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Assessing the Effect of a Health Education Intervention on Attitudes Toward Safe Motherhood Among Women of Reproductive Age in Eleme, Rivers State, Nigeria

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Abstract

Since the inception of the 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 strategies to curb the high maternal morbidity and mortality rates in the developing countries of Sub-Saharan African and Asia. This quasi-experimental study had a sample size of 400 women, and the researcher used health talk, demonstration (of history taking, blood pressure, weight measurement to establish women's health status, etc.), and role-play exercises to investigate the effects of health education intervention on the attitudes of women of reproductive age toward SMI components of antenatal family planning and PMTCT of HIV and AIDS in Eleme, Rivers State, Nigeria. Findings revealed the intervention had a significant effect on the attitudes of women in the intervention group, who had a higher mean gain difference (.6250, 1.2350, and .2775) than did the control group (.4150, 1.0775, and .0325) in the posttest scores, F1 (397 = 70.077, p = .000, p < .05). However, statistically, there was no significant difference on attitudes toward SMI between the age groups of the women, F3 (394 = .079, p = .971, p > .05).

Keywords

effect; health education; attitude; women; reproductive age

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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 1990 and in 2003, and as a result, the country may be 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 up to 10% of the world's maternal deaths. As many as 60,000 Nigerian women die from pregnancy-related complications each year (Bankole et al., 2009). It is only because India has a population 8 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).

The World Health Organization (WHO, 1977) stated that maternal death is the death of a pregnant woman or death of a woman within 42 days of the end of the pregnancy, irrespective of the age or location of the pregnancy; such death may be linked to poor management of pregnancy. However, death resulting from accidental or incidental causes but unrelated to pregnancy is not regarded as maternal death. 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).

Hemorrhage, 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 women suffer injury, infection, or illness (Ravindran & Berer, 2000). Consequently, 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 in general (Olise, 2007). According to the WHO Global Health Observatory (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").

The Safe Motherhood Initiative (SMI) was launched in 1989 in Nairobi, Kenya, to create awareness of maternal 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 (Family Care International, 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 300/100,000 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 (as cited in WHO Regional Office for the Eastern Mediterranean [EMRO], 2012) defines 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 to live and behave in ways that promote, maintain and restore health" (p. 13). The knowledge and skills are acquired through awareness-raising and skill-acquisition educational methodologies. Rimer, Glanz, and Rasband (as cited in WHO EMRO, 2012) posited that the most effective health education interventions are evidence based and are based on theories and models.

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 indicate that maternal death figures in the hospital are one of the highest in the world. Fears that the situation has not improved much were confirmed by Akani (2015), who stated that Nigeria accounted for 25% of maternal, newborn, and child deaths in Sub-Saharan Africa in 2014. Akani gave the alarming statistics while delivering the university's 116th inaugural lecture. Akani noted that Sub-Saharan Africa, which represents 11% of the world's population, contributes 50% to global maternal deaths annually. According to Akani, 4.7 million of the 4.9 million newborn and child births per year occur in that region, with Nigeria accounting for a significant percentage of this number. The risk of a woman dying as a result of pregnancy or childbirth in Nigeria is about 1 in 15, as opposed to 1 in 5,000 in developed nations. Additionally, an estimated 52,900 women and an estimated 250,000 newborns die from pregnancy-related complications annually.

Akani (2015) 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. Furthermore, Akani blamed the deaths on quacks, unskilled native midwives, shortage of health care fa-

cilities, lack of planning, traditional and cultural practices, female genital mutilation, unsafe abortions, and sexually transmitted infections. This confirmed the United Nation's source data of Nigeria's maternal mortality rate of 1,500/100,000 births in 1980–1987, which appeared to be among the highest in Black Africa. However, a story ("Nigeria Accounts for 13%", 2014) noted that data made available by the United Nations Population Fund (UNFPA) reveal that over the last 20 years Nigeria has made significant progress in reducing the maternal mortality ratio. However, it added that Nigeria has to make concerted efforts to reach the Millennium Development Goal of 300/100,000 (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 consistent health education at the health facilities by nurses and community health officers, free medical care services, free obstetric services (free caesarean section inclusive). In addition, there is celebration of Maternal and Child Health Week and Safe Motherhood Day; these celebrations feature 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 education at the health facilities by nurses and community health officers is most often undocumented, making it hard to assess outcomes appropriately. Available records from the office of the Special Adviser to the Governor on Medical Statistics also reveal poor usage of health facilities in the LGAs for antenatal and delivery purposes (Lawson, 2012). This is in spite of efforts by the RVSG to achieve the opposite to reduce the maternal mortality ratio in the state by employing strategies such as a mass awareness campaign and community outreach programs.

