**ASSESSING THE IMPACT OF A HEALTH EDUCATION INTERVENTION ON ATTITUDESS TOWARDS SAFE MOTHERHOOD AMONG WOMEN OF REPRODUCTIVE AGE IN ELEME, RIVERS STATE, NIGERIA**

**Abstract**

 Since the inception of Safe Motherhood Initiative (SMI) by WHO, UNFPA and World Bank in Nairobi, Kenya in 1989, several intervention programs have been instituted by stakeholders at governmental and nongovernmental levels, nationally and internationally to implement the Initiative’s strategic thrust to curb the high maternal morbidity and mortality rates, especially in the developing countries of sub Saharan African and Asia. A quasi experimental study with a sample size of 400 women investigated the impact of a health education intervention using health talk, demonstration of history taking, blood pressure and weight measurement to establish mothers’ health status and role-play exercises on attitudes towards SMI components of antenatal, family planning and PMTCT of HIV and AIDS among women of reproductive age in Eleme, Rivers State, Nigeria. Findings revealed that the intervention significantly impacted the women’s attitudes generally,as the intervention group had higher Mean Gain Difference (MGD = .6250, 1.2350 & .2775) than the control group (MGD= .4150, 1.0775 & .0325) in the post test scores and calculated ANCOVA F1 (397=70.077, p=.000, p<.05), however, there was no statistically significant difference between the age-groups on the attitudes of women of reproductive age towards SMI as calculated ANCOVA F3 (394=.079, p=.971, p>.05).

**Introduction**

 Nigeria’s maternal mortality ratio of 1,100 maternal deaths for every 100,000 live- births is one of the highest in the world (Bankole et al, 2009). High risk births persist in Nigeria although patterns differ in the various regions. Mother’s age, parity or spacing of births made two-thirds of all births high risk in both 1990 and 2003 as a result, the country maybe facing the most serious maternal mortality crisis in the world with more maternal deaths in childbirth than any other country except India. Nigeria comprises only 2% of the world’s population, yet contributes to 10% of the world’s maternal deaths. As many as 60,000 Nigerian women die due to pregnancy-related complications each year (Bankole et al, 2009). It is only because India has a population eight times higher than that of Nigeria that it has a larger number of maternal deaths globally (Shiffman & Okonofua, 2007). The human rights community has raised concern that maternal mortality is preventable and avoidable and that compliance of international human rights treaties relating to women’s access to health care is required to reduce maternal death (Maine, 1991).

 Maternal death refers to the death of a pregnant woman or deaths of a woman within 42 days of the end of the pregnancy (WHO,1977). No matter the age or location of the pregnancy; such deaths may be linked to poor management of pregnancy. However, deaths from accidental or incidental causes unrelated to pregnancy are not regarded as maternal deaths (WHO, 1977). In spite of concerted efforts by governments and various health organizations to mitigate maternal morbidity and mortality resulting from pregnancy and related issues, both continue to remain high particularly in developing countries and are on the increase in some of the countries (WHO, 2005). Haemorrhage, sepsis, toxemia, ruptured uterus and abortion with its complications are listed as the main causes of maternal deaths (Olise, 2007). For each maternal death, a corresponding 30 to 50 more women suffer injury, infection, or illness (Ravindan & Berer, 2000). As a result, children are deprived of their mother’s love and nurturing, communities lose the women’s paid and unpaid services and their contributions socially and economically to the development of their countries in particular and the world at large (Olise, 2007). According to WHO Global Health Observatory (GHO) (2016**),** globally, one third of total Disability-adjusted life years (DALYs) in 2012 resulted from communicable, maternal, neonatal and nutritional causes (these are referred to as “MDG conditions”), representing a decline from 43% in 2000. The WHO African region DALYs due to the MDG conditions is strikingly higher in proportion (65%) when compared to other regions, with 10% due to HIV/AIDS alone. The University of Washington Institute for Health Metrics and Evaluation (IHME) (2016), further posited that DALYs due to Millennium Development Goals (MDGs) 4, 5, and 6 account for 60 to 70% of burden in sub‐Saharan African regions, a third of burden in south Asia and Oceania, and less than 20% in all other regions. All regions outside of sub-Saharan Africa have been made substantial progress in reducing the MDG‐related burden (The University of Washington IHME, 2016).

The Safe Motherhood Initiative (SMI) was launched in 1989 in Nairobi, Kenya to create awareness of the mortality all over the world and to encourage governments, nongovernmental and United Nations (UN) agencies, and other stakeholders to strategize, synergize and seek ways to end this public health tragedy (FCI, 2007). The SMI aimed at reducing the burden of maternal morbidity and mortality, in addition to providing a framework for activities and empirical studies on how to improve the health of mothers in third world countries (Jowett, 2013). In the 19th century, Sweden’s maternal mortality rate was similar to that of developing countries today. There was strong advocacy within the country to combat it and reach a goal of less than 300 per 100,000 live-births. The Swedish government embarked on the strategy of training midwives to attend to all births. Norway, Denmark, and the Netherlands later used this approach with similar successes; therefore, several lessons can be learned from the West (De Brouwere, Tonglet & Van Lerberghe, 1998).

The Joint Committee on Health Education and Promotion Terminology (2001 cited in WHO E.M.RO., 2012, p.13) defined Health Education as "any combination of planned learning experiences based on sound theories that provide individuals, groups, and communities the opportunity to acquire information and the skills needed to make quality health decisions.” Health education aims at teaching individuals to gain appropriate knowledge and skills in order to motivate and enable them live and behave in ways that promote, maintain and restore health. The knowledge and skills are acquired through awareness-raising and skill-acquisition educational methodologies. The most effective health education interventions are evidence based (Rimer, Glanz & Rasband, 2001).

