The Assessments of HPV Vaccination among Adolescents in Selected Schools in FCT-Abuja and Its Implications for Public Health.

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ABSTRACT

In 2020, globally estimated cases of cervical cancer was 604,127, while the death rate from cervical cancer was 341,831. To alter this trend and accelerate the elimination of cervical cancer, the World Health Organization (WHO) launched the global cervical cancer elimination initiative. In specific, the WHO, set up the 90-70-90 target through the initiative to be achieved by 2030. Thus, it requires 90% of girls to be vaccinated by the age of 15 years. The study assessed the HPV vaccination in the Federal Capital Territory-Abuja, Nigeria. The specific objectives of the study were to determine the rate of HPV vaccination in the Federal Capital Territory-Abuja, to identify the determinants of the vaccination and the effects of the rate of vaccination on public health. The mixed methods of survey and the qualitative study design of in-depth interview were adopted. The multi stage sampling method was used to select participants for the study. The questionnaire and IDI were instruments for data collection. Data was analysed using descriptive and inferential statistics using the aid of Statistical Package for Social Sciences (SPSS) Version 26-0. The qualitative data was analyzed using thematic narrative approach. The study found out that the rate of vaccination of adolescents in the Federal Capital Territory is low. The study also found out that the determinants of this low rate of vaccination is religious manipulation, lack of trust in government, fear of damaging side effects among others. The study therefore recommends that continuous aggressive sensitization on cancer, stressing the prognosis and the cost effect of cancer management, formation of anti- cancer clubs in schools and among religious bodies, to initiate training for persons who will step down the training to the target groups.

Keywords: Cervical Cancer, Human Papilloma Virus (HPV), Vaccination, Adolescent, Public Health.

INTRODUCTION

The world is confronted from time to time with serious health challenges which are mostly public health issues. One of such is cervical cancer, and death from cervical cancer has reached an all-time high in the world. Cervical cancer indicates a malignant tumor of the cervix, the lower most part of the uterus. It is mostly caused by persistent infection with one or more high risk Human Papilloma Virus (HPV). Specifically type 16 and 18. The virus is the most common viral infection of the reproductive tract which is sexually transmitted, hence one who is exposed to sex, stands the risk of infection.

In women, cervical cancer is one of the leading causes of death worldwide. Research has shown that 80% of sexually active females worldwide would have been infected with HPV by the age of 50 at some points of their lives. An estimated incidence of 12,100 patients and 8000 deaths in 2020. While in Nigeria, it is the second most common cancer after breast cancer, in women. Even more disheartening is that an estimated 60.9 million Nigerian women age 15 years and older will be at greater risk of developing cervical cancer in the absence of cost-effective intervention (Adeagbo, Sekoni & Owopetu 2023).

The burden of cervical cancer has been reported in most states in Nigeria, including Nigeria's Federal Capital Territory, Abuja. A study in Enugu showed high incidence 78% of cervical cancer among younger women age 30 years (Ihudiebube, Ndidiamaka, Onuigbo, Ezeh, Odikpo, Umezinwa & Mba: 2019). The fight against cervical

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cancer is taken aggressively by the World Health Organization and the Nigerian Government. To this effect, the World Health Organization initiated a target of 90-70-90 by 2023 to eliminate the problem of cancer through prevention and early detection. By this initiative 90% of girls are to be fully vaccinated by age 15. 70% of women are to be screened with high performance test at 35 and 45 years and that 90% of women diagnosed with cervical cancer are to receive treatment (Anyaehichukwu & Nwadike 2023).

In support of the WHO, The Federal Government of Nigeria on October, 2023 through the Federal Ministry of Health flagged off a five-day mass vaccination campaign in schools and communities in 16 states and FCT. The vaccine is being provided for free by the Federal Ministry of Health through the National Health Care Development Agency with support from Gavi, the vaccine alliance (UNICEF, WHO & Partners). For all these efforts to produce the desired result, the strategy has emphasized need for continuous and improved surveillance and monitoring through which identified gaps can receive specific action. Hence to contribute to this course, the researchers embark on this study. The study is concern with the 90 strategic of adolescents HPV vaccination.

