birth. The study recommended a design of health education program for the promotion of antenatal care in order to raise the level of knowledge, attitude practices for pregnant women.
دور التثقيف الصحي في ترقية رعاية مرحلة ما قبل الولادة بين النساء في مراكز ودمدني الصحية (2015 - 2016)
نعمة عمر عثمان إدريس
ملخص الدراسة

تحسين رعاية ما قبل الولادة هو أحد أهداف التنمية في الألفية الثالثة. ومن المقبول بصورة واسعة أن استخدام صحة الأمومة يساعد في تقليل نسبة إنتشار المرض والوفيات. جهل الأمهات برعاية مرحلة ما قبل الولادة أثناء متابعة الحمل قد يؤدي إلى مضاعفات ما قبل الولادة التي قد تؤدي إلى موت الأمهات.

التثقيف الصحي هو أحد الأدوات المستخدمة في تثقيف معرفة الأمهات وسلوكهن. أجريت هذا الدراسة في مدينة ودمدني وكان هدف هذه الدراسة هو دراسة تأثير التثقيف الصحي في ترقية رعاية ما قبل الولادة بين النساء الحوامل في الثلث الأول والثاني. تم إجراء مسح أولي لتقديم المعرفة والسلوك والمارسات بين مجموعة الدراسة ومجموعة الضابطة للنساء الحوامل في الثلث الأول والثاني والثالث جنّب لبرنامج التدخل السريري لمدة شهر تم استخدام طرق مختلفة تتضمن المحاضرات وتقديم نتائج التدخل باستخدام الاستبيان القبلي الذي تم استخدامه في المسح الأولي من أجل مقارنة النتائج القبلية والبعدية. وأظهر التدخل الأخير نتائج عالية في زيارة الطبيب في الثلث الأول والثاني والمعرفة حول التطعيم ضد مرض الكزاز والمعرفة حول فوائده واستخدام حمض الفوليك والحبوب والفيتامينات أيضًا كان هناك آثراً كبيراً في معرفة الأمهات في الأيام الأولى القليلة الولادة. أيضًا كان هناك آثراً على السلوك الغذائي وتناول الوجبات المحتوية على البروتين الحيواني والبروتينات النباتي والفيتامينات والفواكه والخضروات. أوصت الدراسة بتعميم برنامج التثقيف الصحي لترقية رعاية ما قبل الولادة من أجل رفع مستوى المعرفة والاتجاهات والمارسات للنساء الحوامل.
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List of abbreviations

ANC ...................................................... antenatal care

MMR ..................................................... maternal mortality rate

WHO ...................................................... world health organization

PMR ...................................................... prenatal mortality rate

LBW ...................................................... low birth weight

UNICEF .............................................. United Nations children fund

SPSS ..................................................... Statistical package for social sciences

PHCS ..................................................... primary health care centers

MDGs: .................................................... Millennium developmental goals

HIV/AIDS .............................................. Human immuno- deficiency

virus/acquired immune-deficiency syndrome
CHAPTER (1)

Introduction:-

Health Education, one of the essential elements in the delivery of Primary Health Care as dictated by the Alma Ata conference 1978 is expected to be conducted from the Primary Health Centers (PHCs) (1) The national “Plan of Action” for activities of the PHCs, which is revised annually, emphasizes that health information on antenatal care and related matters must be properly disseminated so that women can improve their knowledge, attitude and skills for a healthy pregnancy and delivery(2). Health Education on this subject is also promoted through the mass media, including the national TV and a wide range of informative literature distributed. In other countries too (3) efforts are made by the health-care providers to ensure that there is adequate health awareness among pregnant women. However, several studies have shown that many women either lack knowledge(4) This indicates that there is the need for a more effective drive to educate women and help them to acquire appropriate knowledge and develop attitudes towards a healthy pregnancy The current study was, therefore, conducted on Pregnant women who used the PHC facilities in Wadmadani town the studies have been conducted on the role of health education in promotion of ANC. However in Sudan there is no clear data regarding role of health education in promotion of ANC this study intended to study the effect of health education on promotion of ANC among pregnant women at Abosnoon and Abu Ella health centers, Wad medani central Sudan.

Definition of antenatal care :-

Antenatal care (ANC) is a key strategy to improve maternal and infant health that provide important determinants of maternal and prenatal mortality rate ,ANC is a routine care for healthy pregnant women (5). which includes education ,counseling, screening , treatment , monitor and to promote the well-being of the mother and fetus (6) The detection of high –risk pregnancies through ANC has been advocated as a good tool to reduce maternal mortality in developing countries (7) Refers to the regular medical and nursing care recommended for women during pregnancy (8) antenatal care is type of preventative care with goal of providing regular checkups that allow doctors or midwives to treat and prevent potential health problem Antenatal care
visits provide important intervention and programs for the pregnant women and her unborn child.(9)

**Benefits of antenatal care**

- Antenatal care can prevent complications. A small minority of pregnant women develop complications such as hypertension and diabetes. Early diagnosis means they can be properly monitored and treated
- Antenatal care provides caregivers with an opportunity to explain the importance of proper nutrition during pregnancy and breastfeeding to expecting moms.
- Antenatal classes will help expecting parents to gain insight and get fact-based information on pregnancy, birthing options, breastfeeding and caring for a newborn baby so that they can make informed choices.
- Antenatal classes also give partners an opportunity to understand the whole process of pregnancy, birth and early parenting (10)

**Statement of the problem:-**

ANC is a necessary component of maternal health in order to identify complications and danger signs during pregnancy. Regular ANC visits can provide some benefits for the women such as a strong relationship between women and the health care provider that can result in reducing complications during pregnancy.

**Justification:-**

- Lack of awareness of mother about importance of ANC & home care during pregnancy. (11)
- Respectively suggested gabs in access to and quality of maternal and neonatal health services. (12)
- most of these maternal death 64.4% had no antenatal care ,the rate 35.6% had antenatal care ,17.4% at the level of consultant In Gazira maternal mortality Rate was 169 in 2010 total number was in hospital and 17 in community. (13)
General Objective:–

To study the effect of health education on promotion of antenatal care among pregnant women at first & second trimester.

Specific Objective:–

- To implement health education program addressing the importance and benefit of utilization of antenatal care.
- To assess the effect of health education program in improving the knowledge, attitude, practice of the target group toward antenatal care.
CHAPTER (2)

LITERATURE REVIEW

INTRODUCTION:-

Many health problems in pregnant women can be prevented, detected and treated during antenatal care visits with trained health workers. WHO recommends a minimum of four antenatal visits, comprising interventions such as tetanus toxoid vaccination, screening and treatment for infections, and identification of warning signs during pregnancy, globally the proportion of women receiving antenatal care at least once during pregnancy was 83% for the period 2007–2014. However, only 64% of pregnant women received the recommended minimum of four antenatal care visits or more, suggesting that large expansions in antenatal care coverage are still needed. Each of the ANC visits consists of a well-defined set of activities related to three equally important general areas, namely screening for conditions likely to increase adverse outcomes, providing therapeutic interventions known to be beneficial, and educating pregnant women about planning for a safe birth, emergencies during pregnancy, and how to deal with them. There were many studies done which found that educated women have better pregnancy outcomes compared with uneducated women and that education during the antenatal period can reduce pregnancy and delivery complications. Education is an important component of prenatal care, particularly for women who are pregnant for the first time. The three studies done in Gambia, supported that provision of information and education is a major component of ANC.
Indicators for global monitoring of reproductive health:

1. General Fertility Rate (GFR)
   Total number of live births for one thousand women at child bearing age (15-49)

2. Contraceptive Prevalence Rate (CPR)
   Percent of women of reproductive age (15-49) who are using (or whose partner is using) a contraceptive method at a particular point in time

3. Maternal Mortality Ratio (MMR)
   Annual number of maternal deaths per 100,000 live births

4. Antenatal Care Coverage
   Percent of women attended at least once during pregnancy, by skilled health personnel (excluding trained or untrained traditional birth attendants), for reasons relating to pregnancy

5. Percent of Births Attended by Skilled Health Personnel
   Percent of births attended by skilled health personnel (excluding trained or untrained traditional birth attendants)

6. Availability of Basic Essential Obstetric Care
   Number of facilities with functioning basic essential obstetric care per 500,000 populations

7. Availability of Comprehensive Essential Obstetric Care
   Number of facilities with functioning comprehensive essential obstetric care per 500,000 populations
8- Prenatal Mortality Rate (PMR)

Number of prenatal deaths per 1,000 total births

9- Low Birth Weight Prevalence (L BW)

Percent of live births that weigh less than 2,500g

10- Positive Syphilis Serology Prevalence in Pregnant Women

Percent of pregnant women (15-24) attending antenatal clinics, whose blood has been screened for syphilis, with positive serology for syphilis

11- Prevalence of Anemia in Women

Percent of women of reproductive age (15-49) screened for hemoglobin levels with levels 110g/l for pregnant women, and 120g/l for non-pregnant women

12- Percent of obstetric and Gynecological Admission owing to abortion

Percent of all cases admitted to service delivery points providing in-patient obstetric and gynecological services, which are due to abortion (spontaneous and induced, but excluding planned termination of pregnancy).

