Open Journal of Medical Research (OJMR)
ISSN: 2734-2093
Article Details:
DOI: 10.52417/ojmr.v4i1.479
Article Ref. No.: OJMR0401003-460
Volume: 4; Issue: 1, Pages: 24-37 (2022)
Accepted Date: 2nd June, 2023

Open Journals Nigeria (OJN)
Open Access | Bi-annual | Peer-reviewed
www.openjournalsnigeria.org.ng
editorial@openjournalsnigeria.org.ng

RESEARCH ARTICLE **OJMR0401003-460**

THE IMPACT OF HEALTH EDUCATION ON THE UTILIZATION OF HEALTHCARE FACILITIES AMONG PREGNANT WOMEN DURING DELIVERY IN CROSS RIVER STATE, NIGERIA.

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ABSTRACT

Every day, women in low-income countries lose their lives to pregnancy and childbirth that involve potential complications; most fatalities were avoidable. In Nigeria, the unfortunate odds of a woman passing away during pregnancy, childbirth, or postpartum are 1 in 22, which is significantly higher than the odds in most developed countries, where it's only 1 in 4900. During delivery, pregnant women need to use health facilities where skilled birth attendants can handle any potential obstetric and newborn complications that may arise. This study aimed to evaluate the impact of health education on the utilization of healthcare facilities by pregnant women during delivery in Cross River State, Nigeria. The study followed a quasi-experimental design and included pregnant women aged between 15 and 45 years from all senatorial districts. A sample of 60 pregnant women in their third trimester was selected; 30 each for health education and control group and a validated semi-structured questionnaire, with a Cronbach's Alpha internal consistency range of 0.76 to 0.81, was administered at baseline, immediate post-intervention after 4 weeks, and during the 8th-week follow-up period. Descriptive and inferential statistics were used to analyze the data with a significance level of 5%. The study showed that the average age of the participants was 21.53±6.07 years. The practice of the utilisation of health facilities during delivery among pregnant women's mean score increased significantly between the baseline and follow-up from 1.13±1.62; p = 0.000. In conclusion, the health education intervention effectively improved the utilization of Health facilities during delivery among pregnant women. The study recommended that health education strategies should be utilized to promote positive change in the practice of health facilities utilisation among pregnant women.

Keywords: *Health facilities, Utilisation, Health Education, Intervention, Pregnant women, Delivery*.

INTRODUCTION

Receiving maternal health care services is crucial for positive maternal and neonatal health outcomes (Jonathan and John, 2019) and to reduce maternal deaths (UNICEF, 2019). Unfortunately, poor pregnancy and childbirth-related problems remain challenging for mothers in poor and less-developed countries (UNICEF, 2019). Every day, women die due to pregnancy and delivery complications, with a higher proportion of deaths in low-income countries, even though most fatalities are avoidable (WHO *et al.*, 2015). In 2015, developed regions had a maternal mortality rate of 16 per 100,000 live births, while developing regions had 230 per 100,000 live births (WHO *et al.*, 2015).

Despite receiving ante-natal care from skilled personnel, some women still resort to unskilled obstetric services during delivery due to low trust in healthcare facilities (Agbede *et al.*, 2015). However, studies have proven that home births can pose significant risks to the mother and the child during the post-delivery period (Kifle *et al.*, 2018; Wanjira *et al.*, 2011). In contrast, skilled birth attendance during delivery contributes to better pregnancy and childbirth outcomes by detecting and managing complications during the ANC period, delivery, and postnatal period (WHO, 2019).

In Cross River State, improving health facility utilization during delivery can significantly reduce poor pregnancy outcomes resulting from complications among pregnant women. However, despite increased ANC visits, health facility utilization during delivery by pregnant women remains low in Cross River, with health facility utilization rates for delivery at 58% and 63% for 2020 and 2021, respectively, according to data from Programme Assessment for Performance Management and Action (PAPA) and Lots Quality Assurance Sampling (LQAS).

