

**HUMAN PAPILLOMAVIRUS VACCINATION AWARENESS AND ACCEPTANCE  
AMONG MOTHERS OF FEMALE CHILDREN ATTENDING CARE IN TERTIARY  
HOSPITALS IN EKITI STATE**

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**Abstract**

Vaccination is considered to be a viable method in preventing and reducing the severity of a disease. This is not an exception in cervical cancer. This study determined the awareness of HPV vaccination and its acceptance rate. To achieve these objectives, a descriptive cross-sectional survey design was employed. The population for the study comprised mothers of female children attending pediatric units and those at antenatal clinics in two selected tertiary hospitals in Ekiti State. The total number of women registered at these clinics over the last three months was 1,285. The required sample size was calculated to be 336. Convenience sampling was used to select participants, who were approached at the clinics and gave their consents. The questionnaire, adapted from McRee et al. (2012) and Gilkey et al. (2013), was divided into three sections covering demographic data, awareness and acceptability. Data analysis was conducted using descriptive and inferential statistics. The findings revealed the largest group of respondents was aged 31-40 years (38.1%), awareness of HPV vaccination was low among 39.9% of respondents, moderate among 35.9%, and high among 24.1%. A significant portion of mothers had either low or moderate awareness of HPV vaccination. There was also a significant gap in acceptance of HPV vaccination, with 79.9% of mothers exhibiting low acceptance levels. However, there was no significant association between socio-

demographic characteristics and acceptance of HPV vaccination among mothers of female children (chi-square value obtained for age is  $(x^2 = 11.578, p = .171 > 0.05)$ ; religion  $(x^2 = 3.482, p = .481 > 0.05)$ ; and highest educational qualification  $(x^2 = 8.497, p = .386 > 0.05)$ . It was recommended among others that the Ministry of Health, in collaboration with educational institutions and non-governmental organizations (NGOs), should develop and disseminate educational materials that provide clear and accurate information about HPV, its risks, and the benefits of vaccination.

**Keywords:** Vaccination, Acceptance, Awareness, Mothers, Female Children

## Introduction

Vaccination against HPV given to adolescent girls prior to sexual initiation has been found to be highly cost-effective in reducing the risk of invasive cervical cancer (WHO, 2021). Worldwide, it was estimated that only 12% of adolescent girls completed the full course of HPV vaccination in 2021, down from 14% in 2019 before COVID-19 pandemic (WHO, 2021). The coverage of the first dose of HPV vaccination was even lower in the Asia region at about 6% in the Western Pacific Region and about 3% in the South East Asia Region (Bruni et al., 2021). About half 52% of Asian National Cancer Centers Alliance (ANCCA) member countries have introduced HPV vaccination as part of their national vaccination programme or school health programme. Only three out of 21 (14%) ANCCA member countries (Bhutan, Brunei and Singapore) have reported first dose national vaccination coverage of above 90% for girls by 15 years of age. About half of the ANCCA member countries 52% reported a lack of national surveillance data on HPV vaccination coverage. A comparative modelling analysis in 78 LMICs found that by meeting the 90% HPV vaccination target, cervical cancer incidence can be reduced by 89% within a century in the LMICs (Brison et al., 2020). The majority (>80%) of ANCCA member countries are LMICs. Among ANCCA member countries, in the absence of vaccination, 4.2 million cervical cancer cases are predicted to occur among women born between 2005 and 2014. Out of these, with HPV vaccination, an estimated 3.8 million cases can be prevented (Brison et al., 2020).

Most people are infected with HPV shortly after onset of sexual activity (Fagbule et al., 2020). The world health organization recommended that the vaccination against HPV in girls 9–13-year-old combined with regular screening in women over age 30 for precancerous lesions followed by adequate treatment is key tools to prevent the 530,000 new cervical cancer cases

diagnosed every year (Fagbule et al., 2020). According to centers for disease control and prevention, HPV vaccination is for 11 and 12-year-old girls, but it is also recommended for girls and women age 13 through 26 years of age who have not yet been vaccinated or completed the vaccine series (Swain & Parida, 2018).