13- Prevalence of Infertility in Women

Percent of women of reproductive age (15-49) at risk of pregnancy (not pregnant, sexually active, non-contraception, and non-lactating) who report trying for a pregnancy for two years or more.

14- HIV Prevalence among Pregnant Women

Percent of pregnant women (15-24) attending antenatal clinics, whose blood has been screened for HIV and who are sero-positive for HIV
15- Knowledge of HIV-related Prevention Practices

Percent of all respondents who correctly identify all three major ways of preventing the sexual transmission of HIV and who reject three major misconceptions about HIV transmission or prevention.(19).

Antenatal Care provides an important opportunity for discussion between a pregnant woman and a health care provider about health behavior during pregnancy and about recognizing complications that may arise during pregnancy. Antenatal Care personnel should also provide information on postpartum care newborn care, and breastfeeding, signs of problems, and appropriate action to take.(20) Pregnancy is one of the most important periods in the life of a woman, family and society. Extraordinary attention is therefore given to antenatal care by the health care system of most countries. The goal of antenatal care is to prevent health problems in both infant and mother and to see that each newborn child has a good start. The care provided needs to be appropriate and not excessive. New technologies need to be implemented continually, while order services need to be reconsidered the care for each pregnant woman needs to be individualized based on her own needs and wishes. Pregnancy is a period at which a woman’s health is placed at risk. However, health care professionals providing antenatal care (ANC) can reduce that risk by monitoring women health regularly and offering both preventive and curative services. Worldwide an estimated 515,000 women die of pregnancy-related causes, a rate of over 1,400 maternal deaths each year. The overwhelming majority of this deaths and complication occur in developing countries effective ANC appropriate emergency treatment of complication and competent referral level encompass the most effective answers to reduction of maternal deaths (21). According to UNICEF/WHO about 70% of women worldwide had at least one antenatal care visit with a skilled provider during pregnancy. ANC coverage was extremely high in the industrialized countries, with 98% of women having at least one visit. In the developing world, antenatal care use was around 68% the region of the world with the lowest levels of use was south, where only 54% of pregnant women have at least one antenatal care visit. In the middle East and north Africa use of antenatal care was somewhat higher (65%), where in sub-Saharan Africa about (68%) of women report at least one antenatal visit. The levels in the remaining regions of the world range from 82% to 86% (22). Antenatal care (ANC) is one of the four pillars initiatives of the Safe Motherhood Initiative; however, its relative contribution to
maternal health has been under debate. While many of routine antenatal care procedures have little effect on maternal mortality and morbidity, some of these have been ascertained as beneficial \(^{(23)}\) antenatal care and investigation is an Important part of preventive medicine. Its objective is to maintain the women in health of body and mind, to anticipate difficulties and complications of labor to ensure the birth of healthy infant, and to help the mother rear the child. Antenatal care provides advice, reassurance, education, support for the woman on screening programs and detects the problems that make the pregnancy high risk one \(^{(24)}\) There are many socio-economic and cultural factors which act as barriers to the use of antenatal care \(^{(25)}\) Although, it can't be claimed that antenatal care is the only solution for the high maternal and prenatal death in the developing world, but it can help to reach the Millennium Development Goals for the maternal and child mortality \(^{(26)}\) World Health Organization recommended four antenatal visits for the low risk pregnancy \(^{(27)}\) There is tendency towards late attendance for the first antenatal care visit in developing countries \(^{(28)}\) and the coverage in Sub-Saharan Africa lags far behind \(^{(29)}\) maternal mortality continues to be a major problem. According to a World Health Organization (WHO) report \(^{(30)}\) in Indonesia Maternal Mortality Ratio (MMR) continues in the high range of 420/100,000 live births, while coverage of births assisted by skilled providers is still low. The deaths are due mainly to five major causes: hemorrhage; followed by eclampsia, infection (sepsis), abortion complications and obstructed labor\(^{(31)}\) The global MMR in 2010 was 210 maternal death per 100,000 live birth, down from 400 maternal deaths per 100,000 live birth in 1990 .The MMR in developing regions \((240)\) was 15 time higher than in developed regions sub–Saharan Africa had the highest MMR at 500 maternal deaths per 100,000 live births ,while Eastern Asia had the lowest at 37 maternal deaths per 100,000 live births .A total of 40 countries had high MMR ,in 2010 of these countries, Chad and Somalia had extremely high MMRs ,the Sudan one of the eight highest MMR countries \((730)\) Sudan, which is the largest country in Africa with 40 million inhabitants, has one of the highest rates of maternal and prenatal mortality .Prenatal mortality estimated annually that there are 4 million neonatal deaths, approximately 3.3 million stillbirths and 99% of these deaths occur in low –income and middle income countries.\(^{(33)}\) We have previously suggested that the high maternal and prenatal mortality in Sudan could be reduced by increasing the use of antenatal care \(^{(34)}\)
In a study was carried out in kassala, eastern Sudan during September-October 2009 Out of 900 women investigated for antenatal care coverage (90%) women had at least one visit. Only 11% of the investigated women had ≥four antenatal visits, while 10 % had not attended at all. Out of 811 women who attended at least one visit, (59.6%), (37.4%) and (3.1%) women attended antenatal care in the first, second and third trimester, Antenatal care showed a low coverage in kassala, eastern Sudan. This low coverage was associated with high parity and low husband education (35). A study was conducted in Khartoum State, Sudan, between August and December 2002. Interviews were held among a representative sample of 400 married women aged 15-49 years from both urban and rural localities found that Utilization of antenatal care and Tetanus Toxoid vaccine for pregnant women were used as dependent variables while socio-economic status, place of resident, women's education, quality of care and walk-time were applied as independent variables. Utilization of routine antenatal health care services was approximately 5 times and application of Tetanus Toxoid-vaccination was 3.7 times higher in urban women as compared to women in rural area (36)

Factors influencing utilization of antenatal care services:-

1- socio-demographic factors:-

Socio demographic factors influencing utilization of maternal health care services in less developed countries include residence or distance to health services, age, parity, economic status and the problems during pregnancy. The levels of antenatal care utilization were also found to be high among women with higher economic status, better education, few children, and employed women. In another related research conducted in Nicaragua by Lubbak and Stephenson, 2008. (37) Poverty levels in Africa are very high and in Ghana particularly, it has been estimated that forty nine percent of Ghanaians earn less than a dollar a day (UNICEF, 2000) study on the determinants of maternal health services in the rural India, it was found that, there is a correlation between household income and utilization of maternal health services .The client’s level of education could also influence pregnant women’s utilization of the health facilities as well as the understanding of the importance of seeking health care promptly. Low educational status has been identified as a major barrier to the utilization of health care services especially ANC. These women could easily be persuaded by their grandmothers not to attend ANC and to deliver their
babies at home.\textsuperscript{(38)} Lack of education can also negatively affect the women’s comprehension of important information and the ability to make informed decisions including the awareness of their own rights\textsuperscript{(39)}

