



## **Factors Influencing Acceptance of Cervical Cancer Vaccine by Mothers of Teenage Girls in Oyo State Public Service**

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### **Abstract**

Cervical cancer vaccine is usually administered to prevent cervical cancer. This, the vaccine does by assisting human body to develop immunity against human papilloma virus (HPV). HPV vaccination remains low and the incidence of HPV infection is high. This in addition to inadequate cervical screening are responsible for the high incidence of cervical cancer in developing countries. There is dearth of study on the acceptance of cervical cancer vaccine among mothers of teenage girls in Oyo State civil service. The objective of the study is to identify factors influencing acceptance of cervical cancer vaccine by mothers of teenage girls in public service of Oyo State. The Theoretical framework for the study was the Health Belief Model (HBM). It is a descriptive study in which thirteen government ministries in Oyo State Secretariat were purposely selected. Structured questionnaire was used to collect data from 422 mothers of teenage girls selected through proportionate sampling technique. Data collected were analysed using SPSS version 20. Information was presented on frequency, percentages, and tables. The results revealed that most (79.1%) of the mothers of teenage girls had high level of awareness. More than half (58.3%) of the respondents had insufficient knowledge of cervical cancer risk factors. Most (90.8%) of the respondents were ready to accept cervical cancer vaccine for their teenage girls. More than half (61.6%) had positive perception towards acceptance of cervical cancer vaccine. Inferentially, awareness of the cervical cancer was not significantly ( $p = 0.383$ ; CI: 0.000-0.002) associated with the acceptance, the knowledge of cervical cancer risk factors and their acceptance of HPV vaccine for their teenage girls was significant ( $p = 0.001$ ; CI: 0.000-0.002). Also, the perception towards cervical cancer vaccine was significantly associated with the acceptance of HPV vaccine ( $p=0.026$ ; CI:0.024-0.030). The study further revealed that other demographic characteristics associated with HPV acceptance were respondents age ( $p = 0.003$ ; CI: 0.001), educational status ( $p = 0.021$ ; CI:0.019) and number of adolescent girls ( $p = 0.000$ ; CI: 0.000) while job category (junior or senior) was not significantly ( $p = 0.728$ ; CI:0.720) associated with the acceptance of HPV vaccine for adolescent girls. The study concluded that majority of mothers of teenage girls did not accept cervical cancer vaccines for their adolescent girls because of insufficient knowledge of cervical cancer risk factors. Therefore, it was recommended that there is need for campaign program on awareness through radio, television and flyers. Nurses should stress the importance of accepting HPV vaccine by mothers of teenage girls at stipulated time and the importance of completion of the series for effectiveness of the vaccine.

**Keywords:** *Acceptance, Cervical cancer, Mothers, Teenage girl*

## Introduction

Cancer of cervix has been a global problem for some decades ago; it is a malignant disease that is caused by a sexually transmitted infection called Human papilloma virus. It is common in people who are sexually active, have multiple partners and people who have been exposed to other sexually transmitted infection such as HIV (Arbyn, Castellsague, & de-Sanjose, 2011). Cancer of the cervix is a malevolent neoplasm of the uterine cervix. It is peculiar to women because men do not normally have the organ. Clinically, about 1.4 million cases of cervical cancer are diagnosed worldwide and it is assumed that 7 million women will have a high-grade change in the cervix (more or less becoming cancer) of which 80% occur in developing countries (World Health Organization/ICO, 2010). Human Papilloma virus is viruses that are contracted through sexual intercourse and it causes about 90% of cervical cancers. Globally people living with cervical neoplasm were estimated to be 80 million people and yearly about 14 million people were diagnosed in which teenagers were inclusive in the United States (WHO/ICO, 2010). Human papilloma virus infection causes vaginal, vulval cancer in women; perinea cancer in men; cancer of the anus, malignant disease of the back of the throat (oropharynx), and genital cancer in both male and female (Abiodun, Fatungase, & Olu-Abiodun, 2014).

The rate of cervical cancer is high in developing countries as a result of inadequate knowledge of cervical cancer, poor cervical screening and poor acceptance of cervical cancer vaccine by mothers of teenage girls (Abiodun, Fatungase Olu-Abiodun, 2014). It is evident that the decline in the uptake of HPV Vaccine is influenced by high cost of HPV vaccine, poor accessibility, lack of complete information on the safety of the vaccine by their physician among women of different countries in the world (Eaker, Hans-Olov, & Par, 2014; McMullin, Alba, Chavez & Hubbell, 2015; and Oscarsson, Benzein, & Wijma, 2014). Other factors that contribute to

poor acceptance of cervical vaccines by mothers of teenage girls include inadequate knowledge of women, their beliefs, perception about cervical cancer & inadequate cervical screening (Curado, Edwards, Shin, Storm, Ferlay, Heanue & Boyle, 2007).

