
**Effects of Health Education on Knowledge about Cervical Cancer Screening
Among Pregnant Women in Rivers State, Nigeria**

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Keywords:

Effects, Knowledge,
Health Education,
Cervical Cancer,
Screening,
Pregnant Women,

Abstract

The knowledge of Cervical Cancer screening among Nigerian women is still under investigated. Aim: The study aimed at investigating the Effects of Health Education on Knowledge about Cervical Cancer Screening among Pregnant Women in Rivers State, Nigeria. Method: The study adopted a quasi-experimental design. The population for the study was the entire pregnant women in Obio/Akpor Local Government Area. The sample size of forty pregnant women was drawn using the Accidental/convenience purposive and quota sampling technique. A self-structured questionnaire titled "Effects of Health Education on the Knowledge, towards Cervical Cancer Screening Questionnaire was used to obtain the data from the respondents. The questionnaire was validated by three experts with internal reliability coefficient of 0.80 which was determined using Cronbach Alpha. Descriptive statistics as well as t test was used to analyze the data with significant level set at 0.05. The data collected were analyzed using percentages, in answering the research questions, paired t-tests and ANCOVA were used to test the null hypotheses at 0.05 level of significance. Results: findings revealed an increase in knowledge of cervical cancer screening, from 67.5% before training to 72.5% after training, The pregnant women with college/university education had a higher percentage gain in knowledge than their counterparts. The pregnant women between 20-30 years exposed to health education had higher percentage gain in knowledge than other age groups. Findings also revealed that health education had a significant effect on knowledge of pregnant women on cervical cancer screening and especially with respect to their level of education. It had no significant effect with respect to age. The effect was moderate. The study recommended among others that health education on cervical cancer screening should constantly be emphasized in all health care facilities and more health educators should be employed to improve in the knowledge of cervical cancer screening.

INTRODUCTION

Cervical cancer is a type of cancer that occurs in the cells of the cervix, which is referred to as the mouth of the uterus. It is the lower part of the uterus that opens into the vaginal canal, (Mayoclinic, 2020). Cervical cancer occurs in the tissues of the cervix. It is slow forming in nature and may not have symptoms though can be diagnosed with regular Pap smear (National Cancer Institute, 2020).

Cervical cancer is the fourth most common cancer and said to be the fourth leading cause of deaths in women globally that are related to cancer. Globally, there are nearly 1.5 million cases of cervical cancer clinically recognized, of which eighty five percent of such are found in developing countries, Nigeria being one of such. The incidence of cervical cancer has been reduced by over 70% in the last 50 years in industrialized countries, whereas it is equated that in developing countries, the incidence will rise instead of decreasing, from 444,546 to 588,922 between the years 2012 and 2025 (Abiodun, Olu-Abiodun Sotunsa & Olumile, 2014).

World Health Organization (WHO) (2020) illustrated that a great difference can be seen in the disease occurrence found between women living in developed countries (high-income) and those living in developing countries (low-middle income). They stated that in 2012, 528,000 new cases of cervical cancer were diagnosed worldwide. These numbers, according to WHO, about 85% which is a large majority occurred in developing countries. In the same year by occurrence, 266,000 women died by cervical cancer globally. Of these deaths, 90 percent occurred in developing countries.

WHO in its statement described the main reason for the disparity as the lack of effective prevention, early detection and treatment programs, as well as the lack of equal access to such available programmes. If these interventions are not plugged into, cervical cancer will only be detected at an already advanced stage. At this stage, it will be too late for treatment, poor prognosis and a high mortality rate (Waripamo, Osegi & Jeremiah, 2020).

The Human Papilloma Virus (HPV) has been identified as a cause of cervical cancer. The HPV serotypes 16 and 18 are responsible for about 70% of the cervical cancer cases globally. They are also known as the high-risk types. There are other risk factors that relate to sexual activity. They include early marriage (below age 20), early age at first sexual intercourse, multiple partners, polygamy, multi-parity, poor knowledge about the disease and long-term use of oral contraceptive pills. The symptoms include bleeding between periods, bleeding after sexual intercourse, bleeding in post-menopausal women, discomfort during sexual intercourse, vaginal discharge with a strong odour, vaginal discharge tinged with blood, pelvic pain and pain during urination (Abiodun, et al, 2014).