Statistics above indicate a dire situation, with Nigeria experiencing a high prevalence of HPV infection and cervical cancer, resulting in substantial morbidity and mortality rates. Despite the availability of vaccination and screening tools, their utilization remains inadequate, contributing to the persistence of cervical cancer as a major public health threat. Additionally, there is a lack of comprehensive studies focusing on acceptance of HPV vaccination, including their awareness and barriers of HPV vaccination, in Ekiti State. Despite being largely preventable, cervical cancer remains a significant public health concern in Nigeria, particularly among young women. Low- and middle-income countries like Nigeria face a disproportionate burden of cervical cancer, with high morbidity and mortality rates attributed to limited access to vaccination, screening, and treatment programs. Despite the availability of the human papillomavirus (HPV) vaccine, the acceptance of HPV vaccination among mothers of female children in Nigeria, particularly in Ekiti State, is notably low. This low acceptance poses a significant challenge to effective cervical cancer prevention efforts.

Vaccination is considered to be a viable method in preventing and reducing the severity of a disease. This is not an exception in cervical cancer. HPV vaccination was approved in 2006 as one of the means of preventing HPV-related diseases for girls a 9 years or older before exposure to sexual activities or HPV (UNAIDS, 2020). Cervical cancer is the second most common cancer among women worldwide (Swain & Parida, 2018). It is the most common type of cancer in sub-Saharan Africa, constituting about 19.4% and 22.4% of cervical cancer prevalence and mortality globally (Sherma 2018; Swain & Parida, 2018.) In Nigeria, cervical cancer is the second leading cause of cancer mortality and morbidity among women between 15 and 44 years (Okolie et al, 2022).

In spite of these statistics, studies have reported low knowledge and an unfavourable perception towards HPV vaccination among women and female children (Adesina et al, 2018). If the problem of low awareness and acceptance of HPV vaccination remains unsolved,

cervical cancer will continue to be a major public health problem in Nigeria and globally with increased morbidity and mortality rate. The hope of future generation will also be blink.

This study specifically examined

1. the awareness of HPV vaccination among mothers of female children attending care in tertiary hospitals in Ekiti state, Nigeria;
2. the rate of acceptance of HPV vaccination among mothers of female children attending care in tertiary hospitals in Ekiti state, Nigeria.

The research hypotheses raised for the study are:

**Ho1:** There is no significant association between socio-demographic characteristics (age, religion and level of education) and awareness of HPV vaccination among mothers of female children

**Ho2:** There is no significant association between socio-demographic characteristics (age, religion and level of education) and acceptance of HPV vaccination among mothers of female children

### **Methodology**

The study utilized a descriptive cross-sectional survey to analyse the awareness and acceptability of HPV vaccination, among mothers of female children attending care in tertiary hospital in Ekiti State, Nigeria, using an inductive approach. The setting of the study was Ekiti State University Teaching Hospital, Ado-Ekiti and Federal Teaching Hospital Ido-Ekiti. The research population consisted of all mothers of female children attending care at the pediatric unit and mothers who have at least a female child and are attending ante-natal clinic at the two selected teaching hospitals in Ekiti State. The total number of women who registered at the ante-natal clinic and female children who attended pediatric clinic of the two selected tertiary hospitals in the last 3 months was 1285

**Table 1: Population**

S/N	Teaching Hospitals	ANC	Pediatric	Population
1.	Federal Teaching Hospital, Ido-Ekiti	307	346	<b>653</b>
2.	Ekiti State University Teaching Hospital, Ado-Ekiti.	375	257	<b>632</b>
	<b>Total</b>			<b>1285</b>

Only the Mothers of female children who attend pediatric clinic, and mothers who have given birth to at least a female child and attend ante-natal clinic in the two selected teaching Hospitals, and have consented were included in the study. Those excluded from the study are mothers of female children who did not book at the ante-natal clinic nor bring their children for care in the pediatric unit of the two selected teaching hospitals in Ekiti State during the period of study, mothers who refuse to give their consent for the study and mothers with no female child. The Sample size was 336 after it was estimated by using Levin's formula of Israel (1992) and Krejcie and Morgan (1970).