2-Knowledge about A.N.C:-

Knowledge was identified as a major structural variable that could influence the decision on whether to utilize ANC services. Women need information about pregnancy and ANC services during their pre-conception period so that they can make informed decisions when pregnant. Health education programs during ANC services should inform the women about reproductive health, knowledge related to sexuality, pregnancy, nutrition, family planning, malaria, etc. Information should indicate where these services are offered, including the requirements for attending ANC. ANC including family planning services is provided by both public and private health facilities. Lack of knowledge about the ANC services could be a major barrier to women’s utilization of ANC services. Due to lack of knowledge pregnant women are likely to have limited knowledge and experiences in seeking health care. Lack of knowledge about the dangers of not seeking health care in pregnancy and delivery were major barriers to seeking health care among pregnant women in Uganda\textsuperscript{(40)}. Behavior is expected to change if pregnant women are aware of the implications of not attending ANC and if they are convinced of the benefits of practicing preventive care. Perceived benefits of utilizing ANC services provide a platform for interacting with the pregnant women, identifying needs or problems and jointly arriving at possible solutions to these needs. The pregnant women need to know the benefits of attending ANC as well as the implications of not attending ANC. Pregnant women might value the importance of ANC if they were aware of its benefits to their health and that of their babies. Adequate ANC utilization implies that the initial ANC should take place before 16 weeks of gestation during the first trimester of pregnancy with a minimum of four ANC visits during the pregnancy. The second ANC visit should occur between 16 and 23 weeks gestation. The third ANC visit takes place between 24 and 28 weeks gestation. The fourth ANC visit takes place between 32 and 34 weeks of gestation. The fifth ANC visit is conducted between 36 and 37 weeks, while the sixth visit between 38 and 42 weeks respectively. However the ANC visits may be more frequent when there are potential health risks. The ANC attendance register for 2004 and 2005 revealed that the
majority of Zimbabwe’s pregnant women had an average of one ANC visit before delivery and an initial ANC visit was made during the second or third trimester.\(^{(41)}\)

**What are the factors that put a pregnancy at risk?**

The factors that place a pregnancy at risk can be divided into four categories:

- **Existing Health Conditions**
- **Age**
- **Lifestyle Factors**
- **Conditions of Pregnancy**

**Existing Health Conditions :-**

- **High blood pressure.** Even though high blood pressure can be risky for mother and fetus, many women with high blood pressure have healthy pregnancies and healthy children. Uncontrolled high blood pressure, however, can lead to damage to the mother’s kidneys and increases the risk for low birth weight or preeclampsia.\(^{(42)}\).
- **Polycystic ovary syndrome.** Polycystic (pronounced ovary syndrome (PCOS) is a disorder that can interfere with a woman's ability to get and stay pregnant. PCOS may result in higher rates of miscarriage (the spontaneous loss of the fetus before 20 weeks of pregnancy), gestational diabetes, preeclampsia, and premature delivery.\(^{(43)}\).
- **Diabetes.** It is important for women with diabetes to manage their blood sugar levels before getting pregnant. High blood sugar levels can cause birth defects during the first few weeks of pregnancy, often before women even know they are pregnant. Controlling blood sugar levels and taking a multivitamin with 40 micrograms of folic acid every day can help reduce this risk.\(^{(44)}\).
- **Kidney disease.** Women with kidney disease often have difficulty getting pregnant, and any pregnancy is at significant risk for miscarriage. Pregnant women with kidney disease require additional treatments, changes in diet and medication, and frequent visits to their health care provider\(^{(45)}\).
- **Autoimmune disease.** Autoimmune diseases include conditions such as lupus and multiple sclerosis. Some autoimmune diseases can increase a women's risk for problems during pregnancy. For example, lupus can increase the risk for preterm birth and stillbirth. Some women may find that their symptoms improve during pregnancy, while others experience flare ups and other challenges. Certain medications to treat autoimmune diseases may be harmful to the fetus as well.\(^{(46)}\).
- **Thyroid disease.** Uncontrolled thyroid disease, such as an overactive or underactive thyroid (small gland in the neck that makes hormones that regulate the heart rate and blood pressure) can cause problems for the fetus, such as heart failure, poor weight gain, and birth defects. \(^{(47)}\).
- **Infertility.** Several studies have found that women who take drugs that increase the chances of pregnancy are significantly more likely to have pregnancy complications than those who get pregnant without assistance. These complications often involve the placenta (the organ linking the fetus and the mother) and vaginal bleeding.\(^{48}\).

- **Obesity.** Obesity can make a pregnancy more difficult, increasing a woman’s chance of developing diabetes during pregnancy, which can contribute to difficult births.\(^{49}\). On the other hand, some women weigh too little for their own health and the health of their growing fetus. In 2009, the Institute of Medicine updated its recommendations on how much weight to gain during pregnancy\(^{50}\). New recommendations issued by the American College of Obstetricians and Gynecologists suggest that overweight and obese women may be able to gain even less than what is recommended and still have a healthy infant\(^{51}\).

- **HIV/AIDS.** HIV/AIDS damages cells of the immune system, making it difficult to fight infections and certain cancers. Women can pass the virus to their fetus during pregnancy; transmission also can occur during labor and giving birth or through breastfeeding. Fortunately, effective treatments exist to reduce the spread of HIV from the mother to her fetus, newborn, or infant. Women with very low viral loads may be able to have a vaginal delivery with a low risk of transmission. An option for pregnant women with higher viral loads (measurement of the amount of active HIV in the blood) is a cesarean delivery, which reduces the risk of passing HIV to the infant during labor and delivery. Early and regular prenatal care is important. Women who take medication to treat their HIV and have a cesarean delivery can reduce the risk of transmission to 2%.\(^{52}\).

### Age

- **Teen pregnancy.** Pregnant teens are more likely to develop high blood pressure and anemia (lack of healthy red blood cells), and go into labor earlier than women who are older. Teens also may be exposed to a sexually transmitted disease or infection that could affect their pregnancy.\(^{53}\). Teens may be less likely to get prenatal care or to make ongoing appointments with health care providers during the pregnancy to evaluate risks, ensure they are staying healthy, and understand what medications and drugs they can use.\(^{54}\).

- **First-time pregnancy after age 35.** Older first-time mothers may have normal pregnancies, but research indicates that these women are at increased risk of having\(^{55}\):
  - A cesarean delivery (when the newborn is delivered through a surgical incision in the mother’s abdomen)
  - Delivery complications, including excessive bleeding during labor
  - Prolonged labor (lasting more than 20 hours)
  - Labor that does not advance
  - An infant with a genetic disorder, such as Down syndrome.
Lifestyle Factors :-

1. **Alcohol use.** Alcohol consumed during pregnancy passes directly to the fetus through the umbilical cord. The Centers for Disease Control and Prevention recommend that women avoid alcoholic beverages during pregnancy or when they are trying to get pregnant \(^{(56)}\). During pregnancy, women who drink are more likely to have a miscarriage or stillbirth. Other risks to the fetus include a higher chance of having birth defects and fetal alcohol spectrum disorder (FASD). FASD is the technical name for the group of fetal disorders that have been associated with drinking alcohol during pregnancy. It causes abnormal facial features, short stature and low body weight, hyperactivity disorder, intellectual disabilities, and vision or hearing problems.

2. **Cigarette smoking.** Smoking during pregnancy puts the fetus at risk for preterm birth, certain birth defects, and sudden infant death syndrome (SIDS). Secondhand smoke also puts a woman and her developing fetus at increased risk for health problems. \(^{(56)}\).

Conditions of Pregnancy :-

**Multiple gestations.** Pregnancy with twins, triplets, or more, referred to as a multiple gestation, increases the risk of infants being born prematurely (before 37 weeks of pregnancy). Having infants after age 30 and taking fertility drugs both have been associated with multiple births. Having three or more infants increases the chance that a woman will need to have the infants delivered by cesarean section. Twins and triplets are more likely to be smaller for their size than infants of singleton births. If infants of multiple gestation are born prematurely, they are more likely to have difficulty breathing. \(^{(57)}\).

**Nutrient & vitamins for pregnancy:**

According to the American Congress of Obstetricians and Gynecologists (ACOG), pregnant women should have a diet that consists of a variety foods including:

- Proteins
- Carbohydrates
- Vitamins
- Minerals
- Fats
From these you should get the right nutrients and vitamins for pregnancy health and your baby’s development.

The right vitamin supplements can be beneficial if you are not able to prepare healthy meals regularly.

It is important to note that pregnant women should only take vitamin supplements on a health care provider’s direct recommendation.

Supplements do not replace a healthy diet, but rather ensure that a woman is receiving enough daily nutrients.

Vitamin supplements work best when taken as part of a healthy diet. It should be understood that taking vitamins are by no means a substitute for a healthy diet. (58).