Cervical cancer is described as a social disease. Considering the risk factors that are most prevalent in Nigeria, this disease is tailored towards the poor, vulnerable and the less educated. It is estimated that Nigeria loses between 347.4 and 482.7 million US Dollars to cancers each year. This is quite a large sum and can be prevented if widespread and regular screening services are put in place for women who are and have been sexually active. This screening can be done by the HPV test, Pap test or the visual Inspection of the Acetic Acid painted cervix (VIA). Vaccination of women

before the onset of sexual activity; be it oral or vaginal, against the HPV which also helps in preventing the disease (Abiodun *et al.*, 2014).

Cervical cancer screenings are screening tests that are done to prevent cervical cancer and detect abnormal cells in the cervix early. The Pap smear is one of the screening tests that helps in identifying pre-cancerous cell changes in the cervix of the woman. These cells if not identified early and treated can lead to cervical cancers. The other screening test is the Human Papilloma Virus (HPV) screening test. This test helps in identifying the virus (human papilloma virus) that brings about the cell changes. In essence, the Pap test involves checking to see if the cells are normal or having some pre-cancerous changes while the HPV test has to do with identifying the virus (HPV) responsible for cervical cancer. Their screening tests can be done singly or together as the case may be.

Normal pap smears when done can be repeated after three years. A normal HPV test on the other hand can be repeated after five years (CDC, 2021). When a woman is not sexually active, the best option for her is being vaccinated with the HPV vaccine screening. Screening test in essence is done mainly for women that are sexually active. When a woman is sixty-five years (65) and above, she can opt out of being screened if she has had normal screening test results for several years and has had total hysterectomy done (removal of the uterus including the cervix) for non-cancerous conditions like fibroid. The results of the test can take as long as three weeks before being received. Abnormal test result does not necessarily mean the woman has cervical cancer, since there are many reasons why cells can be abnormal. From Investigations it will be detected if those abnormal cells will eventually become cancerous or not, treatment is given if needed. If results are normal, the chances of developing the disease cervical cancer are slim (CDC, 2021).

In Nigeria, research shows that about 40.43 million women are at the risk of developing cervical cancer. Currently, it was estimated that 14,089 women are being diagnosed with cervical cancer every year and out of these diagnosed cases, about 8,240 die from the disease. It is estimated that about 23.7% of women harbor the cervical HPV infection. Also estimates show that the HPV serotypes 16 and 18 are attributed to 90% of invasive cervical cancer. It is projected that in 2025, there will be 17,440 new cervical cancer cases and 10,991 cervical cancer deaths in Nigeria (Abiodun *et al.*, 2014).

Nigeria lacks a national population based cervical cancer screening programme. Primary healthcare centres provide health care services to majority of the population. These health care centres are close to the grassroots, easily accessible and affordable. It is very convenient for women of reproductive age to walk in and take up services for their various reproductive needs which include antenatal, maternity, and contraceptive services. In view of these services being rendered, the primary health care centers can serve as cervical cancer screening centre for the population based cervical cancer screening program (Yahya & Mande, 2019).

A guideline for the prevention of cervical cancer in Nigeria was recently developed in the society of Gynaecology and Obstetrics of Nigeria (SOGON). This guideline when used at the Primary Health Care Centres can help in the reduction of the burden of cervical cancer. However, increasing knowledge through health education is of utmost importance (Yahya & Mande, 2019).

According to Rao (2017), knowledge is a justified true belief. He further opined that it is a belief that is supported by the fact that, both belief and knowledge can have the same objects. He also mentioned that what is true of someone who believes something to be the case is also true, among other things, of one who knows it. An individual's knowledge can be increased based on the health education received. This is in relation to the study embarked on.