 In Rivers State, Nigeria, studies have been conducted to investigate various aspects of SMI. Uzoigwe and John (2004) studied Maternal Mortality in the University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria in the Last Year before the New Millennium. Findings of the study indicated that the maternal death figures are one of the highest in the world. Fears that the situation has not improved much was confirmed as Akani (2015) stated that Nigeria accounted for 25 per cent of maternal, new born and child deaths in sub-Saharan Africa in 2014. A professor of Obstetrics and Gynaecology and Provost, College of Health Sciences, University of Port Harcourt, Rivers State, Akani gave the alarming statistics while delivering the University’s 116th inaugural Lecture. He noted that sub-Saharan Africa, which represents 11 per cent of the world’s population, contributed 50 per cent to global maternal deaths annually. According to him “4.7 million of the 4.9 million new born and child births per year occur in the region, with Nigeria accounting for significant percentage of this number. “The risk of a woman dying as a result of pregnancy or childbirth in Nigeria is about one in 15, as opposed to one in 5,000 in developed nations. “Additionally, an estimated 52,900 women and estimated 250,000 newborn die from pregnancy-related complications annually.”

 Akani identified some of the factors responsible for the high statistics on the part of pregnant women as delay in decision making, lack of medical attention and access to emergency care. He further blamed the deaths on quacks, unskilled native midwives, shortage of healthcare facilities, lack of planning, traditional and cultural practices, female genital mutilation, unsafe abortions and sexual transmitted infections. This confirmed United Nation’s sources data of Nigeria’s maternal mortality rate of 1500 per 100,000 births in 1980-87 which appeared to be among the highest in black Africa. However, a story (“Nigeria Accounts for 13%”, 2014) revealed that data made available by the United Nations Population Fund (UNFPA) noted that over the last 20 years, Nigeria has made significant progress in reducing the maternal mortality ratio. It however added that Nigeria has to make concerted efforts to reach the Millenium Development Goal of 300 per 100,000 (or under 20,000 annual deaths) by 2015.

Rivers State Government (RVSG) in the present democratic dispensation instituted several measures to raise awareness and provide maternal and child health care services. This is to enable her achieve the goals of the global Safe Motherhood Initiative and the set target of the Millennium Development Goal 5. That is, to reduce maternal mortality ratio by 75% in the year 2015, thus improving maternal health. These services and community outreach programs include among others consistent health education at the health facilities by nurses and community health officers, free medical care services, free obstetric services (free caesarean section inclusive). Also, celebration of maternal and child health week, safe motherhood day with the distribution of free antimalarial drugs, free intermittent preventive treatment of malaria for pregnant mothers and free immunization services.

 Others are free family planning services and increase in the number of primary health care facilities in all wards of the Local Government Areas (LGAs) in the state. However, the health interventions at the health facilities by nurses, and community health officers are largely undocumented to appropriately assess outcomes. Available records from the office of the Special Adviser to the Governor on Medical Statistics also reveal poor usage of health facilities in the local government areas for antenatal and delivery purposes (Lawson, 2012).This is in spite of all efforts by the RVSG to achieve the opposite in order to reduce maternal mortality ratio in the state by employing strategies such as mass awareness campaign and community outreach programs as discussed above.

Figure 1 shows data on utilization of antenatal and delivery services in some local government areas of Rivers State The data from these tables show poor utilization of the health facilities in the local government areas of Rivers State for antenatal and delivery services (Lawson, 2012).

Figure 1. **Analysis of Data on Maternal Health Indices 2008-2011: Trends in Utilization of Antenatal Care Services in Rivers State LGAs.**  **Source: Rivers State Office of the Governor on Medical Statistics, Lawson (2012).**



A cross-sectional, questionnaire based study involving 112 mothers aged 15 years to 49 years from Gokana Local Government Area of Rivers State, Nigeria was conducted by Moore, Alex-Hart and George (2011). It was a community based study on utilization of health care services by pregnant mothers during delivery in Nigeria. According to the researchers, poor utilization of health care services during delivery by pregnant mothers is still a major cause of maternal and childhood morbidity and mortality in Nigeria. The aim of the study was to determine the level of utilization of health care services by pregnant women during delivery in Gokana Local Government Area of River State, Nigeria. The local Government Area has 12 health centers and 6 health centers were selected by multistage sampling. 112 were then selected by simple random sampling.

Of the 112 mothers interviewed 91(81.3%) were married, 13(11.6%) were single, 5(4.5%) were widows, 2(1.8%) divorced and 1(0.9%) separated. Ninety seven (86.6%) of these mothers (n=112) had formal education while 15 (13.4%) had no formal education. Most 42(37.5%) of the mothers were between 25-29 years. Sixty four (57.1%) of the 112 mothers in their recent delivery used a health facility while 48(42.9%) did not. Findings revealed that factors responsible for non utilization of health facility for delivery include: Long distance to health facility 33(68.7%), onset of labor at night 40(83.3%), unavailability of means of transportation 37(77.1%), lack of money for transportation 26(54.2%), unsatisfactory services at health facility 26(54.2%), unfriendly attitude of staff of the health facility 34(70.8%), unavailability of staff at health facility 32(64.0%), lack of urgency at health facility, 36 (75.0%), previous uneventful delivery at the health facility 32(66.7%). In conclusion, utilization of health care services during delivery in Nigeria is still poor (Moore, Alex-Hart & George (2011).