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

	LGA	2008				2009				2010				2011			
1	Obio-Akpor	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2	Emohua	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
3	Etche	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4	Ogu-Bolo	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
5	Bonny	x		x	x	x	x	x	x	x	x	x	x		x	x	x
6	Andoni	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	Abua-Odual	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
8	Okrika	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
9	Omuma	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x
10	Port-Harcourt	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x
11	Ikwerre	x	x	x		x	x	x	x	x	x	x				x	x
12	Khana					x	x	x	x	x	x	x	x	x	x	x	x
13	Gokana					x	x	x	x	x	x	x	x	x	x	x	x
14	Akuku-Toru	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x
15	ONELGA					x	x	x	x	x	x	x	x	x	x	x	x
16	Asari-Toru	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
17	Eleme		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
18	Opobo/Nkoro	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
19	Ahoada-West					x	x	x	x	x	x	x	x	x	x	x	x
20	Ahoada-East					x	x	x	x	x	x	x	x	x	x	x	x
21	Tai														x	x	x
22	Degema													x	x	x	x
23	Oyigbo					x	x	x		x	x					x	x

Figure 1. Analysis of data on maternal health indices 2008–2011: Trends in utilization of antenatal care services in Rivers State LGAs. Data from Rivers State Office of the Governor on Medical Statistics, Lawson (2012).

A cross-sectional questionnaire-based study involving 112 mothers aged 15 to 49 years from Gokana LGA 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 LGA of River State, Nigeria. The LGA has 12 health centers, and six health centers were selected through multistage sampling. One hundred twelve mothers were then selected by simple random sampling.

Out of the 112 mothers interviewed, 91(81.3%) were married, 13 (11.6%) were single, five (4.5%) were widows, two (1.8%) were divorced, and one (0.9%) was separated. Of these mothers, 97 (86.6%) had formal education and 15 (13.4%) had no formal education. Most of the mothers (37.5%, $n = 42$) were between the ages of 25 and 29 years. Of the mothers, 64 (57.1%) in their recent delivery used a health facility and 48 (42.9%) did not. Findings reveal

that factors responsible for nonutilization 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%); and 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 et al., 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. This area has 23 LGAs and a population of 3,187,864, per the 1991 census. Nwokocha studied the Ibani, an ethnic group inhabiting the Bonny Island, which consists of 14 kingdoms. Through examination of 19 cases, Nwokocha demonstrated evidence of the influence of beliefs and practices on pregnancy outcomes in places where the activities of individuals are strictly regulated by cultural norms and values. The result of the research showed that high fertility among the Ibani, as in most other communities in Sub-Saharan Africa, is explained by the value for children and large family size. In the case of the Ibani, where remarrying is allowed for women, each union makes a new demand on the women in terms of fertility. This implies that multiple marriages have a significant relationship with pregnancy and high fertility. A combination of factors has been identified as affecting pregnancy outcome among the Ibani.

Nwokocha's (2006) study provides data to affirm the links between sociocultural variables and pregnancy outcomes among the Ibani of Rivers State, Nigeria, with identification of communal and individual values, attitudes, and behaviors related to pregnancy. In conclusion, Nwokocha noted that the complexities surrounding analysis of these issues signals a need for a holistic understanding of events related to pregnancy. The researcher 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

1. The purpose of this study was to assess the effects of a health education intervention using health talk; demonstration of history taking, blood pressure, weight measurement, and so forth; and role-play on attitudes of women of reproductive age toward SMI components of antenatal care (ANC), family planning (FP), and PMTCT of HIV and AIDS in Eleme, Rivers State, Nigeria. Improved implementation and evaluation

of current health education programs and the utilization of health facilities in LGAs for antenatal and delivery purposes by the women may result in improved maternal health and reduced maternal mortality. Demonstration of history taking, blood pressure, and weight measurement to establish women's health status and role-play exercises were intended to convince the women of the care they would receive and benefits they would derive from patronage of the health facilities during pregnancy and childbirth.

2. This study also intended to find out if health talk; demonstration of history taking, blood pressure, weight measurement, and so forth; and role-play exercises would have an effect on the attitudes of women of reproductive age toward SMI components of ANC, FP, and PMTCT of HIV and AIDS based on selected demographic characteristics of different age groups (see Table 1 for age group matrix) of 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 an effect on attitudes of women of reproductive age toward SMI components of ANC, FP, and PMTCT of HIV and AIDS?
2. Do health talk; demonstration of history taking, blood pressure, and weight measurement; and role-play exercises have an effect on attitudes of women of reproductive age toward SMI components of ANC, FP, and PMTCT of HIV and AIDS between the age groups 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 not have an effect on the attitudes of women of reproductive age toward SMI components of ANC, FP, and PMTCT of HIV and AIDS.
2. Health talk; demonstration of history taking, blood pressure, and weight measurement; and role-play exercises will not have an effect on the attitudes of women of reproductive age toward SMI components of ANC, FP, and PMTCT of HIV and AIDS between the age groups (see Table 1 for age group matrix) of the women.

Theoretical Framework

According to Khoramabadi et al. (2015), to provide successful health interventions, it is essential to design and implement effective health education programs. Successful health education also depends on the proper use of theo-

ries and models. The aim of this study was to assess the effects of health education intervention using health talk; demonstration of history taking, blood pressure, and weight measurement; and role-play on attitudes of women of reproductive age toward SMI components of ANC, FP, and PMTCT of HIV and AIDS. Theories that provided the conceptual framework for the study were two intrapersonal capacity theories: the Rational Model and the 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 EMRO, 2012). A teaching guide prepared by the researcher based on the principles of the Rational Model and the Health Belief Model was used for the health education intervention performed once for the intervention group during a 2-hr session (using health talk, demonstration, and role-play). Women in the control group received routine care and did not receive training on the models (Khoramabadi et al., 2015).

