# Nurse-Led Intervention on Knowledge of Dangersigns in Pregnancy Among Women Attendingantenatal Clinic In The Two Teaching Hospitals In Lagos State, Nigeria

Oladunni Adebanke Ajike. (Rn, Bnsc)
*Institution: Department of Maternal and Child Health Nursing, School of Nursing, Babcock University Ilishan – Remo Ogun State, Nigeria*

Akindipe Adewole Peter. (Rn, Bnsc, Pgde)
*Institution: Department of Mental and Psychiatric Health Nursing, School of Nursing, Babcock University Ilishan – Remo Ogun State, Nigeria*
*Corresponding author: Oladunni Adebanke Ajike. (Rn, Bnsc)*

**Abstract**
*In Nigeria in spite of 76 % of all pregnant women attending antenatal care at least once, the most common causes of deaths are due to factors that could have been detected and addressed. This study therefore hoped to evaluate the effect of a nurse-led Intervention on knowledge of danger signs among pregnant women attending antenatal clinic in two Teaching Hospitals in Lagos state. The conceptual model for the study was adapted from Bloom's taxonomy of learning domain.*

*The study adopted a longitudinal case control study, where intervention of a nurse led education was given to the experimental group. The two groups include (experimental and control groups). Intervention of a nurse led health education was given to the experimental group. The instrument for data collection was a self-structured questionnaire which was administered by the researcher. Data was collected at a pre and post intervention period of 6 weeks. Data from this study was analyzed using Statistical Package for Social Sciences (SPSS) version 23.0.*

*The sample size of 127 (66 experimental and 61 control groups) was determined using Schaeffer, Mendenall, and Ott formula. Simple random sampling was used in selecting the participants from the two teaching hospitals. 97.0% of the experimental group was married with a good number of them (32) between 21 and 35 years of age. Both groups in this study had a generally poor level (experimental = 60.6%, control = 63.9%) of knowledge on danger signs in pregnancy prior to the intervention. There was however a statistically significant (p = 0.001) improvement in the mean knowledge score of the experimental group from the pre-intervention (20.3±2.5) to the post-intervention (35.2±1.4) period.*

*Nurse-led health education intervention is a very important tool in improving knowledge of pregnant women on danger signs in pregnancy. Nurses and midwife should do more in emphasizing this aspect of health education for pregnant women and their relatives.*

***Keywords:*** *Nurse-led Intervention programme, danger signs, knowledge, teaching hospitals.*

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## I.    Introduction

### 1.1    Background to the study

The birth of a baby is a major reason for celebration and societies expect women to bear children and honour them for their role as mothers. Pregnancy and childbirth are very dangerous in most of the developing countries especially sub-saharan Africa (Bililign&Mulatu, 2017). Pregnancy complications are the main cause of maternal morbidity and mortality (WHO, 2019). Globally, about 830 women die from pregnancy or childbirth related complications every day (WHO, 2018). Roughly it is estimated that 303000 women die during pregnancy and during childbirth due to postnatal complications (WHO, 2018). Studies show that maternal mortality is higher in women living in rural areas and among poorer communities (Alkema, Gemmill, & Say, 2016). The danger signs during pregnancy are signs of serious complications that can increase the risk of maternal deaths worldwide such as; persistent vomiting, severe persistent abdominal pain, vaginal bleeding during pregnancy and delivery, swelling of face, fingers and feet, blurring of vision, fits of pregnancy, severe recurrent frontal headache, high grade fever, marked change in fetal movement, high blood pressure, sudden escape of fluid from the vagina (WHO, 2018). Knowledge of danger signs during pregnancy may contribute to

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timely access to appropriate emergency obstetric care (WHO,2019).

Almost all maternal deaths (99%) occur in developing countries. More than half of these deaths occur in Africa (WHO, 2018). In Uganda, a study conducted on pregnant women admitted due to

Pregnancy complications indicated that there where poor knowledge of danger signs and birth preparedness which may compromise decision making for emergency obstetric complication and health care seeking timely (Mamdani, & Bangser,2016).

In Ethiopia, studies have shown that pregnant women's knowledge of danger sign is associated with socio-demographic factors, and obstetric factors as well as source of information these contributes to the knowledge of danger signs during pregnancy which may influence the early health care seeking actions after recognition of pregnancy associated danger signs (Koşum, &Yurdakul, 2015). Lack of knowledge of danger signs during pregnancy is one of the reasons of failure to recognize pregnancy related complications as well as making decision to seek for appropriate health care. Increased knowledge of danger signs during pregnancy to the pregnant women is essential for reducing delays in seeking health care and in reaching a health facility (Kabakyenga, Turyakira, &Pettersson, 2017). Prevalence of danger signs in pregnancy in Nigeria is (41.3%) and highest in Sub-Saharan Africa. The most prevalence obstetrics danger signs were vaginal bleeding and severe vomiting.

The Epidemiology of danger signs in pregnancy, the most frequently mentioned key danger signs for pregnancy were fever (41.15%) headache (32.0%), swollen hands and body (28.8%) and vaginal bleeding (26.9%). For the other three periods (delivery, post-partum and neonatal knowledge of at least one danger sign was lower 51.9%, 50.8% and 53.2% respectively). (NDHS-2018). Danger signs in pregnancy include vaginal bleeding, severe abdominal pain, swollen hands and face, reduced feta movement, weakness and difficulty in breathing. According to World Health Organisation and Nigeria Demographic and Health Survey in 2018. Nigeria estimated maternal mortality rate was 560 and 570 deaths per 100,000 live birth. Danger signs of pregnancy global estimate: include the following Serria-Leone – 13.60%, Central Africa Republic – 80.2%, Lake Chad – 85.6%, Poland – 3%, United Kingdom – 9%, United State of America – 14%, Canada -2.7%, Europe – 5.4%, Asia ranges between 0.7 to 51.0%, Nigeria – 814% (according to Central Intelligence Agency 2018). Danger signs in pregnancy include vaginal bleeding, severe abdominal pain, swollen hands and face, reduced fetal movement, weakness and difficulty in breathing. Nigeria was rate number four (4) in one of the 80 countries. That has higher maternal mortality rate

In Nigeria in spite of 76 % of all pregnant women attending antenatal care at least once (NDHS, 2016), where they receive Antenatal services including health education concerning pregnancy and the outcomes, nutrition, family planning and danger signs during pregnancy but the trends of maternal mortality in women of the age 15 up to 49 shows the increase of maternal mortality from 398 per 100,000 live birth (WHO, 2018) to 556 per 100,000 live birth (WHO, 2015 – 2019). The most common cause of Danger signs death in Nigeria is due to factors that could have been detected and addressed during the antenatal care service period, such as hypertension, ante- partum hemorrhage, abortion, ectopic pregnancy, and pregnancy-related sepsis which are preventable (NDHS, 2016). This could be due to a lack of knowledge of the danger signs during pregnancy and child birth (Okereke, Aradeon, &Obonyo 2016).

To improve maternal health, barriers that limit access to quality maternal health services must be identified and addressed at all levels of the health system (WHO, 2016). Some effort has been made to improve maternal health and reduce maternal mortality since the launch of the Safe Motherhood Initiative. The Safe Motherhood Initiative focuses on improving access to skilled attendants during delivery, improving referral systems for emergency obstetric care and monitoring progress through maternal mortality and morbidity audits. Knowledge of pregnant women on the danger signs of obstetric complications is the essential first step in accepting appropriate and timely referral to obstetric and newborn care. Enhancing pregnant women's knowledge of danger signs during pregnancy can improve mothers' attitude on seeking medical care and it is crucial for safe motherhood (Mbalinda, Nakimuli, & Kaye, 2016).