**Table 2: Proportional distribution of the Sample**

S/N	Teaching Hospitals	Calculation	Sample Size
1.	Federal Teaching Hospital, Ido-Ekiti	$653/1285 * 336$	171
2.	Ekiti State University Teaching Hospital, Ado-Ekiti.	$632/1285 * 336$	165
	<b>Total</b>		<b>336</b>

**Table 3: Proportional distribution of the Sample according to each Units**

S/N	Teaching Hospitals	ANC	PAED	Total Sample
1.	Federal Teaching Hospital, Ido-Ekiti	$307/653 * 171 =$ <b>80</b>	$346/653 * 171 =$ <b>91</b>	<b>171</b>
2.	Ekiti State University Teaching Hospital, Ado-Ekiti.	$375/632 * 165 =$	$257/632 * 165 =$	<b>165</b>

		<b>98</b>	<b>67</b>	
	<b>Total</b>			<b>336</b>

The study participants (sample) were selected using the convenience sampling technique. This included visiting the ante-natal and Paediatrics clinics and administering the questionnaire to mothers who have at least a female child and attended care during the period of the study. The instrument for data collection was an adapted questionnaire of McRee et al (2012), Global HPV Vaccine Acceptance Survey, and Gilkey et al (2013). The first section (Section A) seeks for the demographic data of the participants which included the marital status, age group, highest educational level, religion, occupation, ethnicity and level of income. Section B consisted of 12 items on awareness of HPV vaccination. Yes or No option was used for grading. Section C consisted of 10 items on acceptability of HPV vaccination.

The questionnaire was submitted to specialists in the fields of Tests and Measurement and Nursing Science to assess its content and face validity. The reliability method adopted in this study is the internal consistency method that involves administration of the corrected and validated version of the questionnaire once to 10% of the sample size (34 mothers of female children attending Children clinic at Afe Babalola University Teaching Hospital, Ado-Ekiti). The overall reliability index was 0.824. An ethical approval from the Afe Babalola University Research and Ethical Committee was collected. This was utilised to obtain consent from the Health Research Ethics Committee of the two tertiary hospitals in Ekiti State. The nurse in charge was carried along so as to obtain consent from the mothers at the ante-natal and pediatric clinics of the two selected tertiary hospitals in Ekiti State, Nigeria. Thereafter, questionnaires for the research work were distributed to the participants on the scheduled clinic days for medical consultations after explaining the research and its purpose to them, with their consent fully gained. The data obtained from the surveys were analysed using quantitative methods, namely descriptive and inferential statistics. The descriptive statistics encompassed frequency and percentage analysis to examine the demographic features and variables of interest in this study, which aimed to address the research objectives of the study. Hypotheses 1 – 2 were tested using Chi-square at 0.05 level of significance.

## Results

It should be noted that three hundred and twenty-three (323) respondents participated in this study out of the 336 sample size representing 96.1% retrieval success rate.

**Table 4: Distribution of respondents by socio-demographic characteristics N= 323**

<b>Socio-demographic characteristics</b>	<b>Frequency (N= 323)</b>	<b>Percentage</b>
<b>Age</b>		
Below 20 years	24	7.4
21-30 years	87	26.9
31-40 years	123	38.1
41-50 years	67	20.7
Above 50 years	22	6.8
<b>Religion</b>		
Christianity	202	62.5
Islam	97	30.0
Others	24	7.4
<b>Marital Status</b>		
Single	50	15.5
Married	165	51.1
Divorced	73	22.6
Separated	35	10.8
<b>Highest level of education</b>		
No Formal Education	13	4.0
Primary	50	15.5
Secondary	99	30.7
Tertiary	124	38.4
Others	37	11.5
<b>Occupation</b>		
No Job	25	7.7
Civil servants	67	20.7
Private Organisation Employee	81	25.1
Artisan/Entrepreneur	100	31.0
Others	50	15.5
Total	323	100.0