Statement of the Problem

Cervical cancer is a major public health problem globally but especially in developing countries like Nigeria. Research has it that about 25,000 new cases of cervical cancer will emerge annually in Nigeria (Abiodun et al., 2014). Cervical cancer can be prevented unlike other cancers, through the prevention of the HPV infection which is even more challenging than most other sexually transmitted infections. This is so because women infected with the HPV virus are generally asymptomatic.

Cervical cancer screening is absolutely the most effective tool for the pre-invasive stages of cervical cancer to be detected, since at its early stages it is asymptomatic. The screening creates an opportunity for early detection and prompt treatment before the disease becomes invasive. However, this tool is underutilized and underdeveloped. Some factors are responsible for this, which could be lack of knowledge, negative attitude, cost of service rendered, ignorance, poor performance and inadequate facilities.

In Obio/Akpor Local Government Area where the researcher resides and works, it was observed that the primary health care centres don't offer the service (cervical cancer screening) rather it is done mostly in the secondary and tertiary centers (hospitals). Affordability and accessibility are a challenge for these women since their areas of residence is close to the Primary Health Care Centres. Women that access reproductive health services in the Primary Health Care Centres, which is at the grassroot with a larger population don't have the opportunity. As a researcher, during communication with these women, it was observed that they were ignorant of the term cervical cancer. Since health education has proven to be an effective tool in assisting people gain knowledge, the researcher wants to find out the effect of health education on the knowledge towards cervical cancer screening in Rivers State.

METHODS

The study adopted a quasi-experimental study design. Kpolovie (2010) refers to quasi-experimental research as investigations which use designs that are very suitable for adoption to approximate conditions of true experiment in situations that do not permit the control and manipulation of all relevant variables. Three research questions (1. What is the effect of health education on cervical cancer screening knowledge among the pregnant women? 2. What is the effect of age on cervical cancer screening knowledge among pregnant women after health education? 3. What is the effect of level of education on cervical cancer screening knowledge among pregnant women after health education?) and three hypotheses (1).Health Education has no significant effect on the knowledge, of pregnant women on cervical cancer screening., (2). Age has no significant

effect on the knowledge of pregnant women on cervical cancer screening. (3). Level of education has no significant effect on the knowledge of pregnant women on cervical cancer screening) were formulated for the study. Population of the study consists of all the pregnant women in Obio/Akpor Local Government Area of Rivers State. Sample size of forty (40) pregnant women in their second and third trimester was used for the study. The multistage sampling procedure was used, using the non-probability sampling procedure. The researcher used the accidental/convenience sampling technique to select the local government area for the study. These regions have different health centers situated in them. The researcher used the purposive sampling technique to select the regions. This involves selecting people who possess the same characteristics needed for the study. Using the quota sampling technique, 10 pregnant women were drawn from each health centre for the study. A quota was established of 70% women in their third trimester and 30% women in their second trimester. The researcher used her discretion to choose the respondents and ensure that her quota is met. This brought the sample size to forty (40), which were representative of the pregnant women being used for the study. A self-structured questionnaire tagged Effects of Health Education on the Knowledge towards Cervical Cancer Screening Questionnaire (EHEKTCCSQ). It was made up of two sections, section A focused on demographic data (age and level of education) while section B focused on the variables under study. The questionnaire was a twenty-three (23) item questionnaire. Section A had five (5) items while section B had eighteen (18) items. The instrument was made up of responses from the pregnant women. These include “Yes’ or ‘No’ and ‘True’ or ‘False’”. The instrument was validated by subjecting it to scrutiny by three (3) experts from the Department of Human Kinetics and Health Education for face and content validity. Test-retest method was adopted to determine the reliability of the instrument. Pearson Moment Correlation was used to establish the reliability co-efficient of the instrument. Data was analyzed using percentages, bar charts statistical techniques, while chi-square, and paired t tests were used to test the null hypothesis at 0.05 level of significance.