It was reported that about 12000 women would be diagnosed with cervical cancer and 4120 women would die as a result of the disease in 2017 (American Cancer Society's publication, cancer fact & figures, 2016). Each year, 68,000 cases of cervical cancer are diagnosed in Africa, this symbolises a conventional estimate that poses health problem in health information system and cancer databases in Nigeria (Odetola, & Ekpo 2012).

According to Jedy-Agba, Curado, Ogunbiyi, Oga, Fabowale & Igbinoba, (2012), cancer of the cervix was estimated to be the second most frequent female cancer in Nigeria, with a rate of incidence of 34.5 per 100,000 and rate of death of 0.6. Recently there is a study which states that about 14,550 women are diagnosed with cancer of the cervix with 9,659 death recorded from the disease yearly (WHO/ICO, 2010). 23.7% of the women of the total respondent were living with cervical HPV infection and about 90% of invasive cervical cancers were originated from HPV type 16 or 18.

Human papilloma virus is a sexually transmitted disease and is the commonest sexually transmitted disease in young sexually active people. There are more than 80 strains that exist, some of which are associated with cervical cancer. The most common strains 6 and 11 usually cause condylomata (wart growth) on the vulva. HPV comprises of 150 interrelated viruses. Each HPV virus is named according to the group it belongs to and called HPV type. Some HPV types can cause warts (papillomas) while other HPV types cause cancer, mainly cervical cancer. There are over 40 HPV types that can transmit a disease to the genital areas of males and females. Recently some vaccines were

developed which can be used to prevent HPV infection.

Human being can be infected with HPV by having personal contact. The HPV infection can be transmitted through anal, vaginal or oral sex with people that are living with the HPV virus. The disease is easily acquired through vaginal or anal sex. Any sexually active person can contract HPV infection, even when the sex was done once. During a lifetime almost all sexually active male and female can be infected with Human papilloma virus infection even when the person does not show any sign or symptoms. Although such an infected person may not show signs and symptoms of the infection for years and these give problem in tracing the contact (WHO/ICO, 2010).

Women are faced with serious challenges of health issues such as cancer, HIV and maternal abnormality. Globally, cervical cancer has been the major cause of genital tract cancer and was said to be the second most frequent cancer in women behind cancer of the breast. In developing countries, the effect of the disease is very high compared with the developed countries which have reduced the occurrence by over 70% in the previous years. In North America and Europe, the achievement in the reduction of HPV infection was achieved through high screening rates and high acceptance of cervical vaccines that brought about reduction of 20 and 60% in cervical cancer-related death within a population (Berg, 2013; Curado et. al., 2013). A study by Abiodun, Fatungase Olu-Abiodun, (2014) revealed that poor acceptance of cervical cancer vaccines and low cervical screening rate in some countries led to high cervical cancer mortality rate. It is opined that the risk factor for the disease is inadequate cervical screening services, high cost of HPV vaccines and incomplete information on vaccines safety by the physicians and the newness of the HPV vaccines. Other risk factors are: childhood marriage (below 18years), having sexual intercourse at tender age, coming in contact with human papilloma

virus infection (HPV), having numerous sexual partners, polygamy, too many children and poor knowledge of the disease itself (Lee, Fogg & Menon, 2008.; Sairafi and Mohamed, 2013; Kumar, Abbas, Fausto & Mitchel, 2014).

Women's beliefs and perception, poor knowledge of cervical cancer screening, poor acceptance of HPV vaccines are major contributory factors (Twinn and Cheng, 2010). Some religious belief and culture are a major barrier for cervical screening and acceptance of HPV vaccines. In the study carried out by Gupta, Kumar & Stewart, (2012), people at a tender age and those with a high level of literacy show more interest in accepting HPV vaccines and cervical screening. Due to low literacy level in the developing countries, women are faced with serious medical problems globally with mortality rates exceeding world average of 15.3% per 100,000 women annually and 8.2% in 100,000 women yearly (WHO/ICO, 2010). In sub-Saharan African countries, there are uniform rates of incidence of 32.5, 37.7, 47.5 and 47.4 per 100,000 women per year, correspondingly, (Globocan, 2008). The uniformity of mortality rate in Nigeria is 22.9 per 100,000 women annually, while the remaining Western Africa countries are 24.0 (WHO/ICO, 2010).

It is estimated that in 2025, new cervical cancer cases 22,915 while there will be about 15,251 deaths that are related to cancer of the cervix in Nigeria (WHO/ICO, 2010). With this age uniformity incidence rate in Nigeria, cervical cancer will double the world's average rate (WHO/ICO, 2010). Thus, this study aimed to investigate the teenagers' mothers' level of acceptance of cervical cancer vaccine for their teenage girls.