Table 4 presents the socio-demographic characteristics of the 323 respondents. The age distribution reveals that the largest group of respondents, 123 individuals or 38.1%, falls within the 31-40 years age range. This is followed by 87 respondents, or 26.9%, who are aged 21-30 years. Respondents aged 41-50 years constitute 20.7% of the sample with 67 individuals. The age groups below 20 years and above 50 years are the smallest, with 24 respondents (7.4%) and 22 respondents (6.8%) respectively. In terms of religious affiliation, the majority of respondents, 202 individuals or 62.5%, identify as Christians. Islam is practiced by 97 respondents, making up 30.0% of the sample. The remaining 24 respondents, or 7.4%, follow other religions.

Marital status among the respondents shows that 165 individuals, or 51.1%, are married, making this the largest group. Single respondents number 50, accounting for 15.5% of the sample. Those who are divorced and separated constitute 22.6% and 10.8% of the respondents, with 73 and 35 individuals respectively. Educational attainment varies, with 124 respondents, or 38.4%, having completed tertiary education. Secondary education has been attained by 99 respondents, making up 30.7% of the sample. Those with primary education number 50, representing 15.5%, while 13 respondents, or 4.0%, have no formal education. An additional 37 respondents, or 11.5%, fall into the 'other' education category. Regarding occupation, the largest group of respondents, 100 individuals or 31.0%, are artisans or entrepreneurs. Private organisation employees number 81, making up 25.1% of the sample. Civil servants constitute 20.7% of the respondents with 67 individuals. There are 50 respondents, or 15.5%, in other occupations, and 25 respondents, or 7.7%, are without jobs.

The majority of the respondents fall within the 31-40 years age range, are Christians, married, and have attained tertiary education. A significant proportion of the respondents are artisans or entrepreneurs.

**Table 5: Awareness of HPV vaccination among mothers of female children**

S/N	ITEMS	Yes (%)	No (%)	Mean	S.D.
1.	Are you aware that HPV vaccination can prevent certain types of cancers?	164 (50.8)	159 (49.2)	1.51	0.50



2.	Do you know that HPV vaccination is recommended for female children?	142 (44.0)	181 (56.0)	1.44	0.50
3.	Have you heard about the benefits of HPV vaccination through healthcare providers?	133 (41.2)	190 (58.8)	1.41	0.49
4.	Do you receive information about HPV vaccination from social media?	113 (35.0)	210 (65.0)	1.35	0.48
5.	Are you aware that HPV vaccination is most effective when given before exposure to the virus?	136 (42.1)	187 (57.9)	1.42	0.49
6.	Have you discussed HPV vaccination with your friends or family?	135 (41.8)	188 (58.2)	1.42	0.49
7.	Do you think that HPV vaccination should be a routine part of healthcare for female children?	181 (56.0)	142 (44.0)	1.56	0.50
8.	Are you aware of any side effects associated with HPV vaccination?	120 (37.2)	203 (62.8)	1.37	0.48
9.	Do you feel that there is enough public awareness about the importance of HPV vaccination?	222 (68.7)	101 (31.3)	1.69	0.46
10.	Have you been encouraged by your healthcare provider to get the HPV vaccine?	185 (57.3)	138 (42.7)	1.57	0.50

Table 5 presents the awareness of HPV vaccination among mothers of female children, highlighting varying levels of awareness and knowledge. Overall, 50.8% of respondents are aware that HPV vaccination can prevent certain types of cancers, while 44.0% know it is recommended for female children. Only 41.2% have heard about its benefits through healthcare providers, and a smaller 35.0% received information via social media. Awareness that the vaccine is most effective before virus exposure is at 42.1%, and 41.8% have discussed the vaccination with friends or family. More than half (56.0%) believe it should be part of routine healthcare, but only 37.2% are aware of potential side effects. Interestingly, 68.7% feel there is sufficient public awareness about the vaccine's importance, and 57.3% have been encouraged by their healthcare provider to get the HPV vaccine.