Most pregnant women fail to reach health care facilities before severe forms of pregnancy complications arise due to late recognition of danger signs during pregnancy which may compromise their decision on seeking health care. It was documented by (WHO 2018) maternal mortality is higher in developing countries compared to developed countries. In 2018, the maternal mortality ratio in developing countries was 239 per 100,000 live births compared to 12 per 100,000 live births in developed countries. Globally, it was documented that in 2018, there was maternal mortality of about 303,000 that occur as a result of pregnancy and child birth and 830 women die every day during pregnancy and childbirth from causes that can be prevented around the world.

The goal of the present sustainable development goals is to reduce maternal mortality ratio to less than 70 per 100,000 live births between 2016 and 2030 (WHO, 2019). It was also documented that Nigeria though is about 2.4% of global population constituted 15% of annual global death with current maternal mortality rate of 576 per 100,000 live birth (Okereke, Aradeon, &Obonyo, 2016) and was rated the second largest country where

there is high rate of maternal mortality as a woman's chance of dying from pregnancy and childbirth in Nigeria is 1 in 13. Maternal death in Nigeria is 40,000 per year (Ossai, & Uzochukwu,2017) , only 36% of deliveries are taken by skilled birth attendants and overall deliveries in health facility was 38% (Ossai, &Uzochukwu, 2017).

It is important for the pregnant women and their families to have knowledge of danger signs during pregnancy to enable them to respond appropriately to complications which may arise because when women are informed about the danger signs of pregnancy, they will be in a better position to make reasonable decisions (Okour, Alkhateeb, &Amarin, 2017). A Study conducted by (Hoque, 2017) identified lack of information on obstetric warning signs, birth Preparedness, complication readiness, among the factors that caused delays in seeking appropriate care, thereby hampering the abilities of women to participate fully in safe motherhood initiatives. Finlayson and Down (2016), emphasized that increasing use of skilled services through women and community education on recognition of danger signs and early intervention has been identified as a key link towards improving maternal health through addressing the delays in seeking care and reaching health facilities.

Nurses are in the best position to identify the women's knowledge of danger signs in pregnancy. This will enable the nurse to plan with specialized service to help the mother to understand about common danger signs in pregnancy that will make a significant difference in the prevention of maternal morbidity and mortality rate. This study therefore focuses on Nurse-led Intervention on knowledge of danger signs among pregnant women attending antenatal clinic in two teaching hospitals in Lagosstate.

**1.2 Statement of the Problem**

Knowledge of danger signs has become an issue of interest with the proliferation of danger signs among pregnant women in health care delivery system. Knowledge of danger signs is very important to every family and every woman is expected to know more about pregnancy outcome and its complications. Increasing knowledge of obstetric danger sign is one strategy aimed at encouraging the utilization of skilled care during pregnancy. Danger Signs remains a huge health problem in Nigeria. This problem is more in rural communities of Nigeria. Pregnancy if not well-managed could lead to obstetric dangers, and obstetric dangers if not well-managed could lead to maternal health complications and death (Adesina, Oladapo&Adeniran, 2015).

The knowledge of danger signs will ultimately empower the pregnant women and their families to make prompt decisions to seek healthcare from skilled birth attendants. However, from the researcher clinical observation, most pregnant women naturally do not attend or listen to the health education given by the nurses. Majority of pregnant women come late to the clinic after health education has been delivered by the nurses.

This study will seek to determine knowledge of danger signs in pregnancy, provide results on knowledge of prevention of danger signs and complications in pregnancy. It will reveal the impact of health education on knowledge of prevention of complications of danger signs during pregnancy. Thus, it is the interest of the researcher to carry out an intervention study on effect of Nurse-led intervention on knowledge of danger signs among pregnant women attending ante-natal clinic in two teaching hospitals in Lagos state.

**1.3    Objectives of thestudy**

Main objective

The general objective of this study is to assess the effect of a nurse-led Intervention on knowledge of danger signs among pregnant women attending antenatal clinic in two Teaching Hospitals in Lagos state.

The specific objectives of this study are:

 i.  to assess the level of knowledge of the study participants (experimental and control) at the pre- and post-intervention period on some common discomforts in pregnancy.;

 ii.  to assess the level of knowledge of the study participants (experimental and control) at the pre- and post-intervention period on the warning signs in pregnancy;

iii.  to determine the level of knowledge of the study participants (experimental and control) at the pre- and post- intervention period on the danger signs of complications in pregnancy;

iv.  to determine the level of knowledge of the study participants (experimental and control) at the pre- and post- intervention period on prevention of danger signs in pregnancy.

**1.4 Research questions**

**1.**    What is the level of knowledge of the study participants (experimental and control) at the pre- and post-intervention period on some common discomforts in pregnancy.

**2.**    What is the level of knowledge of the study participants (experimental and control) at the pre- and post-intervention period on the warning signs in pregnancy

**3.**    What is the level of knowledge of the study participants (experimental and control) at the pre- and post-intervention period on the danger signs of complications in pregnancy

**4.**    What is the level of knowledge of the study participants (experimental and control) at the pre- and post-intervention period on prevention of danger signs in pregnancy.

**1.5 Hypothesis**
1.      There is no significant difference in the pre-intervention knowledge of danger signs in pregnancy among women attending antenatal clinic between the experimental and the control groups
2.      There is no significant difference between the pre- and post- intervention knowledge of danger signs in pregnancy among women attending antenatal clinic in the experimental group
3.      There is no significant difference between the pre- and post- intervention knowledge of danger signs in pregnancy among women attending antenatal clinic in the control group
4.      There is no significant difference in the post-intervention knowledge of danger signs in pregnancy among women attending antenatal clinic between the experimental and the control groups

**1.6      Justification of Study**
The study is aimed at identifying gaps in the knowledge of danger signs among pregnant women attending ante-natal clinic in Lagos University Teaching Hospital Idi-araba and Lagos State University Teaching Hospital Ikeja, Lagos. This therefore may reduce maternal mortality rate in
Lagos  state, Nigeria.

**1.7      Scope of the study**
The study is limited to Nurse-Led intervention on knowledge of danger signs in pregnancy among women attending antenatal clinic in the two teaching hospitals in Lagos State. The study will be delimited to women attending antenatal clinic in  the two teaching hospitals in Lagos State. The two teaching hospitals are Lagos University Teaching Hospital Idi-araba and Lagos State University Teaching Hospital Ikeja, Lagos.

**1.8 Significance of the study**
The significance of study may help to improve the understanding of pregnant women on measures required to avert danger signs. It may also help to update knowledge of pregnant women in the early identification of danger signs during pregnancy, thereby helping to reduce maternal mortality and morbidityrate. It would also improve the understanding of pregnant women on measures required to prevent complications.
The general knowledge of pregnant women in danger signs could also be assessed. The findings of the study may also be useful to the policy makers, in addressing the challenges which may lead to improvement of implementation and uptake of the interventions to reduce maternal morbidity and mortality rate. It may also serve as a framework for future researchers on reducing maternal mortality and morbidity rate. The outcome of this study may equally add to the body of knowledge in nursing.

**1.9 Operational definition of terms**
**Ante-natal Clinic:** This is a healthcare facility that is primarily focused on the care of pregnant women in LUTH and LASUTH.
**Danger signs:** A number of different problems, which could become potential threats to the sustainability or viability of the pregnancy women attending LUTH and LASUTH. The danger signs include severe vaginal bleeding, convulsions severe headache with blurred vision, severe abdominal pain, and fever, swelling of fingers, face and legs.
**Knowledge:** The mastery or skill acquired through experience of women about danger signs in pregnancy.
**Nurse-led education:** Health education given to pregnant women in the two tertiary hospitals in Lagos State on the identification of common danger signs during pregnancy by the nurse.
**Pregnant Women**: Women of child bearing age (15-49years) who are pregnant and are attending two teaching hospitals in Lagosstate.