RESULTS**Table 1: Percentage on effect of health education on the knowledge of pregnant women on cervical cancer screening**

S/N	Items Statement	Pre-test			Post-test		
		Yes (%)	No (%)		Yes (%)	No (%)	
1.	I have heard about cervical cancer	32 (80.0)	8(20.0)	High	39(97.5)	1(2.5)	V.H
2.	A family history of cervical cancer	8(20.0)	32(80.0)	Low	16(40.0)	24(60.0)	Low
3.	Health education can reduce the incidence of cervical cancer	37(92.5)	3(7.5)	High	39(97.5)	1(2.5)	V.H
4.	Information regarding cervical cancer screening should be made more public	37(92.5)	3(7.5)	High	40(100)	0(0.0)	V.H
5.	cervical cancer is the fourth most common cancer in women	33(82.5)	7(17.5)	High	39(97.5)	1(2.5)	V.H
6.	cervical cancer is the fourth leading cancer of death in women globally	34(85.0)	6(15.0)	High	37(92.5)	3(7.5)	V.H
7.	The human papilloma virus is not the cause of cervical cancer	19(47.5)	21(52.5)	Fair	14(35.0)	26(65.0)	Low
8.	Pap smear is the most helpful way to detect pre-cancer and cancer of the cervix	33(82.5)	7(17.5)	High	36(90.0)	4(10.0)	V.H
9.	Women should have pap-smear at least every three (3) years	29(72.5)	11(27.5)	High	36(90.0)	4(10.0)	V.H
10.	Early marriage is not a risk factor of cervical cancer	25(62.5)	15(37.5)	High	17(42.5)	23(57.5)	Low
11.	Multiple partners increases risk of cervical cancer	26(65.0)	14(35.0)	High	36(90.0)	4(10.0)	V.H
12.	Early age at first sexual intercourse is not a risk factor for cervical cancer	19(47.5)	21(52.5)	Fair	15(37.5)	25(62.5)	Low
13.	Pap smear is not successful in reducing incidence and mortality of cervical cancer	20(50.0)	20(50.0)	Fair	15(37.5)	25(62.5)	Low
14.	Pap smear is non-invasive and relatively inexpensive	26(65.0)	14(35.0)	High	29(72.5)	11(27.5)	High
15.	In advanced stages of cervical cancer, women might experience foul smelling vaginal discharge.	35(87.5)	5(12.5)	High	39(97.5)	1(12.5)	V.H
16.	There are four stages of cervical cancer	34(85.0)	6(15.0)	High	37(92.5)	3(7.5)	V.H
17.	Vaccination of young girls from the age of nine (9) does not reduce incidence of cervical cancer.	20(50.0)	20(50.0)	Fair	18(45.0)	22(55.0)	Fair
18.	Vaccination in older women is more effective in reducing risk of cervical cancer	24(60.0)	16(40.0)	High	20(50.0)	20(50.0)	Fair
Average Percentage		27(67.5)	13(32.5)	High	29(72.5)	11(27.5)	V.H

