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KNOWLEDGE OF CERVICAL CANCER AND UPTAKE OF HUMAN PAPILLOMAVIRUS VACCINE AMONG MOTHERS OF ADOLESCENTS IN IBADAN, NIGERIA

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ABSTRACT

Cervical cancer (CC) is the most common gynecological malignancy in Nigeria, and the Human papillomavirus (HPV) is known to be associated with the disease. Vaccination is an effective preventive strategy, but its uptake remains low in Nigeria. Therefore, this study aimed to assess the knowledge and uptake of HPV vaccination among mothers of adolescents in two selected markets in Ibadan, Nigeria. A descriptive cross-sectional design was employed, and 398 mothers were purposively selected out of the 600 accessible participants. Data was collected using a structured interviewer-administered questionnaire and analyzed using IBM Statistical Package for the Social Sciences version 25. Descriptive statistics, frequency tables, and charts were used for data presentation, while the chi-square test was used for hypothesis testing at a significance level of 0.05. The findings revealed that 46.7% of the respondents were aged 39-48 years. Less than half (47.2%) had a high knowledge level of Cervical cancer and HPV, and only 23.4% had received HPV vaccination, with none of their daughters being vaccinated against HPV. The major perceived factors influencing mothers' uptake of HPV vaccine were a lack of adequate information about the vaccine (87.2%) and not knowing where to get the vaccine (79.4%). There was no significant association between mothers' knowledge and uptake of the HPV vaccine (p=0.487), as well as the cost of the vaccine and its uptake (p=0.998). However, a significant association was found between mothers' educational level and their knowledge of cervical cancer (p=0.000). These findings highlight the need for improved information dissemination on cervical cancer and HPV vaccination. It is recommended that the government initiates national immunization policies to make the vaccine more accessible and affordable, thereby combating the disease effectively.

Keywords: Cervical cancer, Human papillomavirus vaccines, influencing factors, Perception, uptake

INTRODUCTION

Cervical cancer remains a significant global health concern. Despite being a preventable disease, it continues to burden women, particularly in developing countries, due to the lack of adequate screening programs and awareness about screening services (Bruni et al., 2022; Sultana et al., 2019; Ndikom et al., 2019). The global incidence of cancer has risen to 1.8 million new cases and resulted in 9.6 million deaths in 2018 (International Agency for Research on Cancer, 2018). Among the 500,000 new cervical cancer cases reported annually worldwide, over 80% are diagnosed at an advanced stage, leading to poor treatment outcomes (Mwaka, Orach, Were, et al., 2016). Cervical cancer is predominantly caused by high-risk human papillomavirus infections and accounts for 7.7% of cancer cases in developing countries, with a primary focus on cervical cancer (World Health Organization, 2017). By the year 2030, it is projected that cervical cancer will claim the lives of more than 443,000 women annually worldwide, with a significant number of these cases occurring in Sub-Saharan Africa.

Numerous studies have highlighted the limited awareness of cervical cancer screening and human papillomavirus (HPV) vaccination among women in Nigeria and Sub-Saharan Africa (Akanbi, Iyanda, Osundare & Opaleye, 2015; Ojima & Maduka, 2017). The promotion of HPV vaccine as a preventive measure against cancer has raised moral concerns among some parents due to its association with sexually transmitted infections (Adesina et al., 2018). Nigeria has the highest mortality rate from cervical cancer in Africa, with an

