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Factors Associated With the Utilization of Cervarix Vaccine Among Nursing And Midwifery Students In Anambra State, Nigeria

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Abstract: *Cervical cancer is the second most common cancer among the female population in Nigeria. This study investigated the factors associated with the utilization of cervarix vaccine among students in the Schools of Nursing and Midwifery in Anambra State, Nigeria. Three research questions and two null hypotheses guided the study. Cross-sectional descriptive research design was used for the study and the population consisted of 957 students while the sample size was 282. Proportionate sampling and simple random sampling techniques were used for the study. A self developed questionnaire on factors associated with the utilization of cervarix was the instrument used for data collection. The reliability of the instrument was tested using Cronbach's Alpha coefficient with test result of 0.76. The research questions were answered using percentages and mean scores while the hypotheses were tested using Mann- Whitney U test, and Krukal-Wallis H test. Findings from this study revealed that none (0%) of the students had previously received the vaccine; hence there was no facilitator towards its utilization. Lack of information about cervarix (76.2%) was the highest influential barrier to the utilization of the vaccine among the students, followed by no knowledge of where to be vaccinated (63.5%). The hypotheses showed that the students' age had no significant influence on the level of utilization of the vaccine (X^2 = 3.08; p-value = 0.380), while barriers to the utilization of cervarix were not significantly influenced by the marital status of the students (Z = -0.858; p-value = 0.391). It was recommended that the vaccine should be included in the National Programme on Immunization, students' curriculum and there should be publicity about cervarix vaccine.*

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I. Introduction

Cervarix is a vaccine against certain types of cancer-causing human papilloma virus (HPV) [1]. It is designed to prevent infection from HPV types 16 and 18 that cause about 70% of cervical cancer cases[1.] Cervical cancer is a cancer arising from the cervix due to abnormal growth of cells that can invade or spread to other parts of the body[2]. It is the second most common cancer among women worldwide, with estimated new cases of 493,000 and 274,000 deaths annually[2]. About 83% of the cases occur in developing countries, including Nigeria representing 15% of female cancers[3]. Precursor lesions can be formed after HPV infections, leading to cervical intraepithelial neoplasia, and cervical cancer if the disease progresses[4] .The incidence of cervical carcinoma in Africa is on the increase[2]. The survival rate for cervical cancer in sub-Saharan Africa in 2012 was 21% compared with 70% and 66% in the United States and Western Europe, respectively[5]. The high incidence and mortality rates associated with cervical cancer prompted the researchers to study the factors associated with the utilization of cervarix among students in the Schools of Nursing and Midwifery in Anambra State, Nigeria. Findings from this study would help the government and other private organizations in planning strategies for enhancing the availability and utilization of the cervarix vaccine. It would help in the improvement of Nursing and Midwifery curriculum in Nigeria, and also serve as a tool to reinforce the importance of vaccination against cervical cancer.

II. Material And Methods

This cross-sectional descriptive study was carried out on student Nurses and Midwives in Anambra State, Nigeria from March 2017 to May 2017. A total of 282 student Nurses and Midwives participated in the study.

Study Design: Cross-sectional descriptive research design.

Study Location: The area of study was the Schools of Nursing and Midwifery in Anambra State. Anambra is a State in southeastern Nigeria. In Anambra, there are four Basic Schools of Nursing, two Basic Schools of Midwifery, one Post-Basic School of Nursing and three Post-Basic Schools of Midwifery: School of Nursing, Nnamdi Azikiwe University Teaching Hospital, Nnewi; School of Nursing, Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Nkpor; School of Nursing, Our Lady of Lourdes Hospital, Ihiala; School of Nursing, Iyienu; School of Midwifery, St. Joseph's Hospital, Adazi-Nnukwu; School of Midwifery, Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Nkpor; Post-Basic School of Nursing, Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Nkpor; Post-Basic School of Midwifery, Our Lady of Lourdes Hospital, Ihiala; Post-Basic School of Midwifery, Holy Rosary Specialist Hospital, Water Side, Onitsha and Post-Basic School of Midwifery, Iyienu.

Study Duration: March 2017 to May 2017.

Sample size: 282 students of Nursing and Midwifery.

Sample size calculation: Proportionate sampling technique was used to select the number of students from each class in all the Schools of Nursing and Midwifery while the students were randomly selected from each class.