To improve health facility utilization during delivery, health education interventions are necessary to increase utilization and uptake demand for health services during pregnancy and immediately after delivery. Health education interventions have been a top priority in many states of Nigeria, with various methods such as health talks, posters, sensitization awareness, and handbills used to create awareness. World Health Organization (2019) defined health education as any combination of learning experiences designed to help individuals and communities improve their health by increasing their knowledge or influencing their attitudes. This study aims to assess the impact of health education interventions on the practice of health facility utilization during delivery among pregnant women immediately after and post-intervention. The results of this study will help in understanding the need to utilize health facilities during delivery among pregnant women and strengthen existing strategies to provide quality healthcare services in Primary Health Centres.

METHODOLOGY

STUDY DESIGN

A quasi-experimental design was utilised to determine the effectiveness of health education intervention on pregnant women's health facilities used during delivery in Cross River State.

STUDY AREA

The study was conducted in one of the 36 states of Nigeria, which is Cross River State, located in the South-South geopolitical zone. This state comprises 18 Local Government Areas (LGAs) and is politically divided into three

senatorial zones - southern, central, and northern - each with six LGAs. Cross River State's population is mainly composed of the Efik and Ekoi people, with three major languages: Efik, Bekwarra, and Ejagham, and several dialects including French spread across the three senatorial districts.

The state has a total of 1047 health facilities, these comprise 195 private, 14 secondary, 2 tertiary, and 575 Primary Healthcare Centers (PHCs), with at least one PHC Center in each ward in the LGA.

STUDY POPULATION

The group being studied consists of pregnant women aged 15 to 49 years across all senatorial districts. This age range was selected following the Women of Reproductive Age (WHO, 2014) guidelines.

Inclusion Criteria

1. Pregnant women in their 3rd trimester
2. Pregnant women who were making their 2nd or more ANC visits to the selected health facilities
3. Pregnant women who were pregnant for at least the second time
4. Pregnant women aged 15 to 49 years that are registered for ANC in a primary health care clinic
5. Pregnant women aged 15 to 49 years that have visited the PHC at least once
6. Pregnant women who gave their consent to be part of the study

Exclusion Criteria

1. Pregnant teenagers who are not up to 15 years
2. Pregnant women aged 15 to 49 years who are not in their 3rd trimester.
3. Pregnant women who are pregnant for the first time
4. Pregnant women who did not give their consent to be part of the study

SAMPLING TECHNIQUE

For this study, pregnant women were selected using a multi-stage sampling technique. Through balloting, two senatorial districts (Southern Cross River and Central Cross River) were chosen from the three available in Cross River State. From each of the two selected senatorial districts, one LGA was chosen by ballot and divided into intervention and control groups. The experimental group comprised one LGA with easy access and adequate monitoring by the researcher. For the study period, two PHCs were selected per LGA to ensure the required sample size of 30 pregnant women in their 3rd trimester per LGA and intervention group. Finally, eligible pregnant women were chosen at random from the antenatal register per PHC after enlisting all potential respondents who met the inclusion criteria for the study.

HEALTH EDUCATION INTERVENTION

The health education intervention was solely administered to pregnant women during ANC sessions while the control received their usual ANC. A training manual was adapted to equip pregnant women with adequate knowledge to promote the utilisation of health facilities for delivery.

MODE OF INTERVENTION

The researcher facilitated the programme herself with the use of the module developed for the training. The research assistants interpreted in local languages where necessary and supported in collation of data. Each session lasted for 90 minutes for a day in the week, which went on for 4 weeks.

SOURCES AND TYPES OF DATA

The study made use of primary data collected from eight PHCS from 4 LGAs. The data collected include socio-economic characteristics such as age, current gestational period, marital status, the income of pregnant women and spouses, educational attainment of pregnant women and spouses, parity, and number of ANC and utilization practices of health facilities during delivery by pregnant women.