The Rational Model also known as the knowledge, attitudes, practices model is based on the understanding that increasing a person's knowledge will prompt a behavior change. In this case, the change in behavior sought is the attendance and utilization of health facilities in Eleme, Rivers State for ANC, FP, 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. This is achieved by presenting relatively unbiased information (WHO EMRO, 2012). The Health Belief Model illustrates the relationship between beliefs and health, and it is based on the hypothesis that preventive health behavior consists of personal beliefs (Khoramabadi et al., 2015). The Health Belief Model explains human health decision making and subsequent behavior based on six constructs: 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 & Glanz, 2005). Through the health education interventions, the women were educated on ANC, FP, and PMTCT of HIV and AIDS to encourage them to seek the SMI services offered in the health facilities.

The Rational and Health Belief models were employed in the study because the researcher used 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 ANC, FP, and PMTCT and to assess if the health education intervention would have an effect on the attitudes of women of reproductive age toward SMI components in Eleme, Rivers State, Nigeria. Also, the intervention provided relevant information on the importance of ANC, FP, and PMTCT and the key roles they play in preventing and reducing maternal and infant morbid-

ity and mortality arising from pregnancy, its complications, and related issues. Data were collected using a self-designed, structured effect of health education questionnaire covering the three components of safe motherhood under study, namely, ANC, FP, and prevention of mother-to-child transmission of HIV and AIDS (PMTCT; including demographic characteristics) based on the Rational Model and the Health Belief Model. To evaluate the intervention, the researcher administered the questionnaire before and immediately after completion of the intervention, and participants in both groups fill out the questionnaire. Data were analyzed using SPSS software and reported in tables.

Similarly, Khoramabadi et al. (2015) studied the effects of education based on the 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 at the Shahid Beheshti University of Medical Sciences. Data were collected using a structured questionnaire in three parts and seven subscales (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 2-hr sessions in the intervention group. Women in the control group received routine care and did not receive training on the model.

These results demonstrated 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 means of the control group. On the other hand, after the intervention, no statistically significant difference was found in the mean scores of perceived benefits and perceived susceptibility between the groups (two independent samples t test, $p < 0.001$). Khoramabadi et al. (2015) concluded that educational interventions based on health promotion patterns can be effective in enhancing awareness, improving understanding of risks, and reducing barriers to healthy behavior, ultimately improving women's health and nutritional performance during pregnancy.

Concept of Health Education Intervention

Health education is defined by the Joint Committee on Health Education and Promotion Terminology (as cited in WHO EMRO, 2012) "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 WHO (1998) defines health education as comprising "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*" (p. 4).

According to WHO EMRO (2012), health education forms an important part of 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 is focused on building individuals' capacities through educational, motivational, skill-building, and consciousness-raising techniques. Evidence-based health education interventions are most likely to be based on theory and have been shown through empirical study to be effective. According to Rimer, Glanz, and Rasband (as cited in WHO EMRO, 2012), 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. Rosenberg and Donald, Jenicek, and Cottrell and McKenzie (as cited in WHO EMRO, 2012) noted that based on the definitions of evidence-based medicine, evidence-based public health, and the work of Rimer et al. (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.

Methods in Health Education

According to the National Open University of Nigeria (NOUN, 2013) in its *Health Education, Advocacy, and Community Mobilization* module, teaching methods in health education refers to ways through which health messages are used to help solve problems related to health behaviors. Teaching materials or aids are used to help and support the communication process to bring about desired health changes in the audience. Health educators in health education work use a variety of teaching methods. These methods are adapted to different situations so that health education messages can be communicated most effectively. The NOUN (2013) discusses these teaching methods as presented next.

Health talks. The best way of communicating health messages in certain situations is by using health talks. Talking is often the most natural way of communicating with people to share health knowledge and facts. In health education, there will always be many opportunities to talk with people. Group size is important: The number of people to engage in a health talk depends on the group size. However, talks are most effective if conducted with small gatherings (5–10 people) because the larger the group, the less chance that each person has to participate. If the group is too big, it is difficult to get the health message across. Talking to a person who has come for help is much like giving advice. But advice is not the same as health education. To make a talk educational rather than just a chat, health educators can combine it with other methods, especially visual aids such as posters or audiovisual material. Also, health educators can tie a talk into the local setting by using proverbs and local stories that carry a positive health message.

Demonstration. Health educators often find themselves giving a demonstration in the course of performing their duties. This form of health education is based on learning through observation. There is a difference between knowing how to do something and actually being able to do it. The aim of a demonstration is to help learners become able to do the skills themselves, not just know how to do them. The health educator needs to make the demonstration relevant to the local situation and find ways to make health-related demonstrations a pleasant way of sharing skills and knowledge. Although demonstration sessions usually focus on practice, they also involve theoretical teaching as well—showing how is better than telling how. "If I hear, I forget. If I see, I remember. If I do, I know" (Chinese proverb). Note that people remember 20% of what they hear, people remember 50% of what they hear and see, and people remember 90% of what they hear, see, and do—with repetition, close to 100% is remembered.