Subjects & selection method: The study population was drawn from the 1st, 2nd, and 3rd year students in all the Schools of Nursing and Midwifery in Anambra State during 2017/2018 academic session.

Inclusion criteria:
1. Female students in Schools of Nursing.
2. Female students in Schools of Midwifery.
3. Female students in 1st, 2nd and 3rd years in Schools of Nursing and Midwifery.
4. All ages.

Exclusion criteria:
1. Male students.
2. Students in preliminary training.
3. Students on refresher courses.

Procedure methodology

After written approval was obtained from the Human Research and Ethics Committee of Nnamdi Azikiwe University, Nnewi Campus and informed consent from the Principals and students of all the schools that participated in the study, a self- structured questionnaire was used to collect the data. The questionnaire included socio-demographic characteristics such as school, year of study, age and marital status. It also included the level of utilization of cervarix by the students, facilitators towards utilization of cervarix and the barriers to the utilization of cervarix vaccine. Two hundred and eighty two copies of questionnaire were administered to the students. The respondents completed the questionnaire after explaining the purpose of the study to them. All the copies of the questionnaire (100%) were returned.

Statistical analysis

The Demographic data and research questions were analyzed using percentages and mean scores. Hypotheses were tested using Mann- Whitney U test for data involving two variables and Krukals-Wallis H test for data involving three or more variables. Statistical significance was set at 0.05 level. All statistics were done using SPSS statistical software (version 20.0).

III. Result

After 3 months of data collection, it was discovered that none (0%) of the students had previously received the cervarix vaccine; hence there was no facilitator towards its utilization. Lack of information about the cervarix (76.2%) was the highest influential barrier to the utilization of the vaccine among the students, followed by no knowledge of where to be vaccinated (63.5%). The hypotheses showed that the students' age had no significant influence on the level of utilization of the vaccine ($X^2 = 3.08$; p-value = 0.380), while barriers to the utilization of cervarix were not significantly influenced by the marital status of the students ($Z = -0.858$; p-value = 0.391).

Table 1 shows the demographic characteristics of the participants. Data showed that the highest percentage (18.4%) of the study population was selected from School of Nursing Ihiala, while the lowest percentage (2.5%) was recruited from Post Basic School of Nursing, Chukwuemeka Odumegwu Ojukwu

University Teaching Hospital, Nkpor. The participants were selected from 1st year (37.6%), 2nd year (40.1%) and 3rd year (22.3%) classes. Majority (72.7%) of the participants were from the age group 20-24 yrs (72.7%), followed by those aged 25-29 yrs (13.8%) and ≥30 years (7.4%). Majority of the participants were singles (84%), while the married participants constituted 16% of the population.

Table 1. Demographic Characteristics of the Participants.

Characteristics	Number of Participants (n = 282)	Percentage
Names of Schools		
Post-Basic School of Midwifery, Ihiala	15	5.3
Post-Basic School of Midwifery, Iyienu	14	5.0
Post-Basic School of Midwifery, Water side	18	6.4
Post-Basic School of Nursing, Nkpor	7	2.5
School of Midwifery, Adazi-Nnukwu	29	10.3
School of Midwifery, Nkpor	25	8.9
School of Nursing, Nkpor	44	15.6
School of Nursing, Ihiala	52	18.4
School of Nursing, Iyienu	32	11.3
School of Nursing, NAUTH	46	16.3
Year of Study		
1st Year	106	37.6
2nd Year	113	40.1
3rd Year	63	22.3
Age Group		
15-19 yrs	17	6.0
20-24 yrs	205	72.7
25-29 yrs	39	13.8
≥ 30 yrs	21	7.4
Marital Status		
Single	237	84.0
Married	45	16.0

Table 2 shows the level of utilization of cervarix vaccine among students in the Schools of Nursing and Midwifery in Anambra State. Results indicated that none of the students had previously received the vaccine.

Table 2. Level of utilization of cervarix vaccine among student Nurses and Midwives

Statement	Responses by Participants (n = 282)	
	Yes N (%)	No N (%)
5. Cervarix Vaccine has been previously received	-	282 (100)
6. Cervarix Vaccine has been received once	-	282 (100)
7. Cervarix Vaccine has been received twice	-	282 (100)
8. Cervarix Vaccine has been received thrice	-	282 (100)

Table 3 shows that lack of information about the vaccine (76.2%) was the highest barrier to the utilization of cervarix among the participants, followed by no knowledge of where to receive the vaccine (63.5%) while lack of time for vaccination was the least influential barrier (4.3%) to the utilization of the vaccine by the student Nurses and Midwives in Anambra State.