OUTCOME VARIABLES

An increase in the utilisation of health facilities during delivery among pregnant women will lead to a reduction in the complications and maternal deaths among pregnant women constituted the outcome variables in the study. Practices were operationalized in section D of the instrument that asks questions about their place of delivery. The variables were measured on a 5-point scale. Each item was scored Yes = 1, No = 2 while others specify = 0, and the negative statement was reversed. Practices scores were classified based on the 50th percentile into 3, those who scored between 0- 1.67 were regarded as having low utilisation practices, while those who scored 1.68-3.34 were regarded as having moderate utilisation practices, and those who scored 3.35– 5.0 were regarded as having high utilisation practices

INSTRUMENTATION

The instrument was a structured, participant-administered questionnaire that sought information on the socio-demographic characteristics, knowledge of normal and danger signs associated with pregnancy, labour, and puerperium, perception of the use of health facilities during delivery and utilisation of health facilities among pregnant women during delivery. The instrument was drafted in English only, interviewing technique was used for participants with difficulty in reading and writing. Item validity was carried out to ensure the alignment of each item and the variables for measurement. The items in the questionnaire were strengthened by incorporating items in the literature review. Twelve of the draft questionnaires were piloted among pregnant women to confirm clarity, and feedback from the pilot study was incorporated into the instrument. The data obtained was subjected to Cronbach's Alpha reliability analysis to test its internal consistency and after necessary adjustment, the Cronbach values ranged from 0.76 to 0.81 for all constructs in the questionnaire which shows the good fit of the instrument.

METHOD OF DATA ANALYSIS

The study used both descriptive and inferential statistics, including means, standard deviations, standard errors, paired t-tests, and ANOVA. A significance level of 0.05 was set, and any p-values below this were considered significant. The data were analyzed using a repeated measure design with three measures per subject: baseline, immediate post-intervention after 4 weeks, and at the 8^{th}-week follow-up period. The study used both descriptive and inferential statistics, including means, standard deviations, standard errors, paired t-tests, and ANOVA. A significance level of

0.05 was set, and any p-values below this were considered significant. The data were analyzed using a repeated measure design with three measures per subject: baseline, immediate post-intervention after 4 weeks, and at the 8th-week follow-up period.

ETHICAL CONSIDERATION

Approval was obtained from the Cross River State Ministry of Health Ethics Review Committee under approval number CRSMOH/RP/REC/2022/232 before commencing the study. The chosen PHCs' officers also granted the researcher permission to conduct the study. Before their participation, all participants gave informed consent, and confidentiality was strictly maintained.

RESULTS

The study gathered data from both intervention and control groups during the baseline, post-intervention, and 8th-week follow-up stages. To validate the hypotheses which states that there is no significant difference in the level of practice of the pregnant women on utilisation of health facilities during delivery between baseline and the 8th-week follow-up period, independent sample t-tests and ANOVA were utilized with a significance level of 5%. The hypotheses were deemed valid if the p-value was less than 0.05.

SOCIO-DEMOGRAPHIC CHARACTERISTICS

The pregnant women in the health education and control groups had a mean age of 28.53+9.07 years and 21.33+7.15 years, respectively, at baseline. Their ages range from 18 to 41 years. More than 90% of pregnant women were Christians. The marital status distribution showed >80% are married. Greater than 50% of pregnant women earn between 16,000 to 30,000 Naira, the same as their spouses. In terms of education level, most of the pregnant women (>60%) and their spouses were secondary school graduates. Ethnically, most of the pregnant women were Efik and Yakurr and had at least two children in all groups.