### **Hypotheses**

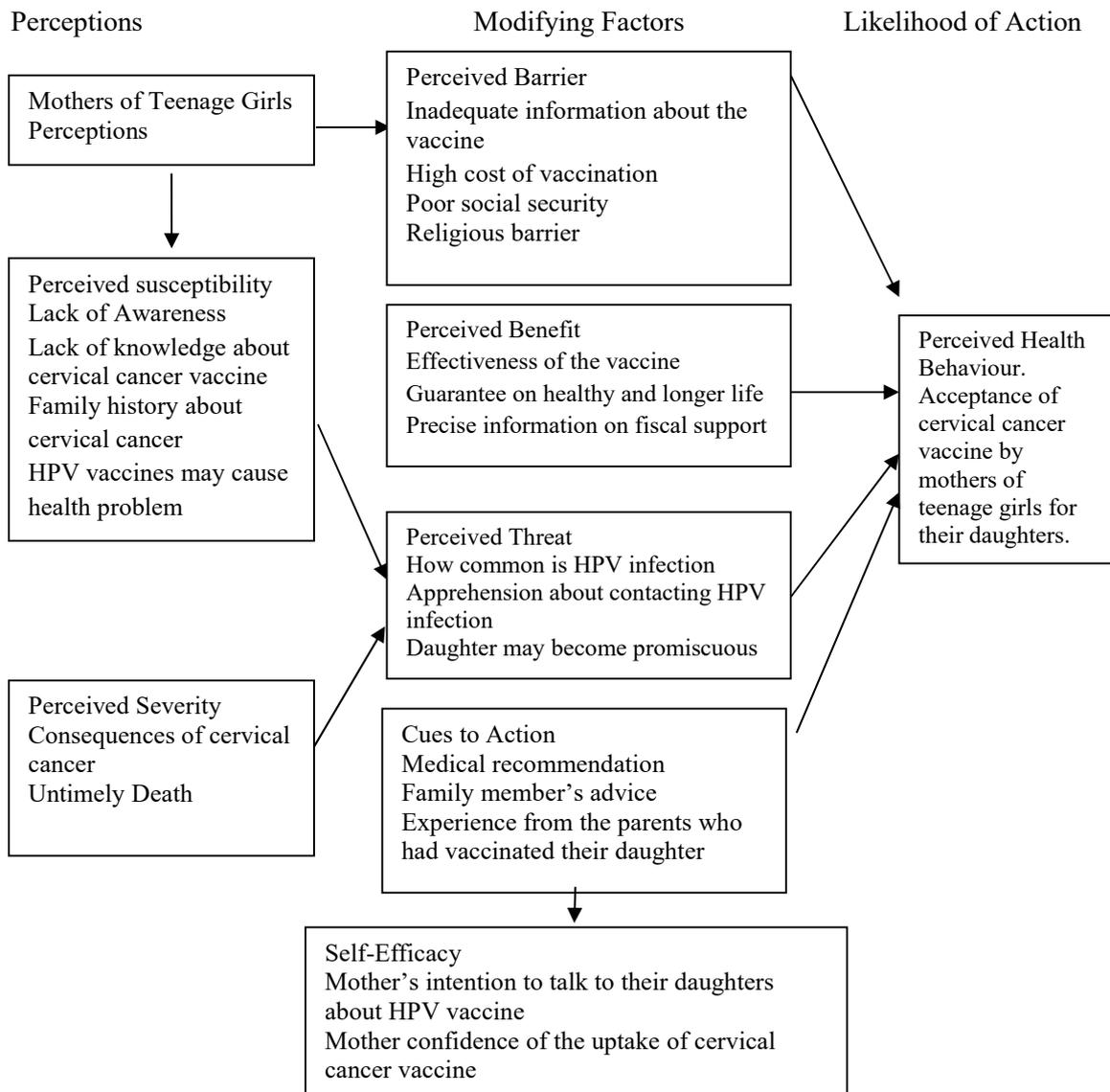
H01: There is no significant association between mothers of teenage girl's acceptance of cervical cancer vaccine and their awareness of cervical cancer

H02: There is no significant association between mothers of teenage girl's acceptance of cervical cancer vaccine and their knowledge about cervical cancer

H04: There is no significant association between mothers of teenage girl's acceptance of cervical cancer vaccine and their demographic characteristics

H03: There is no significant association between mothers of teenage girl's acceptance of cervical cancer vaccine and their perception towards cervical cancer vaccine

**Theoretical Framework**



**Fig. 1: Health Belief Model**

The model was applied in a way that mothers of teenage girls will be ready to accept a cervical cancer vaccine for her teenage girls to avoid the threat that may emanate from cervical cancer. The threat is composed of three components; Firstly, the mother of teenage girls will perceive her teenage girl being susceptible through her awareness, knowledge of the risk factors and/or family history about cervical cancer. That is, she believes that her teenage girls have a reasonable chance of suffering from cervical cancer. Secondly, the mothers of teenage girls will perceive the severity of cervical cancer; that is, in event of the problem occurring it would have either a moderate or severe impact on her teenage girls' life such as reduce risk of contracting a severe HPV infection, risk of vaccination and having different grades of pain or untimely death. The third component is that the likelihood that a mother of a teenage girl will be ready to accept preventive action resulting from her perception of the benefits and barriers to taking action by accepting cervical cancer vaccine for her teenage girls. The preventive action of the mother of teenage girls includes; readiness to accept cervical cancer vaccine for her teenage girls through a search for medical advice or treatment. This will be of great benefit to prevent the occurrence of cervical cancer for her teenage girl which could lead to an immediate or future problem for her family, community and the nation as a whole.