To summarize the level of awareness of HPV vaccination among mothers of female children attending care in tertiary hospitals in Ekiti state, Nigeria, the SOLO classification was used.

**Table 6: Summary of level of awareness of HPV vaccination among mothers of female children**

Level	Frequency	Percent
Low Awareness (10 – 14)	129	39.9
Moderate Awareness (15 - 16)	116	35.9
High Awareness (17 – 20)	78	24.1
<b>Total</b>	<b>323</b>	<b>100.0</b>

Table 6 summarizes the levels of awareness of HPV vaccination among mothers of female children, categorizing them into three distinct groups based on their awareness scores. Among the 323 respondents, 39.9% (129 mothers) have low awareness, scoring between 10 and 14. Moderate awareness, with scores ranging from 15 to 16, is observed in 35.9% (116 mothers). Meanwhile, 24.1% (78 mothers) exhibit high awareness, scoring between 17 and 20. This distribution indicates that a significant portion of the mothers have either low or moderate awareness of HPV vaccination, highlighting the need for enhanced educational efforts to increase awareness and understanding of the vaccine's benefits and importance.

**Table 7: Acceptance of HPV vaccination among mothers of female children N= 323**

S/N	ITEMS	Yes (%)	No (%)	Mean	S.D.
1.	Would you consider getting the HPV vaccine for your female children if it was recommended by your healthcare provider?	96 (29.7)	227 (70.3)	1.30	0.46
2.	Do you believe the HPV vaccine is safe for female children?	77 (23.8)	246 (76.2)	1.24	0.43
3.	Would you be willing to pay for the HPV vaccine if it is not covered by insurance?	131 (40.6)	192 (59.4)	1.41	0.49
4.	Are you comfortable discussing HPV vaccination with your healthcare provider?	53 (16.4)	270 (83.6)	1.16	0.37
5.	Do you think the benefits of HPV vaccination outweigh the risks?	54 (16.7)	269 (83.3)	1.17	0.37

6.	Would you encourage other female children to get the HPV vaccine?	132 (40.9)	191 (59.1)	1.41	0.49
7.	Are you influenced by social media or online information in your decision to get the HPV vaccine?	138 (42.7)	185 (57.3)	1.43	0.50
8.	Do you trust the information provided by healthcare authorities about the HPV vaccine?	68 (21.1)	255 (78.9)	1.21	0.41
9.	Would you consider getting the HPV vaccine if it was offered for free at a community health event?	157 (48.6)	166 (51.4)	1.49	0.50
10.	Are you concerned about potential long-term side effects of the HPV vaccine?	138 (42.7)	185 (57.3)	1.43	0.50

Table 7 presents data on the acceptance of HPV vaccination among mothers of female children, with a total of 323 respondents. A significant majority, 70.3%, would not consider getting the vaccine if recommended by a healthcare provider, and 76.2% do not believe the vaccine is safe. Additionally, 59.4% are unwilling to pay for the vaccine if it is not covered by insurance, and 83.6% are uncomfortable discussing it with healthcare providers. Only 16.7% think the benefits outweigh the risks, while 59.1% would not encourage others to get the vaccine. Social media influences 42.7% in their decision, and only 21.1% trust information from healthcare authorities. While 48.6% would consider vaccination if offered for free at community events, concerns about long-term side effects remain for 42.7% of the mothers.

To summarize the rate of acceptance of HPV vaccination among mothers of female children attending care in tertiary hospitals in Ekiti state, Nigeria, the SOLO classification was used.