### Nutrients and Vitamins for Pregnancy

<table>
<thead>
<tr>
<th>Essential Vitamin/Mineral:</th>
<th>Why You Need It:</th>
<th>Where You Find It:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vitamin A &amp; Beta Carotene (770 mcg)</strong></td>
<td>Helps bones and teeth grow</td>
<td>Liver, milk, eggs, carrots, spinach, green and yellow vegetables, broccoli, potatoes, pumpkin, yellow fruits, cantaloupe</td>
</tr>
<tr>
<td><strong>Vitamin D (5 mcg)</strong></td>
<td>Helps body use calcium and phosphorus; promotes strong teeth and bones</td>
<td>Milk, fatty fish, sunshine</td>
</tr>
<tr>
<td><strong>Vitamin E (15 mg)</strong></td>
<td>Helps body form and use red blood cells and muscles</td>
<td>Vegetable oil, wheat germ, nuts, spinach, fortified cereals</td>
</tr>
<tr>
<td><strong>Vitamin C (80 – 85 mg)</strong></td>
<td>An antioxidant that protects tissues from damage and helps body absorb iron; builds healthy immune system</td>
<td>Citrus fruits, bell peppers, green beans, strawberries, papaya, potatoes, broccoli, tomatoes</td>
</tr>
<tr>
<td>Vitamin/Metal</td>
<td>Amount</td>
<td>Function</td>
</tr>
<tr>
<td>--------------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>Thiamin/B1</td>
<td>1.4 mg</td>
<td>Raises energy level and regulates nervous system</td>
</tr>
<tr>
<td>Riboflavin/B2</td>
<td>1.4 mg</td>
<td>Maintains energy, good eyesight, healthy skin</td>
</tr>
<tr>
<td>Niacin/B3</td>
<td>18 mg</td>
<td>Promotes healthy skin, nerves and digestion</td>
</tr>
<tr>
<td>Pyridoxine/B6</td>
<td>1.9 mg</td>
<td>Helps form red blood cells; helps with morning sickness</td>
</tr>
<tr>
<td>Folic Acid/Folate</td>
<td>600 mcg</td>
<td>Helps support the placenta, and prevents spina bifida and other neural tube defects</td>
</tr>
<tr>
<td>Calcium</td>
<td>1,000 – 1,300 mg</td>
<td>Creates strong bones and teeth, helps prevent blood clots, helps muscles and nerves function</td>
</tr>
<tr>
<td>Iron</td>
<td>27 mg</td>
<td>Helps in the production of hemoglobin; prevents anemia, low birth weight, and premature delivery</td>
</tr>
<tr>
<td><strong>Protein</strong> (71 g)</td>
<td>Helps in the production of amino acids; repairs cells</td>
<td>Most animal foods, meat, poultry, eggs, dairy products, veggie burgers, beans, legumes, nuts</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Zinc</strong> (11-12 mg)</td>
<td>Helps produce insulin and enzymes</td>
<td>Red meats, poultry, beans, nuts, whole grains, fortified cereals, oysters, dairy products</td>
</tr>
</tbody>
</table>
CHAPTER (3)

Methods and Materials:-

Study design:-

This study was Interventional health facility based study in Wad Medani heath centers aiming to study the effect of health education on promotion of antenatal care among pregnant ladies 2014-2015. The pre questionnaire was designed to study knowledge of pregnant to-words antenatal care and then intervention was carried through health education sessions including lecture, distribution of designing health messages and poster to words antenatal care. The post intervention (post questionnaire) was carried out to measure results of intervention to words antenatal care.

Study area:-

The study was carried out at Wad Medani town is the capital of the Al Jazeera state in east-central Sudan Wad Madani lies on the west bank of the Blue Nile, nearly 85 miles (186 km) southeast of Khartoum. In 2008 its population was 345,290. Wad Madani has many industrial plants in maringan area and many universities. Wad Medani town benefits from the availability of health services where were provided through different levels including primary health care unit, health facility and hospitals.

Health facility selection: was done through randomly selected.

Name of health facility is

1- Abo Sonoon Medical Health Center
2- Abo Al Elaa Health Center
3- Shakireen Medical Health Center:
4- Awooda Health Center:
Description of health centers: - (study area)

Abo Sonoon Medical Health Center:

The center was established in 1994 as a popular effort by Babiker Abo Sonoon and shifted to the health insurance in 1997. The center has all sections: medical staff, medical assistant, sections for nutrition and vaccination, laboratory, recovery, pharmacy, and a weekly internal medicine specialist and dermatologist.

Location:

The center is located near Abo Sonoon old mosque at the affluent of dardige and Mayo 40 Street

Benefitted are:

The beneficiaries is Al nasr north, Al Sinait, Dardig and Mayo residential areas.

Pregnant Care Section:

It is a section that cares about health guidance and dietary of pregnant mothers. This section plays a vital role in offering guidance and dietary awareness for pregnant women as well as vaccination.

Abo Al Elaa Health Center:

It was founded in 1967 and was built as a charity by Osman Abo Elaa.

Location:

It is located in the middle of Al Dibaga residential area which is in the north of Wad Medeni Town near Hantoub Bridge the districts that get benefit of the center medical service are Wad Kanan, Al Eshair, Al Dibaga and some villages in the east bank of the Blue Nile. There is also a section for pregnant women.
Working force:

Doctors, doctors' assistants, lab technician, pharmacist, health inspector, statistics technician, vaccination, dietetic, health insurance inspector and a midwife.

Control area:--

Awooda Health Center:

Awooda Health Center was established in 1976 as a clinical unit as well as a change point; then it had shifted to a health center. It is located in the north east of Awooda. Frequent distracts to Awooda health center are: Al Monira, Arkowit, Habib Allah, industrial district and the dwellers of Awooda district.

Working force: Doctors, doctor assistant, lab technician, dietetic, vaccination, health inspector, midwife and special section to look after pregnant women.

Shakireen Medical Health Center:

It is located in the east side of the electricity headquarter in Wad Medani. In its north direction there is the Earth Moving Corporation and 114 districts is in its south wards and Al Ahli sport club is in the westwards of the clinic.

Benefitted are:

The beneficiaries are 114 district, Aldaraja district, Almazad, and Railway district.

The cadres:

Doctors, doctors' assistants, lab technician, pharmacist, health inspector, statistics technician, vaccination, dietetic, and health insurance inspector.

Services provided to pregnant women all this centers is : -

- Provide guidance and nutrition education for pregnant women
- Immunization against tetanus toxoid
- Promote breastfeeding
- Personal hygiene
- Routine services (blood pressure - urine – Hemoglobin)
- Family planning services
- Follow-up special cases (bleeding - gestational diabetes)

**Sampling procedure:-**

The health centers were randomly chosen for the study at wad Medani four health centers the total target population was found to be pregnant women at first & second trimester during the study period (from 2014-2015)

**Sample size & sampling:-**

**Multistage sampling:-**

Stage (1) it was selected health centers at Wad Medani town among 18 health centers

Stage (2) randomly selected four health centers among these centers.

Stage (3) two centers selected randomly as intervention study (Abusoonoon, Abo Al Elaa health center) while the other two centers selected randomly as control (Awoda, Shakreen health centers)

Stage (4) a sample size is estimated using a sample size derivation. Assuming that the anticipated proportion of women expected to be health educated as we did not know health education we consider 50% thus p is 0.5 and q is 0.5.

The sample size (n) is determined by using the following formula

\[
 n = \frac{z^2pq}{d^2}
\]

Where d is confidence level at 95% =0.05

\[ Z = 2 \]

\[ P = \text{prevalence 50%} \]
Choose members of the sampled pregnant women in the first and second trimester. A sample of pregnant women is carried out in Wad Medani health centers in Wad Medani locality in Gezira state 200 sample were collected during the two months of the total number every Sunday and Wednesday due to lack of attendance centers for pregnant women every week, the visits are two times a week for follow up monthly total number of participant were 200 study group educated used health education program (interventional group) while the other did not receive any intervention (control group) the outcome of the intervention was measured by comparing the two groups later.

**Study population:-**

Pregnant ladies at first &second trimester at wad Medani came to the health centers for follow up and those who meet the inclusion criteria during the period 2014 -2015.

**Variable of the study: -** Knowledge of pregnant women about the antenatal care

**The independent variable: -** Age, education, monthly income level, frequency of pregnancy, number of live births.

**Inclusion criteria:-**

All pregnant ladies at first & second trimester, not having more than 3 babies because primagravida and second births need more knowledge about antenatal care.

**Exclusion criteria:-**

Non pregnant & late pregnancy (third trimester), grand multiparty, deliveries or having four or more babies because women births more than three baby their knowledge about antenatal care more than primagravida.
**Data collection tools:-**

Pre-tested questionnaire and modified structure questionnaire, the questionnaire addressed the following variables such as: social demographic, education level, economic status, nutrition status, Gravidity, parity, Knowledge about antenatal care the questions were close-ended and few open-ended questions.

**Pilot study:-**

Pilot study was done on sample of 10 clients The aim was to test the validity & feasibility of the questionnaire according to the result obtained. Some questions were restructured & rephrased to give the most accurate response & result.