Role-play. In role-play, some of the participants take the roles of other people and act accordingly. Role-play is usually a spontaneous or unrehearsed acting out of real-life situations during which others watch and learn by seeing and discussing how people might behave in certain situations. Learning takes place through active experience; it is not passive. Role-play uses situations that the members of the group are likely to find themselves in during their lives. Health educators should use role-playing because it shows real situations. It is a direct way of learning; participants are given a role or character and have to think and speak immediately without detailed planning because there is usually no script. In a role-playing situation, people volunteer to play the parts in a natural way and other people watch carefully and offer suggestions to the players. Some of the people watching would decide to join in with the play.

The purpose of role-play is to act out real-life situations so people can better understand their problems and the behavior associated with the problem. For example, they can explore ways of improving relationships with other people and gain the support of others as well. They can develop empathy, or sympathy, with the points of view of other people. Role-play can give people experiences in communication, planning, and decision making. For example, it could provide the opportunity to practice a particular activity such as coping with a difficult home situation. Using this method would help people to reevaluate their values and attitudes. Role-play is usually undertaken in small groups of four to six people (NOUN, 2013).

Concept of Safe Motherhood

Safe motherhood means that women are safe and healthy during pregnancy and delivery ("Human Rights Matrix," 2013). Safe motherhood is made up of initiatives, practices, protocols, and service delivery guidelines that are organized to provide high-quality obstetric and gynecological services to women

and their babies throughout the duration of pregnancy and afterwards. Such services include FP, prenatal, delivery, and postpartum care to ensure that the highest level of health for the mother, fetus, and infant in the antepartum, intrapartum, and postpartum periods is maintained ("Human Rights Matrix," 2013).

Conceptually, safe motherhood is a component of reproductive health that deals with prenatal care, safe delivery by a skilled attendant, essential obstetric care, postnatal and neonatal care, postnatal care and breast-feeding (Federal Ministry of Health, 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; FP to enable women to plan their pregnancies and prevent complications related to too many, too close, too early, and too late pregnancies; health education and services for adolescents; and community education for women, their families, and decision makers (Fitaw et al., 2005).

Safe Motherhood Initiative

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 1970s when the United Nations proclaimed the period between 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, 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 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).

The SMI represents a worldwide effort that aims to increase attention to and reduce the devastating numbers of women who suffer death or serious illness every year; making motherhood safe for the world's women calls for national governments, funding agencies, and nongovernmental organizations to make maternal health an urgent health priority and to ensure that the neces-

sary 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 (SMI, 2011).

Subsequent work on the SMI by the Inter-Agency Group and others has outlined clear strategies and specified interventions for the reduction of maternal morbidity and mortality, often referred to as the Pillars of Safe Motherhood. For reductions in life-threatening risks and mortality, good-quality maternal health services by trained health workers must be available and must be used (SMI, 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 (World Bank Group, 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. Second, there must be good health care delivery system, including ANC, at various levels. The third factor is a functional referral system to ensure that cases that cannot be handled effectively at lower levels are transferred to higher levels of health care delivery for appropriate treatment; many countries have established a national SMI.

May 8 of every year is International Safe Motherhood Day. Strategies for achieving United Nations–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, FP, and adequate nutrition (Olise, 2007). Furthermore, the United Nations Population Fund (UNFPA, 2012) stated that working for the survival of mothers is a human rights imperative. It also has enormous socioeconomic ramifications and is a crucial international development priority. Components of SMI on which data were collected are discussed in the following sections.

Antenatal Care

Olise (2007) referred to ANC as the professional service given to pregnant women to promote and maintain the good health of the expectant woman and the unborn child until the safe delivery of a mature and healthy baby. Focused ANC refers to a minimum of four antenatal clinic visits, each of which specifies items of client assessment, education, and care to ensure the prevention of or early detection and prompt management of complications (Federal Ministry of Health, 2012). In the developed world, 97% of women receive prenatal care. This contrasts sharply with the experience in many developing countries where

less than 30% of the women receive ANC. A good number of those who receive ANC in rural areas even prefer to deliver at home attended to by traditional birth attendants or relatives who are well versed in local traditional practices and customs, but not necessarily safe health practices (Olise, 2007).

Family Planning

FP, also known as child birth spacing, simply refers to a decision made by couples and individuals on when to get pregnant, the number of children to have, and the intervals at which to have them to be able to cater to the family's needs (Society for Family Health Nigeria, 2012). It also assists infertile couples with investigation and treatment. FP is one of the strategies or practices used in safe motherhood to prevent unwanted and at-risk pregnancies that would result in maternal and infant morbidity and mortality. As the saying goes, "prevention is better than cure."