Table 1: Socio-demographic Characteristics of Respondents in Health Education and Control Groups; Age, Religion, Marital Status, and Income level, Level of Education, Ethnicity, and Parity

Variables	Health-Education group (N =30)	Control group (N=30)
	N (%)	N (%)
Age (in Years)		
15-25	16 (53. 4)	8 (26.7)
26-35	10 (33.3)	18 (60.0)
35-45	4 (13.3)	4(13.3)
Mean±SD	**21.53 ± 6.07**	**21.33±7.15**
Religion		
Christianity	30 (100)	28 (93.3)
Muslim	0 (0.0)	2 (6.7)
Marital Status		
Single	4 (13.3)	4(13.3)
Married	26 (86.7)	25 (83.4)
Separated	0 (0.0)	1 (3.3)
Income Level		
<15,000	6 (20.0)	9 (30.0)
16,000 - 30,000	16 (53.3)	19 (63.3)
31,000-50,000	8 (26.7)	2 (6.7)
>50,000	0 (0.0)	0 (0.0)
Spouse Income Level		
<15,000	4 (13.3)	4 (13.3)
16,000 - 30,000	14 (46.7)	18 (60)
31,000-50,000	12 (40.0)	8 (26.7)
>50,000	0 (0.0)	0 (0.0)

Education level		
Below Secondary	9 (21)	7 (23.3)
Secondary	21 (70)	20 (67.7)
Tertiary	0 (0.0)	3 (10.0)
Spouse Level of Education		
Below Secondary	3 (10)	2 (6.7)
Secondary	27 (90)	19 (63.3)
Tertiary	0 (0.0)	9 (30.0)
Ethnicity		
Efik	8 (26.7)	10 (33.3)
Yakurr	6 (20.0)	11 (36.7)
Others*	16 (53.3)	9 (30.0)
Parity		
One	12 (40.0)	10 (33.3)
Two	14 (46.7)	14 (46.7)
More	4 (13.3)	6 (20.0)

Others* include Bekwarra and French.

Distribution of Pregnant Women's Utilisation of Health Facilities Practices during Pregnancy and Delivery at the baseline, immediately after the intervention after 4 weeks, and during the follow-up period.

We evaluated pregnant women's utilisation of health facilities practices during pregnancy and delivery as the number of antenatal care sessions attended, TBA patronage, place of delivery, use of individual birth preparedness plan, and willingness of pregnant women to utilize the PHC in subsequent deliveries.

Though, most of the pregnant women (50%) have attended ANC sessions up to 4 times during pregnancy in the health education group, only 10.0% of pregnant women in the health education group, and 16.7% in the control group have ever attended up to eight ANC sessions as recommended by WHO for pregnant women (Table 3). The result showed that patronage of TBAs is high across all groups; 80.0% of pregnant women in the health education and the control groups (Table 3). At baseline, the majority of expectant mothers do not opt for the PHC facility for childbirth. In the health education group, 43.3% of pregnant women and 40.0% in the control group gave birth to their last baby in TBA

homes. Initially, the majority of expectant mothers do not opt for the PHC facility for childbirth. In the health education group, 43.3% of pregnant women and 40.0% in the control group gave birth to their last baby in TBA homes. The results showed that most (>70%) pregnant women do not have an individual birth preparedness plan, only 26.7% of pregnant women in the health education group, and 30.0% in the control group have had a birth preparedness plan. The willingness to utilize the PHC for subsequent delivery is low among pregnant women across all groups, 26.7% of pregnant women in the health education group, and 40.0% in the control group (Table 3). With a mean score of 1.13±1.02 and 1.65±1.68, pregnant women in the health education intervention and control groups showed low utilisation practices at baseline (Table 4).