**Phases of the study:-**

1. **Preparatory phase:**
   
   This has been conducted with pregnant at first and second trimester. Advocacy and agreement were obtained from pregnant and the authority of the centers.

2. **Baseline:**
   
   1- Pre-tested questionnaire and modified structure questionnaire, the questionnaire addressed the following variables such as: social demographic, education level, economic status, nutrition status, Gravidity, parity, Knowledge about antenatal care the questions were close-ended and few open-ended questions.

   2- Pre-assessment survey was conducted for both groups (initial evaluation) for knowledge, attitude, among study & control group (questionnaire Anex1) for pregnant women at first and second trimester attended health centers.

   3- Prepare intervention aids such as educational materials, lectures, posters, brochures.

   4- It has been trained nutrition guide to fill out the questionnaire.

   5- Determine the time for lectures

   6- Taking the phone numbers of participants in the study
7- Coordination with the participants to attend lectures

**Phase two:** - (intervention phase)

Intervention (December 2014 – March 2015) interviews were conducted with the participants and counseling about: Regular follow-up A-NC, tetanus toxoid Vaccination, benefit of iron & Folic acid, Iodization Salt, Nutrition at home, Knowledge about child spacing, Exclusive breast feeding

The people who providing lectures they

- Dietician
- Nutrition Guide

100 brochures were distributed *(appendix)* containing messages for:

- follow up monthly.
- exclusive breast feeding.
- Family planning method.
- Nutrition during pregnancy.
- Iron and folic acid use during pregnancy.
- Benefit of iodine.

Posters have been installed in the waiting room of the health center

**Phase three:** - (implementation)

The implementation of the action plan and training

8 lectures were presented at a rate of two lectures a week for a month knowing that the visit of pregnant women in the centers on Sunday and Wednesday to follow up monthly.

**Memory gap and follow-up (April – May 2015)**

**Post intervention (June 2015):**

Started after the rest period and at the same questionnaire was used to measure the outcome of health education provided through study variables
Phase four:

**Evaluation and analysis**: (July – August 2015)

After month evaluation of knowledge by using the same previous questionnaire comparing the two groups based on the result of assessment of pregnant ladies

**Data Analysis:-**

Statistical program for social sciences (SPSS 16.00) is used to analyze the research data. Frequency distributions, chi-square test are adopted to detect relationships between variables of the questionnaire

**Final report:**

(November 2016)

**Goal of the program:-**

To assess the existing knowledge & practice of women towards utilization of antenatal care and effect of information of educational program in Improvement knowledge &practice for pregnant women at first & second trimester before &after health education program.

**ETHICAL CONSIDERATION:-**

- Scientific and ethical approval from the health centers directors was ensured.
- Explain to the participants in the study research objectives and commitment that this interview to study only and not for other purpose.
- Verbal consent was taken.
- The interviewees were assured about the confidentiality of their identity.
- I thank all the pregnant ladies participating in the study.
Chapter (4)

Data Analysis Results

Figure (1)  Distribution of the study group according to age (intervention & control) (n=200)

Most of pregnant women age between 25-29 year 37% in the intervention group &35% in the control
Figure (2)  Distribution of the study group according to Occupation (intervention & control) (n=200)

Most of pregnant women are housewives 87% in the intervention group & 86% in the control group.
Figure (3)  Distribution of the study group according to level of Education (intervention & control) (n=200)

Most of them in Basic school & secondary school.

Table (4)

Distribution of the study group according to average monthly household income (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Average monthly household income</th>
<th>Intervention</th>
<th>%</th>
<th>Control</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 500 pound</td>
<td>25</td>
<td>25</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>500-1000 pound</td>
<td>70</td>
<td>70</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>More than 1000</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Most of them average income between 500-1000 (70%) in the intervention group & 50% as control group.
Table (5)

Distribution of study according to frequency of pregnancy (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Frequency of pregnancy</th>
<th>Intervention</th>
<th>%</th>
<th>Control</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once</td>
<td>28</td>
<td>28</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Twice</td>
<td>37</td>
<td>37</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Three</td>
<td>35</td>
<td>35</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

In both groups most of them have twice time of pregnancy.

Table (6)

Distribution of study group according to Number of live births (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Number of live births</th>
<th>Intervention</th>
<th>%</th>
<th>Control</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>36</td>
<td>36</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Two</td>
<td>36</td>
<td>36</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>Not applicable</td>
<td>28</td>
<td>28</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Mostly of pregnant women have two of live births 36% in the intervention group & 41% in control group.
Table (7)

Distribution of study group according to follow up ANC with a doctor or any other cadre in this pregnancy or previous pregnancy (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Follow up ANC</th>
<th>Intervention</th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
<td>%</td>
<td>Total</td>
</tr>
<tr>
<td>Yes</td>
<td>94</td>
<td>94</td>
<td>98</td>
<td>98</td>
<td>192</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

Chi-Square = 2.083  d.f  = 1P.Value = 0.1485Chi-Square = 0  d.f  = 1P.Value = 1.000

There was no significant different between intervention group and control group regarding ANC follow up.

Table (8)

Distribution of study group according to number of visits in the First trimester (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>First trimester</th>
<th>Intervention</th>
<th>First three months</th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
<td>%</td>
<td>Total</td>
</tr>
<tr>
<td>Once</td>
<td>75</td>
<td>75</td>
<td>26</td>
<td>26</td>
<td>101</td>
</tr>
<tr>
<td>Twice</td>
<td>20</td>
<td>20</td>
<td>59</td>
<td>59</td>
<td>79</td>
</tr>
<tr>
<td>Three time</td>
<td>5</td>
<td>5</td>
<td>15</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

Chi-Square = 17.803 d.f  = 2P.Value = 0.000 Chi-Square = 2.081 d.f  = 2P.Value= 0.556
There was highly significant result at level of significant (0.01) between intervention group and control group according to number of visits in the First three months.

Table (9)

Distribution of study group according to number of visits during the second trimester (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Visits number during the second trimester</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre %</td>
<td>Post %</td>
</tr>
<tr>
<td>Once</td>
<td>32</td>
<td>13</td>
</tr>
<tr>
<td>Twice</td>
<td>65</td>
<td>29</td>
</tr>
<tr>
<td>Three time</td>
<td>3</td>
<td>58</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>10</td>
</tr>
</tbody>
</table>

Chi-Square = 11.178  d.f = 3  P.Value = 0.0108

The number of visit during the second trimester increased significantly among the intervention group compared to the control.

Table (10)

Distribution of study group according to site pregnancy test is done (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Where the test is done?</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre %</td>
<td>Post %</td>
</tr>
<tr>
<td>Village center</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Center in town</td>
<td>78</td>
<td>78</td>
</tr>
<tr>
<td>---------------</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Midwife</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Private clinic</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 0.005, d.f = 2, P.value = 0.998    Chi-square value = 4.426, d.f = 3, P.value = 0.219

That there was no significant difference between the intervention group and control regarding the site of pregnancy test.

Table (11)  Distribution of study group according to who has confirm pregnancy (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Who has done the confirm pregnancy</th>
<th>Intervention</th>
<th></th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
<td>%</td>
<td>Total</td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
</tr>
<tr>
<td>Specialist</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>26</td>
<td>20</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>General practioner</td>
<td>7</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>11</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Medical Assistant</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>health visitor</td>
<td>73</td>
<td>73</td>
<td>70</td>
<td>70</td>
<td>143</td>
<td>32</td>
<td>32</td>
<td>38</td>
</tr>
<tr>
<td>Midwife</td>
<td>7</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>17</td>
<td>44</td>
<td>44</td>
<td>46</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>200</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 3.818, d.f = 3, P.value = 0.148    Chi-square value = 2.559, d.f = 3, P.value = 0.465

That there was no significant difference between the intervention group and control group regarding confirmation of pregnancy.

Table (12)
Distribution of study group according to knowledge about regular routine examination and lab test when visiting the center? (Intervention & control) (n=200)

<table>
<thead>
<tr>
<th>When you visit the center the regular routine examination and lab test</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre %</td>
<td>Post %</td>
</tr>
<tr>
<td>Measure blood pressure</td>
<td>32</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>40</td>
</tr>
<tr>
<td>Urinalysis</td>
<td>42</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>36</td>
</tr>
<tr>
<td>Measure blood</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>Do not know</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 6.202, d.f = 3 P.value = 0.102 Chi-square = 1.63, d.f = 4, P.value = 0.653 That there was no significant difference between the intervention group and control group regarding to routine examination and lab test.