Pregnancy outcomes among the Ibani of Rivers State, Nigeria: Findings from Case-Studies was conducted by Nwokocha (2006). The study was conducted in Rivers State of Nigeria which has 23 local government areas (LGAs) with a population of 3,187,864, according to the 1991 census. This research was specifically undertaken among the Ibani, who constitute an ethnic group (Otite, 2000 cited in Nwokocha, 2006) and inhabit the Bonny Island, which consists of 14 kingdoms (Alagoa & Fombo, 200; Adeyemo, 2000 cited in Nwokocha, 2006). Through examination of 19 cases, evidence of the influence of beliefs and practices on pregnancy outcomes, where the activities of individuals are strictly regulated by cultural norms and values was demonstrated. The result of the research showed that high fertility among the Ibani like most other communities in Sub-Saharan African is explained by the value for children and large family size. In the case of the Ibani, where re-marrying among women is allowed, each union make a new demand on the women in terms of fertility. This implies that multiple marriages have significant relationship with pregnancy and high fertility. A combination of factors has been identified as affecting pregnancy outcome among the Ibani.

According to Nwokocha (2006) the study provided data to affirm the links between socio-cultural variables and pregnancy outcomes among the Ibani of Rivers State, Nigeria, by identifying communal and individual values, attitude and behaviors related to pregnancy. In conclusion, Nwokocha noted that the complexities surrounding analysis of these issues signaled a need for a holistic understanding of events related to pregnancy. The study argues that although individuals are ascribed some freedom within the social system, in the choice of activities perceived as most rational to seeking pregnancy outcome, such independence is unwittingly guided by the norms and values of a society (Nwokocha, 2006).

**Purpose of the Study**

 The purpose of this research was to ascertain whether a health education intervention using health talk, demonstration of history taking, blood pressure, weight measurement and role play would have impact on reproductive age women’s attitude towards safe motherhood initiative components of antenatal care, family planning and PMTCT of HIV and AIDS in Eleme, Rivers State, Nigeria. The study also intended to find out whether:

1. Health talk, demonstration of history taking, blood pressure and weight measurement, etc and role play exercises would have impact on the attitudes of women of reproductive age towards safe motherhood initiative (SMI) components of antenatal care, family planning and PMTCT of HIV and AIDS based on the selected demographic characteristics of different age groups (as provided by the researcher in the matrix) of the women of reproductive age in Eleme, Rivers State, Nigeria.

**Research Questions**

These research questions were answered in this study:

1. Do health talk, demonstration of history taking, blood pressure and weight measurement and role play exercises have impact on attitudes of women of reproductive age towards safe motherhood initiative components of antenatal care, family planning and PMTCT of HIV and AIDS?
2. Do health talk, demonstration of history taking, blood pressure and weight measurement, etc and role play exercises have impact on attitudes of women of reproductive age towards safe motherhood initiative components of antenatal care, family planning and PMTCT of HIV and AIDS based on age group of the women?

These hypotheses were tested in the study:

1. Health talk, demonstration of history taking, blood pressure and weight measurement and role play exercises will impact attitudes of women of reproductive age towards safe motherhood initiative components of antenatal care, family planning and PMTCT of HIV and AIDS.
2. Health talk, demonstration of history taking, blood pressure and weight measurement and role play exercises will impact attitudes of women of reproductive age towards safe motherhood initiative components of antenatal care, family planning and PMTCT of HIV and AIDS based on age groups (see matrix below) of the women.

**Theoretical Framework**

 Theories that provided the conceptual framework for the study were two Intrapersonal Capacity theories, that is, the Rational model and Health Belief Model. Theories on Intrapersonal Capacity deal with and try to change characteristics at the individual’s capacity level by improving awareness and knowledge, beliefs, opinions and attitudes, self-efficacy, intentions, and skills and personal power (WHO, E.M.R.O., 2012). The Rational Model also known as the knowledge, attitudes, practices model (KAP) is based on the understanding that increasing a person’s knowledge will prompt a behavior change. In this case, the behavior change sought is the attendance and utilization of health facilities in Eleme, Rivers State for antenatal care, family planning and PMTCT by women of reproductive age in the communities. Education strategies within this model target individuals and groups and seek to instill positive and prevent negative health behavior choices. It achieves this by presenting relatively unbiased information (WHO, E.M.R.O., 2012).

The Health Belief Model explains human health decision-making and subsequent behavior based on six construct; perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self efficacy, which help predict whether people will take action to prevent, screen for, and control illness (Rimer & Gianz, 2005 cited in WHO, E.M.R.O., 2012). Through the health education interventions, the women will be educated on antenatal care, family planning and PMTCT of HIV and AIDS to encourage them to seek the services offered by SMI. The Rational and Health Belief models were employed in the study because the researcher utilized health education methodologies such as health talk, demonstration of history taking, blood pressure and weight measurement and role play exercises to provide information about safe motherhood strategies of antenatal care, family planning and PMTCT; and assess what impact the health education interventions would have on attitude of women of reproductive age towards SMI components in Eleme, Rivers State, Nigeria. Also, the intervention provided relevant information on the importance of antenatal care, family planning and PMTCT and the key roles these concepts play in the prevention and reduction of maternal and infant morbidity and mortality arising from pregnancy, its complications and related issues.

 Khoramabadi et al (2015) studied effects of education based on health belief model on dietary behaviors of Iranian pregnant women The aim of the study was to assess the effects of training on the Health Belief Model on dietary behaviors of a sample of pregnant Iranian women. The study was a randomized controlled clinical trial, involving 130 pregnant women who attended two health care centers of Shahid Beheshti University of Medical Sciences. Data was collected by a structured questionnaire in three parts and seven sub-scales (including demographic characteristics, knowledge and dietary behaviors) based on the Health Belief Model. Principles of education were based on the Health Belief Model and performed twice during two-hour sessions in the intervention group. Women in the control group received routine care and did not receive training on the above model.