## II.      Methodology

**3.0      Introduction**
This chapter discusses the methodology deployed in executing this research work. It includes the following subheadings research design, research setting, population, sample size and sampling technique, sample research instrument, validity and reliability of instrument, data collection procedure, method of data analysis and ethicalconsideration.

**3.1 Researchdesign**
The study adopted longitudinal case control study. It entails two groups (experimental and control group) a pre-intervention, intervention was rendered which involves teaching section on danger signs in pregnancy. This was followed by post -test in both teaching hospitals in Lagos state.

**3.2 ResearchSetting**

The study was carried out at the Lagos University Teaching Hospital, Idi-Araba Lagos (LUTH) and the Lagos State University Teaching Hospital, Ikeja, Lagos. (LASUTH)

The Lagos University hospital was established in July 1962 and it is a tertiary institution in Idi-araba Mushin Local Government Area Lagos. It is a tertiary institution that carries out researchtraining of studentsandtakescareofbothIn-patientsandout-patients.Thehospitalwasbuilt on Ninety-two (92) acres of land. The hospital has Twenty-eight (28 wards, consisting of seven hundred and sixty-one beds in totality. The hospital also has an accident and emergency department as well as the outpatient clinic department (medical, surgical, pediatrics, and obstetrics and gynecology, Pediatrics outpatient, oncology, and radiology department). LUTH was graced with specialist doctors and well-seasoned nurses; it has potential for international collaboration and research. LUTH is centrally located for easy referral. It attracts international partnership and funding.

While Lagos State University Teaching Hospital Ikeja emerged from a modest cottage hospital, which was established, 25th of June 1955 by the old Western Regional government to provide health care services for the people of Ikeja and its environment. The Lagos State Government formally converted the Ikeja General Hospital to the Lagos State University Teaching Hospital in July 2001.The institute of maternal and child health centre is also situated within the complex and is known as Ayinke house. It was upgraded from an 80-bed facility to a 170-bed healthcare centre with state of heart of the medical care centre equipment as well as information technology services. Ayinke house has 5 surgical theatres, 16bed emergency care units with 3 organ support facilities, 30 bed special baby care units, 5 neonatal intensive care units, a fully equipped laboratory with Supportservice.

The maternity has 10 delivery suites each equipped with sonicaid, computed tomography tracing machines (CTG) and resuscitaire. There is also feto-surveillance room which is used for tracing of potential pre-term babies and administrator of medication to boost surfactant before delivery.

Antental Clinic days is on Monday, Tuesday, Wednesday for postnatal, Thursday and Friday (New patient booking).

**3.3     Population**

The population used for pregnant woman attending ANC in the Lagos University Teaching Hospital, Idiaraba, Lagos was 188. Clinic days are Monday, Tuesday, Thursday and Friday. The population used for pregnant women attending ANC in Lagos State University Teaching Hospital was 158. Clinic days are Monday, Tuesday, Wednesday, Thursday and fridays

**Inclusion Criteria:**
1.        The research included the pregnant women in Lagos University Teaching Hospital, IdiAraba, Lagos who have been consistent with their antenatal clinic days of Monday, Tuesday, Thursday, and Friday.
2.         The Lagos State University Teaching Hospital, included pregnant women must have been attending their daily antenatal clinics before they can be considered

**Exclusion Criteria**
The research excluded pregnant women who are not consistent with their clinic days in both teaching hospitals.Unbooked patients were excluded from the study in order to have access to the booked pregnant women.

**Sample size and sampling techniques**
Sample size determination for (LUTH) Scheaffer, Mendenall, and OttFormular was used.

$$\frac{NP\,(1-P)}{(N-1)\,D + P\,(1-P)}$$

**Sample** size Calculation for LUTH
Where;
N = Population 188
P = The proportion having the attribute = 0.5 Constant

$$D = \frac{B x B}{4}$$

$$\frac{188\ x\ 0.5\ x\ (1-0.5)}{(188-1)x\ 0.0025 + 0.5\ x\ (1-0.5)}$$

$$= \frac{188 x 0.5 x 0.5}{187 x 0.0025 + 0.5 x (1-05)}$$

$$= \frac{47}{0.4675 + 0.25} \qquad = \frac{47}{0.7175} \qquad = 65.5 \quad = 66$$

n = 66

Sample determination for LASUTH Schaeffer, Mendenhall AndOtt formula was used.

$$\frac{NP(I - P)}{(N - I)D + P(I - P)}$$

Sample size control calculation from LASUTH

Where N = population (158)

$$\frac{158 x 0.5 x (1 - 0.5)}{(158 - 1) x 0.0025 + 0.5 x (1 - 0.5)}$$

$$\frac{158 x 0.5 x 0.5}{157 x 0.0025 + 0.5 x 0.5} = \frac{39.5}{0.3925 + 0.25}$$

$$= \frac{39.5}{0.6425} = 61$$

**Sampling technique**
Random sampling is a part of the sampling technique in which each sample has an equal probability of being chosen. A sample chosen randomly is meant to be an unbiased representation of the total population.
Stage 1
To determine the days of meeting the participant since clinic runs Monday, Tuesday, Thursday and Friday of every week in LUTH but Wednesday included in LASUTH. Monday and Thursday were purposely selected for the experimental group in LUTH while Tuesday and Friday were selected for the control group in LASUTH.
Stage 2
Simple random sampling was used in selecting the participant. Ballot paper was passed round among the antenatal patients that came for clinic. Yes and No was written in the ballot paper. 127 pregnant women from each hospital (LUTH and LASUTH) were selected, that is 66 patients from Lagos University Teaching Hospital, Idi-Araba and 61 patients from Lagos State University Teaching Hospital, Ikeja

**3.4    Validity and Reliability of Instrument**
**Validity:** To determine the validity of the instrument was subjected to face and content validity test. This involves the scrutiny of the instrument by the research supervisor and other experts in the field of nursing profession. Inapplicable questions were cancelled and suit the purpose of the study.
**Reliability:** The reliability of the instruments was established using test retest and the reliability index was calculated using Cronbach Alpha test with 15 pregnant women attending Randle General Hospital (Maternal and Child Health Care).
The reliability index for demographic Questionnaire and Test paper was 0.739. Therefore, the instrument was considered reliable.

**3.5    Instrument for Data Collection**
The instrument for data collection was a 47 item questionnaire that elicited information relevant to the objectives of the study. The instrument was grouped under four sections. Questions prepared was such that response can be Yes or No
**Section A** – consisted of 11 questioned that assessed demographic characteristics such as age, marital status, educational qualification, religion, record of family history, occupation, age of pregnancy, monthly income, ethnicity and no of children.
**Section B** – Consisted of 20 questions that measured knowledge of danger signs in pregnancy knowledge scoring.
**Section C** – consisted of 9 questions which measured the complication of danger signs in pregnancy
**Section D** – consisted of 8 questions which measured the respondent's method of prevention of danger signs in pregnancy.
The first stage entails conducting pre –intervention test ,thethesecong stage which is the intervention, which involves teaching section on danger signs in pregnancy for the experimental group. And the third stage is followed by post test in both teaching hospitals in lagos state after six weeks.

**3.6    Method of data collection**
The duration for data collection was six weeks with the following activities. The help of two research assistants were sought and they were trained on the objectives of the study, contents of the questionnaire and how to ensure anonymity and confidentially

**Session One: Pre-intervention session Administration of instrument to both institutions**.
Section two: intervention section: intervention package addressed danger signs, normal discomfort, complication and prevention of danger signs.
Session Three: Post intervention / Evaluation session Holds six weeks afterintervention session.