estimated incidence rate of 29 per 100,000 by age standardized rate, and approximately 3.28 newborn girls per 100 expected to develop cervical cancer in Nigeria (Africa Development Information, 2014). Additionally, cervical cancer is the leading cause of cancer-related deaths in Sub-Saharan Africa (Ferlay, Shin, Bray, Forman, Mathers, & Parkins, 2010; Jemal, Bray, Center, Ferlay, Ward, & Forman, 2011). This is attributed to inadequate healthcare facilities and low standards of delivery services (Ophori, Tula, Azih, Okojie, & Ikpo, 2014). Nigeria, as a country with a low Health Development Index, faces challenges of low screening and HPV vaccination uptake, leading to increased mortality from cervical cancer (Inter Agency for Cancer Research, 2021). As HPV vaccines become available in developing countries, acceptability studies are crucial to understand potential barriers and facilitators of HPV vaccination and guide immunization programs (Ezechi et al., 2019; Remes, Selestine, Changalucha, Ross, Wight, & de Sanjose, 2012). Factors influencing cervical cancer and HPV knowledge and vaccine uptake include education level, employment status, marital status, age, and number of pregnancies (John-Akinola et al., 2022). Studies conducted in three states in the South East and South West regions by Eni et al. (2018) revealed that only 5.27% of respondents reported prior HPV vaccination. Another study in southern Nigeria by Ezanochie & Olasimbo (2020) found that only 0.5% of participants had received the HPV vaccine. Based on the researcher's observations and inquiries, the number of women presenting with cervical cancer at University College Hospital has been increasing, while the uptake of cervical cancer screening and HPV vaccination for adolescents remains low. Therefore, this study aims to assess the knowledge of cervical cancer and HPV and the uptake of HPV vaccines among mothers of adolescents in selected markets in Ibadan, Nigeria.

Objectives

1. To assess the level of knowledge of cervical cancer and human papilloma virus vaccine among mothers of adolescents
2. To investigate the uptake of HPV Vaccinations among the mothers and their adolescent children.
3. To investigate the perceived factors influencing mothers' uptake of human papilloma virus vaccine for their adolescent children.

METHODOLOGY

Design: The descriptive cross-sectional study adopted.

Study population: The study was conducted among mothers of adolescent children in two selected markets in Ibadan, namely Bodija and Sango. The average population of women in these markets at the time of the study was estimated to be approximately 600, with 400 women in Bodija market and 200 women in Sango market.

Inclusive criteria: Inclusion criteria for participants in this study included: mothers of young adults/ adolescents attending selected markets (Bodija and Sango markets); those that are able to speak, write and read English Language and Yoruba; and mothers who are willing to participate in the study.

Exclusion criteria: Exclusion criteria for participants in this study included: mothers who children are less than nine years were excluded from the study; and mothers who were not willing to participate in the study.

Sample size determination: The minimum sample size for this study was determined using Fischer's formula, as described by Araoye (2003). Proportionate allocation was applied based on the population of each market. For Bodija market, the allocated sample size was 285, and for Sango market, it was 142. The total sample size for both markets combined was therefore 427. However, the final number of respondents who participated in the study was 398.

Sampling Technique: Purposive technique was used to select mothers of adolescents in the selected markets in Ibadan North Local Government Area, Ibadan, Oyo State, during the period of data collection who met the inclusion criteria of having at least one adolescent female child.

Instruments for Data Collection: A Structured interviewer administered questionnaire was used for data collection and this was also used to elicit information from the participants. The instrument was developed from reviewed literature. It consists of six sections: Section A sociodemographic characteristic; Section B: Knowledge of cervical cancer HPV, HPV Vaccination; Section C: Mothers' Perception of use of HPV Vaccination; Section D: Uptake of HPV vaccination; Section E: Barriers / Factors Associated with the Use of HPV Vaccine. The instrument was validated with a reliability coefficient (Cronbach's Alpha) value of 0.71 which was used to ensure internal constituency of the instrument.

Method of Data Collection: A letter explaining the purpose of the study and indicating the time of involvement was attached to the questionnaire. The investigators obtained consent and clarify confusion on the part of the participants, if any. The researchers with the assistants administered and retrieved the questionnaires after been duly completed by the participants. This was done daily for a maximum of four (4) weeks. For the participants who are illiterate, the questionnaire was read to them in either English or Yoruba by the researcher or the research assistant and they were allowed to choose their responses without being coerced.

Method of Data Analysis: The questionnaires were carefully checked for proper completion and Data analysis was done using IBM Statistical Package for Social Sciences version 25 Software with both descriptive and inferential statistics. Frequency counts and percentages tables and charts were used for the descriptive statistics. Cross tabulation and chi-square was used to test associations between categorical variables 0.05level of significance.

Ethical Consideration: Ethical approval was obtained from the research ethics committee, Oyo State Ministry of Health with approval number- AD13/479/2023[A]. The ethical approval letter was presented to the heads of the traders in the two selected markets. The purpose and benefits of the study were explained to the heads, representatives and the participants. The researcher ensured all ethical principles were considered and the right of human subjects were maintained while carrying out the study. Informed consent was obtained from all the participants before participating in the study and confidentiality was highly maintained. The questionnaires were filled and retrieved immediately. The researcher ensured that the information obtained from the participants was used strictly for academic purpose.