Table 3. Barriers to utilization of cervarix among student Nurses and Midwives

Barrier variables	Responses by Participants (n = 282)			
	Strongly Agree N (%)	Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
21. Lack of Information about the vaccine	123 (43.6)	92 (32.6)	42 (14.9)	25 (8.9)
22. No Knowledge of where to receive the vaccine	122 (43.3)	57 (20.2)	42 (14.9)	61 (21.6)
23. High cost of the vaccine	35 (12.4)	42 (14.9)	58 (20.6)	147 (52.1)
24.Already Infected by HPV	11 (3.9)	10 (3.5)	40 (14.2)	221 (78.4)
25.Vaccine not covered by health insurance	103 (36.5)	33 (11.7)	43 (15.2)	103 (36.5)
26. In monogamous relationship	70 (24.8)	46 (16.3)	32 (11.3)	134 (47.5)
27.Currently not having sex and don't need the vaccine	138 (48.9)	19 (6.7)	32 (11.3)	93 (33.0)
28.Lack of parental consent	29 (10.3)	17 (6.0)	36 (12.8)	200 (70.9)
29.Inadequate knowledge about the vaccine	103 (36.5)	65 (23.0)	58 (20.6)	56 (19.9)
30.Inadequate knowledge of the vaccine's side effects	102 (36.2)	98 (34.8)	16 (5.7)	66 (23.4)
31.No knowledge of vaccine's efficacy	55 (19.5)	37 (13.1)	71 (25.2)	119 (42.2)
32.Concern that the vaccine will hurt	47 (16.7)	36 (12.8)	61 (21.6)	138 (48.9)
33.Social stigma associated with vaccine	29 (10.3)	40 (14.2)	68 (24.1)	145 (51.4)
34.Lack of time for vaccination	1 (0.4)	11 (3.9)	95 (33.7)	175 (62.1)

Table 4 shows the influence of age on the barriers to the utilization of cervarix among student Nurses and Midwives in Anambra State. Kruskal- Wallis H test indicated that the barriers to the utilization of cervarix did not significantly differ ($p = 0.380$) in the age of the students undergoing Nursing and Midwifery programmes in Anambra State. This means that the barriers to the utilization of cervarix were not significantly influenced by the age of the students, hence hypothesis 1 was accepted.

Table 4. Kruskal- Wallis H test of the influence of age on the barriers to the utilization of cervarix

Age (Years)	**N**	**Mean Rank**
15-19	17	116.59
20-24	205	143.78
25-29	39	149.63
≥30	21	124.29
Statistics: $X^2 = 3.08$; $P = 0.380$		

Table no 5 shows the influence of students' marital status on the barriers to the utilization of cervarix. Mann-Whitney U test indicated lack of significant difference ($p = 0.391$) in barriers to the utilization of cervarix between the singles and married students. This means that the barriers to the utilization of cervarix were not significantly influenced by the marital status of the students undergoing Nursing and Midwifery programmes in Anambra State. Hypothesis 2 was therefore accepted.

Table 5. Mann-Whitney U test of the influence of students' marital status on the barriers to the utilization of cervarix

Marital Status	N	Mean Rank
Single	237	139.69
Married	45	151.04
Statistics: Z = -0.858; P = 0.391		

IV. Discussion

The results of level of utilization of cervarix vaccine indicated that none (0%) of the student Nurses and Midwives in Anambra State, Nigeria had earlier received the vaccine. These results are in line with the study carried out by Makwe, Arnolu and Odeyemi[6] (2010) to determine the level of utilization of HPV vaccines among female undergraduate students at the University of Lagos which showed that none (0%) of the students had received the vaccine. The results also agreed with the finding by Ajah et al. [7] (2015) in their study to determine the utilization of HPV vaccines by secondary school teachers in Abakiliki, Ebonyi State which showed that none of the teachers (0%) had earlier received the vaccine.