### **Methodology**

The study adopted a descriptive design to identify the factors influencing acceptance of cervical cancer vaccine among mothers of teenage girls. The target population was women working in all departments and agencies in Oyo State Secretariat, Ibadan, Nigeria. The Oyo State Secretariat, Ibadan comprises several ministries and agencies functioning with their specific task of the office. The ministry is sectioned into departments. The total workforce in the ministries is eleven thousand and seventy-five (11075) (Oyo State Directorate of Planning, Research, and Statistics, 2017). Participants

were drawn among women from thirteen (13) selected ministries of Oyo State Civil service, namely; Ministries of Education, Women Affairs, Trade, Agriculture, Establishment, Health, and Planning. Others are Lands and Housing, Water Resources and Ministry of Culture and Tourism.

Inclusion criteria: Women of reproductive age group; Staff of selected Ministries; Women that have a teenage daughter must have consent to participate in the study.

The participants were selected as true representatives of the women working in Secretariat, Ibadan. A proportional allocation of the sample size was given to each ministry using the sampling ratio. The eligible respondents (mothers of teenage girls) were recruited during visits to ministries for three weeks. The individuals selected were the available women at the time of the study until the number needed was completed.

Using Cochran's formula, the total sample size randomly selected was 422 mothers of teenage girls.

The instrument was a structured questionnaire. The questions were grouped into core sections as A: Socio-demographic data of respondents; B: Mothers of Teenage girl's awareness of cervical cancer; C: Mothers of Teenage girl's knowledge of risk factors of cervical cancer; D: Mothers of Teenage girl's level of acceptance of cervical cancer vaccine for their teenage girl; and E: Mothers' perception towards uptake of cervical cancer vaccine for their teenage girl.

The instrument was pre-tested on a small sample of mothers (n = 20) randomly selected in Ibadan North local government secretariat due to the similarities in the study settings. A test-retest method was adopted to administer the instrument after 2 weeks. The obtained data were analysed using Cronbach alpha to ascertain the reliability of the instrument. It is measured by Cronbach's Alpha Correlation coefficient which was computed to ensure stability and the retentive memory of the

respondents over time. The value obtained for the itemized questions on awareness of cervical cancer was 0.68, for knowledge of risk factors was 0.72, for itemized questions on acceptance was 0.79 and for itemized questions on perception towards acceptance was 0.85.

All the respondents were well informed that the survey was not compulsory and that they may not participate if they chose not to or could withdraw at any time. Assurance was given to respondents on confidentiality. They were informed that all the information given during and after data collection on study would be kept with the utmost confidence.

The collected data using a questionnaire was analysed using the Statistical Package for Social Science (SPSS) version 20 to transform, analyze and report results and findings of the study. The quantitative variables were presented on the frequency-percentage table with their respective indices where necessary. The inferential statistics in the form of hypotheses testing was at 5% statistical level of significance using Chi-square analysis.

**Results**

A total of 422 questionnaires were distributed for filling among mothers of teenage girls. All questionnaires were correctly and completely filled and were analysed. The results of the data were presented on the frequency-percentage table while the qualitative data in terms of the hypothesis was tested at 5% level of significance using Chi-square analysis.

**Description of Sample Characteristics**

The demographic characteristics of respondents show that the highest number of the respondents (40.8%) was aged from 36 to 45years with mean of 43 ± 8.5. About 28% had HND/Bachelor degree. This is the highest among the educated. The least educated (7%) had a primary school certificate. Also, 73.7% of the respondents were junior staff while 26.3% were senior. Almost 49.1% of the respondents practiced Christianity while the majority (73.9%) had one or two adolescent girls and only 26.1% had more than two adolescent girls.

**Table 1:** Awareness of the Respondents

n=422

Variable	Response	Frequency	Percentage (%)
Awareness of cervical cancer	Yes	334	79.1
	No	84	19.9
	No response	4	0.9
Source of Awareness of cervical cancer	Family member	97	23.0
	Medical Personnel	234	55.5
	Mass Media	23	5.3
Duration of awareness	No Response	68	16.2
	Less than one year	117	27.7
	Above one year	216	51.2
	No Response	89	21.1

Table 1 reveals that 79% of the respondents were aware of cervical cancer while 55.5% gained awareness from medical personnel and

51.2% have heard about cervical cancer for more than one year.