The rationales for FP are as follows:

1. *health rationale*: reduction of risky pregnancies, prevention of abortion;
2. *socioeconomic rationale:* enough shelter, food, employment;
3. *human right*: provides opportunity for couples to decide the no and timing of childbirth, improves status of women in society; and
4. *demographic rationale* (not used in the Nigerian setting): regulates population growth for better national planning and development (SHF, 2012).

Prevention of mother-to-child transmission of HIV and AIDS. PMTCT stands for prevention of mother-to-child transmission of HIV. It involves all the measures or interventions carried out to reduce the risk of HIV transmission from an infected mother to her baby during pregnancy, labor, delivery, and breast-feeding. According to Zambia AED/LINKAGES PMTCT Programme (2009), factors that contribute to mother-to-child transmission of HIV include the following:

- ***Viral load.*** A high HIV viral load in the mother's blood increases the chances of a baby being infected with HIV. Also, chances of a baby getting infected increase when the mother has an advanced infection or full-blown AIDS and gets a new infection during pregnancy or breast-feeding.
- ***Maternal factors.*** The chances of mother-to-child transmission of HIV increase when a mother has low immunity (low CD4 count), a poor nutritional status, breast conditions (e.g., cracked nipples or mastitis), an untreated sexually transmitted infection (STI), and no antiretroviral (ARV) treatment during and after delivery.

- ***Obstetrical factors.*** Chances of mother-to-child transmission of HIV increase with the following: multiple vaginal examinations; premature rupture of the membranes; prolonged labor, which could lead to interventions that would increase chances of HIV infection; intrapartum hemorrhage; episiotomy; and milking the cord during delivery.
- ***Foetal factors.*** Chances of a baby being infected with HIV increase when the baby is born prematurely and the mother has a multiple pregnancy.
- ***Other factors.*** Other factors that contribute to babies getting infected through (MTCT) include the following: mixed feeding, unnecessary suction of the baby during delivery, duration of breast-feeding, and breast-feeding from an infected mother while the baby has lesion or thrush in the mouth. A mother having multiple sexual partners; inconsistent use of condoms; gender inequality, which makes it difficult for women to negotiate safer sex; and adverse cultural practices (e.g., sexual cleansing of widows) are also inclusive.

WHO's four-pronged approach forms the basis of PMTCT of HIV. The four prongs are prevention of HIV infection, particularly in women, young people, and parents-to-be; prevention of unintended (unwanted) pregnancies; prevention of HIV transmission from HIV-infected women to their children (MTCT); and provision of care and support to affected families and individuals (Zambia AED/LINKAGES PMTCT Programme, 2009).

Concept of Maternal Mortality

The WHO defines maternal death mortality as

> the death of 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 because 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 important indicators of overall health system quality because pregnant women survive in health facilities in good sanitary condition that are safe, well staffed, and equipped and that provide them with essential drugs. If new mothers are thriving, it indicates that the health care system is doing its job. If not, problems likely exist (Garrett, 2007).

The WHO definition of maternal mortality is one of several and raises some controversial issues that 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, for instance, deaths resulting from gender-based violence when a woman is pregnant. As a result, other definitions of maternal mortality include deaths resulting from accidental and incidental causes; for example, incidental causes include deaths secondary to violence against women related to the pregnancy and deaths in relation to the socioeconomic and cultural environment ("Maternal Health," 2013). Also, it has been reported that about 10% of maternal deaths occur late, that is, after 42 days following a termination of pregnancy or delivery (Koonin, Atrash, Rochat, & Smith, 2013), and thus, some definitions extend the time of observation to 1 year after the end of 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. The WHO (2012) also stated that maternal mortality is unacceptably high, especially in developing countries. 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 form some of the early studies on the subject matter, the majority of these deaths are in developing countries. As the figures above show, 25% of women of reproductive age live in developed countries, but only 1% of all maternal deaths take place in those countries (Starrs, 1987). Even among the developing regions of the world, however, there is substantial variation. Because of 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).

Method

Research Design

The pretest, posttest, control group quasi-experimental research design (Nwankwo, 2013) was used in this study to investigate the effects of health education intervention on the attitudes of women of reproductive age toward SMI components of ANC, FP, and PMTCT of HIV and AIDS in Eleme, Rivers State, Nigeria. It was considered appropriate for this study because the researcher sought to test the effects of health education intervention on the attitudes of women of reproductive age toward SMI components of ANC, FP, and PMTCT of HIV and AIDS in Eleme, Rivers State, Nigeria. The design used was parallel, un-blinded (it was impossible for participants to be blinded to the intervention

because they had to actively participate in the health education intervention) and consisted of two blocks, intervention and control groups.

Table 1
Ages and Distribution of Participants in the Intervention and Control Groups

Group	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

Note. Participants in the intervention and control groups were 200 each, totaling 400 participants.

Population for the Study

This study took place in Eleme LGA of Rivers State, for about 6 weeks between April and May 2014. A population of 1,082 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 LGA of Rivers State. The estimates were derived from the records of the ANC, FP, and infant welfare clinics. The weight records of babies weighed at the infant welfare clinic were used as a guide to estimate the number of women of reproductive age at the infant welfare clinic, because each child was accompanied by his or her mother, and data obtained were as follows: Model Primary Health Center (MPHC) Ebubu (496, 510, and 510); MPHC Eteo (464, 426, and 437); MPHC Onne (127, 149, and 128); total (1,087; 1,085; and 1,075), respectively, and grand total (3,247) for January, February, and March, respectively (MPHC Ebubu, 2014; MPHCr Eteo, 2014; MPHC Onne, 2014;).