**Session two : - Intervention Session**
Only the experimental group participants was involved in the intervention session.
Intervention package addressed the following: Definition of danger sign;
•      Identify normal discomfort in pregnancy
•      Recognize danger signs complications in pregnancy
•      Understand the preventive measures.
**Session Three:** This session evaluates the post – intervention knowledge of the participantsBoth experimental and the control group participant were involved.

**INTERVENTION PACKAGE**
**Objectives**
At the end of the teaching sessions, participants should be able to:
1.      Define danger signs in pregnancy
2.      Identify normal discomfort inpregnancy
3.      Recognize danger signs inpregnancy
4.      Understand what to do when there is a danger signs inpregnancy

**Introduction: Danger signs are warning signs that woman encounter during pregnancy**
Pregnancy is a time of great change for your body, and in your life, as you get ready for your baby to arrive. It also can be a time when you may be worried about some of the changes you are experiencing, and you want to know when you should seek help. Most changes in your body are likely to be a normal part of pregnancy and a majority of pregnancy health issues are mild andcommon. However, there are some signs that can indicate that things may not be going well, and these could signal a more serious pregnancy complication. Some of these symptoms may appear at different stages of your pregnancy; others might occur at any time. Even if you are not sure about your symptoms but think that something just doesn't feel right with your own or your baby's health, it's important to get it checked out.

**Normal discomforts of pregnancy**
These include:
•      Heartburn
•      Frequency in urinating
•      Backache
•      Breast tenderness and swelling
•      Feeling tired

**Danger signs are warning signs that women encounter during pregnancy**
Certain signs should be reported to your healthcare provider right away during any stage of the pregnancy. These include the following:
•      Bleeding or leaking fluid from the vagina
•      Blurry or impaired vision
•      Unusual or severe stomach pain or backaches
•      Frequent, severe, and/or constant headaches
•      Contractions, where your stomach muscles tighten, before 37 weeks that happen every10 minutes or more often
•      Decrease in baby's movements after 28weeks
•      Dizziness
•      Excessive vomiting and diarrhea
•      Fever 100.5°F (38°C) or higher
•      Pain or burning with urination
•      Swelling of face, fingers, and feet
•      Inability to tolerate foods or liquids
•      Muscular convulsions

- Have thoughts of harming yourself or your baby

**What to do when there is a danger sign during pregnancy?**
1.  Eat a healthy diet.
2.  Reduce intake of sodium
3.  Avoid stressful activities
4.  Avoid smoking, caffeine, alcohol and over the counter drugs
5.  Immunization – Ensure you obtain tetanus toxoid during pregnancy
6.  Regular visits to Antenatal clinic
7.  Take at least 400 micrograms of folic acid daily. Take prescribed vitamins/ hematinic
8.  Early report to the hospital in case of emergency

**3.7 EthicalConsideration**
    Permission was sort for, and ethical clearance was be given by Babcock University Health research Ethics Committee (BUHREC) to conduct the study. The researcher got an introductory letter from Babcok University School of Nursing to the Chief Medical Director (CMD) of the two hospitals LUTH and LASUTH, each of the prospective participants. Participation is based on voluntary acceptance.
    Participants were duly informed that they would be free to decline or withdraw their participation at any point during the visits participants were also informed that their confidentiality was strictly maintained. Inform consent was signed and collected at each level by educating them on what the study was all about involving the objectives and benefits while assuring that there was no risk associated with the study. Questions were entertained from the participants and answer given accordingly.

**3.8 Procedure of data analysis**
    The research questions were analyzed using descriptive statistics (percentage, frequencies, mean, median, standard deviation and tables) and inferential statistics (t-test) was used to get the hypothesis of the study at 0.05 level of significance statistical package for social sciences (SPSS) version 23.0 was used in the data analysis.

## IV. Analysis And Presentation Of Data
**4.0 INTRODUCTION**
    This chapter presents the data collected from the field of study. The research questions were answered and the postulated hypothesis were tested and presented. A total of 127 copies of questionnaires were distributed by the researcher to the study population (66 experimental groups and 61 control groups) at the pre-intervention stage. All participants were invited for a post-intervention evaluation 6 weeks later with same number of questionnaires received.  All the questions were duly completed and returned by the respondents. All the questionnaires were as well validated for the study indicating a 100% response rate.
    The demographic data of the respondents were first presented and analyzed. Responses based on the research questions were analyzed using simple descriptive statistic such as frequency and percentage. Groups were compared using student t,-test while relationships between qualitative variables were determined using chi-square test.

**4.1: ANALYSIS OF RESPONDENTS DATA**

**Table 4.1.1:** Respondents demographic characteristics

| VARIABLES | EXPERIMENTAL GROUP N (%) | CONTROL GROUP N (%) | $\chi^2$ | p-value |
|---|---|---|---|---|
| **Age (years)** | | | | |
| <15 | 0(0) | 0(0) | | |
| 15-20 | 0(0) | 0(0) | | |
| 21-35 | 32 (48.5) | 35 (57.4) | 1.362 | 0.311 |
| 36-45 | 27(40.9) | 20 (32.7) | | |
| 46-49 | 7 (10.5) | 6 (9.8) | | |
| | | | | |
| **Marital status** | | | | |
| Married | 64 (97.0) | 57 (93.4) | | |
| Single | 2 (3.0) | 4 (6.6) | | |
| Single parent | 0 (0) | 0 (0) | 0.930 | 0.267 |
| Divorced | 0 (0) | 0 (0) | | |

| | | | | |
|---|---|---|---|---|
| **Religion** | | | | |
| Christianity | 54 (88.5) | 58 (95.0) | | |
| Islam | 12 (18.1) | 3 (5.0) | 1.100 | 0.092 |
| Traditional | 0 (0) | 0 (0) | | |
| | | | | |
| **Ethnicity** | | | | |
| Yoruba | 37 (56.2) | 46 (75.4) | | |
| Igbo | 20 (30.3) | 10 (16.3) | 2.023 | 0.722 |
| Hausa | 9 (13.5) | 5 (8.2) | | |
| | | | | |
| **Educational qualification** | | | | |
| No formal education | 0 (0) | 0 (0) | | |
| Primary | 10 (15.2) | 9 (14.8) | | |
| Secondary | 15 (22.7) | 15 (24.6) | 1.338 | 0.572 |
| Tertiary | 41 (62.1) | 37 (60.7) | | |
| | | | | |
| **Number of Children** | | | | |
| None | 5 (7.6) | 4 (6.6) | | |
| One | 9 (13.6) | 9 (14.8) | | |
| Two | 33 (50.0) | 30 (49.2) | 1.322 | 0.283 |
| Three or more | 19 (28.8) | 18 (29.5) | | |
| | | | | |
| **Occupation** | | | | |
| Housewife | 2 (3.6) | 4 (6.6) | | |
| Trading | 17 (25.8) | 15 (24.6) | | |
| Civil servant | 31 (46.0) | 28 (45.9) | 0.699 | 0.083 |
| Student | 0 (0) | 0 (0) | | |
| Others | 16 (24.2) | 14 (23.0) | | |

In table 4.1, it is shown that none of the study participants were less than 20 years of age while 7 were already between 46-69 years in the experimental group. 97.0% of the experimental group was married as compared to 93.4% in the control group, while a little larger number (46) of the control group belonged to the Yoruba tribe as compared to the experimental group with 37. Furthermore, almost equal percentages of the experimental (62.1%) and control (60.7) groups had tertiary education although no members of each group admitted to having no formal education. In the same vein, 46.0% and 45.9% were civil servants in the experimental and control groups respectively. When subjected to chi-square test, the table further showed that there were no significant relationship between any of the socio demographic characteristics and the groups, indicating that the groups were properly matched with each other.