Specifically, the research set out to find the rate of vaccination among adolescent school girls in the Federal Capital Territory. Other specific objectives of the study include:

- To determine the level of awareness of HPV vaccine by the adolescents in FCT.
- To assess the rate of HPV vaccination among adolescents in FCT. • To identify the determinants of the rate of HPV vaccination
- To examine the effects of vaccination of public health.

Review of literature on the study revealed that the rate of awareness on cervical cancer is high in some states like: Lagos and low in states like Edo state among others (Kanmodi, Ogbeide, Fagbule, Isola, Kanmodi, Lawal, Omoleke, & Obi 2019; Rabiu &Yahuza 2023). However, the knowledge of the cervical cancer for those whose awareness level was high did not reflect in the rate of vaccination as most of the respondents were not vaccinated.(Rabiu & Yahuza 2023)Reasons for the low vaccination rate as reviewed in Previous work showed high cost of the vaccine, supply challenges, lack of awareness, and lack of political will as the major factor influencing their vaccination rate. (Brown& Folayan 2015; Okunowo, Ugwu, Kuku, Adaiah, Okunowo, AniUgwu, Osunwusi & Adenekan, 2021; Kanmodi et al. 2019.). Besides high cost of the vaccine, a previous study by Wong, Wong, Hashim, Han, Lin, Hu, Zhau and Zimet (2020) identified cultural and religious factors as barriers to HPV vaccination.

In Asia and some African countries, girls are to be reserved. Hence, the idea of giving them HPV vaccination which is a vaccine against sexually transmitted HPV is not cultural and religiously acceptable. The notion around it is that, if young girls are vaccinated against HPV as a preventive measure, it will make the girls to be sexually active since there is nothing to fear. Nevertheless, previous studies has shown that the vaccination of HPV has been proven to be effective in the reduction of cervical cancer (Kutz, Rausche & Fusco 2023).

THEORETICAL FRAMEWORK

Health belief model by Howard Becker

The study applied the Health Belief Model (HBM) propounded in the 1950's to help understand preventive health behaviours, and built upon by Howard Becker in 1974. Becker's health belief model postulated that individual belief systems determine their health seeking behaviour. It argued that a person's willingness to act on a health related issue will basically depend on the perceived threat of the health problem and the evaluation of a recommended health behavior.

These belief cues are shaped by enabling factors like, educational emancipation, environmental factors, like access to health care facilities. Hence, they access health care if their belief cues are favourably disposed to it. The study applied this model since respondent belief cues play a major role in their acceptance of the vaccine. Thus by this, other means of accepting the vaccines can be used for easy acceptance. This justifies the fact that only the respondents whose belief system were favouably disposed to the health seeking behaviour of vaccination received it. (Tile,1988)

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However, the health belief model is vital for understanding health behaviours, but fall short because of some limitations. The model has been criticized for not addressing the impact of social and cultural factors on health belief and behaviours. It is also believed that people are not capable of change towards health seeking behavior in response to health interventions.

Anderson Behavioral Model.

Anderson's behavioural model often times referred to as socio-economic status model, gives a theoretical framework for understanding why people use health services. It emphasizes the role of education, income and career in health seeking behaviour of people in society. Education, income and one's social status can serve as predisposing factors that enables people to seek for help when they are ill or access health care services. In the research, this can be applied in that, those from highly exposed educational background were knowledgeable and favourably disposed to HPV vaccination.

METHODOLOGY

The study adopted a mixed methods of survey using both quantitative and qualitative study design. We found the survey methods suitable for this study because it can be used to collect data from a large population which can be used for generalization on the entire population (Ndiyo, 2005; Tile, 2016). The study area is Abuja the Federal Capital Territory. Abuja is the capital city of Nigeria. It is located in the center of Nigeria within the Guinea forest and the Savanna Mosaic zone latitude 8025N and 90N and longitude 6039.8000sqm (Abubakar, Folashade & Philip 2014).