 These results demonstrated that there were significant differences between the two groups in terms of mean scores of knowledge, perceived severity, perceived barriers, performance guide and individual performance, and the means of these variables in the intervention group were also higher than the control group. On the other hand, after the intervention, there was no statistically significant difference found in the mean scores of perceived benefits and perceived susceptibility between the two groups (two independent samples t-test, P <0/001). They concluded educational interventions based on health promotion patterns can be effective in enhancing awareness, better understanding of risks, and reducing barriers to healthy behavior and ultimately, improving women’s health and nutritional performance during pregnancy (Khoramabadi et al, 2015).

**Concept of Health Education Intervention**

 Health Education is defined by The Joint Committee on Health Education and Promotion Terminology (2001 cited in WHO, E.M.R.O., 2012, p.13) as any combination of planned learning experiences based on sound theories that provide individuals, groups, and communities the opportunity to acquire information and the skills needed to make quality health decisions. The World Health Organization (1998 in WHO E.M.RO., 2012, p.13) defined Health Education as "comprising of consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health".

 According to WHO Regional Office for the Eastern Mediterranean (2012), health education forms an important part of the health promotion activities. These activities occur in schools, workplaces, clinics and communities and include topics such as healthy eating, physical activity, tobacco use prevention, mental health, HIV/AIDS prevention and safety. Health education focuses on building individuals’ capacities through educational, motivational, skill-building and consciousness-raising techniques. Evidence-based health education interventions are those that are most likely to be based on theory and have been shown through empirical study to be effective. The use of theory-based interventions, evaluated through appropriate designs, contributes to the understanding of why interventions do or do not “work” under particular conditions (Rimer, Glanz & Rasband, 2001). Using the definitions of evidence-based medicine (Rosenberg & Donald 1995 in WHO, 2012) and evidence-based public health (Jenicek, 1997 in WHO, 2012) and the work of Rimer and her colleagues, (Rimer, Glanz & Rasband, 2001) evidence-based health education practice is the “process of systematically finding, appraising and using ... qualitative and quantitative research findings as the basis for decisions in the practice of health education” (Cottrell & McKenzie, 2005).

**Concept of Safe Motherhood (SM)**

 Safe Motherhood means that women are safe and healthy during pregnancy and delivery (The Human Rights Matrix, 2013). Safe Motherhood is made up of initiatives, practices, protocols and service delivery guidelines so organized as to provide high-quality obstetric and gynecological services to women and their babies throughout the duration of pregnancy and afterwards. Such services include family planning, prenatal, delivery and post partum care to ensure that the highest level of health for the mother, fetus and infant in the ante partum, intra partum and post partum periods are maintained (The Human Rights Matrix, 2013).

 Conceptually, safe motherhood is a component of reproductive health that deals with prenatal care, safe delivery by skilled attendant, essential obstetric Care (EOC), postnatal and neonatal care, post natal care and breast feeding (Ministry of Health, MOH, Rivers State, 2013). Safe motherhood can be achieved by providing high-quality maternal health services to all women. Services to help make motherhood safe include: Care by skilled health personnel before, during and after childbirth, emergency care for life-threatening obstetric complications, services to prevent and manage the complications of unsafe abortion, family planning to enable women to plan their pregnancies and prevent complications related to too many, too close, too early and too late pregnancies and health education and services for adolescents, community education for women, their families and decision-makers (Yohannis et al, 2005).

**Safe Motherhood Initiative (SMI)**

Maternal health is one of the key recognized elements of attaining development goals. It is clearly a key development issue worldwide (Achen, 2011). The health status of women gained increased awareness in the late 1970’s when the United Nations proclaimed the period 1976 to 1985 as the international Decade of Women. The aim was to improve the quality of life of women. Various Women-in-Development programs were established. Women-in-Health was initiated by WHO in 1980 to promote the participation of women in Primary Health Care in view of the vital role they play in family life (Olise, 2007).

Consequently, in order to draw attention to the magnitude of maternal mortality globally and to mobilize resources at national and international levels to prevent maternal deaths, in 1987, the World Bank, WHO and UNFPA convened an international conference on Safe Motherhood in Nairobi, Kenya. Two years later, that is, in 1989 (also in Nairobi), the Safe Motherhood Initiative was formally launched (Olise, 2007). The launch of the Safe Motherhood Initiative (SMI) was seen as a major milestone in the race to reduce the burden of maternal mortality throughout the world, particularly in developing countries. It issued a call to action to reduce maternal mortality and morbidity by one half by the year 2000 (Olise, 2007).

It represents a worldwide effort that aims to increase attention to and reduce the devastating numbers of women that suffer death or serious illness every year; making motherhood safe for the world’s women calls for national governments, funding agencies, and Non-Governmental Organizations (NGOs) to make maternal health an urgent health priority and to ensure that the necessary political and financial support is dedicated to this effort. It also gave birth to the Inter-Agency Group (IAG) for Safe Motherhood. All events that make pregnancy unsafe, irrespective of the gestation or outcome, are part and parcel of safe motherhood (Safe Motherhood Initiative, **2011).**

Subsequent work on Safe Motherhood by the Inter-Agency Group and others have outlined clear strategies and specified interventions for the reduction of maternal morbidity and mortality, often referred to as the Pillars of Safe Motherhood. In order to reduce life-threatening risks and reduce mortality, good-quality maternal health services by trained health workers must be available and must be used (Safe Motherhood Initiative, **2011).** Safe motherhood programs emphasize addressing all of these issues as well as other reproductive health issues, such as sexually transmitted infections, unplanned pregnancy, obstetric fistula, and female genital cutting (FGC), ([The World Bank Group](http://www.worldbankgroup.org/), 2012). Also, Safe motherhood investments are cost effective.