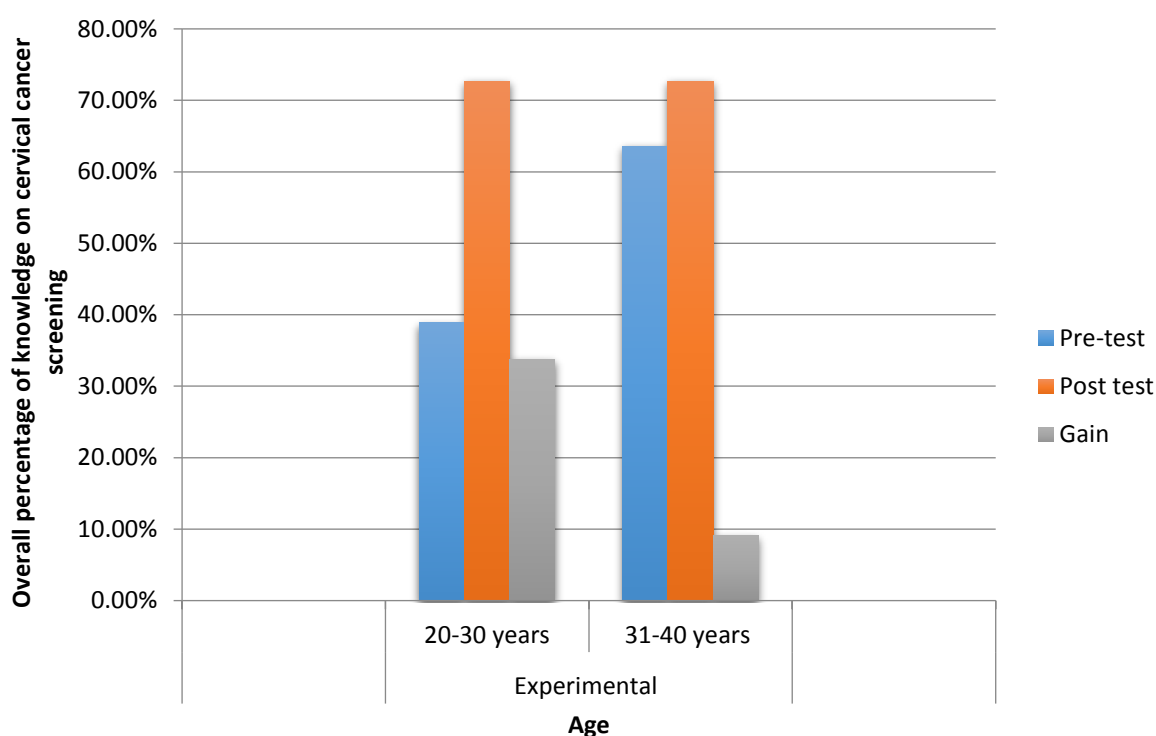
*V.H – Very High

Results in Table 1 show the effect of health education on the knowledge of pregnant women. The result shows increase in knowledge in the post test on awareness of cervical cancer, incidence of cervical cancer, information regarding cervical cancer screening. Furthermore, there was increase in knowledge on cervical cancer as the fourth leading cause of death in women globally and multiple partners increases risk factor of cervical cancer. The overall percentage was 67.5% and 72.5% for pretest and posttest respectively. It could therefore be deduced that there was increase in knowledge of cervical cancer screening amongst pregnant woman exposed to health education.

Table 2: Overall percent on effect of health education on the knowledge of pregnant women on cervical cancer screening with respect to age

Age	N	Pretest		Post test		Gain%
		Yes	No	Yes	No	
20-30 years	18	38.9%	61.1%	72.7%	27.8%	33.8%
31-40 years	22	63.6%	36.4%	72.7%	27.3%	9.1%

The results in Table 2 show that the 20-30 years old pregnant women exposed to health education obtained a percentage gain of 33.8%, while their 31-40 years counterparts had a percentage gain of 9.1% on knowledge of cervical cancer screening. It is deduced that the 20-30 years pregnant women therefore had a higher percentage gain than their counterpart. This is shown in figure 1.

**Fig 1: Bar chart on the knowledge of pregnant women on cervical cancer screening based on age****Table 3: Overall percent on effect of health education on the knowledge of pregnant women on cervical cancer screening with respect to level of education**

Level of Education	N	Pretest		Post test		Gain%
		Yes	No	Yes	No	
Primary	10	60.0%	40.0%	70.0%	30.0%	10.0%
Secondary	2	50.0%	50.0%	0.0%	100.0%	-50.0%
College/University	28	57.1%	42.9%	67.5%	32.5%	10.4%

The results in Table 3 reveal that the pregnant women with primary education exposed to health education obtained a percentage gain of 10.0%, while those with secondary education had a percentage gain of -50.0% and those with college/university education had 10.4% gain on knowledge of cervical cancer screening. It is deduced that the pregnant women with college/university education therefore had a higher percentage gain than their counterparts.