**Table 4.1.2:** Respondents demographic characteristics

| VARIABLES | EPERIMENTAL GROUP N (%) | CONTROL GROUP N (%) | $\chi^2$ | p-value |
|---|---|---|---|---|
| **Age of pregnancy (weeks)** | | | | |
| <12 | 5 (7.6) | 9 (14.8) | | |
| 13-24 | 15 (22.7) | 17 (25.8) | | |
| 25-36 | 40 (61.4) | 30 (49.2) | 1.703 | 0.177 |
| Over 36 | 6 (9.1) | 5 (8.2) | | |
| | | | | |
| **Monthly income (#)** | | | | |
| < 18,000 | 5 (7.6) | 4 (6.6) | | |
| 18,000 – 30,000 | 25 (37.9) | 23 (37.7) | | |
| 30,000 – 100,000 | 21 (31.8) | 15 (24.6) | | |
| 100,00 -200,000 | 5 (7.6) | 10 (16.3) | 2.906 | 0.374 |
| >200,000 | 10 (15.2) | 9 (14.8) | | |
| | | | | |
| **History of minor disorders of pregnancy** | | | | |
| Yes | 52 (78.8) | 48 (78.7) | | |
| No | 14 (21.2) | 13 (21.3) | 1.067 | 0.087 |

In table 4.2 it is revealed that a large percentage in both groups (experimental = 78.8%, control = 78.7%) had a history disorders in pregnancy. A number of the participants also lived on a monthly income of #18,000-30,00 (experimental group = 25, control group = 23).
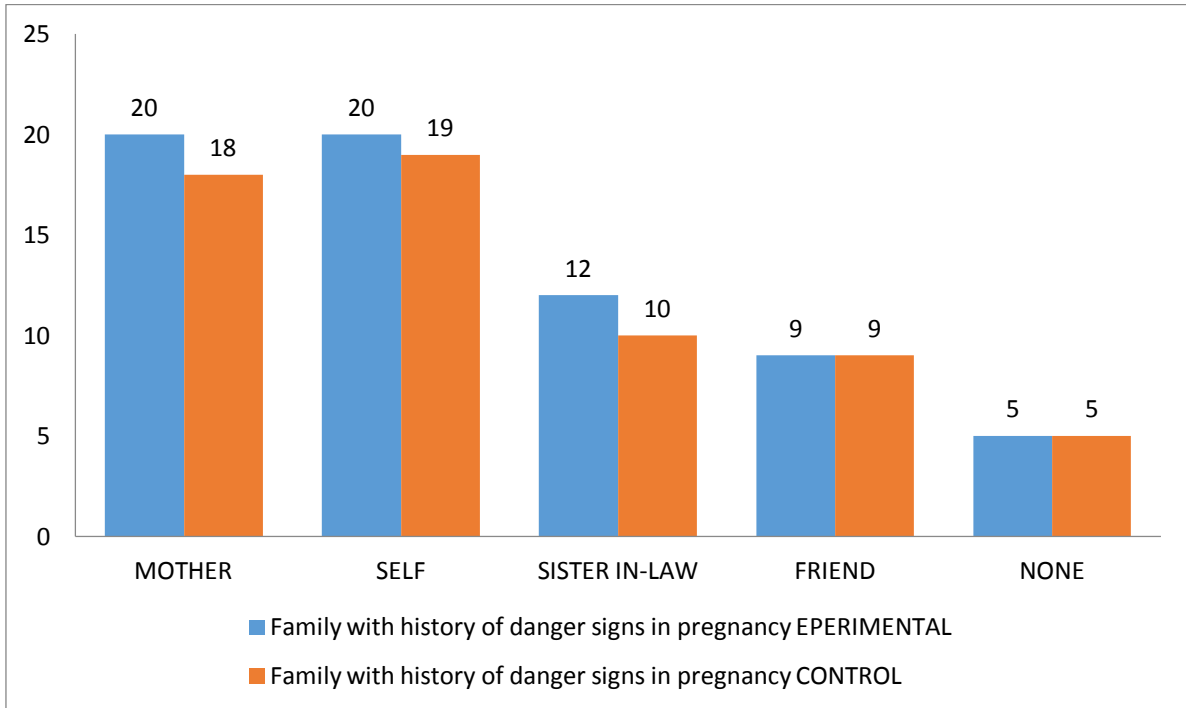
**Fig. 4.1:** Family with history of danger signs in pregnancy among study participants

Figure 4.1 show that mothers were the common family members of the study participants that had a history of danger signs in pregnancy. There was no apparent difference between the outcomes in experimental and control groups.

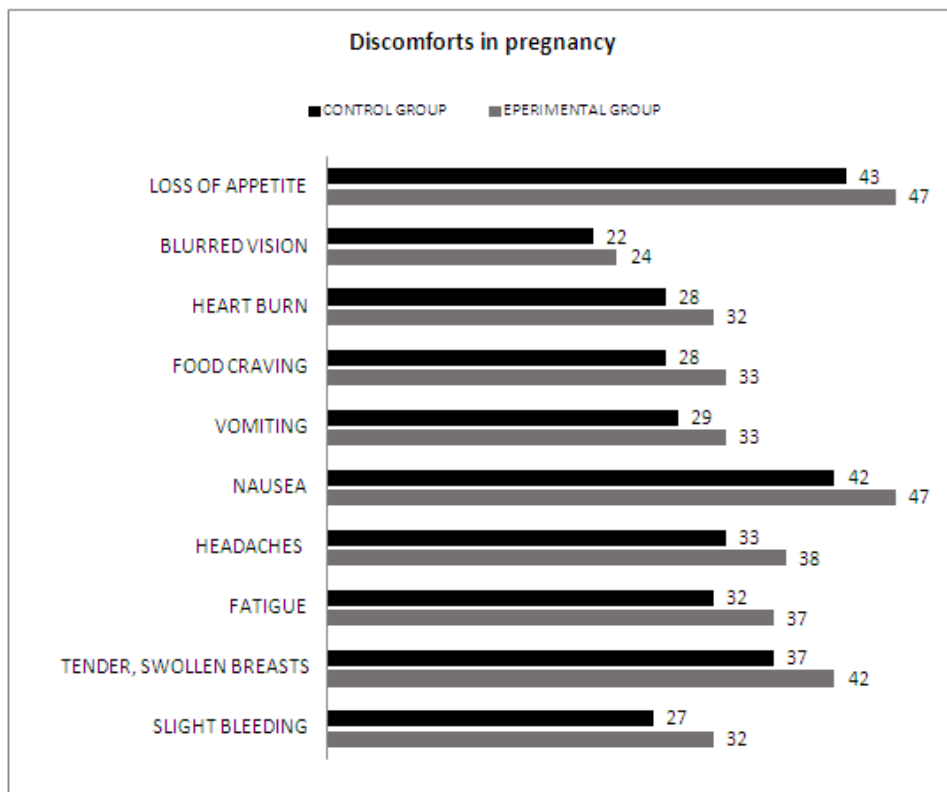## 4.2: ANSWERS TO RESEARCH QUESTIONS



Fig. 4.2: Participants pre-intervention knowledge on discomforts in pregnancy

Fig 4.2 shows that loss of appetite, nausea, as well as tender, swollen breasts were the most popularly known discomforts in pregnancy by both the experimental and control groups pre-intervention. However, blurred vision as a discomfort in pregnancy was not so well known by the respondents judging from the number who in indicated in the experimental (24) and control (22) groups.