As Olise (2007) noted safe motherhood depends on three key elements. The first is the improvement of the standard of living of the people to ensure that everyone including women and children are in good health. Secondly, there must be good health care delivery system including antenatal care at various levels. The third factor is a functional referral system to ensure that cases, which cannot be handled effectively at lower levels, are transferred to higher levels of health care delivery for appropriate treatment; many countries have established their national safe motherhood initiatives.

May 8th of every year is International Safe Motherhood Days, Strategies for achieving UN set objectives include; antenatal (Prenatal) care, tetanus immunization of women of reproductive age, emergency care for pregnant women and safe blood transfusion services; as well as Safe delivery education of the girl child, family planning and adequate nutrition (Olise, 2007).Furthermore, the United Nations Population Fund (UNFPA) (2012) stated that working for the survival of mothers is human right imperative. It also has enormous socio- economic ramifications - and is a crucial international development priority.

 **Concept of Maternal Mortality**

 The World Health Organization defined maternal death mortality as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidents, or incidental causes”. (WHO, 1977, pp. 763-764).Thus, a death from complications of induced abortion is a maternal death, since it is considered to be due to the “management” of the pregnancy (Maine, 1991). The United States of America Joint Commission on Accreditation of Healthcare Organizations calls maternal mortality (death) “a sentinel event”, and uses it to assess the quality of a health care system. Maternal mortality data are said to be an important indicator of overall health system quality because pregnant women survive in health facilities in good sanitary condition, safe, well-staffed, equipped and provided with essential drugs. If new mothers are thriving, it indicates that the health care system is doing its job. If not, problems likely exist (Gerrat, 2007).

 The WHO definition of maternal mortality is one of several and raises some controversial issues which need to be recognized and addressed especially deaths from accidents, or incidental causes because they are not classified as maternal death even when they occur during pregnancy as in deaths resulting from gender based violence when a woman is pregnant. As a result, other definitions of maternal mortality include those deaths resulting from accidental and incidental causes, for example, cases with “incidental causes” include deaths secondary to violence against women that would be related to the pregnancy and be affected by the socioeconomic and cultural environmental (WHO, 2013). Also, it has been reported that about 10% of maternal deaths would occur late, that is after 42 days after a termination of pregnancy or delivery (Koonin, Atrash, Rochat & Smith, 2013), thus, some definitions extend the time period of observation to one year after the end of the gestation. However, the WHO definition is the most widely quoted and recognized.

 The WHO (1986), puts the worldwide maternal deaths every year at 500,000, adding that, this is almost one every minute. Current statistics of the WHO Media Centre fact sheet No. 348 (2012) stated that maternal mortality is unacceptably high especially in developing countries of the world. About 800 women die from pregnancy or childbirth-related complications around the world every day. In 2010, 287 000 women died during and following pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented. According to Maine (1991), whose works on maternal mortality forms some of the early studies on the subject matter, the vast majority of these deaths are in developing countries. As figures above show, while 25 percent of women of reproductive age live in developed countries only one percent of all maternal deaths take place in those countries (Starrs, World Bank & U.S.A. Bureau of the Census in Maine 1991). Even among the developing regions of the world, however, there is substantial variation. Due to low fertility and maternal mortality in China, East Asia has much less than its share of maternal deaths in contrast to Africa which has a lot more than its fair share (Lingmei & Hui, 1988 cited in Maine, 1991,).

**Methodology**

**Research Design**

 The pretest, posttest, control group quasi experimental research design (Nwankwo, 2013) research design was used in this study to investigate the impact of health education intervention on attitude towards safe motherhood Initiative (SMI) components of ANC, FP and PMTCT of HIV and AIDS among women of reproductive age in Eleme, Rivers State, Nigeria. It was considered appropriate for this study because the researcher sought to test the impact of health education intervention on attitude towards Safe Motherhood Initiative components of ANC, FP and PMTCT of HIV and AIDS among women of reproductive age in Eleme, Rivers State, Nigeria. The design used was parallel, unblinded and consisted of two blocks, intervention and control groups.

 **Ages and Distribution of Participants in the Intervention and Control Groups**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ages** | **15-24 Years** | **25-34 Years** | **35-44 Years** | **45 Years & above** | **Total (n)** |
| **Intervention Group** | **41** | **87** | **67** | **5** | **200** |
| **Control Group** | **51** | **87** | **53** | **9** | **200** |
| **Total** | **92** | **174** | **120** | **14** | **400** |

**Population for the Study**

The study took place in Eleme Local Government Area of Rivers State, for about six weeks between April and May 2014. A total population of 1082 of all women of reproductive age was used for this study. This figure included estimates of the total average monthly attendance of all women of reproductive age, for the months of January, February and March 2014, at the three state government owned health Model Primary Health Centers (MPHCs) in Ebubu, Eteo and Onne in Eleme, Local Government Area of Rivers State. The estimates were derived from the records of the antenatal, family planning, and infant welfare clinics. The weight records of babies weighted at the infant welfare clinic was used as guide to estimate the number of women of reproductive age at the infant welfare clinic since each child was accompanied by his or her mother and data obtained were as follows: MPHC Ebubu 496, 510 and 510; MPHC Eteo464, 426 and 437; MPHC Onne127, 149 and 128; total 1087, 1085 and 1075, and grand total 3247 for January, February and March respectively (MPHCs Ebubu, Eteo & Ebubu, 2014).