Table 3: Baseline Data of Pregnant Women's Utilisation of Health Facilities Practices during Pregnancy and Delivery

Variables	Health-Education (N=30) N (%)	Control (N=30) N (%)
The number of ANC attended		
0	8 (26.7)	10 (33.3)
4	15 (50.0)	8 (26.7)
8	3 (10.0)	5 (16.7)
Others	4 (13.3)	7 (23.3)
Patronized a TBA in the last 6 weeks		
No	6 (20.0)	6 (20.0)
Yes	24 (80.0)	24 (80.0)
Place of Delivery		
PHC	3 (10.0)	9 (30.0)
Church	8 (26.7)	6 (20.0)
Private Hospital	4 (13.3)	3 (10.0)
Teaching Hospital	2 (6.67)	0 (0.0)
TBA	13 (43.3)	12 (40.0)
Have an individual birth preparedness plan		
No	22 (73.3)	21 (70.0)
Yes	8 (26.7)	9 (30.0)
Willing to utilize the PHC in a subsequent delivery		
No	22 (73.3)	18 (60.0)
Yes	8 (26.7)	12 (40.0)

Utilisation of Health Facilities Practices during Pregnancy and Delivery among Pregnant Women at 8th-week Follow-up

By comparing the baseline and 8th-week follow-up mean scores for the group that received health education, it was found that the intervention had a significant impact on pregnant women's practices regarding the utilisation of health facilities during delivery. The mean scores showed a clear difference between the two-time points, with a p-value of 0.000. On the other hand, the control group did not show statistically significant differences (P=0.047) (refer to Table 4).

Table 4: Comparison of Pregnant Women's Utilisation of Health Facilities Practices during Pregnancy and Delivery at Baseline, Immediate Post-intervention after 4 weeks, and at the 8th-week follow-up period

The practice of the utilisation of health facilities during Delivery on a 5–point rating scale	**Health Education (N=30)**	**Control (N=30)**	**P-Value**
	N (%)	N (%)	
Baseline			
Low (0-1.67)	2 (6.7)	3 (10.0)	0.047
Moderate(1.68-3.34)	19 (63.3)	26(86.7)	
High (3.35-5.0)	9 (30)	1 (3.3)	
Mean + SD	1.13+1.02	1.65+1.68	
Immediate Post Intervention after 4 weeks			
Low (0-1.67)	0 (0.0)	3 (10.0)	0.000
Moderate(1.68-3.34)	1 (3.3)	25 (83.3)	
High (3.35-5.0)	29 (96.7)	2 (6.7)	
Mean + SD	4.52+1.80	1.67+1.80	
8th-Week follow-up			
Low (0-1.67)	0 (0.0)	3 (10.0)	0.000
Moderate(1.68-3.34)	1 (6.6)	25(83.3)	
High (3.35-5.0)	29 (93.0)	2 (6.7)	
Mean + SD	4.69+0.90	1.67+1.80	

The P-Value obtained by ANOVA, Significant at <0.05

Based on the interaction plot in the control group, it was observed that pregnant women's utilization practices had increased from the baseline to post-intervention periods. However, there was no significant change in the utilisation of health facilities during pregnancy and delivery between the post-intervention and 8th-week follow-up period, as shown in Figure 1.