**Table 2:** Respondents’ Knowledge of Cervical Cancer

Risks factors for cervical cancer	Frequency (%)		
	Yes	No	Not sure
Infection with HPV	246 (58.3)	111 (26.3)	65 (15.4)
Smoking cigarette	154 (36.5)	140 (33.2)	128 (30.3)
Long term use of contraceptive pill	181 (42.9)	131 (31.0)	110 (26.1)
Infection with any sexually transmitted disease	206 (48.8)	127 (30.1)	89 (21.1)
Having an uncircumcised sexual partner	149 (35.3)	154 (36.5)	119 (28.2)
Having sex before 18years	178 (42.2)	132 (31.3)	112 (26.5)
Not going for regular pap smears	118 (28.0)	139 (32.9)	165 (39.1)
Having many sexual partners	222 (52.6)	102 (24.2)	98 (23.2)
Having many children	92 (21.8)	196 (46.4)	134 (31.8)
Having a close relative with cancer	112 (26.5)	177 (41.9)	133 (31.5)

Table 2 reveals that 58.3% of the respondents agreed that infection with HPV is a risk factor for cervical cancer, 36.5% agreed that smoking cigarette is a risk factor while another 42.9% agreed that long term use of contraceptive pill could predispose one to cervical cancer. Also, infection with any sexually transmitted disease (48.8%); having sex before 18years (42.2%) and having many sexual partners (52.6%) were risk factors of

cervical cancer. In the same way, 71.8% of the respondents agreed that cervical cancer could be prevented. 45.0% of the respondents said that the timing for cervical cancer vaccine is once a year; and that only female could be vaccinated with HPV vaccine (75.1%). Also, 34.8% of the respondents agreed that cervical cancer affect uterus and 31.5% agreed on the womb.

**Table 3:** Knowledge Grade

Value	Score	Frequency	Percent %	Remark
Mean Score = 3.9±2.3	< 4	213	50.5	Poor
	4	123	29.1	Fair
	>4	86	20.4	Good
Total		422	100.0	

Table 3 shows that the mean score for the respondents’ knowledge was 3.9 ± 2.3. About 50.5% of the respondents scored below the mean score indicating poor knowledge, 29.1% scored exactly 4 indicating fair knowledge while 20.4% scored above 4 indicating good knowledge.

The results also revealed that about 36% of the respondents have taken their daughters for

HPV vaccination; 12.1% vaccinated once, 16.4% twice while 7.8% three times. Out of those that have not taken their daughter for vaccination, 27.5% gave reasons of unaware, 30.9% said they were not interested in vaccination and 35.7% said the vaccination is too expensive while 90.8% of the respondents said that they would complete the vaccination if yet to complete.

**Table 4:** Respondents’ Perception toward Acceptance of Cervical Cancer Vaccine for Teenage Girl n=422

Statement	Frequency (%)		
	Yes	No	Not sure
I don’t believe HPV vaccine is available in Nigeria	212 (50.2)	168 (39.8)	42 (10.0)
My religion does not permit uptake of any vaccine	68 (16.1)	291 (69.0)	63 (14.9)
My tradition does not permit me to allow my teenage girl	79 (18.7)	253 (60.0)	90 (21.3)
Uptake of HPV vaccine may render the girl child infertile	86 (20.4)	208 (49.3)	128 (30.3)
Uptake of HPV vaccine may lead to girl’s promiscuity	70 (16.6)	222 (52.6)	130 (30.8)
Cervical cancer is not in the family, so she cannot have it	94 (22.3)	232 (55.0)	96 (22.7)
I don’t believe my teenage girl should take the vaccine for now but in the near future	165 (39.1)	124 (29.4)	133 (31.5)
If required, I am willing to pay for the vaccination so as to protect my teenage girl	245 (58.1)	81 (19.2)	96 (22.7)
I don’t believe HPV vaccine can prevent cervical cancer like the traditional method	109 (25.8)	220 (52.1)	93 (22.0)
I would rather allow my teenage girl to take the vaccine to prevent than anything	260 (61.6)	71 (16.8)	91 (21.6)

Table 4 reveals that about 50% of the respondents agreed that they didn’t believe the HPV vaccine is available in Nigeria; 69.0% disagreed that their religion did not permit the uptake of any vaccination. Also, as much as 60.0% disagreed that their tradition did not permit them to allow their teenage girl for the vaccination. From the study, it was shown that 49.3% disagreed that the uptake of the vaccine might render the girl child infertile; 52.6%

disagreed that the uptake of the HPV vaccine may lead to promiscuity in the girl; 39.1% agreed that they did not believe that their teenage girl should take the vaccine then, but in near future, 52.1% disagreed that they did not believe HPV vaccine could prevent cervical cancer like traditional method and 61.6% agreed that they would rather allow their teenage girl to take the vaccine.

**Table 5:** Perception Grade

	Score	Frequency	Percent (%)
Negative	< 5	215	50.9
Positive	≥ 5	207	49.1
Total		422	100.0

Table 4.5.1 shows that the mean score for the respondents’ perception was 5. About 50.9% of the respondents scored below the mean score indicating negative perception while 49.1 scored above 5 indicating positive perception.