 The participants for the study were all women (newly enlisted for the study) of reproductive age (15 - 49 years), pregnant or not that attended the antenatal, family planning, and infant welfare clinics at three of the six state government owned health centers in Eleme Local Government Area of Rivers State in the months of April and May. The health centers included MPHCs Ebubu, Eteo and Onne. The eligibility criteria for enrollment were as follows: 1) women of reproductive age, 2) healthy, pregnant or not, 3) that attended the antenatal, family planning, and infant welfare clinics at MPHCs Ebubu, Eteo and Onne. The exclusion criteria included; 1) women outside the reproductive age group, 2) unhealthy, pregnant or not, 3) did not attend antenatal, family planning, and infant welfare clinics at MPHCs Ebubu, Eteo and Onne. Average monthly attendance was calculated as mean of the three months included1082.33 participants.

**Sample and Sampling Techniques**

 The sample size for the study was 400 women of reproductive age. The figure was derived using Taro Yamen Formula for computing sample size. Purposive (with respect to geographical location) quota sampling and simple random techniques were used to select the participants used for the study. Consent was first obtained from each woman confirming her willingness to participate. Participating women in the antenatal, family planning and infant welfare clinics of the three health centers used for the study were randomly assigned to either intervention group or control group.

**Instrument for Data Collection**

 A self designed, structured and validated Impact of Health Education Intervention on Knowledge, Attitude and Practice of Safe Motherhood Questionnaire (IHEIKAPSMQ) was used to collect data for the study. It comprised two sections ‘A’ and ‘B’, where section ‘A’ was about demographics: sex, age, parity and educational qualifications and section ‘B’ contained the items used to elicit information on the variables being studied. Section B tested attitude towards safe motherhood Initiative components using multi-choice type of the modified (4-point) Likert scale of Strongly Agree, Agree, Disagree and Strongly Disagree. The questionnaire was administered twice as pre and post test. Summated rating for modified (4-point) Likert scale: Strongly agree (SA) - 4 points; agree (A) - 3points; strongly disagree (SD) – 2 points and disagree (D) - 1 point. An example of a questionnaire statement in section ‘B’ to which participants responded is “every mother should attend antenatal clinic and receive antenatal care when pregnant” and responses were weighted on a ‘4’ point modified Likert scale. The composite score for each respondent on all the items was computed. The lowest score obtained from the responses in the section was ‘1’ and the highest ‘4’.

**Reliability of Instrument**

 The Model Primary Health Centre, Agbonchia, Eleme with similar characteristics as the other health centers was used to test the reliability of the research instrument. This group was not used in the final study. Information received from the responses was also used for modification of the questionnaire items and to improve the reliability of the research instrument. The reliability test also acquainted the researcher on what possible problems that would likely be encountered during the distribution and collection of data from the respondents. Reliability for internal consistency of the instrument was done using Split Half method. For this purpose, 40 respondents were selected using simple random sampling technique from the Model Primary Health Centre Agbonchia, Eleme Local Government Area of Rivers State. Forty copies of the questionnaire were served them. These were retrieved after being filled for calculation. The 40 questionnaire retrieved were split into two equal halves of odd and even numbers. These were coded and first correlated using Pearson Product Moment Correlation Coefficient. Then, the reliability on full test was done using Spearman Brown formula; rf = 2\* reliability on half test/ 1+ reliability on half test. Thereliability coefficient value obtained for the variable attitude was r=0.791. It was high enough to guarantee the use of the instrument for the study.

**Methods of Data Collection**

 The researcher was granted ethical approval to embark on the study by the Medical Officer Health (MOH), in charge of all the health centers in Eleme Local Government Area of Rivers State and the ethical committee. The researcher administered the questionnaires directly to the participants (mainly newly enlisted women of reproductive age for the study) through personal contacts. The researcher was assisted on this by training and using the services of six research assistants and community health officers in each health facility to ensure that the questionnaires were properly served on the respondents, filled and retrieved. Instructions pertaining to the filling of the questionnaires were thoroughly explained to the respondents. The questionnaires were administered and retrieved after filling. Any uneducated woman was assisted in filling the questionnaires by the researcher, research assistants and community health officers.

 The respondents were served the questionnaires twice, first as pre test, secondly as post test immediately after receiving a teaching session of the health education intervention for the intervention group and immediately after the usual clinic routine care for the control group, during their visits to the antenatal, family planning and infant welfare clinics at three of the six state owned government health centers in Eleme, Rivers State for six weeks in the months of April and May, 2014. The control group did not participate in the planned health education intervention given by the researcher, research assistants and the community health officers.

 The participants in the control group had the routine health talk given to them on their visit to the clinic; they and their counterparts in the intervention group were treated to light refreshment and were given souvenirs of safe motherhood caps, handkerchief, pens and drinking cups designed by the researchers. Also, they were given free diapers, toys and drinking cups for their babies. The procedures for the study, that is, first, pre test, the health education intervention for the intervention group and the usual clinic routine care for the control group, then, the post test were explained to each participant including information about confidentiality. Those who accepted to participant had opportunity to consider the information, ask questions and had these answered satisfactorily. They were also informed that participation is voluntary and that they were free to withdraw at any time without giving any reason.

 Each health education intervention of health talk (teaching mothers on meaning, importance of and care received at ANC, FP & PMTCT clinics), demonstration ( displaying & explaining the care mothers receive in the ANC, FP & PMTCT clinics such as history taking, blood pressure and weight measurement, how to use male & female condoms) and role play (short drama depicting the availability of health officers, free ANC, FP & PMTCT services at the health facilities) lasted for two hours, it covered relevant areas such as meaning, importance, benefits etc, of the three.