Table (13)

Distribution of study group according to knowledge about the doses of tetanus toxoid during the last pregnancy or current pregnancy (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Do you have vaccination against tetanus</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre %</td>
<td>Post %</td>
</tr>
<tr>
<td>Yes</td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>97</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 19.803, d.f = 1, P.value = 0.000 Chi-square value = 2.881, d.f = 1, P.value = 0.456

There is a highly significant different in Intervention group compared with control group in having a dose of tetanus toxoid during last pregnancy or current pregnancy tetanus toxoid is high among the intervention group.
Table (14)

Distribution of study group according to their knowledge about the benefit of folic acid (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Knowledge about the benefit of folic acid</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre  %</td>
<td>Post  %</td>
</tr>
<tr>
<td>Protect a child from distortions</td>
<td>25 25</td>
<td>65 65</td>
</tr>
<tr>
<td>Reduces the risk of exposure of pregnant mother to repeated abortion</td>
<td>9 9</td>
<td>32 32</td>
</tr>
<tr>
<td>Do not know</td>
<td>66 66</td>
<td>3 3</td>
</tr>
<tr>
<td>Total</td>
<td>100 100</td>
<td>100 100</td>
</tr>
</tbody>
</table>

Chi-square value =88.202, d.f = 2, P.value =0.000 Chi-s =3.614,,d.f =2, P.value =0.164

There is a highly significant difference between intervention group and control group regarding their knowledge about the benefit of folic acid itis improved among the intervention group in the post test.

Table (15)

Distribution of study group according to the use of folic acid in the first Three Months during pregnancy. (Intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Use of folic acid in the first three months</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre  %</td>
<td>Post  %</td>
</tr>
<tr>
<td>Yes</td>
<td>94 94.00</td>
<td>99 99.00</td>
</tr>
<tr>
<td>No</td>
<td>6 6.00</td>
<td>1 1.00</td>
</tr>
<tr>
<td>Total</td>
<td>100 100.00</td>
<td>100 100.00</td>
</tr>
</tbody>
</table>
Chi-square value = 3.701, d.f = 1, P.value = 0.000
Chi-square value = 0.216, d.f = 1, P.value = 0.642

There is a highly significant Improvement in use of folic acid among the intervention group compared to the control group.

Table (16)

Distribution of study group according to the benefit of iron for pregnant mothers (intervention& control) (n=200)

<table>
<thead>
<tr>
<th>knowledge about the benefit of iron</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>%</td>
<td>Post</td>
</tr>
<tr>
<td>Increase the proportion of blood</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>Prevent anemia</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>Preserve the health of the fetus and the mother</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Do not know</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Chi-square value = 23.235, d.f = 3, P.value = 0.000
Chi-square value = 2.661, d.f = 3, P.value = 0.546

There is a highly significant difference between intervention group and control group regarding their knowledge about the benefit of iron it is improved among the intervention group in the post test.
Table (17)

Distribution of study group according to the use of iron (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>The use of iron</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre %</td>
<td>Post %</td>
</tr>
<tr>
<td>Yes</td>
<td>68</td>
<td>68</td>
</tr>
<tr>
<td>No</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 31.892, d.f = 2, P.value = 0.000 Chi-square value = 0.000, d.f = 1, P.value = 1.000

There is a highly significant Improvement in use of iron among the intervention group compared to the control group.

Distribution of study group according to knowledge about Exercises for nipples protrusion (intervention & control) (n=200)

Intervention

Control
Figure (4) Distribution of study group according to knowledge about Exercises for nipples protrusion (intervention & control) (n=200)

Chi-square value = 79.388, d.f = 1, P.value = 0.000  Chi-square value = 1.681, d.f = 1, P.value = 0.195

There is a highly significant improvement in practicing exercise for nipple protrusion in intervention group compared to the control group.

Table (19)

Distribution of study group according to appropriate clothing for pregnant women (intervention & control) (n=200)

| What is appropriate clothing for pregnant women? | Intervention | | Control | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pre | % | Post | % | Total | Pre | % | Post | % | Total | Pre | % | Post | % | Total |
| Be wide | 64 | 64 | 68 | 68 | 132 | 62 | 62 | 64 | 64 | 126 |
| Loose | 4 | 4 | 17 | 17 | 21 | 11 | 11 | 15 | 15 | 26 |
| Be free of belts | 12 | 12 | 3 | 3 | 15 | 3 | 3 | 7 | 7 | 10 |
| Do not know | 20 | 20 | 12 | 12 | 32 | 24 | 24 | 14 | 14 | 38 |
| Total | 100 | 100 | 100 | 100 | 200 | 100 | 100 | 100 | 100 | 200 |

Chi-square value = 76.803, d.f = 1, P.value = 0.000  Chi-square value = 1.081, d.f = 1, P.value = 0.223

There is a highly significant Improvement in the knowledge about the appropriate dressing clothing among the intervention group compared to the control group.

Table (20)

Distribution of study group according to the dressing appropriate shoes for pregnant women (intervention & control) (n=200)
What is the right shoe for pregnant women

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
<td>%</td>
<td>Total</td>
<td>Pre</td>
<td>%</td>
</tr>
<tr>
<td>Heeled short</td>
<td>26</td>
<td>50</td>
<td>50</td>
<td>76</td>
<td>53</td>
<td>57</td>
<td>57</td>
</tr>
<tr>
<td>Shoes comfortable and spacious</td>
<td>8</td>
<td>17</td>
<td>17</td>
<td>25</td>
<td>12</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Do not know</td>
<td>44</td>
<td>0</td>
<td>0</td>
<td>44</td>
<td>24</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>200</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 57.019, d.f = 3, P.value = 0.000 Chi-square value = 2.878, ,d.f = 3, P.value = 0.411

There is a highly significant Improvement in the knowledge about the appropriate dressing shoes among the intervention group compared to the control group.

Table (21)

Distribution of study group according to knowledge about the importance of using insecticide treated Mosquito bed nets (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Are you using ITN</th>
<th>Intervention</th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
<td>%</td>
<td>Total</td>
<td>Pre</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>40</td>
<td>76</td>
<td>76</td>
<td>116</td>
<td>37</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>No</td>
<td>60</td>
<td>24</td>
<td>24</td>
<td>84</td>
<td>63</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>200</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 26.601, d.f = 1, P.value = 0.000 Chi-square value = 1.323, ,d.f = 1, P.value = 0.250

There is a highly significant in using insecticide treated mosquito bed nets among intervention group compared to control group.

Table (22)

Distribution of study group according to their knowledge about the benefit of iodine salt for pregnant women (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>The benefit of iodine for pregnant women</th>
<th>Intervention</th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
<td>%</td>
<td>Total</td>
<td>Pre</td>
<td>%</td>
</tr>
<tr>
<td>Prevent thyroid</td>
<td>40</td>
<td>60</td>
<td>60</td>
<td>100</td>
<td>35</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>
Helps the growth of the nervous system

<table>
<thead>
<tr>
<th></th>
<th>10</th>
<th>10</th>
<th>5</th>
<th>5</th>
<th>15</th>
<th>8</th>
<th>8</th>
<th>15</th>
<th>15</th>
<th>23</th>
</tr>
</thead>
</table>

Helps the secretion of the hormone thyroxin

<table>
<thead>
<tr>
<th></th>
<th>20</th>
<th>20</th>
<th>30</th>
<th>30</th>
<th>50</th>
<th>15</th>
<th>15</th>
<th>20</th>
<th>20</th>
<th>35</th>
</tr>
</thead>
</table>

Do not know

<table>
<thead>
<tr>
<th></th>
<th>30</th>
<th>30</th>
<th>5</th>
<th>5</th>
<th>35</th>
<th>42</th>
<th>42</th>
<th>25</th>
<th>25</th>
<th>67</th>
</tr>
</thead>
</table>

Total

<table>
<thead>
<tr>
<th></th>
<th>100</th>
<th>100</th>
<th>100</th>
<th>100</th>
<th>200</th>
<th>100</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
</table>

Chi-square value = 25.524, d.f = 3, P.value = 0.000 Chi-square value = 7.491, d.f = 3, P.value = 0.058

There is a highly significant difference between intervention group and control group regarding their knowledge about the benefit of iodine salt it's improved among the intervention group in the post test.