RESULTS

Table 1 shows that 186(46.7%) are between 29-38 years, 260(65.3%) had Senior Secondary, 356(89.4%) mothers are Yoruba, 295(74.1%) mothers are from monogamous family type, 86(21.6%) are from polygamy family type, 21(55.5%) mothers earn less than 10,000 monthly.

Table 1: Socio demographical representation of respondents

Variables	Labels	Frequency	Percentage
Age group	19-28 years	137	34.4
	29-38 years	186	46.7
	39-48 years	69	17.3
	49 years and above	6	1.5
Educational status	Ph.D.	2	0.5
	M.Sc.	11	2.8
	B.Sc.	14	3.5
	HND	22	5.5
	OND	21	5.3
	NCE	29	7.3
	SSCE	260	65.3
	Others	39	9.8
Tribe	Yoruba	356	89.4
	Hausa	10	2.5
	Igbo	21	5.3
	Fulani	3	0.8
	Others	8	2
Family types	Monogamy	295	74.1
	Polygamy	86	21.6
	Single mothers	17	4.3
	Total	398	100
Monthly family income (Naira)	Less than 10,000	221	55.5
	10,000-50,000	167	42
	51,000-100,000	10	2.5
	Total	398	100

Level of knowledge of cervical cancer and human papilloma virus vaccine among mothers of adolescent:

Table 2 presents the findings related to participants' knowledge regarding cervical cancer and human papillomavirus (HPV). Of the respondents, only 158 (39.7%) exhibited awareness of the fact that cervical cancer is prevalent among women. Among the mothers of adolescents, a mere 41 (10.3%) possessed knowledge of HPV as a causative factor of cervical cancer, while 62 (15.6%) were aware of HPV as a sexually transmitted disease. Notably, Figure 1 illustrates that slightly less than half of the participants, specifically 188 (47.2%), demonstrated a high level of knowledge concerning cervical cancer and HPV.

Table 2: Respondents' Knowledge of Cervical cancer

Items	Don't know	No	Yes
Respondents' General Knowledge of Cervical cancer			
HPV vaccines are available for the prevention of cervical cancer of recent	(0%)	233(58.5%)	165(41.5%)
Cervical cancer is a common cancer among women	110(27.6%)	163(41%)	125(31.4%)
Cervical cancer is the commonest cancer among Nigerian women	283(71.1%)	108(27.1%)	7(1.8%)
Cervical cancer is the most frequent cancer in women worldwide	321(80.7%)	73(18.3%)	4(1.0%)
The virus that causes cervical cancer is Human Papillomavirus	344(86.4%)	13(3.3%)	41 (10.3%)
Cervical cancer can develop in any women that has been exposed to sexual activity	224(56.3%)	16(4.0%)	158(39.7%)
Human papillomavirus is a causative factor of cervical cancer	317(79.6%)	8(2.0%)	73(18.3%)
Having multiple sex partners increases the likelihood of cervical cancer	154(38.7%)	17(4.3%)	227(57.0%)
HPV is a sexually transmitted disease	331(83.2%)	5(1.3%)	62 (15.6%)