**Table 8: Summary of rate of acceptance of HPV vaccination among mothers of female children**

Level	Frequency	Percent
Low Acceptance (10 – 13)	258	79.9
Average Acceptance (14 - 16)	40	12.4
High Acceptance (17 – 20)	25	7.7

<b>Total</b>	<b>323</b>	<b>100.0</b>
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Table 8 summarizes the rate of acceptance of HPV vaccination among mothers of female children. It reveals that a significant majority, 79.9%, exhibit low acceptance of the HPV vaccine, scoring between 10 and 13. Only 12.4% of the respondents show average acceptance, with scores ranging from 14 to 16. A mere 7.7% demonstrate high acceptance, scoring between 17 and 20. This result indicates that most mothers have a low level of acceptance towards HPV vaccination for their female children.

**Ho1:** There is no significant association between socio-demographic characteristics (age, religion and level of education) and awareness of HPV vaccination among mothers of female children.

**Table 9: Chi-Square showing the association between socio-demographic characteristics (age, religion and level of education) and awareness of HPV vaccination N = 323**

		Low (%)	Moderate (%)	High (%)	X <sup>2</sup>	df	P
Age	Below 20	9 (2.8)	9 (2.8)	6 (1.9)	6.948	8	.542
	21 - 30	27 (8.4)	37 (11.5)	23 (7.1)			
	31 - 40	58 (18.0)	37 (11.5)	28 (8.7)			
	41 - 50	28 (8.7)	23 (7.1)	16 (5.0)			
	Above 50	7 (2.2)	10 (3.1)	5 (1.5)			
Religion	Christianity	79 (24.5)	72 (22.3)	51 (15.8)	0.412	4	.981
	Islam	40 (12.4)	35 (10.8)	22 (6.8)			
	Others	10 (3.1)	9 (2.8)	5 (1.5)			
Highest Educational	No Education	3 (0.9)	4 (1.2)	6 (1.9)	10.266	8	.247
	Primary	17 (5.3)	19 (5.9)	14 (4.3)			
	Secondary	49	34 (10.5)	16 (5.0)			

		(15.2)					
	Tertiary	47 (14.6)	44 (13.6)	33 (10.2)			
	Others	13 (4.0)	15 (4.6)	9 (2.8)			

Table 9 shows that the chi-square value obtained for age is ( $\chi^2 = 6.948, p = .542 > 0.05$ ); religion ( $\chi^2 = 0.412, p = .981 > 0.05$ ); and highest educational qualification ( $\chi^2 = 10.266, p = .247 > 0.05$ ). From the table above, none of the socio-demographics (age, religion and level of education) were related to awareness of HPV vaccination because their p-values were greater than 0.05 level of significance. Therefore, the null hypothesis is not rejected and retained. Hence, there was no significant association between socio-demographic characteristics (age, religion and level of education) and awareness of HPV vaccination among mothers of female children.

**Ho2:** There is no significant association between socio-demographic characteristics (age, religion and level of education) and acceptance of HPV vaccination among mothers of female children

**Table 10: Chi-Square showing the association between socio-demographic characteristics (age, religion and level of education) and acceptance of HPV vaccination N = 323**

		Low (%)	Moderate (%)	High (%)	X <sup>2</sup>	df	P
Age	Below 20	15 (4.6)	7 (2.2)	2 (0.6)	11.578	8	.171
	21 - 30	68 (21.1)	12 (3.7)	7 (2.2)			
	31 - 40	103 (31.9)	11 (3.4)	9 (2.8)			
	41 - 50	54 (16.7)	6 (1.9)	7 (2.2)			
	Above 50	18 (5.6)	4 (1.2)	0 (0.0)			
Religion	Christianity	161 (49.8)	26 (8.0)	15 (4.6)	3.482	4	.481
	Islam	77 (23.8)	10 (3.1)	10 (3.1)			
	Others	20 (6.2)	4 (1.2)	0 (0.0)			