**Table 4.2:** Participants pre-intervention knowledge on warning signs during pregnancy

| WARNING SIGNS | EXPERIMENTAL GROUP N (%) | CONTROL GROUP N (%) |
|---|---|---|
| Bleeding or leaking fluid from vagina | 44 (66.7) | 43 (70.5) |
| Blurry or impaired vision | 24 (36.4) | 22 (36.7) |
| Unusual or severe stomach pain or backaches | 24 (36.4) | 22 (36.7) |
| Frequent severe and / or constant headaches | 28 (42.4) | 33 (54.1) |
| Contractions | 33 (50.0) | 32 (52.5) |
| Decrease in baby's movement after 28 weeks | 29 (43.9) | 32 (52.5) |
| Dizziness | 33 (50.0) | 28 (45.9) |
| Fever 100.5$^0$F (38$^0$C) or higher | 34 (51.5) | 28 (45.9) |
| Fast or difficult breathing | 19 (28.8) | 17 (28.6) |
| Convulsions/ fits | 28 (42.4) | 33 (54.1) |

In table 4.2 it is observed that bleeding or leaking fluid from vagina was the most easily recognized warning signs by the respondents (experimental group = 66.7%, control group = 70.5%) on pre-intervention evaluation of their knowledge. This was followed by knowledge on contractions, fever and dizziness. On the other hand, fast or difficult breathing (experimental group = 28.8%, control group = 28.6%) was the least recognizable warning sign by the study participants next to which was blurry or impaired vision and unusual or severe stomach pain or back pain.

**Table 4.3:** Participants pre-intervention knowledge on danger signs of complications in pregnancy

| DANGER SIGNS OF COMPLICATIONS | EXPERIMENTAL GROUP N (%) | CONTROL GROUP N (%) |
|---|---|---|
| Profuse bleeding | 43 (65.2) | 42 (68.9) |
| Miscarriage | 45 (69.3) | 43 (70.5) |
| Low blood pressure | 24 (36.4) | 23 (37.7) |
| Anemia | 34 (51.5) | 23 (37.7) |
| HBP, swollen legs and protein in urine | 34 (51.5) | 33 (54.1) |
| Preterm labour | 37 (56.1) | 32 (52.5) |
| Infection | 38 (57.6) | 27 (44.3) |
| Fetal death | 61 (92.4) | 57 (93.4) |
| Fresh / macerated still birth | 45 (69.3) | 43 (70.5) |

After evaluating respondent's pre-intervention knowledge on danger signs of complications in pregnancy, it was observed as shown in Table 4.3 that fetal death was overwhelmingly known as a danger sign of complication in pregnancy. This was indicated by 92.4% of the experimental group as well as 93.4% from the control group. However, less than 50% of the study population in the experimental group (36.4%) and control group (37.7%) could recognize low blood pressure as a danger sign of pregnancy complication.

**Table 4.4:** Participants pre-intervention knowledge on prevention of danger signs in pregnancy

| STEPS TO PREVENT DANGER SIGNS DURING PREGNANCY | EXPERIMENTAL GROUP N (%) | CONTROL GROUP N (%) |
|---|---|---|
| Eat a healthy diet | 45 (68.2) | 42 (68.9) |
| Reduce intake of sodium | 43 (65.2) | 42 (68.9) |
| Avoid stressful activities | 37 (56.1) | 32 (52.5) |
| Avoid smoking, caffeine, alcohol and over the counter drugs | 43 (65.2) | 32 (52.5) |
| Immunization | 34 (51.5) | 27 (44.3) |
| Regular visits to Antenatal clinic | 33 (50.0) | 32 (52.5) |
| Take at least 400 micrograms of folic acid daily | 37 (56.1) | 33 (54.1) |
| Early report to the hospital in case of emergency | 43 (65.2) | 37 (62.4) |

Table 4.4 revealed that a large percentage of the respondents (experimental group = 68.2%, control group = 68.9%) knew about eating a healthy diet as a preventive measure of danger signs in pregnancy. However, only about half of the experimental group knew that regular visits to antenatal clinic (50.0%), immunization (51.5%) and avoiding stressful activities (56.1%) are vital steps to prevent danger signs in pregnancy.

**Overall rating of respondents' pre-intervention knowledge on danger signs in pregnancy**

**NOTE**
For the rating of respondents' knowledge on danger signs in pregnancy, 4 sections of questions were adopted (section 1 = 10 questions, section 2 = 10 questions, section 3 = 9 questions and 8 questions in section 4). Positive response to each question attracted a score of 1 point making a total obtainable score of 37 per respondent. The scores of 1-19 (0-50%) were rated as poor level while the scores of 20-37 (more than 50%) were rated good level of knowledge.
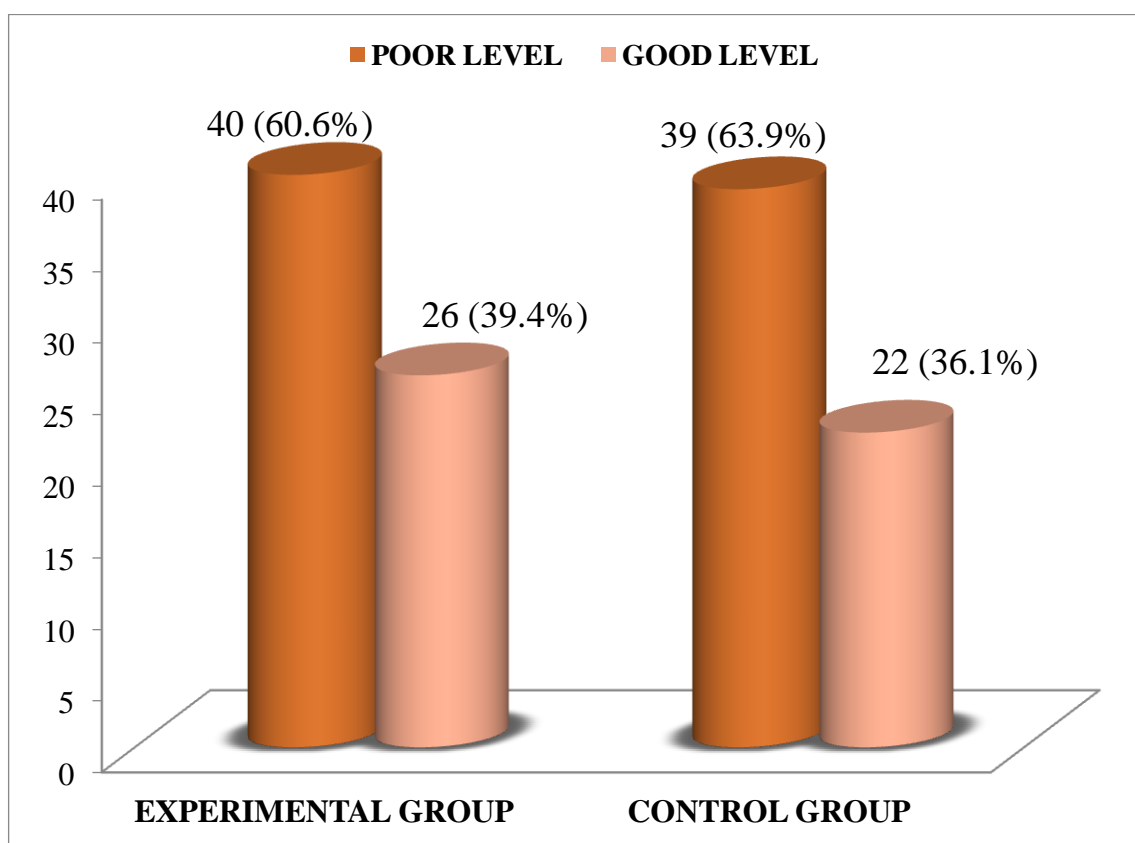


**FIG. 4.3**: Participants overall level of pre-intervention knowledge on danger signs in pregnancy

Figure 4.3 reveals that a high percentage of the participants in both control (63.9%) and experimental (60.6%) groups had a poor level of knowledge on danger signs in pregnancy on a general note.