However, the results differ from the study by Rachel[8] (2014) to determine the undergraduate students' utilization and barriers to human papilloma virus vaccination in Canada where (49%) of the students had received the vaccine. The contrast in the levels of utilization of HPV vaccines between the undergraduate students in Canada and the student Nurses and Midwives in Anambra State may be due to the fact that Canada is a developed country and has a better health delivery system than Nigeria which is still a developing country. The poor level of utilization of cervarix by the students undergoing Nursing and Midwifery training in Anambra State may be due to their poor knowledge about the vaccine and its availability. Promoting the knowledge and utilization of cervarix in Anambra State will help in reduction of the incidence and mortality rates associated with cervical cancer.

Findings on the facilitators to the utilization of cervarix revealed that there was no facilitator to the utilization of cervarix among students in the schools of Nursing and Midwifery in Anambra State. The result is in agreement with the study by Odetola and Ekpo[9] (2012) to determine the facilitators to human papilloma virus vaccine utilization among Nigerian women in Lagos State which showed that there was no facilitator to HPV vaccination since none of the women that participated in the study had been vaccinated[6]. The finding is not in line with the study by Iliyasu, Abubakar, Aliyu and Galadanci[10] (2010) on the knowledge and facilitators to human papilloma virus vaccination by female students of Ahmadu Bello University, Zaria which showed that medical education and knowledge of human papilloma virus were their motivational factors to HPV vaccination.

The contrast in the facilitators to the utilization of cervarix vaccine between the student Nurses and Midwives in Anambra State and the female undergraduate students of Ahmadu Bello University, Zaria may be due to the vaccination of 200 female students randomly selected from various parts of northern Nigeria by the Federal Government in 2010, hence some of the students from Ahmadu Bello University, Zaria might have benefited from the vaccination thereby reporting about their facilitators. Increase in awareness campaign about cervical cancer and human papilloma virus vaccines will motivate the students undergoing Nursing and Midwifery programmes in Anambra State to receive the cervarix vaccine.

Results from the barriers to the utilization of cervarix among student Nurses and Midwives in Anambra State revealed that lack of information about the vaccine (76.2%) was the highest barrier to the its utilization among the students that participated in the study. This result is in line with the result by Funmilayo, Balogun, Adekemi and Adebukola[11] (2013) in their study to determine the facilitators and barriers towards acceptance of human papilloma virus vaccines among the medical students of Lagos State University which indicated that inadequate information about the vaccine was the major barrier (78.9%) towards its utilization among the medical students. The result is also in agreement with the finding by Rachel[8] (2014) to determine the undergraduate students' utilization and barriers to human papilloma virus vaccination in Canada which showed that lack of vaccine knowledge (56.7%) was the primary barrier towards the utilization of the vaccine among the undergraduate students.

However, the result is in contrast with the study by Gitte[12] (2009) to determine the facilitators and barriers to the acceptance of human papilloma virus vaccination among young women in Denmark which revealed that cost of the vaccine (60.9%) was the greatest barrier to its utilization and not lack of knowledge about the vaccine. Cost was not considered as a major barrier to the utilization of cervarix among the students undergoing Nursing and Midwifery programmes in Anambra State probably because of their poor knowledge of the vaccine and its cost. The poor knowledge of the students about the vaccine could be due to the fact that it is neither contained in the National Programme on Immunization nor administered in any of the facilities they use for their clinical experiences. This variation in the barriers to the utilization of HPV vaccine between the young women in Denmark and the student Nurses and Midwives in Anambra State may be due to more enlightenment campaign about the vaccine in Denmark.

In the hypothesis test of the influence of age on the barriers to the utilization of cervarix by the student Nurses and Midwives in Anambra State, Kruskal- Wallis H test indicated that the barriers to the utilization of cervarix did not significantly differ ($p = 0.380$) in the age of the students. Therefore hypothesis 1 was accepted. Also, hypothesis on the influence of marital status on the barriers to the utilization of cervarix by the student Nurses and Midwives in Anambra state was tested using Mann-Whitney U test. Result indicated lack of significant difference ($p = 0.391$) in barriers to the utilization of cervarix between the singles and married students, hence hypothesis 2 was accepted.

V. Conclusion

None of the students that participated in the study had earlier received the cervarix vaccine; hence there was no facilitator to the utilization of cervarix among the students. Lack of information about cervarix was the highest influential barrier to the utilization of the vaccine among the students, followed by no knowledge of where to be vaccinated.

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