Table (23)

Distribution of study group according to the use of iodine salt in cooking food (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>The use iodine salt in cooking food</th>
<th>Intervention</th>
<th></th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
<td>%</td>
<td>Total</td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
</tr>
<tr>
<td>Yes</td>
<td>12</td>
<td>12</td>
<td>55</td>
<td>55</td>
<td>67</td>
<td>24</td>
<td>24</td>
<td>30</td>
</tr>
<tr>
<td>No</td>
<td>88</td>
<td>88</td>
<td>45</td>
<td>45</td>
<td>133</td>
<td>76</td>
<td>76</td>
<td>70</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>200</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 41.499, d.f = 1, P.value = 0.000 Chi-square value = 0.913, d.f = 1, P.value = 0.340

There is a highly significant Improvement in use of iodine salt among the intervention group compared to the control group.
**Intervention Control**

![Bar chart showing distribution of study group according to knowledge about family planning methods (intervention & control) (n=200)]

**Figure (5)** Distribution of study group according to knowledge about family planning methods (intervention & control) (n=200)

Chi-square value = 6.664, d.f = 1, P.value = 0.002

Chi-square value = 0.627, d.f = 1, P.value = 0.429

There is a highly significant difference between intervention group and control group regarding their knowledge about the family planning methods.

**Table (25)**

Distribution of study group according to desire to use any kind of contraceptives (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Use any kind of contraceptives</th>
<th>Intervention Pre</th>
<th>Post</th>
<th>Total</th>
<th>Control Pre</th>
<th>Post</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40</td>
<td>75</td>
<td>115</td>
<td>26</td>
<td>30</td>
<td>56</td>
</tr>
<tr>
<td>No</td>
<td>60</td>
<td>25</td>
<td>85</td>
<td>74</td>
<td>70</td>
<td>144</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>0</td>
<td>200</td>
<td>100</td>
<td>0</td>
<td>200</td>
</tr>
</tbody>
</table>

52
There is a highly significant improvement of the desire using of family planning method among intervention group compared to control group.

Table (26)

Distribution of study group according to knowledge about the sources of contraceptives (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Where do you get this kind?</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
</tr>
<tr>
<td>The hospital</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Midwife</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 9.857, d.f = 2, P.value = 0.024
Chi-square value = 2.355, d.f = 2, P.value = 0.265

There is no significant different bet intervention group and control group regarding the site of getting contraceptive devices.

Table (27) Distribution of study group according to knowledge about the definition of exclusive Breastfeeding (Case & control) (n=200)

<table>
<thead>
<tr>
<th>Do you hear about exclusive breastfeeding?</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>No</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 82.721, d.f = 1, P.value = 0.000
Chi-square value = 0.000, d.f = 2, P.value = 1.000

There is highly significant improvement in knowledge about in hear exclusive breast feeding among intervention group compared to the control group.
Table (28)

Distribution of study group according to knowledge about the definition of exclusive Breastfeeding (Case & control) (n=200)

<table>
<thead>
<tr>
<th>Definition of Breastfeeding</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
</tr>
<tr>
<td>Breast-feed the baby from the breast a period of 6 months without adding water</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Breast-feed the baby from the breast a period of 6 months</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Increase the number of feeds</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Do not know</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 67.572, d.f = 3, P.value = 0.000  
Chi-square value = 9.524, d.f = 3, P.value = 0.023

There is highly significant improvement in definition of exclusive breast feeding among intervention group compared to the control group.

Table (29)

Distribution of study group according to knowledge about the problems faced breastfeeding mother in the early days (intervention& control) (n=200)

<table>
<thead>
<tr>
<th>What are the problems faced by the breastfeeding mother in the early days?</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
</tr>
<tr>
<td>Cracking nipples</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>Congestion of breast with milk</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Lack of emergence of tit</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Chi-square value = 0.367, d.f = 2, P.value = 0.832   Chi-square value = 0.916, d.f = 2, P.value = 0.633

There is no significant different bet intervention group and control group in knowledge about the problems faced breastfeeding mother in the early days.

Table (30)

Distribution of study group according to knowledge about the method solving problems faced breast feeding mother in the early days. (Case & control) (n=200)

<table>
<thead>
<tr>
<th>How do you solve these problems</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
</tr>
<tr>
<td>Rinse milk</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Wash breast with hot water</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Nipples exercises</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Do not know</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 108.501, d.f = 3, P.value = 0.000 Chi-square value = 2.424, d.f = 3, P.value = 0.633

There is highly significant improvement in intervention group compared with control group to know the method that solving problems faced breastfeeding mother in the early days
Table (31) Distribution of study group according to knowledge about hygienic practices when breast feed a baby. (intervention & control) (n=200)

<table>
<thead>
<tr>
<th>Hygienic practice when breast -feed baby</th>
<th>Case</th>
<th></th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
<td>%</td>
<td>Total</td>
<td>Pre</td>
<td>%</td>
<td>Post</td>
<td>%</td>
</tr>
<tr>
<td>Hand washing</td>
<td>25</td>
<td>25</td>
<td>15</td>
<td>15</td>
<td>40</td>
<td>51</td>
<td>51</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Washing hands and breast</td>
<td>45</td>
<td>45</td>
<td>85</td>
<td>85</td>
<td>130</td>
<td>34</td>
<td>34</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Do not know</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>15</td>
<td>15</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>200</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi-square value = 44.808, d.f = 2, P.value = 0.000  
Chi-square value = 6.638, d.f = 2, P.value = 0.036

There is highly significant improvement in intervention group in hygienic practices when breast feed a baby compared with control group.
CHAPTER (5)

Discussion

This is an interventional study which carried out in the period between 2014 to 2015 in Wad Medani Town. The aim of this study is to study the effect of health education in promotion of antenatal care among pregnant women in first and second trimester. More results were achieved during the period of health education program during the interventions by different ways which revealed that the majority of mothers' ages are between 25-29. Table (8-9) shows the doctor visit during the first and second trimester of pregnancy. Through this study, it was clear that 45% before the intervention and 50% after intervention compared with similar study conducted at Assiut General hospital by Sherbini. A study carried out that "the doctor visit was 21% in the first three months and 35% in the six months". Table (13) shows the vaccination against Tetanus and it showed that there is a high significant relation among variables which is that 79% of mothers had vaccinated against Tetanus before the intervention and 100% vaccinated after the intervention. This means that the intervention program was effective. This is a similar study in Al Khober Health Care which shows that it does not matter to have awareness towards vaccination against Tetanus.

It was clear that there is a change of high significant in knowledge about the benefits of the Folic Acid in the first three months of pregnancy as it is shown in tables (15-16). This increase in knowledge percentage had occurred after the intervention by using the hypothetical systems of health education which this study stemmed on which are that the health education is able to
promote the knowledge and changing the practices and attitudes which are on the population of this study; 94% known the important of use of Folic Acid before the intervention while 99% it after the intervention, which was higher than the rate reported among pregnant women in Shanghai – China 12.9% actually took Folic Acid daily.\(^\text{(61)}\) In table (22) the percent of using the circulated mosquito nets has increased before intervention which was 25% to 76% after intervention which reveals the effectiveness of health education programs Tables (23-24) show the benefits of knowing the use of Iodine Sodium in food where the knowledge percentage has increased after intervention by using the health education program It is clear that there is a change of high significant in knowledge about family planning method and use any kind of contraceptive through tables (25-26), but the percent of knowledge has increased after intervention by using the health education program . table (28) shows the increase of percentage in knowledge about the absolute breast feeding after the intervention by the health education program which was 38% before intervention and 98% after intervention. This means that the intervention program is effective. This result has a consistency with a study carried out by Hillenbrand who says that "the increase of percentage of knowing was 69% before intervention and 80% after intervention".\(^\text{(62)}\)
CHAPTER (6)

Conclusions

- The study showed that intervention through health education has a clear and effective role in raising the level of knowledge, attitude and practice toward the promotion of antenatal care. This shows the percentages increased after intervention as in the knowledge of pregnant women for vaccination against tetanus ratio became 100% after intervention in the study group compared with control group 97%.
- Also, it found that knowledge of the benefits and the use of folic acid 99% after intervention in the study group compared to the control group the sampling was 69%.
- Also increased knowledge of pregnant women about exclusive breast feeding where the percentage ratio was 98% in study group after intervention while remained stable in the control group of 30%.