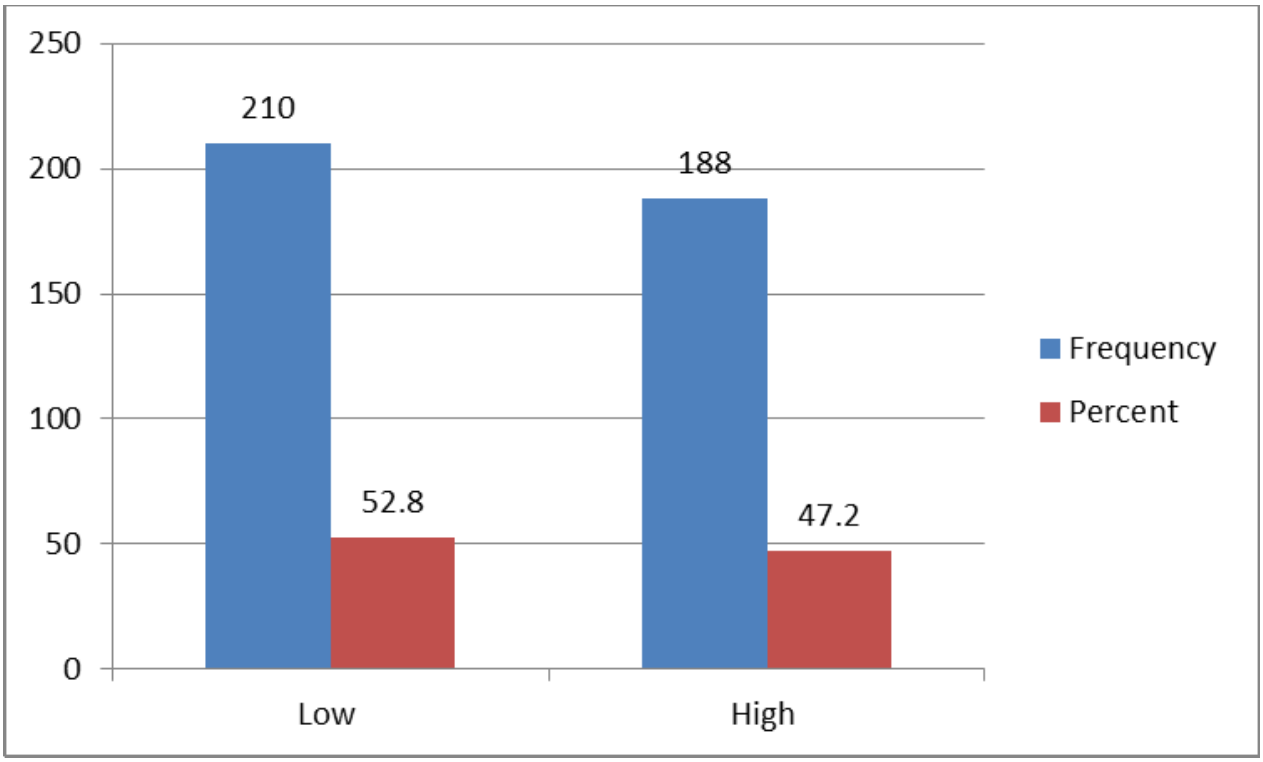

Figure 1: Knowledge level of the Respondents

Respondents' Reported Uptake of Human Papilloma Virus Vaccination:

Figure 2 shows the uptake of human papilloma virus vaccine by the mothers of the adolescents was low as only 93(23.4%) of the participants had received HPV vaccination, and none of their adolescent child had ever received HPV vaccine. The reasons why they were not given the vaccines were because of lack of awareness. Therefore, this study indicate that the mothers' uptake level of HPV vaccination (23%).