Highest Educational	No Education	8 (2.5)	4 (1.2)	1 (0.3)	8.497	8	.386
	Primary	41 (12.7)	6 (1.9)	3 (0.9)			
	Secondary	82 (25.4)	10 (3.1)	7 (2.2)			
	Tertiary	97 (30.0)	18 (5.6)	9 (2.8)			
	Others	30 (9.3)	2 (0.6)	5 (1.5)			

Table 10 shows that the chi-square value obtained for age is ( $\chi^2 = 11.578, p = .171 > 0.05$ ); religion ( $\chi^2 = 3.482, p = .481 > 0.05$ ); and highest educational qualification ( $\chi^2 = 8.497, p = .386 > 0.05$ ). From the table above, none of the socio-demographics (age, religion and level of education) were related to acceptance of HPV vaccination because their p-values were greater than 0.05 level of significance. Therefore, the null hypothesis is not rejected and retained. Hence, there was no significant association between socio-demographic characteristics (age, religion and level of education) and acceptance of HPV vaccination among mothers of female children.

### **Discussion of Results**

The age distribution reveals that the largest group of respondents, 38.1% (123 individuals), falls within the 31-40 years age range. This is followed by the 21-30 years age group, which includes 26.9% (87 individuals) of the respondents. Those aged 41-50 years make up 20.7% (67 individuals) of the sample. The age groups below 20 years and above 50 years are the smallest, with 7.4% (24 individuals) and 6.8% (22 individuals) respectively. This distribution aligns with findings by Nhumba and Sunguya (2022) who observed similar age demographics in their study on HPV vaccine acceptance in Tanzania. In terms of religious affiliation, a majority of the respondents, 62.5% (202 individuals), identify as Christians. Islam is practiced by 30.0% (97 individuals), and the remaining 7.4% (24 individuals) follow other religions. This religious distribution is reflective of the predominant religious affiliations in many African communities, as highlighted by Lubeya et al. (2024), who noted similar trends in their study on HPV vaccination in Zambia.

Marital status among the respondents indicates that the largest group, 51.1% (165 individuals), are married. Single respondents constitute 15.5% (50 individuals), while those who are divorced and separated account for 22.6% (73 individuals) and 10.8% (35 individuals) respectively. These findings are consistent with previous research by Franco et al. (2019), which examined the influence of marital status on health-related behaviors, including vaccination. Educational attainment varies among the respondents, with the majority, 38.4% (124 individuals), having completed tertiary education. Secondary education has been attained by 30.7% (99 individuals). Those with primary education represent 15.5% (50 individuals), while 4.0% (13 individuals) have no formal education. An additional 11.5% (37 individuals) fall into the 'other' education category. This educational distribution is in line with the findings of Mohammed et al. (2016), who emphasized the role of educational attainment in health awareness and behaviors.

Regarding occupation, the largest group of respondents, 31.0% (100 individuals), are artisans or entrepreneurs. Private organization employees constitute 25.1% (81 individuals) of the sample. Civil servants make up 20.7% (67 individuals) of the respondents. There are 15.5% (50 individuals) in other occupations, and 7.7% (25 individuals) are without jobs. This occupational distribution supports the findings of Jeyarajah et al. (2019), who explored the impact of occupation on vaccine acceptance and health behaviors.

The findings also revealed the levels of awareness of HPV vaccination among mothers of female children, categorizing them into three distinct groups based on their awareness scores. Among the 323 respondents, 39.9% (129 mothers) have low awareness, scoring between 10 and 14. Moderate awareness, with scores ranging from 15 to 16, is observed in 35.9% (116 mothers). Meanwhile, 24.1% (78 mothers) exhibit high awareness, scoring between 17 and 20. This distribution indicates that a significant portion of the mothers have either low or moderate awareness of HPV vaccination, highlighting the need for enhanced educational efforts to increase awareness and understanding of the vaccine's benefits and importance.