The Federal Capital Territory comprises of six area councils namely; Abaji, Abuja Municipal, Bwari, Gwagwalada, Kuje and Kwali and one senatorial district. The major ethnic groups are Gbagyi (also known as Gwari), Koro, Bassa, Gade, Ebira Koto, Gwandara, and Ganagana (Bourano & Emmanuel in Abubakar, Folashade & Philip 2014). Abuja was created to replace Lagos as Federal Capital Territory of Nigeria on 3rd February 1976 by General Murtala Mohammed. The city shares boundaries with Kaduna State in the North, Kogi State in the South West, Nassarawa State in the East and Niger State in the West.

The city, besides the indigenes is densely populated and crowded with people of diverse ethnic and religious background (Balogun, 2000). The research considers the study area besides proximity factor the variety of the population.

Population Of Study

The population of study is 331,514. It consists of primary school pupils and junior secondary school students. Universal Basic Education Board(UBEB Statistics 2023).

METHOD OF DATA COLLECTION

The study used primary sources and secondary sources of data. The primary sources comprise of questionnaire and in-depth interview while the secondary data consist of the documented work from printed materials

Sampling Technique / Sample Size

The sample size for the study was 400 respondents which was gotten using Taro Yamane 1967 formula for sampling.

$$n = \frac{N}{1 + N(e)2}$$

Where n = Sample size

N = Total population

E = Sample error (0.05 or 5%)

$$n = \frac{331514}{1+ 331514\ (0.0025)}$$

$$n = \frac{331514}{829.785}$$

$$= 399.99 \sim 400$$

Multi-Stage sampling technique was used in the selection of respondents for the study.

The first stage considered the six local governments that make up the Federal Capital Territory as the first cluster of the study.

The second stage of the study involved random selection of two wards each from each area council using fish bowl method. Here all the names of the wards in each area council were written in pieces of paper and dropped in a bowl and mixed together. Two papers were then drawn one after the other without replacement, the drawn papers were opened to reveal the name of the wards selected. This was done in all the area councils.

At the third stage the same method was used to select two schools from two wards representing each area council. At the end two schools from each ward and by extension each area council were randomly selected for the research.

The researchers and research assistants then proceeded to the various schools after formalities with the management. Here respondents were randomly selected among the age group required for the study.

Abaji:

Junior secondary school Abaji Junior secondary school Naharati

AMAC:

Junior secondary school Karu Junior secondary school Garki

Bwari:

Bwari central ward Junior secondary school Dutse Alhaji

Gwagwalada:

Junior secondary school Hajj Camp (Gwagwalada Centre Ward)

Junior secondary school Paikon-Kore (Paikon Ward)

Kuje:

Junior secondary school Chukuku

Junior secondary school Kuje

Kwali:

Junior secondary school Kwali Central Ward

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Junior secondary school Pai Ward

Intsrument Of Data Analysis

For the instrument of analysis, the study adopts frequency distribution analysis, cross-tabulation and one-wayAnalysis of Variance (one-way-ANOVA).

Analysis And Findings

Frequencies Distribution Analysis

Table 1: Age Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	9-11	15	3.8	3.8	3.8
	12-14	385	96.3	96.3	100.0
	Total	400	100.0	100.0	

The data revealed 12 to 14 years old as the age group of the majority (96.3%) of the respondents. While age 9 to 11 years represent 3.8% of the respondents. This suggests that most of the respondents around the study area are students from 12 to 14 years old. **Table 2:** Parents' Educational Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	FSLC	15	3.8	3.8	3.8
	SSCE	30	7.5	7.5	11.3
	ND/NCE	16	4.0	4.0	15.3
	HND	18	4.5	4.5	19.8
	B.Sc.	187	46.8	46.8	66.5
	M.Sc.	106	26.5	26.5	93.0
	PhD	28	7.0	7.0	100.0
	Total	400	100.0	100.0	

The findings revealed that parents of the respondents are mostly educated with an average of 46.8% with a Bachelor's degree and about an aggregate of 33.5% with post graduate degrees.