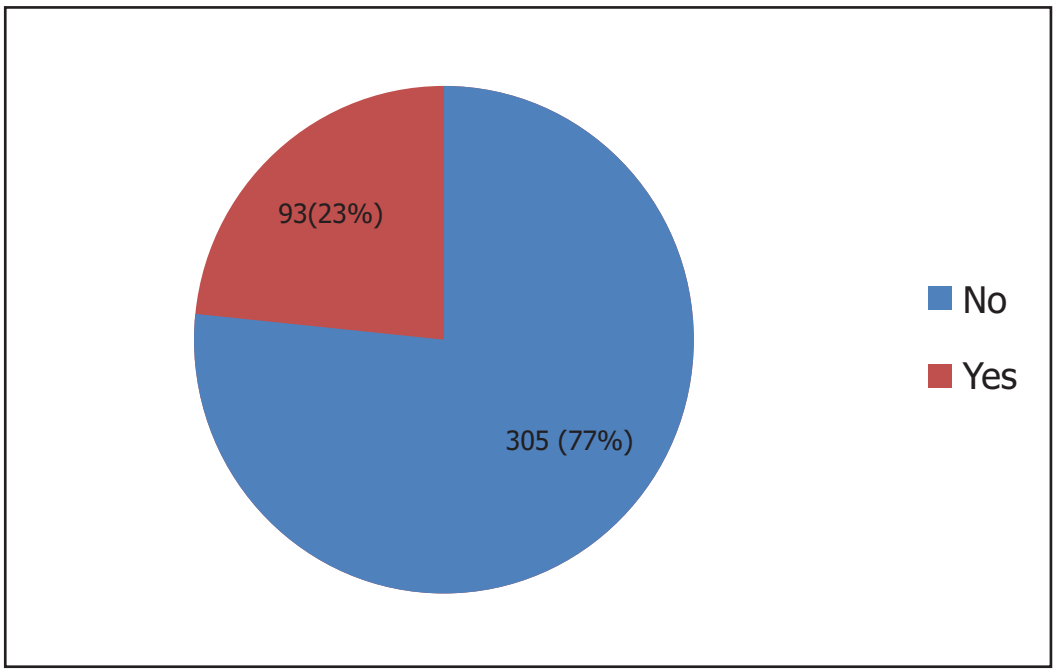

Figure 2: Respondents' Reported Uptake of Human Papillomavirus Vaccination

Table 3 presents the perceived factors that influence mothers' decision to uptake the human papillomavirus (HPV) vaccine for their adolescent children. The highest-ranking factor, with 87.2% agreement among participants, was the "Lack of adequate information about HPV vaccine, including its side effects." This suggests that mothers' knowledge gaps regarding the vaccine and its potential adverse effects significantly impact their decision-making process. Following closely behind, "Not aware of where to get the vaccine" was reported by 79.4% of participants as a significant influencing factor. Additionally, 70.4% of respondents indicated that the societal environment they reside in plays a role, as it is not supportive of HPV vaccine uptake.

Table 3: Perceived Factors influencing mother's uptake of human papilloma virus vaccine for their adolescent children.

Barriers/factors	No	Yes
Lack of adequate information about HPV vaccine including its side effects	51(12.9%)	347(87.2%)**
Not aware of where to get the vaccine	82(20.6%)	316(79.4%)**
The society I live in, is not against the uptake of HPV vaccine	118(29.6%)	280(70.4%)**
There is need to involve adolescents in the decision on HPV vaccination	254(62.9%)	144(36.2%)
My religion is against the HPV vaccination	379(95.3%)	19(4.8%)
My culture does not permit	383(96.3%)	15(3.8%)
Attitude of the health workers discouraged me	384(96.5%)	14(3.5%)
The cost of HPV vaccine is high	261(65.6%)	137(34.4%)
Child will be stigmatized as promiscuous	387(97.2%)	11(2.8%)
Child is too young to receive a vaccine for an STI like HPV	302(75.9%)	96(24.1%)

Test of Associations

Ho1: there is no significant association between mothers' knowledge level and uptake of human papilloma virus vaccination (p=0.487). The null hypothesis was not rejected as the p-value is greater than 0.05.

Ho2: there is no significant association between the Cost of vaccine and uptake of human papilloma virus vaccine (p=0.998). The null hypothesis was not rejected as the p value is greater than 0.05.

Ho3: There is a significant association between mothers' educational level and the knowledge of cervical cancer (p=0.000). The null hypothesis was rejected as the p-value is less than 0.05.

Table 4: Test of Associations

Ho1: Mothers' knowledge of cervical cancer	Uptake of HPV vaccination by respondents			P-value	Remark
	No	Yes	Total		
Low	158(75.2%)	52(24.8%)	210(100.0%)	0.487	Not Significant
High	147(78.2%)	41(21.8%)	188(100.0%)		
Total	305(76.6%)	93(23.4%)	398(100.0%)		
Ho2: Cost of vaccine	Uptake of HPV vaccination by respondents				
	No	Yes	Total		
No	200(76.6%)	61(23.4%)	261(100.0%)	0.998	Not Significant
Yes	105(76.6%)	32(23.4%)	137(100.0%)		
Total	305(76.6%)	93(23.4%)	398(100.0%)		
Ho3: Mothers' educational level	Mothers' knowledge of cervical cancer				
	Low	High	Total		
High	8(16.3%)	41(83.7%)	49(100.0%)	0.000	Significant
Low	202(57.9%)	147(42.1%)	349(100.0%)		
Total	210(52.8%)	188(47.2%)	398(100.0%)		