Estimated Marginal Means of Utilisation Practices

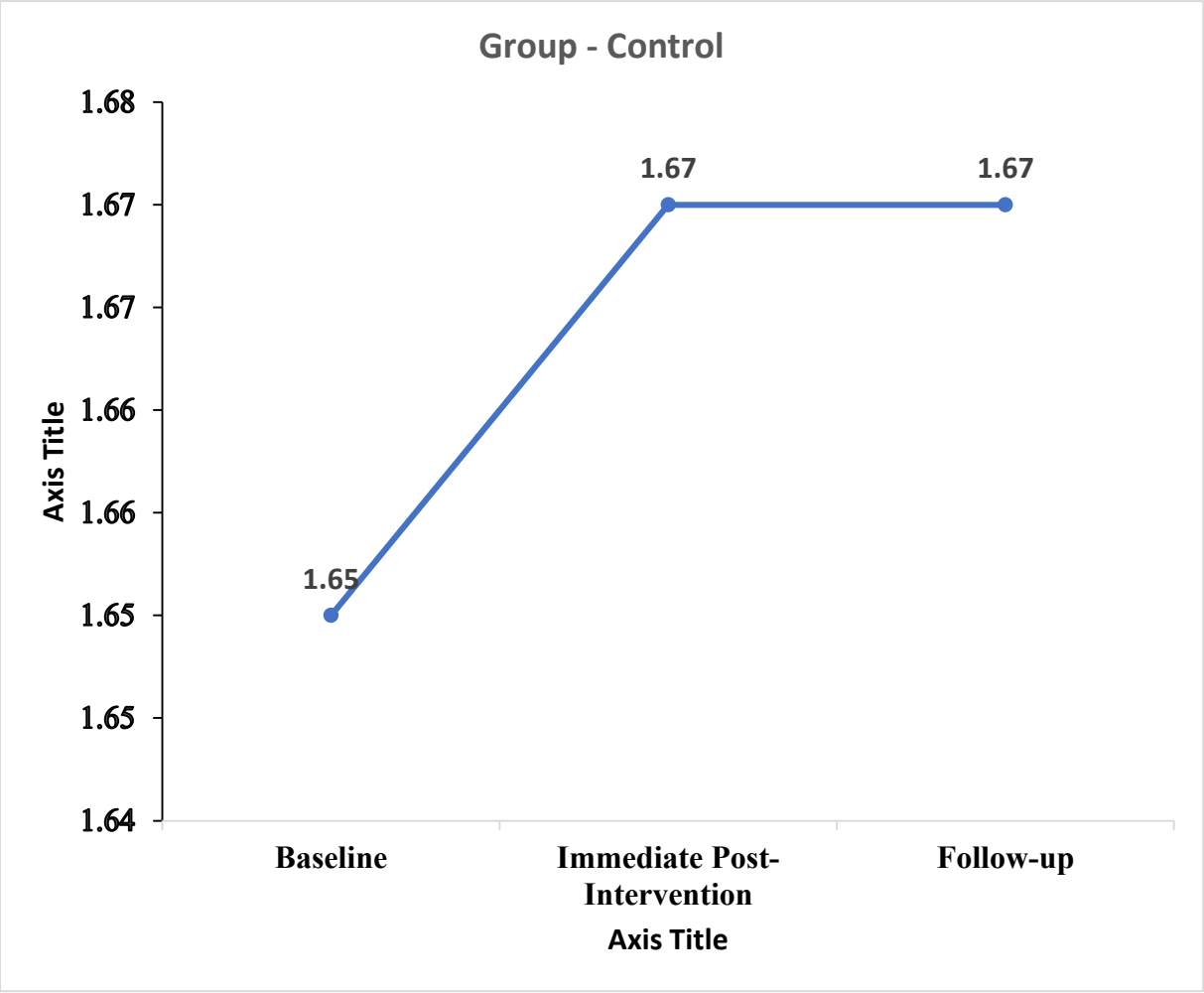

Figure 1: Plot showing the Change in the Pregnant Women's Level of Utilisation of Health facilities during Pregnancy and Delivery in the Control group across the Timeline

The plot depicting interactions in the health education group revealed a gradual rise in the level of pregnant women's utilization practices over time. Notably, there was a significant increase in their utilization of health facilities during pregnancy and delivery between the baseline and immediate post-intervention after 4 weeks. Although there was another increase during the follow-up period, it was not statistically significant (as shown in Figure 2).