The participants for this study were women (newly enlisted for the study) of reproductive age (15–49 years), pregnant or not, who attended the antenatal, FP, and infant welfare clinics at three of the six state-government-owned health centers in Eleme LGA 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) pregnant or not but must be healthy, (3) attended the antenatal, FP, and infant welfare clinics at MPHCs Ebubu, Eteo, and Onne. The exclusion criteria included (1) women outside the reproductive age group, (2) unhealthy whether pregnant or not, (3) did not attend antenatal, FP, and infant welfare clinics at MPHCs

Ebubu, Eteo, and Onne. Average monthly attendance was calculated as mean of the 3 months at 1,082.33 participants.

Sample and Sampling Techniques

The sample size for this study was 400 women of reproductive age. The figure was derived using Taro Yamen formula. Purposive sampling (with respect to geographical location), quota sampling, and simple random sampling 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, FP, 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 was used to collect data for this study. It comprised two sections, A and B, for which Section A was about demographics such as gender, age, parity, and educational qualifications and Section B dealt with the items used to elicit information on the variables being studied. Section B tested attitude toward SMI components using multiple-choice questions on a modified 4-point Likert scale of *strongly agree, agree, disagree,* and *strongly disagree.* The questionnaire was administered twice as pre- and posttest. Summated rating for the modified 4-point Likert scale was *strongly agree* = 4 points, *agree* = 3 points, *disagree* = 2 points, and *strongly disagree* = 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 participant on all the items was computed. The lowest score obtained from the responses in the section was 1 and the highest 4.

Validity of the Instrument

To ensure the face and content validity of the questionnaire, the researcher gave a draft of the questionnaire to her supervisor and two other lecturers of the Department of Human Kinetics and Human Education, University of Port Harcourt, Rivers State, Nigeria. This was after a panel of lecturers from the department had validated the instrument at a research proposal held in the department to consider the adequacy and appropriateness of the study. To ensure the effectiveness of the exercise, the researcher provided the lecturers with clear guidelines on what to do, in a letter that accompanied the questionnaire. The purpose of the study, research questions, and hypotheses of the study were

included in the guidelines. These helped the lecturers to determine which items elicited the information they were intended to elicit. In addition to this, specific instructions were given to the lecturers to review, where necessary, all the questionnaire items in terms of their clarity and the appropriateness of the language and expression to the respondents, including the appropriateness of the instruction to the respondents.

At the end of the questionnaire, space was provided for any comments the lecturers wished to make regarding the overall adequacy of the instrument. Thereafter, the items were modified along the lines suggested by lecturers' comments. See Appendix for the guidelines given to the lecturers.

Reliability of the Instrument

The Model Primary Health Center, 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 to modify the questionnaire items and to improve the reliability of the research instrument. The reliability test also acquainted the researcher on what problems would likely be encountered during the distribution and collection of data from the participants. Reliability for internal consistency of the instrument was done using the split-half method. For this purpose, 40 participants were selected using simple random sampling technique from the Model Primary Health Center, Agbonchia, Eleme LGA of Rivers State. Forty copies of the questionnaire were served there. These were retrieved, after being filled out by the women. The 40 questionnaires retrieved were split into equal halves of odd and even numbers. These were coded and first correlated using the Pearson product–moment correlation coefficient. Then the reliability on full test was done using Spearman–Brown formula: $rf = 2 * \text{Reliability on Half Test} / 1 + \text{Reliability on Half Test}$. The reliability coefficient value obtained for the variable attitude was $r = 0.79$. It was high enough to guarantee the use of the instrument for the study.

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 LGA 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, filled out, and retrieved. Instructions pertaining to filling out the questionnaires were thoroughly explained to the par-

ticipants. The questionnaires were administered and retrieved after being filled in by the participants. Any uneducated woman was assisted in filling out the questionnaires by the researcher, research assistants, and community health officers.

The participants were served the questionnaires twice, first as a pretest and second as a posttest 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 ANC, FP, and infant welfare clinics at three of the six state-owned government health centers in Eleme, Rivers State, for 6 weeks in 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 refreshments and were given souvenirs of safe motherhood caps, handkerchief, pens, and drinking cups designed by the researcher. Also, they were given free diapers, toys, and drinking cups for their babies. The procedures for the study, that is, first pretest and the health education intervention for the intervention group and the usual clinic routine for the control group and second the posttest, were explained to each participant including information about confidentiality. Those who accepted to participate had an opportunity to consider the information, ask questions, and have 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 including health talk (teaching mothers on meaning, importance, and care received at ANC, FP, and PMTCT clinics), demonstration (displaying and explaining the care women receive in the ANC, FP, and PMTCT clinics such as history taking, blood pressure, and weight measurement, how to use male and female condoms), and role-play (short drama depicting the availability of health officers, free ANC, FP, and PMTCT services at the health facilities) lasted for 2 hr, and it covered relevant areas such as meaning, importance, and benefits of the three components of safe motherhood under study, namely, ANC, FP, and PMTCT of HIV and AIDS.