Questionnaire Responses

Table 3: Awareness**:** "Have heard about Human Papilloma Virus (HPV)"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	66	16.5	16.5	16.5
	Disagree	18	4.5	4.5	21.0
	Agree	20	5.0	5.0	26.0
	Strongly Agree	296	74.0	74.0	100.0
	Total	400	100.0	100.0	

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Table 3 showed that the level of awareness on HPV vaccination is very high with 79% (74% "strongly agree" and 7% "agree") awareness level amongst the respondents. The reveals a substantial awareness level among adolescent in the FCT.

Table 4: Sensitization: "Our school has sensitized us on HPV"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	80	20.0	20.0	20.0
	Disagree	14	3.5	3.5	23.5
	Agree	21	5.3	5.3	28.7
	Strongly Agree	285	71.3	71.3	100.0
	Total	400	100.0	100.0	

Table 4 revealed that the level of sensitization on HPV vaccination is very high with 76.6% (71.3% "strongly agree" and 5.3% "agree") sensitization level amongst the respondents. The reveals a substantial sensitization level among adolescent in the FCT.

Table 5: "I understood the essence of the sensitization"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	94	23.5	23.5	23.5
	Disagree	26	6.5	6.5	30.0
	Agree	31	7.8	7.8	37.8
	Strongly Agree	249	62.3	62.3	100.0
	Total	400	100.0	100.0	

Similarly, Table 5 revealed that the essence of sensitization on HPV vaccination is also very high with 70.1% (62.3% "strongly agree" and 7.8% "agree") importance of sensitization amongst the respondents. This justifies the extensive sensitization level among adolescent in the FCT.

Table 6: Beneficial: "Taking of HPV vaccine is highly beneficial to one's health"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	86	21.5	21.5	21.5
	Disagree	14	3.5	3.5	25.0
	Agree	26	6.5	6.5	31.5
	Strongly Agree	274	68.5	68.5	100.0
	Total	400	100.0	100.0	

Additionally, 68.5% and 6.5% respectively strongly agreed or agreed that HPV vaccination is highly beneficial to the adolescents. This shows an average of 75% assertion that the vaccine is beneficial to the adolescents in the FCT.

Table 7: Rate of Vaccination**:** "I have received the HPV vaccination"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	188	47.0	47.0	47.0
	Disagree	34	8.5	8.5	55.5
	Agree	14	3.5	3.5	59.0
	Strongly Agree	164	41.0	41.0	100.0
	Total	400	100.0	100.0	

However, despite the level of acceptance of the vaccine of being beneficial to the adolescents, only about 44.5% of the adolescents have actually received the vaccination. Over 55% have not received the vaccination.

Table 8: Determinants of HPV vaccination among adolescents in FCT

		Strongly Disagree	Disagree	Agree	Strongly Agree	Total
Frequency (%)	**Parent disapproval**	196(49.0)	36(9.0)	13(3.3)	155 (38.8)	400 (100.0)
	Fear of untimely Death	289(72.3)	23(5.8)	13 (3.3)	75 (18.8)	400 (100.0)
	Fear of deformity	271(67.8)	32(8.0)	13(3.3)	84(21.0)	400 (100.0)
	Fear of infertility	267(66.8)	22(5.5)	15(3.8)	96(24.0)	400 (100.0)
	Fear of cancer	273(68.3)	22(5.5)	14(3.5)	91(22.8)	400 (100.0)
	Fear of substandard vaccine.	252(63.0)	21(5.3)	17(4.3)	110(27.5)	400 (100.0)
	Religious reasons	293(73.3)	31(7.8)	9(2.3)	67(16.8)	400 (100.0)
	Cultural reasons	290(77.0)	31(7.8)	7(1.8)	72(18.0)	400 (100.0)
	Government ineptitude	263(65.8)	26(6.5)	11(2.8)	100(25.0)	400 (100.0)
	Peer influence	257(64.3)	25(6.3)	18(4.5)	100(25.0)	400 (100.0)