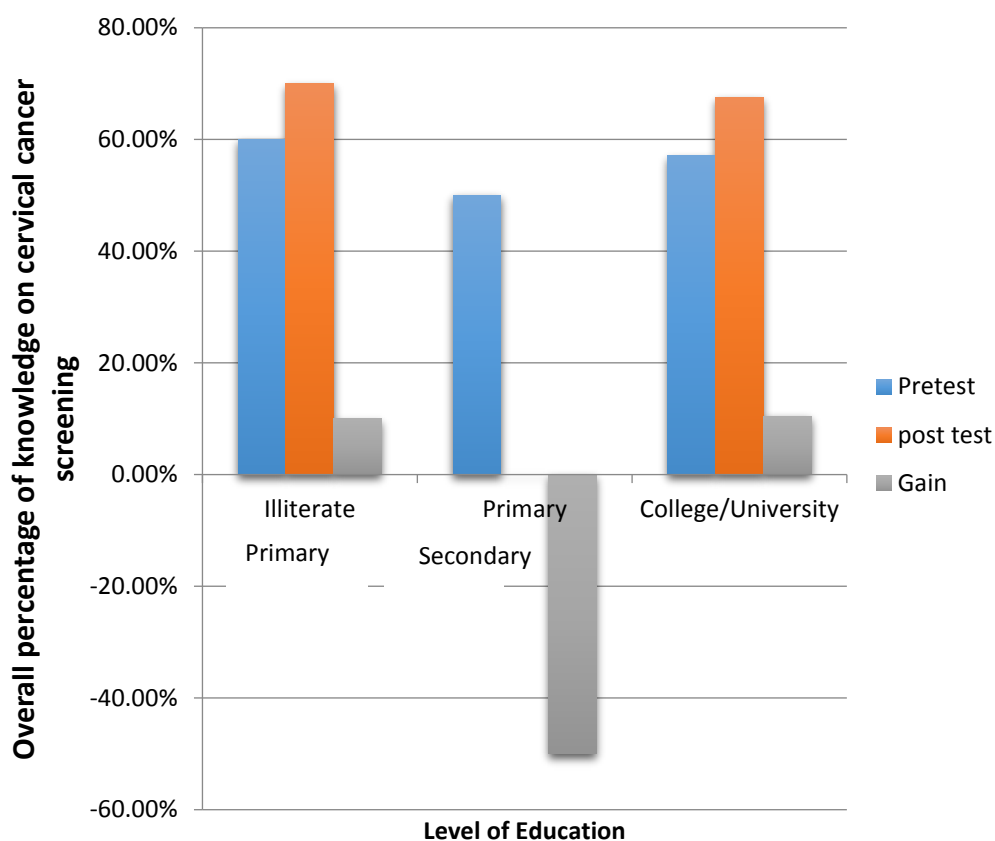


Fig 2: Bar chart on the knowledge of pregnant women on cervical cancer screening based on level of education

Table 4: Summary of chi-square on the effect of health education on the knowledge of pregnant women on cervical cancer screening**test * responses Cross tabulation**

			responses		Total
			yes	no	
test	Pretest	Count	27	13	40
		Expected Count	28.0	12.0	40.0
	post test	Count	29	11	40
		Expected Count	28.0	12.0	40.0
Total		Count	56	24	80
		Expected Count	56.0	24.0	80.0

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.238 ^a	1	.626	.808	.404
Continuity Correction ^b	.060	1	.807		
Likelihood Ratio	.238	1	.625		
Fisher's Exact Test					
Linear-by-Linear Association	.235	1	.628		
N of Valid Cases	80				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.00.

b. Computed only for a 2x2 table

Table 4 shows a slight difference in observed and expected count between the variables, that is, the way the variables are distributed into categories does not change. The Chi-square test revealed that the χ^2_{cal} is 0.238 with $df = 1$ and $p > 0.05$. The obtained p -value of 0.808 is greater than the 0.05 level of significance. This indicates that Health Education has no significant effect on the knowledge of pregnant women on cervical cancer screening in Obio/Akpor Local Government Area.