**Hypotheses Testing**

Hypothesis One (H01): There is no significant association between the mother of teenage girl’s awareness of cervical cancer and their acceptance of cervical cancer vaccine

**Table 6:** Cross-Tabulation of Level of Awareness and Acceptance of Cervical Cancer Vaccine for the Adolescent Girl

	Acceptance of CCV for daughter		Total	X2-value	d.f	Confidence Interval (95%)		p-value	Remark
	Accepted	Not Accepted				Lower	Upper		
Yes	125	209	334	0.95	1	0.370	0.389	0.383	Not Significant
No	28	60	88						
Total	153	269	422						

Table 6 reveals that the respondent’s level of awareness of cervical cancer was not significantly ( $X^2 = 0.95$ ;  $p = 0.383$ ) related to their acceptance of cervical cancer vaccine for their adolescent girl. This means the mother’s acceptance of cervical cancer vaccine for their teenage girls was not as a result of being aware of cervical cancer.

Hypothesis Two (H02):

There is no significant association between the mother of teenage girl’s acceptance of cervical cancer vaccine and their knowledge about cervical cancer

**Table 7:** Cross-tabulation of Level of Knowledge and Acceptance of HPV Vaccine for the Adolescent Girl

	Acceptance of CCV for daughter		Total	X2-value	d.f	Confidence Interval (95%)		p-value	Remark
	Accepted	Not Accepted				Lower	Upper		
Poor	82	131	422	13.69	2	0.000	0.002	0.001	Significant
Fair	54	69							
Good	17	69							
Total	153	269	422						

Table 7 reveals that the respondent's level of knowledge of cervical cancer risk factors was significantly ( $X^2 = 13.69$ ;  $p = 0.001$ ) related to their acceptance of cervical cancer vaccine for their adolescent girl. This means the mother's acceptance of cervical cancer vaccine for their teenage girls was as a result of the level of knowledge of cervical cancer risk factors.

Hypothesis Three (H03): There is no significant association between the mother of teenage girl's acceptance of cervical cancer vaccine and their perception towards cervical cancer vaccine

**Table 8:** Cross-tabulation of Perception of Cervical Cancer Vaccine By Mothers of a Teenage Girl and their Acceptance of the Vaccine

	Acceptance of CCV for daughter		Total	X <sup>2</sup> -value	d.f	Confidence Interval (95%)		p-value	Remark
	Accepted	Not Accepted				Lower	Upper		
Perception									
Positive	64	143	207						
Negative	89	126	215	5.01	1	0.024	0.030	0.026	Significant
Total	153	269	422						

Table 8 reveals that the respondent's perception towards acceptance of cervical cancer vaccine was significantly ( $X^2 = 5.01$ ;  $p = 0.026$ ) related to their acceptance of cervical cancer vaccine for their adolescent girl. This means the mother's perception towards acceptance of cervical cancer vaccine for their teenage girls was as a result of their perception towards cervical cancer vaccine.

Hypothesis Four (H04): There is no significant association between mothers of teenage girl's acceptance of cervical cancer vaccine and their demographic characteristics

**Table 9:** Association between Some Demographic Characteristics and Acceptance of the HPV Vaccine for the Adolescent Girl

	Acceptance of CCV for daughter		Total	X2-value	d.f	Confidence Interval (95%)		p-value	Remark	
	Accepted	Not Accepted				Lower	Upper			
Age group	26 – 35	36	45	81	14.27	3	0.001	0.003	0.003	Significant
	36 – 45	52	120	172						
	46 – 55	44	90	134						
	Above 55	21	14	35						
Total	153	269	422							
Educational Status	Non Tertiary	40	100	140	5.35	1	0.019	0.025	0.021	Significant
	Tertiary	113	169	282						
Total	153	269	422							
Job Category	Junior	111	200	311	0.16	1	0.720	0.737	0.728	Not Significant
	Senior	42	69	111						
Total	153	269	422							
Number of Adolescent Girls	1 – 2	132	180	312	18.97	1	0.000	0.000	0.000	Significant
	Above 2	21	89	110						
Total	153	269	422							

The result of the analysis shows that respondent's age ( $X^2 = 14.27$ ;  $p = 0.03$ ), educational status ( $X^2 = 5.35$ ;  $p = 0.02$ ) and number of adolescent girls ( $X^2 = 18.97$ ;  $p = 0.000$ ) were significantly associated with the

acceptance of HPV vaccine for their adolescent girl while respondent's job category ( $X^2 = 0.16$ ;  $p = 0.799$ ) was not significantly associated with the acceptance of HPV vaccine for adolescent girl.

## Discussion of Findings

Demographically, the findings of the study revealed that majority of the mothers between 36 and 45 years have mean age  $43 \pm 8.5$ . Above half of the respondents possessed tertiary education certificates and approximately half were Christians. Majority of the respondents had between 1 – 2 adolescent female children and majority.