**Table 4.5:** Participants post-intervention knowledge on discomforts in pregnancy

| DISCOMFORTS IN PREGNANCY | EXPERIMENTAL GROUP N (%) | CONTROL GROUP N (%) |
|---|---|---|
| **Slight bleeding** | 66 (100) | 42 (68.9) |
| **Tender, swollen breasts or nipples** | 64 (97.0) | 34 (55.7) |
| **Fatigue** | 64 (97.0) | 33 (54.1) |
| **Headaches** | 63 (95.5) | 28 (45.9) |
| **Nausea** | 63 (95.5) | 24 (31.1) |
| **Vomiting** | 64 (97.0) | 33 (54.1) |
| **Food craving** | 62 (93.9) | 32 (52.5) |
| **Heart burn** | 64 (97.0) | 42 (68.9) |
| **Blurred vision** | 64 (97.0) | 24 (39.3) |
| **Loss of appetite** | 65 (98.5) | 24 (31.1) |

In table 4.5 it is seen that there was an increase in the knowledge of the experimental group post intervention as compared to the control. While a 100% of the experimental group acknowledged that slight bleeding was a discomfort in pregnancy, only 68.9% did in the control group. On a general note, over 95% of the study participants in the experimental group were able to identify the discomfort in pregnancy while less than 50% of the control group knew blurred vision (39.3%) and nausea (31.1%) as a discomfort.

**Table 4.6:** Participants post-intervention knowledge on warning signs during pregnancy

| WARNING SIGNS | EXPERIMENTAL GROUP N (%) | CONTROL GROUP N (%) |
|---|---|---|
| **Bleeding or leaking fluid from vagina** | 66 (100) | 43 (70.5) |
| **Blurry or impaired vision** | 63 (95.5) | 28 (45.9) |
| **Unusual or severe stomach pain or backaches** | 63 (95.5) | 32 (52.5) |
| **Frequent severe and / or constant headaches** | 64 (97.0) | 40 (65.5) |
| **Contractions** | 66 (100) | 40 (65.5) |
| **Decrease in baby's movement after 28 weeks** | 64 (97.0) | 33 (54.1) |
| **Dizziness** | 64 (97.0) | 32 (452.5) |
| **Fever 100.5$^0$F (38$^0$C) or higher** | 63 (95.5) | 33 (54.1) |
| **Fast or difficult breathing** | 64 (97.0) | 28 (45.9) |
| **Convulsions/ fits** | 66 (100) | 40 (65.5) |

In table 4.6 it was observed that 100% of the study participants in the experimental group after intervention knew of convulsions, contractions and bleeding or leaking fluid from vagina as warning signs in pregnancy. While only 65.5% of the control participants knew of these. In the same vein, the least percentage of participants that knew about the warning signs of pregnancy, post-intervention, was 97.0% in the experimental group but 45.9% in the control group.

**Table 4.7:** Participants post-intervention knowledge on danger signs of complications in pregnancy

| DANGER SIGNS OF COMPLICATIONS | EXPERIMENTAL GROUP N (%) | CONTROL GROUP N (%) |
|---|---|---|
| **Profuse bleeding** | 66 (100) | 42 (68.9) |
| **Miscarriage** | 66 (100) | 43 (70.5) |
| **Low blood pressure** | 63 (95.5) | 42 (68.9) |
| **Anemia** | 64 (97.0) | 42 (68.9) |

| | | |
|---|---|---|
| HBP, swollen legs and protein in urine | 66 (100) | 50 (81.9) |
| Preterm labour | 66 (100) | 32 (52.5) |
| Infection | 64 (97.0) | 32 (52.5) |
| Fetal death | 66 (100) | 57 (93.4) |
| Fresh / macerated still birth | 66 (100) | 43 (70.5) |

Table 4.7 reveals that almost all the study participants post-intervention in the experimental group had complete knowledge on the danger signs of complications in pregnancy. However, only 52.5% of the control group knew about infection and preterm labour as danger signs of complications in pregnancy.

**Table 4.8:** Participants post-intervention knowledge on prevention of danger signs in pregnancy

| STEPS TO PREVENT DANGER SIGNS DURING PREGNANCY | EXPERIMENTAL GROUP N (%) | CONTROL GROUP N (%) |
|---|---|---|
| Eat a healthy diet | 66 (100) | 42 (68.9) |
| Reduce intake of sodium | 62 (93.9) | 42 (68.9) |
| Avoid stressful activities | 66 (100) | 37 (62.4) |
| Avoid smoking, caffeine, alcohol and over the counter drugs | 66 (100) | 32 (52.5) |
| Immunization | 64 (97.0) | 32 (52.5) |
| Regular visits to Antenatal clinic | 64 (97.0) | 32 (52.5) |
| Take at least 400 micrograms of folic acid daily | 66 (100) | 33 (54.1) |
| Early report to the hospital in case of emergency | 66 (100) | 37 (62.4) |

In table 4.8 it is revealed that most of the steps to prevent danger signs during pregnancy had been learnt by the participants in the experimental group during the post-intervention period. This is seen in the fact that the least known step at this period was reduced intake of sodium which 93.9% already knew. This was not however so for the control group. The highest known step among the control participants in the post intervention period was eating a healthy diet and reduced intake of sodium which was identified by only 68.9% of the group.

## 4.3: HYPOTHESIS TESTING
**NOTE**
For appropriate comparison of groups for hypothesis testing, scores were assigned to responses to questions determining knowledge of danger signs in pregnancy. For the rating of respondents' knowledge on danger signs in pregnancy, 4 sections of questions were adopted (section 1 = 10 questions, section 2 = 10 questions, section 3 = 9 questions and 8 questions in section 4). Positive response to each question attracted a score of 1 point making a total obtainable score of 37 per respondent. The mean scores per group are obtained by dividing the sum total of all scores by respondents by the number of participants in the group.

**5.** $H_o$ **: There is no significant difference in the pre-intervention knowledge of danger signs in pregnancy among women attending antenatal clinic between the experimental and the control groups**
**Table 4.9: Comparison of mean scores of pre-intervention knowledge on danger signs in pregnancy between experimental and control groups using t-test**

| GROUPS | NUMBER | TOTAL SCORE | MEAN±SD | t-value | p-value |
|---|---|---|---|---|---|
| Experimental | 66 | 1,337 | 20.3±2.5 | | |
| | | | | 0.632 | 0.168 |
| Control | 61 | 1,211 | 19.9±1.8 | | |

**Conclusion of Hypothesis** – the above table revealed that there was no significant difference between the mean scores of the pre-intervention knowledge of experimental and control groups. Based on this outcome, the null hypothesis stating that there is no significant difference between the pre-intervention knowledge of danger signs in pregnancy among women attending antenatal clinic in the experimental and the control groups will be accepted.

**6.** **H$_o$ : There is no significant difference between the pre- and post- intervention knowledge of danger signs in pregnancy among women attending antenatal clinic in the experimental group**
**Table 4.10: Comparison of mean scores between pre- and post-intervention knowledge on danger signs in pregnancy of the experimental group using t-test**

| EXPERIMENTAL GROUP | NUMBER | TOTAL SCORE | MEAN±SD | t-value | p-value |
|---|---|---|---|---|---|
| Pre-intervention | 66 | 1,337 | 20.3±2.5 | | |
| | | | | -24.883 | 0.001* |
| Post-intervention | 66 | 2,325 | 35.2±1.4 | | |

**\*statistically significant at p < 0.05**

**Conclusion of Hypothesis** – the above table revealed that there was a significant difference between the mean scores of the pre- and post-intervention knowledge of the experimental group. Based on this outcome, the null hypothesis stating that there is no significant difference between the pre- and post- intervention knowledge of danger signs in pregnancy among women attending antenatal clinic in the experimental group will be rejected.