Estimated Marginal Means of Utilisation Practices

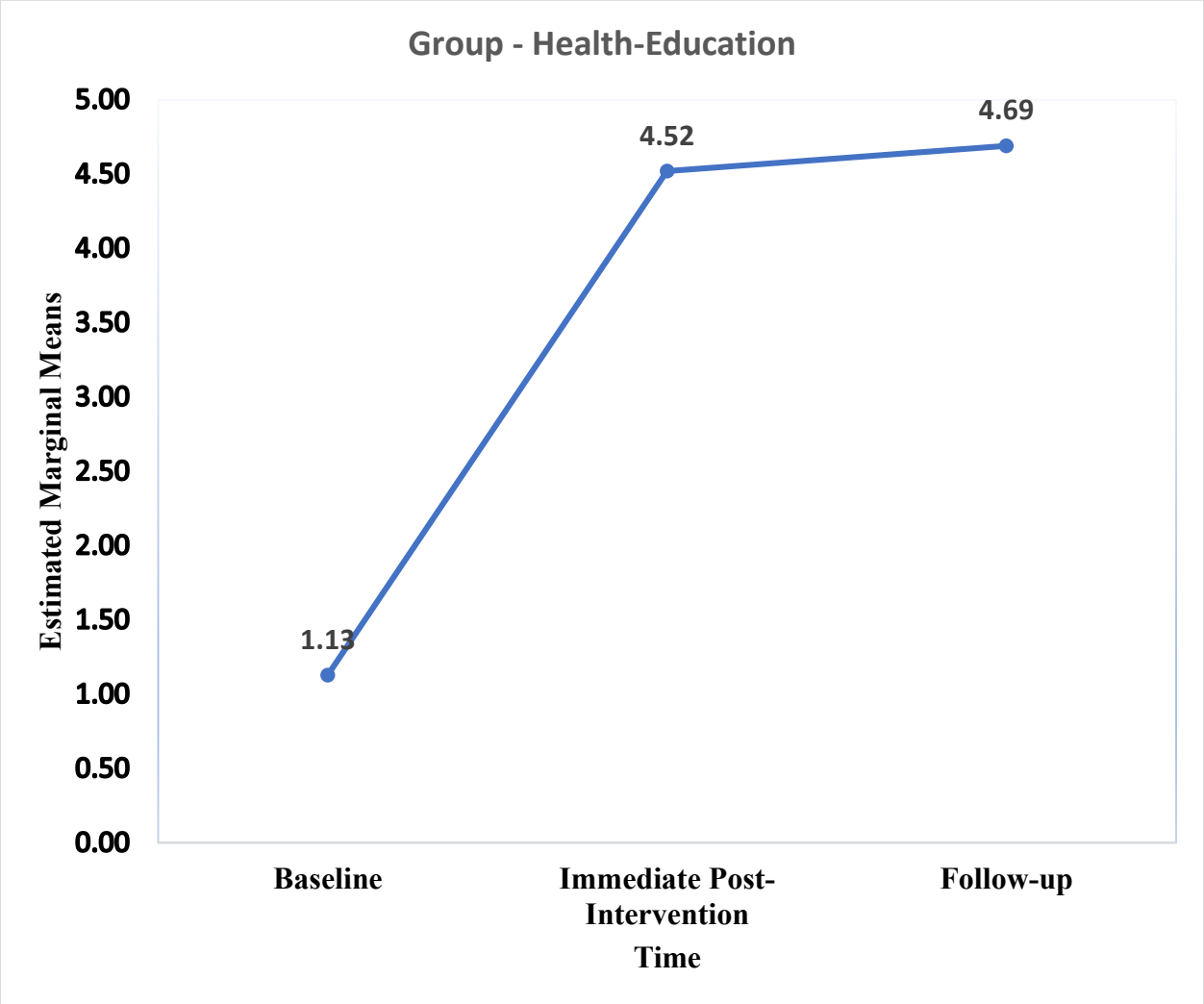

Figure 2: Plot showing the Change in the Pregnant Women's Level of Utilisation of Health facilities during Pregnancy and Delivery in the Health Education Intervention group across the Timeline

DISCUSSION

In this discussion, we'll explore the findings of the study and compare them briefly to previous research in the same field. The respondents in the study were between the ages of 18 and 49, which falls within the estimated target age by WHO for women of reproductive age. This similarity is because these age groups are generally considered to be in the childbearing or reproductive stage of life. The study had a greater number of pregnant women from the Efik tribe, which is the most prevalent in Cross River State.