Recommendation:-

- Design of health education program for the promotion of antenatal care in order to raise the level of knowledge, attitude and practices for pregnant women.
- Encourage pregnant women for follow up monthly to reduce the complication and mortality.
CHAPTER (7)

References:-


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ANNEX (1)

Questionnaire for Mother

أسئلة ل узнاؤ دور التثقيف الصحي في تعزيز رعاية الحوامل ونظام النساء في مدينة ومديني

(A) المعلومات الديموغرافية:

1. اسم:
2. العمر:
3. السكن:
4. المهنة: 1. ربة منزل 2. موظفة 3. عاملة 4. أعمال أخرى
5. مستوى التعليم: 1. أمي 2. أساس 3. ثانوي 4. جامعي
6. متوسط الدخل الشخصي للأسرة:
   1. أقل من 500
   2. 500 إلى أقل من 1000
   3. 1000 فما فوق

(B) معلومات عن الحمل:

7. ما هو عدد مرات الحمل؟ 1. مرة 2. مرتين 3. أكثر
8. كم عدد مرات الولادة الحية؟ 1. مرة 2. مرتين 3. أكثر
9. في هذا الحمل أو آخر حمل هل قابلتي أحد لإجراء الكشف؟ 1. نعم 2. لا

(C) المعرفة عن الرعاية الصحية الأولية
ماهي الفحوصات التي تجرى لك عند زيارتك للمركز:

1. قياس ضغط الدم
2. تحليل البول
3. قياس الدم
4. لا أعرف

المعرفة عن متابعة الحمل:

14. في آخر حمل أو الحمل الحالي تم تطعيمك ضد التتنس؟
   1. نعم
   2. لا

15. خلال فترة الحمل هل استخدمت حيوب الفوليك اسيد في الثلاثه شهور الأولى؟
   1. نعم
   2. لا

16. إذا كانت الإجابات نعم هل تعرف فائدة الفوليك اسيد؟
   1. يبقى الطفل من التماثلات
   2. يقلل خطر تعرض الأم الحامل للإجهاض المتكرر
   3. يقلل من حدوث البلطات الدموية في الساقين
   4. لا أعرف

17. هل استخدمت حيوب الحديد؟
   1. نعم
   2. لا

18. إذا كانت الإجابات نعم هل تعرف فائدة الحديد للحامل؟

الأسئلة المعرفية والممارسات:

19. خلال فترة الحمل هل تقومين بالتمارين للحلمات؟
   1. نعم
   2. لا

20. ما هي الملابس المناسبة للمرأة الحامل?

21. ما هو الحذاء المناسب للمرأة الحامل?

22. هل تستخدمين الناموسية المشعة؟
   1. نعم
   2. لا

23. هل تستخدمين ملح اليود في طهي الطعام؟
   1. نعم
   2. لا

24. إذا كانت الإجابات نعم ما هي فائدة اليود للمرأة الحامل?

25. هل تعرفين أي شيء يمكن الحمل؟
   1. نعم
   2. لا

26. هل استخدمت أي نوع منهم؟
   1. نعم
   2. لا

27. إذا كانت الإجابات نعم ما هي الوسائل التي تستخدمنها؟

28. من اين ت الحصول على هذا النوع؟
1. المستشفى 2. الصيدليه 3. الداية 4. صديقة او جارة

مرحلة مابعد الولادة:

هل سمعتى بالرضاعة الطبيعية المطلقة؟  

1. نعم  
2. لا

إذا كانت الإجابة نعم ماهى ?

1. ارضاع الطفل من الثدي فترة 6 شهور دون اضافة ماء  
2. ارضاع الطفل من الثدي فترة 6 شهور  
3. زيادة عدد الرضعات 
4. لا أعرف

ماهى المشاكل التى تواجه الأم المرضع في الأيام الأولى؟

1. تشقع الحلمه  
2. احتقان الثدي باللبن  
3. عدم بروز الحلمه  
4. لا أعرف

كيف يمكن حل هذة المشاكل؟

1. شطف اللبن  
2. غسل الثدي الماء الساخن  
3. القيام بتمارين الحلمه  
4. لا أعرف

عند ارضاع طفلك ماهى الأشياء التي تقومين بها؟

1. غسل اليدين  
2. غسل اليدين و الثدي  
3. لا أعرف
ANNEX (1)

Questionnaire for Mother

Questionnaire to find out the role of health education in promoting antenatal care among pregnant women in Wad Medani Health Centers

(A) Geographic Information :-
4- Occupation: - 1. Housewife 2. Officer 3. Worker { } 
6. Average monthly income: 1-less than 500 2. 500 to1000 3-1000 and older { } 

(B) About Pregnancy:
9. follow up ANC with doctor or any other cadre 1. Yes 2. Not { } 
10. If yes ,

1. Number of visit during the first three months 1. Once 2. Twice 3. Three { } 
11. Number of visit during the third and sixth months 1. Once . 2.Twice 3. Three { } 
12- Where are site pregnancy test is done :
1. Village center 2. Center in town. 3 Midwife 4. Private clinic { } 
13. Who has confirmed pregnancy? 
1. Specialist 2. Medical 3. Medical Assistant 4.health visitor. 5 midwife { } 

(C) knowledge of primary health care 
14. When you visit the center the regular routine examination and lab test ?
1. Measure blood pressure 2. Urinalysis 3. Measure blood 4. I do not know { } 

(D) knowledge about pregnancy follow-up:
15. Do you have vaccination against tetanus? 1. Yes 2. Not { } 
16. Do you know the knowledge about the benefit of folic acid
1. Protect a child from distortions 2. Reduces the risk of exposure of pregnant to repeated apportion 3. Do not know { } 

17. During pregnancy use of folic acid in the first three months? 1. Yes 2. Not 
18. Do you know the knowledge about the benefit of iron ? { }
1. Increase the proportion of blood 2. Prevent anemia 3. Preserve the health of the fetus and mother 4. I do not know


(E) the epistemological questions and practices:


21. What is appropriate clothing for pregnant women?
1. Be wide 2. Loose 3. Be free of belts 4. Do not know

22. What is the right shoe for pregnant women?
1. Heeled short 2. Shoe comfortable and spacious 3. Do not know


24. Do you know the knowledge about the benefit of iodine salt for pregnant? 1. Prevent thyroid 2. Helps the growth of the nervous system 3. Helps the secretion of the hormone thyroxin 4. Do not know


26. Do you know the knowledge about family planning methods? 1. Yes 2. Not

27. Desire to use any kind of contraceptives? 1. Yes 2. Not

28. Where do you get this kind
1. The hospital 2. Pharmacy 3. Midwife

(F) postpartum:


30. What is the definition of exclusive Breastfeeding?
1. Breast-feed the baby from the breast a period of 6 months without adding water
2. Breast-feed the baby from the breast a period of 6 months
3. Increase the number of feeds 4. Do not know

31. What are the problems faced by the nursing mother in the early days?

32. How do you solve these problems?
1. Rinse milk 2. Wash breast with hot water 3. Nipple exercises 4. Do not know

33. What are the Hygienic practice when breast-feed baby?
1. Hand washing 2. Washing hands and breast 3. Do not know
ANNEX 11

Health Education Program for pregnant women at first and second trimester.

The main objective of this program is to study the effect of health education on promotion of antenatal care among pregnant women at first & second trimester. The health education program: The women knowledge, attitude and practices were assessed towards antenatal care. Using questionnaire filled in interviews. Educational were done by planned session in direct interview. SESSION: Regular follow-up A-NC, tetanus toxoid Vaccination, benefit of iron &Folic acid, Iodization Salt, Nutrition at home, Knowledge about child spacing ,Exclusive breast feeding.

<table>
<thead>
<tr>
<th>SESSION</th>
<th>TIME</th>
<th>CONTENT</th>
<th>MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular follow-up ANC</td>
<td>1hours</td>
<td>Importance of follow-up</td>
<td>Hand out</td>
</tr>
<tr>
<td>Immunization</td>
<td>1hour</td>
<td>Importance of tetanus toxoid Vaccination</td>
<td>Hand out</td>
</tr>
<tr>
<td>Vitamins</td>
<td>2hour</td>
<td>Benefit of folic acid ,iron ,iodine salt</td>
<td>Hand out</td>
</tr>
<tr>
<td>Nutrition during pregnancy</td>
<td>2hours</td>
<td>Importance of nutrition during pregnancy</td>
<td>Hand out</td>
</tr>
<tr>
<td>Family planning</td>
<td>1hour</td>
<td>Method of family planning</td>
<td>Hand out</td>
</tr>
<tr>
<td>Breast feeding (1)</td>
<td>2hour</td>
<td>Definition of exclusive breast -feeding , the correction breast- feeding position</td>
<td>Hand out</td>
</tr>
<tr>
<td>Breast feeding (2)</td>
<td>1hour</td>
<td>Advantage of breast feeding for mothers and child</td>
<td>Hand out</td>
</tr>
<tr>
<td>The risks of breast -feeding bottle</td>
<td>1hour</td>
<td>Methods of prevention</td>
<td>Hand out</td>
</tr>
</tbody>
</table>