**Brief Description of Health Talk, Demonstration and Role Play**

|  |  |
| --- | --- |
| Intervention component | Description |
| 1. Health Talk
 | 45 minutes for introductory lecture by health educator on meaning, importance and care received at ANC, FP and PMTCT clinics. |
| 1. Demonstration
 | 30 minutes presentation on skill training which involves displaying and explaining the care mothers receive in the ANC, FP and PMTCT clinics such as history taking, blood pressure and weight measurement, how to use male and female condoms. |
| 1. Role Play
 | 25 minutes skill training exercise involving participants using short drama depicting the availability of health officers, free ANC, FP and PMTCT services at the health facilities.  |
| 1. Summary
 | 20 minutes for recap, questions and answers between health educator and participants. |

components of safe motherhood under study namely; antenatal care, family planning and prevention of mother to child transmission (PMTCT) of HIV and AIDS.

 The researcher self designed a comprehensive quick reference teaching guide to facilitate training of the research assistants for understanding of the subject matter, uniformity of ideas and information given to the participants in the intervention group. It also served as a guide while giving the health talk for coverage of topics and effective time management. Forty five minutes was allotted to the components in the health education intervention session. A total of 800 questionnaires were served to the 400 respondents as pre and posttest to the intervention and control groups respectively. All the 800 questionnaires served were fully completed and returned for all the groups. The pretest questionnaires were filled and returned at the start of the clinic for each group and the posttest questionnaires were filled immediately after the health education intervention and the clinic routine for the intervention and control groups respectively.

**Methods of Data Analysis**

 Data for this study were collated, coded and analyzed using SPSS version 17. They were analyzed to address research questions and hypotheses. The research questions were answered using mean and standard deviations. The responses to items were weighted and a criterion mean was set at 2.5 for attitude for taking decision. An ANCOVA test was used to answer the hypotheses at 0.05 level of significance. ANCOVA test was used to determine possible changes in attitude and significance was established when p<0.05.

**Results and Findings**

Table 1 indicated that the women in the intervention group had higher attitudinal gain in FMP (MG=1.2350), this was followed by their gain in ANC (MG=.6250) and the least was had in terms of PMTCT (MG=.2775). The women in the control group had their highest attitudinal gain in terms of FMP (MG=1.0775), this was followed by their gain in ANC (MG=.4150) and the least gain was found PMTCT (MG=1.35). The overall SM mean gain score of women in the intervention group was .7118 representing .31.78% mean gain difference, while that of their control counterparts was .5082 representing 23.25% mean gain difference. Table 2 revealed that participants in the experimental group in the age bracket of 35-44 years had the highest gain in attitude (MG=.7657) and those in the control group in the age bracket of 35-44 years had the highest attitudinal gain (MG=.5483).

 Table 3 includes results ofSummary of ANCOVA on Difference in Attitude towards Safe Motherhood among Women of Reproductive Ageindicating that the health education intervention did have a statistically significant impact on attitudes towards safe motherhood components of ANC, FP and PMTCT among women of reproductive age in Eleme, Rivers State with calculated ANCOVAF1, 397=70.077, p=.000, p<.05 and partial eta-squared statistics = a. R Squared = .150 (Adjusted R Squared = .146). Results pertaining to Summary of ANCOVA on Difference in Attitude towards Safe Motherhood among Women of Reproductive Age based on Age Group are depicted in Table 4 indicating there was no significantly significant differences observed among the different age groups regarding the attitudes toward SMI as a result of the health education intervention F3, 394=.079, p=.971, p>.05 and partial eta-squared statistics = a. R Squared = .151 (Adjusted R Squared = .140).

**Discussion of Findings**

 The health education intervention resulted in the improvement of the participants’ in the intervention group attitudes towards SMI component of ANC, FP. PMTCT with a post test mean scores of 2.8086, 3.3650, 2.6825 and 2.9514 respectively while the post test mean scores for the control group was 2.5303, 3.1200, 2.4313 and 2.6938 for ANC, FP. PMTCT. In addition, the attitudes on overall SMI (that is, the total score of all the components for each group) posttest mean gain score of .7118 (31.78%) for the intervention group against .5082 (23.25%) for the control group that did not undergo the health education intervention further buttress the fact that the intervention had impact on attitude of women of reproductive age towards safe motherhood initiative components of antenatal care, family planning and PMTCT of HIV and AIDS.

 In applying the six constructs of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self efficacy of Health Belief Model in the health education intervention in this study, the mothers were taught that though pregnancy is a physiological state in normal conditions, however, the physiological processes such as increased nutrient requirement for mother and growing fetus, and reduced immunity place the mothers at risk of diseases such as malaria, anemia and high blood pressure (perceived susceptibility). These conditions could be life threatening if not detected early and treated (perceived severity), the antenatal care for example, offers the opportunity for early detection and prompt treatment, as use of family planning services prevent high risk pregnancy and use of PMTCT services reduce the risk of transmission of HIV to newborn babies (perceived benefits). In effect, the health education intervention as well as the awareness creating programs of the Rivers State Government especially during the maternal and child health week, celebrated every year by the community health officers, has integrated SMI components of ANC, FP and PMTCT into the social and cultural consciousness of the women in Eleme, Rivers State, Nigeria.

 This is consistent with the findings of Nwokocha (2006) who noted that evidence of the influence of beliefs and practice on pregnancy outcomes where the activities of individuals are strictly regulated by cultural norms and values, has been demonstrated. Nwokocha noted that the findings of the study provided data to affirm that there are links between socio-cultural variables and pregnancy outcomes among the Ibani of Rivers State, Nigeria, by identifying communal and individual values, attitude and behaviors related to pregnancy. Nwankwo asserted further that although individuals are ascribed some freedom within the social system; such independence is unwittingly guided by the norms and values of a society.