According to a recent study, pregnant women are not utilising health facilities during delivery. This is consistent with a similar study conducted in Cross River State, Nigeria by Arogundade *et al.* (2021), which found that only 52% of the respondents utilized health facilities for childbirth. Another study by Xu *et al.* (2022) showed that 56.8% of women preferred to have their children outside of health institutions. The findings suggest that educated women, urban dwellers, and those with formal education, high exposure to news media, high income, and significant autonomy were less likely to deliver their babies outside of health facilities. This is in line with the aforementioned study. A study by Esimai *et al.* (2002) found that out of the 117 interviewed mothers in Ile-Ife, 70 (59.8%) booked in approved health facilities for delivery, while 51 (44%) eventually delivered in the approved health facilities.

According to the study, most pregnant women only attend ANC sessions up to 4 times, although a few attended up to 8 times as recommended by WHO (2006). This is consistent with the research conducted by Iyaniwura & Yussuf (2009), which found that 84.6% of the respondents attended ANC up to 4 times. The study also found that most expectant women prefer to deliver their babies at TBA homes instead of Health facilities. This is similar to the findings of Ebuehi & Akintujoye (2012), which revealed that most women choose to give birth in TBA homes.

Research conducted by Iyaniwura and Yussuf in 2009 on the utilization of delivery services in Sagamu, Southwestern Nigeria revealed that a large proportion of deliveries took place at public facilities (54.8%), followed by private hospitals (24.5%), traditional birth attendants (13.5%) and spiritual healing homes (5.6%). However, this is in contrast to the findings at baseline where most deliveries were at the traditional birth attendants' homes.

The study revealed that the health education intervention had a positive impact on the utilization of health facilities during delivery among pregnant women. As a result, it is recommended that health education sessions should be utilized to promote positive change in the practice of health facilities utilisation among pregnant women.

CONCLUSION

In Nigeria, the improper use of healthcare facilities during delivery among expectant mothers remains a leading cause of maternal and childhood illnesses and fatalities. This issue is partly due to insufficient awareness of the severity and consequences of not seeking assistance from skilled birth attendants and healthcare facilities during childbirth. An estimated 22% of the country's population constitutes women of reproductive age, with approximately 5% estimated to be pregnant. It is expected that these women use healthcare facilities during delivery. However, in Cross River State, only 53% have reported doing so. This puts pregnant women at risk of complications like child loss, and death of the mother among others. It is crucial to educate expectant mothers about the risks associated with using non-

medical delivery facilities and unsafe birthing locations. This knowledge will lead to increased utilization of healthcare facility practices, ultimately improving maternal and infant health outcomes. (Onyeneho, 2016).

Primary Healthcare Centres provide excellent opportunities for the delivery of educational interventions during ANC sessions. The health education intervention is appropriate for pregnant women as they will use the information provided to make evidence-based decisions about the place of choice during delivery. The results. proved that this method is effective to be deployed in practice regarding the utilisation of health facilities during delivery and will also help the Government to strengthen existing strategies to provide quality healthcare services in Primary Health Centres.

The results from the research found that well-planned and executed health education rooted in theory has the potential to bring about a change in the practice of health facilities' utilisation for delivery among pregnant women. The impact of the intervention was evident from the outcome variables observed during the follow-up period. The study recommends integrating the health education strategy into existing antenatal services to enable pregnant women to make better choices about their health services options, especially the place of delivery.

CONFLICT OF INTEREST

The authors of this paper state that they do not have any known financial interests or personal relationships that could be perceived as influencing their work.

ACKNOWLEDGEMENT

We would like to express our gratitude to the research assistants who participated in this study. Additionally, we extend our appreciation to the Ministry of Health, Cross River State for approving this research project.

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