The first objective was to determine the awareness of mothers of teenage girls on cervical cancer. It was revealed that majority of the respondents were aware of cervical cancer and their awareness was through discussion with members of medical staff. They had been aware for more than a year. The awareness level was contrary to Akanbi, Wamai, Ayissi, Oduwo, Perlman, Welty & Welty (2015) who reported low awareness in their study but in line with the findings of Ezem (2012), as well as that of Odetola and Ekpo (2012). The authors reported a high level of awareness of cervical cancer. The awareness of the respondents could result from their level of exposure in terms of occupation, level of education and calibre of friends they were associating with, which determine their social status.

Secondly, the majority (58.3%) of the respondents had insufficient knowledge of cervical cancer risk factors. This is in line with Ezem (2012) and Odetola and Ekpo (2012) who reported a poor level of knowledge of cervical cancer risk factors. This could also have resulted from the level of understanding of health issues toward themselves and their children. This could also be associated with the high level of educational attainment of the respondents, as they possessed post-secondary education.

The third objective was to investigate the acceptance of cervical cancer vaccine of the mothers of teenage girls for their adolescent girls. The findings revealed that below half of the mothers 36.0% accepted cervical cancer vaccine for their adolescent girls. This is in line with Akanbi et. al., (2015) and Beining (2008) who reported that the fair number of

the mothers were ready to take cervical cancer vaccine for their adolescent girls. In addition, Marlow, Waller & Wardle (2014) reported that mothers were ready to discuss disease that are caused by cervical cancer infections with their daughters at earlier ages because parents who find it difficult to discuss sex education with their children were not likely to accept cervical cancer vaccination for their daughters.

The fourth objective was to assess the perception of mothers towards the uptake of a cervical cancer vaccine for their teenage girls. The study revealed (61.6%) that approximately half of the mothers of the teenage girl had a positive perception towards accepting cervical cancer vaccine for their adolescent girls. This is in accordance with the report of Sherman & Yensen (2013) who stated that the participants' perceptions of vaccinating their daughters in overall, as perceptions intertwined to discourage the mothers from having their daughters receive the cervical cancer vaccine.

Some of these perceptions are cervical cancer vaccination unnecessary for their daughters because it was perceived to be mainly for women who were about to become sexually active. The effective duration of the vaccine remained unknown to the participants, and therefore they believed that their daughters could wait till a few months before marriage to receive the vaccination. It is believed that cervical cancer is a disease that affects women who are sexually active, and in that case, the cervical cancer vaccine was for adult women rather than teenage girls. Mothers believed if their daughters accept HPV vaccine, it would encourage them to engage in a premarital sexual activity. In many cases, the mothers perceived that making their daughters fear contracting a disease could be effective in preventing them from having premarital sex and this reinforced the idea that their daughters should not be vaccinated. Mothers believed HPV vaccination as potentially harmful to health as more than half of them

thought that most vaccines are either manufactured from a virus or from artificial chemicals and could lead to serious side-effects. In addition, the study revealed that the mothers of teenage girl acceptance of cervical cancer vaccine were associated with their perception about the cervical cancer vaccine ( $p$ -value = 0.03).

Inferentially, as part of the demographic characteristics impacts on acceptance of HPV vaccine, mother's age ( $p = 0.03$ ) significantly associated with the acceptance of cervical cancer vaccine. This result shows that the acceptance was increasing as they are becoming older probably because of the birth experiences. Educational status ( $p = 0.021$ ) was equally significantly associated with the acceptance as the result shows that the majority of mothers holding tertiary certificate accepted the cervical cancer vaccine the more. Also, a number of adolescent girls ( $p = 0.000$ ) was significantly associated with the acceptance of cervical cancer vaccine because the majority of the mothers with a high number of adolescent girls accepted cervical cancer vaccine. Respondent's job category ( $p = 0.686$ ) was not significantly associated with the acceptance of HPV vaccine probably because some junior staff just possessed their tertiary certificate which was acquired during the service year.

### Conclusion

In conclusion, it was discovered that the awareness of mothers of teenage girls on cervical cancer vaccine was high but few possessed good knowledge of cervical cancer risk factors despite their high literacy level. Majority of the mothers had not accepted

cervical cancer vaccine for their adolescent girls probably because of insufficient knowledge of cervical cancer risk factors. The mothers had a fair positive perception towards cervical cancer vaccine for their girl children.

### Recommendations

Based on the findings of this study, it is necessary to make certain recommendations such as:

Awareness through mass media should be more encouraged especially through Radio, Television, and fliers so that a wide range of mothers would be enlightened about cervical cancer and its prevention through the administration of Human papillomavirus vaccine.

Human papilloma virus vaccine should be made available at the Centres and Public Hospitals at all times.

Parent and guardians should discuss with their children about the benefits of the cervical cancer vaccine.