 Simiarly, Khoramabadi et al (2015) study on effects of education based on health belief model on dietary behaviors of Iranian pregnant women aimed assessing the effects of training on the Health Belief Model on dietary behaviors of a sample of pregnant Iranian women. The study was a randomized controlled clinical trial, involving 130 pregnant women who attended two health care centers of Shahid Beheshti University of Medical Sciences. Data was collected by a structured questionnaire in three parts and seven sub-scales (including demographic characteristics, knowledge and dietary behaviors) based on the Health Belief Model. These results demonstrated that there were significant differences between the two groups in terms of mean scores of knowledge, perceived severity, perceived barriers, performance guide and individual performance, and the means of these variables in the intervention group were also higher than the control group.

 Perceived barriers are mothers’ preference to patronize TBAs or local maternity homes and cues to action include appointment cards and exchange of phone numbers between pregnant mother and health worker. The services are free at the time and the health centers are located in every ward in the LGA for easy accessibility (self efficacy). Moore, Alex-Hart and George (2011) study in Gokana Local Government Area of Rivers State, Nigeria revealed that factors responsible for non utilization of health facility for delivery include: Long distance to health facility 33(68.7%), onset of labor at night 40(83.3%), unavailability of means of transportation 37(77.1%), lack of money for transportation 26(54.2%), unsatisfactory services at health facility 26(54.2%), unfriendly attitude of staff of the health facility 34(70.8%), unavailability of staff at health facility 32(64.0%), lack of urgency at health facility, 36 (75.0%), previous uneventful delivery at the health facility 32(66.7%). In conclusion, utilization of health care services during delivery in Nigeria is still poor (Moore, Alex-Hart & George, 2011).

**Recommendations**

 Based upon the findings of this research, it is recommended that:

1. Government of Rivers State should provide functional health education units in all the MPHC in the LGAs of the state to ensure planned health education activities in the health centers as well as in the communities. The health education activities should cover all aspects of safe motherhood to ensure decrease in maternal morbidity and mortality rates in the State.
2. Government technocrats, administrators and health managers in Rivers State should be properly oriented on WHOs policy guidelines on health education practice as presented in the current National Policy on Health Promotion of Nigeria.

**Conclusions**

 Health education interventions are planned learning experiences which use different forms of communication to help individual adopt behaviors to improve, promote, maintain or restore health. The findings of this study revealed that the attitude of women of reproductive age towards safe motherhood improved significantly as a result of the health education intervention. The intervention group had a higher mean gain than the control group. They performed better than their control group counterparts in their scores on attitudes towards safe motherhood components. This occurred after the intervention group was given two hours of health talk, demonstration of history taking, blood pressure and weight measurement and role play exercises and the control group maintained the usual clinic routine. The health education intervention using health talk, demonstration of history taking, blood pressure and weight measurement, etc and role play exercises were centered on presenting relatively unbiased information (Rational model) and on the six construct of the Health Belief Model; perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self efficacy described above.

 Likewise, there was no significant difference on impact of health talk, demonstration and role play on attitude of women of reproductive age towards safe motherhood based on age in both the intervention and control groups. This is because regardless of age, health education’s prerogative is to improve the health of the individual through appropriate teaching and learning experiences. The individual’s knowledge of related health issues and acquisition of skills needed to behave in health promoting way is increased and thus is motivated to behave in appropriate health ways. The effectiveness of health education is increased when people are taught to take personal actions to address discrete and immediate health or behavioral problem of importance to them (WHO , 2012).

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**Table 1: Pre and Post Tests Grand Mean / Mean Gain Scores on Attitude of Women of Reproductive Age Based on Group towards Safe Motherhood Initiative Components**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | **Pretest**  | **Posttest**  | **Mean**  |
| **Group** | **Variable** | **NF** | **Grand Mean 4ᔀgroupᘀVariableᜀ%gain᠀Attitude** | **SD** | **Grand Mean 4ᔀgroupᘀVariableᜀ%gain᠀Attitude** | **SD** | **Gain****Diff.**  | **%gain** |
| Intervention | ANC | 200 | 2.1835 | .54461 | 2.8086 | .53108 | .6250 | **28.63** |
|   | FP | 200 | 2.1300 | .64823 | 3.3650 | .60714 | 1.2350 | **57.98** |
|   | PMTCT | 200 | 2.4050 | .50161 | 2.6825 | .45647 | .2775 | 11.54 |
|   | Overall SM | 200 | 2.2396 | .45776 | 2.9514 | .31684 | .7118 | 31.78 |
| Control | ANC | 200 | 2.1153 | .45098 | 2.5303 | .49698 | .4150 | 19.62 |
|   | FP | 200 | 2.0425 | .49818 | 3.1200 | .68222 | 1.0775 | 52.75 |
|   | PMTCT | 200 | 2.3988 | .49119 | 2.4313 | .44969 | .0325 | 1.35 |
|  | Overall SM | 200 | 2.1857 | .38147 | 2.6938 | .29759 | .5082 | 23.25 |

**Table 2: Grand Mean Scores on Impact of Health Education Intervention on Attitude of Women of Reproductive Age towards Safe Motherhood Based on Age Group**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  **Attitude**  |
| **Group**  | **Age** |  **N** |  |  | **Grand Mean** | **SD** |
| Intervention  | 15-24 yrs | 41 |  |  | .6317 | .59134 |
| 25-34 yrs | 87 |  |  | .7113 | .54220 |  |  |
| 35-44 yrs | 67 |  |  | **.7657** | **.54484** |  |  |
| 45 yrs and above | 5 |  |  | .6540 | .65744 |  |  |
| Control  | 15-24 yrs | 51 |  |  | .4904 | .53477 |
| 25-34 yrs | 87 |  |  | .4913 | .47923 |  |  |
| 35-44 yrs | 53 |  |  | **.5483** | .**50584** |  |  |
| 45 yrs and above | 9 |  |  | .5356 | .39119 |

I cannot find Tables 3 and 4 in the supplemental files.

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