Table 2
Brief Description of Health Talk, Demonstration, and Role-Play

Intervention component	Description
Health Talk	45 min for introductory lecture by health educator on meaning, importance, and care received at ANC, FP, and PMTCT clinics.

Demonstration	30-min presentation on skill training that involves displaying and explaining the care that mothers receive such as history taking, blood pressure, and weight measurement, how to use male and female condoms at the ANC, FP, and PMTCT clinics.
Role-Play	25-min skill training exercise involving participants using a short drama depicting the availability of health officers, free ANC, FP, and PMTCT services at the health facilities.
Summary	20 min for recap, questions, and answers between health educator and participants.

Note. Table depicts time and areas covered on each SMI component.

A self-designed, comprehensive, quick reference teaching guide based on the Rational Model and the Health Belief Model was provided 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 participants as pre- and posttest to the intervention and control groups, respectively. All of the 800 questionnaires served were fully completed and returned for all the groups. The pretest questionnaires were filled out and returned at the start of the clinic for each group, and the posttest questionnaires were filled out immediately after the health education intervention and the clinic routine for the intervention and control groups, respectively.

Data Analysis

Data for this study were collated, coded, and analyzed using SPSS (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 taking decision on attitudes of the women. An ANCOVA test was used to answer the hypotheses at 0.05 level of significance. An ANCOVA test was used to determine possible changes in attitude, and significance was established when $p < 0.05$.

Results

Table 3 shows that the women in the intervention group had higher attitudinal gain in FP ($M = 1.2350$); this was followed by their gain in ANC ($M = .6250$), and the least was had in terms of PMTCT ($M = .2775$). The women in the control group had their highest attitudinal gain in terms of FP ($M = 1.0775$); this was followed by their gain in ANC ($M = .4150$), and the least gain was found PMTCT ($M = 1.35$). The overall SMI mean gain score of women in

the intervention group was .7118, representing 31.78% mean gain difference, and that of their control counterparts was .5082, representing 23.25% mean gain difference. Table 4 reveals that participants in the experimental group in the age bracket of 35–44 years had the highest gain in attitude (M = .7657), and those in the control group in the age bracket of 35–44 years had the highest attitudinal gain (M = .5483).

The results of the ANCOVA on difference in attitude of women of reproductive age toward safe motherhood are are shown in Table 3 and indicate that the health education intervention had a statistically significant effect on attitudes of women of reproductive age toward the safe motherhood components of ANC, FP, and PMTCT in Eleme, Rivers State, F1 (397 = 70.077, p = .000, p < .05), partial eta-squared statistics, R^2 = .150 (adjusted R^2 = .146). Results pertaining to the ANCOVA on difference in attitude toward safe motherhood among women of reproductive age based on age group are depicted in Table 4. No significant differences were observed between the age groups regarding attitudes toward SMI as a result of the health education intervention, F3 (394 = .079, p = .971, p > .05), partial eta-squared statistics = R^2 = .151 (Adjusted R^2 = .140).

Table 3

Pre- and Posttests Grand Mean/Mean Gain Scores on Attitudes of Women of Reproductive Age Between Groups Toward SMI Components in Eleme, Rivers State, Nigeria

			Pretest		**Posttest**		***M***	
Group	**Variable**	***N***	**Grand mean**	***SD***	**Grand mean**	***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	200	2.2396	.45776	2.9514	.31684		
	SM						.7118	31.78
Control	ANC	2.1153	.45098	2.5303	.49698	.4150	19.62	28.63
	FP	2.0425	.49818	3.1200	.68222	1.0775	52.75	57.98
	PMTCT	2.3988	.49119	2.4313	.44969	.0325	1.35	11.54
	Overall	200	2.1857	.38147	2.6938	.29759		
	SM						.5082	23.25

Table 4

Grand Mean Scores on Effect of Health Education Intervention on Attitudes of Women of Reproductive Age Toward SMI Components Between Age Groups in Eleme, Rivers State, Nigeria

			Attitude	
Group	**Age (years)**	***N***	**Grand mean**	***SD***
Intervention	15–24	41	.6317	.59134
	25–34	87	.7113	.54220
	35–44	67	.7657	.54484
	45+	5	.6540	.65744
Control	15–24	51	.4904	.53477
	25–34	87	.4913	.47923
	35–44	53	.5483	.50584
	45+	9	.5356	.39119

Health education interventions are planned learning experiences in which different forms of communication are used to help individuals adopt behaviors to improve, promote, maintain, or restore health. The attitudes of women of reproductive age toward safe motherhood improved significantly as a result of the health education intervention. The intervention group had a higher mean gain than the control group did. They performed better than their control group counterparts in their scores on attitudes toward safe motherhood components. This occurred after the intervention group was given 2 hr of health talk; demonstration of history taking, blood pressure, and weight measurement, and so forth; and role-play exercises. The control group maintained the usual clinic routine. Likewise, no significant difference was found on the effects of the health talk, demonstration, and role-play on the attitudes of women of reproductive age toward safe motherhood based on age in the intervention and control groups.