Table 5: Summary of ANCOVA on the effect of health education on the knowledge of pregnant women on cervical cancer screening with respect to level of education

Source of Variance	Sum of squares	df	Mean square	F	P value	Partial Eta Squared
Corrected Model	.158 ^a	3	.053	5.914	.002	.330
Intercept	.237	1	.237	26.536	.000	.424
Knowledge pretest	.051	1	.051	5.690	.022	.136
Level of study	.063	2	.031	3.517	.040	.163
Error	.321	36	.009			
Total	119.539	40				
Corrected Total	.479	39				

a. R Squared = .330 (Adjusted R Squared = .274)

Table 5 showed that the calculated F-value for group is 3.517 at degrees of freedom of 3 and 36 at $p < 0.05$. The calculated F-value was significant at $p < 0.05$ which is less than 0.05 level of probability ($F = 3.517$, $df = 3/36$, $p < 0.05$). The effect size was small based on Cohen's guidelines for effect size. Hypothesis seven was therefore rejected. This showed that Health Education has a significant effect on the knowledge of pregnant women on cervical cancer screening in Obio/Akpor Local Government Area with respect to level of education.

Summary of Findings

1. There was increase in knowledge of cervical cancer screening amongst pregnant woman exposed to health education.
2. 20-30 years pregnant women in the experiment had a higher percentage gain than their counterpart.
3. The pregnant women with college/university education had a higher percentage gain in knowledge on cervical cancer screening than their counterparts.
4. Health Education has a significant effect on the knowledge of pregnant women on cervical cancer screening in Obio/Akpor Local Government Area.
5. Health Education has no significant effect on the knowledge of pregnant women on cervical cancer screening in Obio/Akpor Local Government Area with respect to age.
6. Health Education has a significant effect on the knowledge of pregnant women on cervical cancer screening in Obio/Akpor Local Government Area with respect to level of education.

Discussion of findings

The findings in the study revealed that there was an increase in knowledge in the post test on concept of cervical cancer, incidence of cervical cancer, information regarding cervical cancer screening. It also revealed an increase in the knowledge of cervical cancer as the fourth most leading

cause of deaths in women globally. In an earlier study by Abiodun et al (2014) on the impact of health education intervention on knowledge and perception of cervical cancer and cervical cancer screening uptake among adult women in rural communities in Nigeria, it was noted that health education intervention increased the level of awareness of cervical cancer and screening to 100% as compared to the current study. In both studies health education increased their knowledge of cervical cancer and cervical cancer screening. With the increase in knowledge of cervical cancer and cervical screening, the attitude and behaviour of the pregnant women changed positively for the better.

In the same vein, the study also revealed an increase in the knowledge of cervical cancer and cervical cancer screening as regards the different ages of the women. The age range under study were less than 20 years, 20-30years, 31-40years, 41years and above. Inasmuch as there was an increase in their knowledge on cervical cancer screening after health education, the women that were between the ages my 31-40years had a higher percentage gain than their counterparts. In a related study by Gatumo, Gracheri, Sayed and Schiebe (2018) on women's knowledge and attitudes related to cervical cancer and cervical cancer screening in Isiolo and Tharaka Nithi Countries Kenya, it was revealed that the women who participated in the study were within the ages of 18years and above. There was also an increase in knowledge which affected their attitude and behaviour after health education.

As regards the level of education of the women who participated in the study, it was revealed that there was an increase in their knowledge which also affected their attitude and behavior positively towards cervical cancer screening after health education. In a related study by Weng, Trang, Haji, Nondo and Zhon (2020) it was revealed that the educational level of these women affected their knowledge of cervical cancer and cervical cancer screening which eventually affected their screening uptake. In both studies level of education played a significant role in the knowledge, attitude, and behaviour towards cervical cancer screening. In the current study, it showed that the women that had college/university education had a better knowledge than the others, which influenced their attitude and behaviour towards cervical cancer screening. This is not surprising because of their higher level of education. It is expected that since they were in the tertiary institution, understanding of issues will come faster to them than their counterparts.

Conclusion

In conclusion, health education had effects on the knowledge towards cervical cancer screening among pregnant women in Obio/Akpor Local Government Area of Rivers State. Health Education had no significant effect on the knowledge of these pregnant women based on their age but had a significant effect based on their level of education.

Recommendations

Based on the aforementioned findings, the following recommendations were made:

1. Health education on cervical cancer screening should remain constant in all Primary Health Care facilities.
2. Cervical cancer screening should be made available, accessible, and affordable for every woman within the childbearing age.

3. Health Education on cervical cancer screening should be done in churches, institutions, marketplaces, women organizations etc.

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