This finding aligns with the study conducted by Ogbolu and Kozlowszky (2024), which revealed a considerable prevalence of cervical cancer in women and a notable lack of awareness regarding HPV. Their research highlighted that only 34.8% of the population had knowledge of HPV infection, and a mere 25.0% were acquainted with HPV vaccination.



Similarly, Akinsolu et al. (2023) found that a significant majority of participants, specifically 79.1%, were unaware of the existence of the HPV vaccine, and only 29.0% were knowledgeable about its effectiveness in preventing cervical cancer. This limited understanding underscores the necessity of enhancing education and awareness, particularly among women residing with HIV in Nigeria.

In contrast, the study by Larebo et al. (2022) in southern Ethiopia discovered a notable degree of parental approval for the HPV vaccine, with 84.9% of parents willing to vaccinate their daughters. Furthermore, Assoumou et al. (2015) conducted a study in Libreville, Gabon, and found a significant lack of knowledge regarding cervical cancer, Pap smear testing, and HPV among a group of Gabonese women. This lack of knowledge is consistent with the findings in the present study, indicating that insufficient awareness about HPV and its vaccination is a widespread issue across different regions and populations.

There was also a significant gap in the acceptance of HPV vaccination among mothers of female children, with a substantial majority (79.9%) exhibiting low acceptance levels. This is consistent with Agha et al. (2024), who identified that motivation, capability, and social support are crucial factors influencing carers' willingness to vaccinate. Their research suggests that enhancing these aspects through targeted behavioral interventions could improve vaccine acceptance. Contrary to our findings, Jassim et al. (2018) reported favorable attitudes towards the HPV vaccine among women visiting primary care centers in Bahrain for cervical cancer screening. This discrepancy could be due to differences in awareness and educational initiatives between the populations studied. Jassim et al.'s participants might have had better access to information and healthcare support, which could explain their higher acceptance levels.

Al-Shaikh et al. (2019) found that awareness and willingness to receive the HPV vaccine were significantly higher among female university students in health faculties in Jordan when the vaccine was offered free of charge. This aligns with the notion that cost is a significant barrier to vaccine acceptance. Al-Shaikh et al. (2019) also highlighted the importance of cost, with 80% of Saudi Arabian health college students indicating that the vaccine should be reasonably priced. Concerns about injections and side effects were additional barriers. This supports the current findings where similar concerns about safety and side effects were prevalent among

mothers, contributing to low acceptance levels. Olubodun et al. (2019) reported a high willingness to receive HPV vaccination contingent on spousal consent. This suggests that cultural and social factors, including spousal influence, play a significant role in vaccine acceptance.

### **Conclusion**

The study concluded that awareness of HPV vaccination among mothers of female children in tertiary hospitals in Ekiti State, Nigeria, is generally low, with a significant portion demonstrating only moderate awareness. This indicates a pressing need for enhanced educational efforts to raise awareness about HPV and its vaccination. Acceptance of the HPV vaccine was notably low, with a vast majority of mothers displaying reluctance towards vaccinating their daughters.

### **Recommendations**

Based on the findings of this study, the following recommendations were made;

1. The Ministry of Health, in collaboration with educational institutions and non-governmental organizations (NGOs), should develop and disseminate educational materials that provide clear and accurate information about HPV, its risks, and the benefits of vaccination. These programs should address common concerns and misconceptions about vaccine safety and side effects.
2. Healthcare institutions and professional medical bodies should train healthcare providers to proactively recommend the HPV vaccine during consultations. Providers should be equipped with the necessary information to address parents' concerns and emphasize the importance of the vaccine in preventing cervical cancer.
3. The Ministry of Health and public health organizations should launch public health campaigns using various media platforms (e.g., radio, television, social media) to raise awareness about HPV and its vaccination. These campaigns should highlight success stories and endorsements from trusted community figures to build trust and acceptance.
4. Healthcare facilities, schools, and community centers, supported by the Ministry of Health, should ensure that information about the HPV vaccine is readily available.

Easy-to-understand pamphlets, posters, and digital content should be made accessible to reach a wider audience.

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