Discussion

The health education intervention resulted in the improvement of the intervention group participants' attitudes toward the SMI component of ANC, FP, and PMTCT, with posttest mean scores of 2.8086, 3.3650, 2.6825, and 2.9514, respectively. The posttest mean scores for the control group were 2.5303, 3.1200, 2.4313, and 2.6938 for ANC, FP, and PMTCT, respectively. In addition, the attitudes on overall SMI (i.e., 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 further buttressed that the intervention had an effect on the attitudes of women of reproductive age

toward safe motherhood components of ANC, FP, and PMTCT of HIV and AIDS.

Through the six constructs of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy of the Health Belief Model in the health education intervention in this study, the women were taught that though pregnancy is a physiological state in normal conditions, the physiological processes such as increased nutrient requirement for mother and growing fetus and reduced immunity place the women 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). For example, the ANC offers the opportunity for early detection and prompt treatment, because use of FP services prevents high risk pregnancy and use of PMTCT services reduces 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 provide data to affirm links between sociocultural variables and pregnancy outcomes among the Ibani of Rivers State, Nigeria, identifying communal and individual values, attitude, and behaviors related to pregnancy. Nwokocha further asserted that although individuals are ascribed some freedom within the social system, such independence is unwittingly guided by the norms and values of a society.

Similarly, Khoramabadi et al.'s (2015) study on the effects of education based on the Health Belief Model on dietary behaviors of Iranian pregnant women was aimed at 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 were collected using a structured questionnaire in three parts and seven subscales (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 for the intervention group were also higher than those for the control group.

Perceived barriers are women's preference to patronize traditional birth at-

tendants (TBAs) or local maternity homes, and cues to action include appointment cards and exchange of phone numbers between the pregnant mother and the 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 et al.'s (2011) study in Gokana LGA of Rivers State, Nigeria, revealed that factors responsible for nonutilization of a health facility for delivery include long distance to the 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 the health facility, 26 (54.2%); unfriendly attitude of staff of the health facility, 34 (70.8%); unavailability of staff at the health facility, 32 (64.0%); lack of urgency at the health facility, 36 (75.0%); and 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 et al., 2011).

Recommendations

Based upon the findings of this research, the researcher recommends the following:

1. The government of Rivers State should provide functional health education units in all the MPHCs 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 WHO's policy guidelines on health education practice as presented in the current National Policy on Health Promotion of Nigeria.

Conclusion

The health education intervention embarked on in this study centered on the six constructs of the Health Belief Model: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. It used health talk, demonstration of history taking, blood pressure, and weight measurement, and so forth; and role-play exercises to present relatively unbiased information (Rational Model) to the women. Results from this study showed that planned health education intervention based on theories and models using different forms of communication has an effect on the attitudes of women of reproductive age toward SMI components of ANC, FP, and PMTCT of HIV and AIDS regardless of age in Eleme, Rivers State, Nigeria. 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 ways is increased, and thus, the individual is motivated to behave in ways that promote and restore health. 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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APPENDIX A

Instrument Validation Evaluation Guide

Dear Expert,

You have been selected to assist me in validating the attached instruments because of your knowledge in medical/educational research of this nature. Could you please review the instruments and answer the questions that follow. Please feel free to make corrections, additions, or deletions as you deem fit.

Thank you for your assistance.

1. Are questions on each of the instruments representative of all the contents related to the specific construct being studied?
   Yes ☐ No ☐ Not Decided ☐
   Comment:_____
   _____
   _____

2. Are there items that would be difficult to respond to or understand by the women of reproductive age?
   Yes ☐ No ☐ Not Decided ☐
   Comment:_____
   _____
   _____

3. Are there questions, words, or phrases that you think should be deleted or modified?
   Yes ☐ No ☐ Not Decided ☐
   Comment:_____
   _____
   _____

4. Are there questions that should be included in this instrument?
   Yes ☐ No ☐ Not Decided ☐
   Comment:_____
   _____
   _____

5. Are the instructions (directions) provided in this questionnaire clear and easy to understand?
   Yes ☐ No ☐ Not Decided ☐
   Comment:_____
   _____
   _____

6. Does the title clearly reflect the content of the instrument?
   Yes ☐ No ☐ Not Decided ☐
   Comment:_____
   _____
   _____

7. Does the introductory statement clearly state the purpose of the study?
   Yes ☐ No ☐ Not Decided ☐
   Comment:_____
   _____
   _____

8. Are items in the personal data section appropriate?
   Yes ☐ No ☐ Not Decided ☐
   Comment:_____
   _____
   _____

9. Is the length of the instrument appropriate for the intended purpose?
   Yes ☐ No ☐ Not Decided ☐
   Comment:_____
   _____
   _____

Please feel free to comment on the questions or areas not covered by the questions above.

_____
_____
_____

Name of Validator: _____

Department: _____

Signature: _____

Date: _____