**7.** **H$_o$ : There is no significant difference between the pre- and post- intervention knowledge of danger signs in pregnancy among women attending antenatal clinic in the control group**
**Table 4.11: Comparison of mean scores between pre- and post- intervention knowledge on danger signs in pregnancy in the control group using t-test**

| CONTROL GROUP | NUMBER | TOTAL SCORE | MEAN±SD | t-value | p-value |
|---|---|---|---|---|---|
| Pre-intervention | 61 | 1,211 | 19.9±1.8 | | |
| | | | | -1.092 | 0.072 |
| *Post-intervention | 61 | 1,424 | 23.3±2.2 | | |

**\*Note:** Interventions were not carried out for controls, hence post-intervention knowledge therefore refers to the knowledge respondents might have acquired during the periods interventions were given to the experimental groups and the period these interventions were tested
**Conclusion of Hypothesis** – the above table revealed that there was no significant difference between the mean scores of the pre- and post- intervention knowledge of the control group. Based on this outcome, the null hypothesis stating that there is no significant difference between the pre- and post- intervention knowledge of danger signs in pregnancy among women attending antenatal clinic in the control group will be accepted.

**8.** **H$_o$ : There is no significant difference in the post-intervention knowledge of danger signs in pregnancy among women attending antenatal clinic between the experimental and the control groups**
**Table 4.12: Comparison of mean scores of post-intervention knowledge on danger signs in pregnancy between experimental and control groups using t-test**

| GROUPS | NUMBER | TOTAL SCORE | MEAN±SD | t-value | p-value |
|---|---|---|---|---|---|
| Experimental | 66 | 2,325 | 35.2±1.4 | | |
| | | | | 19.732 | 0.000* |
| Control | 61 | 1,424 | 23.3±2.2 | | |

**\*statistically significant at p < 0.05**

**Conclusion of Hypothesis** – the above table revealed that there was a significant difference between the mean scores of the post-intervention knowledge of experimental and control groups. Based on this outcome, the null hypothesis stating that there is no significant difference in the post-intervention knowledge of danger signs in pregnancy among women attending antenatal clinic between the experimental and the control groups will be rejected.

## V. Discusion of Findings
Globally, attention to maternal health and safe motherhood has grown significantly to reduce maternal deaths. Around 40% of pregnancies are said to be high risk, which could lead to adverse maternal and foetal outcomes. Prevalence of danger signs in pregnancy in Nigeria is (41.3%) and highest in Sub-Saharan Africa. It has been suggested that insufficient knowledge about danger signs of pregnancy among women, families, and birth attendants in developing world is one of the major contributing factors for maternal deaths. In Nigeria in spite of 76 % of all pregnant women attending antenatal care at least once (NDHS, 2016), where they receive Antenatal services including health education concerning pregnancy the most common causes of deaths are due

to factors that could have been detected and addressed. This study hoped to evaluate the level of participants knowledge on these danger signs and the impact of nurse led intervention in improving this knowledge.

In this study, it was observed that there was a generally poor level of knowledge among the participants. Only 39.4% of the experimental group could be adjudged to have a good level of knowledge in pregnancy. This finding is similar to what was observed by Abayneh et al., (2015) among pregnant women in Debra, Central Ethiopia where only 38.6% of the respondents were knowledgeable about danger signs of pregnancy. Similarly, findings by Teng et al., (2015) revealed that despite the fact that most women claimed to have heard of danger signs in pregnancy, many still had poor of fair level of knowledge on it after in-depth review. This deficit observed may help to prove that there is poor-quality counseling around pregnancy danger signs offered to women who attend antenatal clinics. Additionally, women may not inform health professionals of any pregnancy danger signs during ANC consultations, considering them as minor.

Furthermore, this study showed that only few minor discomforts in pregnancy such as nausea and loss of appetite could be readily identified by the study participants. Although according to (Aborigo et al, 2016), it can be said that many women go through pregnancy without encountering serious problems, a good number of them however, encounter normal discomforts that could be attributed with pregnancy include heartburn, polyuria, backache, tenderness and swelling of the mammary gland, and easy fatigue; ability to differentiate these minor discomforts from major danger signs will help a pregnant woman decide adequately when immediate medical attention may be needed and not easily overwhelmed with always seeking medical help.

In the same vein, the most common danger signs identified by the respondents at the pre-intervention stage of this study were vaginal bleeding, contractions and high fever. Only very few could point fast or difficult breathing, blurred vision, and severe stomach pain as danger signs of pregnancy. The WHO in 2006 recommended that pregnant women should go to a health facility immediately if they experience vaginal bleeding, convulsions, severe headaches, blurred vision, fever, severe abdominal pain or fast or difficult breathing. This therefore shows that nurses and midwives should prioritize those life-threatening danger signs that are not easily identified when providing health education to women, to enable them recognize these symptoms and seek care immediately, before the life of the mother or fetus is endangered.

This study also showed that there was a significant improvement in the knowledge score of the study participants in the experimental group six weeks after intensive and deliberate health education was given to the women on danger signs in pregnancy. This improvement was not recorded among the control group where such interventions were not given. At the post-intervention period, participants in the experimental group were able to identify danger signs in pregnancy better than the control group. This is in line with Nkiema et al. (2019) in a qualitative study of 90 community members, pregnant mothers were counseled by health workers and they demonstrated high knowledge of danger signs, part of the obstetric complications listed were anemia, vaginal bleeding and swollen hands or face. This shows that nurses must be deliberate and regular in giving consistent health education to pregnant women on danger signs in pregnancy which will in turn help such women to readily identify these signs when encountered for immediate medical attention.

**5.2    Conclusion**

This study has shown that there was a generally poor level of knowledge on danger signs in pregnancy among the study participants of both control and experimental groups before the intervention period. Participants could only readily identify cases of vaginal bleeding, premature contractions and fever as danger signs in pregnancy; while very few knew that blurred or impaired vision, unusual or severe stomach pain or backaches as well as fast or difficult breathing were also danger warning signs. There was a very significant improvement in the knowledge of the experimental group at the post-intervention period which was not same for the control group where nurse led interventions was not given. Nurse led intervention health education is a very important tool in improving knowledge of pregnant women on danger signs in pregnancy.

**5.3    Recommendations**

Based on the research conclusion the researcher would like to make the following recommendation:

1.      Nurses and Midwives should design health programs for all Antenatal clients and they should intensify efforts to create awareness about danger signs in a leaflet or fact sheet or some other methods that can be given out at routine antenatal care.

2.      The importance of reaching an appropriate care provider urgently or nearest general hospital incase any of the danger signs of appear pregnancy.

3.      All hospitals should ensure emergency transport system and schemes are in place.

4.      Hospital management should organize training for all midwives on the current trend in management of obstetrics emergency including how to recognize danger signs in pregnancy.

**5.4    Suggestion for further studies**
1.    The scope of similar should be expanded to include all Antenatal Clients for a more generalized coverage of findings.
2.    Similar studies should be done in other settings for proper generalizations
3.    More studies should be designed to involve husband and wives to bridge the gap in marriages, Antenatal attendance with their husbands.
4.    Health care workers should update their knowledge also in obstetrics emergencies.

**5.5    Implication to Nursing**
1.    Nurses should make concerted efforts to health educate all Antenatal clients properly at every given opportunity.
2.    Nurses should update their knowledge in E-learning so that knowledge and skills can be upgraded to a high standard.
3.    Nurses should also target huge proportion of the population via the use of mass media, and online services in the dissemination of information concerning danger signs and other available interventions.
4.    Students in recognized nursing and midwifery institutions should be trained and empowered on the knowledge and skills in community midwifery.
5.    The findings of this study may be tremendous help to policy makers in organizing and given mandatory continuing education programmes to Midwives / Nurses and other health personnel to update knowledge.

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