DISCUSSION

This study examined the level of knowledge of cervical cancer and factors that may influence uptake of human papillomavirus vaccination of their adolescent children in two selected markets in Ibadan North Local Government, Oyo State. The demographic characteristics of the respondents showed that 186 (46.7%) of the respondents were within ages 39 – 48 years. This age represents the women's reproductive life and thus efforts must be directed at ensuring they undergo screening at the prescribed rates to rule out the presence of lesions. More so, a good number of the mothers had secondary education 260(65.3%) as their highest level of education. Level of education has been implicated in having adequate knowledge of cervical cancer related information (John-Akinola et al (2022). Efforts must also be directed at ensuring that adequate information is made available to mothers with minimal education.

The study findings indicate that less than 50% of the respondents possessed adequate knowledge regarding cervical cancer. Notably, a significant association was observed between mothers' educational level and their knowledge of cervical cancer (p=0.000). This aligns with the research conducted by Agida et al. (2015), which identified low knowledge levels of HPV vaccine among women attending antenatal clinics at the University of Abuja Teaching Hospital in Nigeria. Similar findings were reported among female workers in Abuja (Odunyemi et al., 2018) and in Ilorin, Nigeria (Adesina et al., 2018). Only 31.4% of the women in this study were aware of the common occurrence of cervical cancer among women, and a smaller proportion (27.1%) considered it the second most common cancer among Nigerian women. This corresponds to the findings of Eni et al. (2018), which revealed a low level of HPV knowledge among women from various states in Nigeria.

Another study by Ojimah and Maduk (2017) focusing on female undergraduate students in the South-South region of Nigeria reported that 29.7% of participants were aware that cervical cancer could be screened through pap smear tests, while 26% had heard of the HPV vaccine. Interestingly, most respondents were unaware that the HPV vaccine is used to prevent cervical cancer. However, despite the low awareness levels, the uptake of the vaccine was not reflected in poor vaccination rates. Thus, there is a pressing need for concerted efforts to enhance awareness and promote widespread adoption of vaccination practices. Furthermore, the influencing factors hindering the uptake of the human papillomavirus vaccination were identified as a lack of adequate information about the vaccine, including its side effects, unawareness of where to obtain the vaccine, and the high cost associated with it (John-Akinola et al., 2022).

This study further revealed that the uptake of human papilloma virus vaccine among mothers of adolescent is 23.4%. This study is conducted by Ojimah and Maduk (2017) who conducted a study on awareness and uptake of human papillomavirus vaccines among female undergraduate students in South- south, Nigeria and observed that the uptake of human papillomavirus vaccines is low. This study also agrees with Oluwasola, Bello and Odukogbe (2019) who noted that the Uptake level of human papilloma virus vaccine among female undergraduates in Ibadan is low. Also, Ndikom and Oboh 2017 reported low uptake of HPV Vaccine from the study among adolescents in Ibadan, Nigeria. There is no significant association between mothers' knowledge and uptake of human papilloma virus vaccination (p=0.487). There is no significant association between the Cost of vaccine and uptake of human papilloma virus vaccine (p=0.998). This study does not corroborate the report of Ajah et al. (2012) in Abakaliki Ebonyi State, Nigeria and World Health Organization (2014), who indicated that cost and availability were discovered as the major factors influencing uptake.

CONCLUSION AND RECOMMENDATIONS

The findings of this study highlight the inadequate knowledge regarding human papillomavirus (HPV) infection and low uptake of HPV vaccination among the respondents. This underscores the pressing need for collective efforts to address the challenges posed by cervical cancer in our society. It is crucial to provide comprehensive and accurate information about HPV infection and encourage the uptake of HPV vaccination as a preventive measure against cervical cancer.

Additionally, there is a clear indication for the government to establish national immunization and screening policies, ensuring affordable vaccination and screening services through subsidy programs. These measures are aligned with the findings of this study and emphasize the importance of educating mothers about cervical cancer prevention strategies for both themselves and their adolescent daughters.vTo effectively reduce the burden of cervical cancer in Nigeria, it is imperative to address these issues and enhance the uptake of vaccination. Furthermore, future research should focus on evaluating the impact of educational interventions on HPV vaccination among market women. By implementing these strategies, we can make significant progress in combating cervical cancer and safeguarding the health of our population.

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