Government should incorporate Human papilloma virus vaccine into the National immunization programme free of charge or at a greatly subsidized rate

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### Suggestions for Further Studies

The study could be replicated for mothers of teenage girls in other states across the federation.

### References

- Abiodun, O.A., Fatungase O.K., & Olu-Abiodun O.O.(2014). Knowledge, perception and predictors of uptake of cervical screening among rural Nigerian women. *Journal of Public Health and Epidemiology* 6(3),119-124
- Akanbi, A.O., Wamai, R.G., Ayissi, C.A., Oduwo,G.O., Perlman. S., Welty, E., & Welty, T. (2015). Awareness, knowledge and beliefs about HPV, cervical cancer and HPV vaccines among nurses in Cameroon: An exploratory study. *Int J Nurs Stud* 50: 1399–1406.

- American Cancer Society (2015) Figures and facts publication, cancer fact and figures, 2016
- Arbyn, M., Castellsague, X., & de Sanjose, S. (2011). Worldwide burden of cervical cancer in 2008. *Ann Oncol* 22:2675–86.
- Beining, S. (2008). HPV vaccination programme in Japan. *Lancet* 382: 768. doi: 10.1016/S0140-6736(13)61831-0.
- Berg, R. (2013). Introducing HPV vaccine in developing countries-key challenges and issues. *N Engl J Med* 356: 1908–1910.
- Curado, M.P., Edwards, B., Shin, H.R., Storm, H., Ferlay, J., Heanue, M., Boyle, P. (2013). *Cancer Incidence in Five Continents*, Vol. IX. IARC Scientific Publications No. 160. International Agency for Research on Cancer Press. Lyon, France
- Eaker, S., Hans-Olov, A., & Par, S. (2014). Reasons women do not attend screening for cervical cancer: A population-based study in Sweden. *Prev. Med.* 32:482–491.
- Ezeanochie, M. & Olagbuji, B. (2014): Attaining MDGs in Northern Nigeria: Need to focus on skilled birth attendance. *Af J of Repro. Health.* 2010:14(2):9-11
- Ezem, B.U. (2012). Awareness and uptake of cervical cancer screening in Owerri, South-Eastern, Nigeria. *Ann Afr Med* (6) 94:8
- Globocan (2008). Globocan 2008 database: Summary tables by cancer. Available at <http://www.globocan.iarc.fr/>. [Accessed on 2013 August 17].
- Gupta, A., Kumar, A., & Stewart, D.E. (2012). Cervical cancer screening among South Asian women in Canada; The role of education and acculturation. *Healthcare Women Int.* 23(2):123–134.
- Jedy-Agba, E., Curado, M.P., Ogunbiyi, O., Oga, E., Fabowale, T., & Igbinoba, F. (2012). Cancer incidence in Nigeria: A report from population-based cancer registries. *Cancer Epidemiol* 36(e): 271 – 8
- Kumar, V., Abbas, A.K., Fausto, N., & Mitchel, R.N. (2014). *Robbins Basic Pathology*, 8th Ed. WB Saunders Elsevier. London. 718-721.
- Lee, E.E., Fogg, L., & Menon, U. (2008). Knowledge and beliefs related to cervical cancer and screening among Korean American Women. *West J. Nurs. Res.* 30(8):960–974.
- Marlow, L.A., Waller, J. & Wardle, J. (2014). Parental attitudes to pre-pubertal HPV vaccination. *Vaccine* 25:1945-1952
- McMullin, J.M., Alba, I.D., Chavez, L.R., & Hubbell, F.A. (2015). Influence of beliefs about cervical cancer aetiology on Pap smear use among Latina immigrants. *Ethn Health.* 10(1):3–18.
- Odetola, T.D., & Ekpo, K. (2012). Nigerian women’s perception about human papilloma virus immunizations. *J Community Med Health Educ* (2) 191
- Oscarsson, M.G., Benzein, E.G., & Wijma, B.E. (2014). Reasons for non-attendance at cervical screening as reported by non-attendees in Sweden. *J. Psychosom. Obstet. Gynaecol.* 29(1):23–31.
- Sherman, P.W., & Yensen, E. (2013). Prevalence of human papillomavirus in cervical cancer: a worldwide perspective. International biological study on cervical cancer (IBSCC) Study Group. *J Natl Cancer Inst* 87: 796–802.
- Sairafi, M.A., & Mohamed, F.A. (2013). Knowledge, attitudes, and practice related to cervical screening among Kuwaiti women. *Med. Princ. Pract.* 18:35–42
- Twinn, S, & Cheng, F. (2010). Increasing uptake rates of cervical cancer screening amongst Hong Kong Chinese women: the role of the practitioner. *J AdvNurs.* 32:335–342.

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WHO/ICO Information Centre on HPV and Cervical Cancer (2010). Human papilloma virus and related cancers in Nigeria. *Summary Report 2010*. World Health Organization. Geneva.