As a result, the determinants of HPV vaccination among adolescents in FCT were displayed on Table 8. Though religious and cultural reasons as barriers to the vaccination agreed with previous work of Wong, et. al. Contrary to the findings of Wong et. al. (2020) and Okunowo et. al. (2021), parent disapproval, among many other determinants such as, fear of untimely death, fear of deformity, fear of infertility, fear of cancer, fear of substandard vaccine, government ineptitude, and peer influence has be discovered to be a major reasons for the relatively low number of HPV vaccination among adolescent in the FCT.

Implication of the HPV vaccine on public health

Table 9: "My inability to be vaccinated may expose me to HPV"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	108	27.0	27.0	27.0
	Disagree	18	4.5	4.5	31.5
	Agree	14	3.5	3.5	35.0
	Strongly Agree	260	65.0	65.0	100.0
	Total	400	100.0	100.0	

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From Table 9, while 3.5% of the respondents agreed that their inability to be vaccinated may expose them to HPV, a substantial 65% strongly agreed that their inability to be vaccinated may expose them to HPV. This clearly shows that the recipients know that importance of take the HPV vaccine and also know the risk attached to not being vaccinated.

Table 10: "The vaccine can help to reduce the incident of cervical cancer"

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Strongly Disagree	82	20.5	20.5	20.5
	Disagree	14	3.5	3.5	24.0
	Agree	16	4.0	4.0	28.0
	Strongly Agree	288	72.0	72.0	100.0
	Total	400	100.0	100.0	

Similarly, while 3.5% agreed that the vaccine can help to reduce the incident of cervical cancer, a sizable 72% strongly agreed that the vaccine can help to reduce the incident of cervical cancer. This evidently shows that the recipients know the implication of receiving the HPV vaccine in order to reduce the risk of having cervical cancer.

Table 11: Cross-Tabulation Result

		Rate of HPV vaccination				Total
		Strongly Disagree	Disagree	Agree	Strongly Agree	
Parents' Education level	FSLC	7	1	1	6	15
	SSCE	17	4	2	7	30
	ND/NCE	10	2	0	4	16
	HND	12	2	1	3	18
	B.Sc	115	20	8	44	187
	M.Sc	15	3	2	86	106
	Ph.D	12	2	0	14	28
Total		188	34	14	164	400

The cross-tabulation result shows that while parents with at least a postgraduate degree support their adolescent children to be vaccinated, parents with bachelor's degree do not encourage their adolescent children to be vaccinated. This signifies that those with higher educational level, understands the value of preventive measures with regards to health.

Table 12: ANOVA Result

Dependent Variable: Public Health Outcome **Independent Variable:** Rate of Vaccination

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	132.034	3	44.011	37.263	.000
Within Groups	467.716	396	1.181		
Total	599.750	399			

The paper used ANOVA to examine the effects of HPV vaccination on public health. With the ANOVA coefficient (F-statistics) estimated at 37.263 and a probability value of 0.000, the findings established a significant impact of the rate of HPV vaccination on public health. This implies that public health tends to improve when the rate of HPV vaccination is high.

Thematic Narratives of the Key Informants

The first informant was a gynaecologist, a man of 42 years. He explained that the rate of vaccination is very low. He identified lack of awareness, lack of trust in government, difference between African culture and Western culture as reasons for the low vaccination rate. He recommended more sensitization as the way out.

The second informant: A female chemistry teacher Age: 40 years

She explained that she has not allowed her children to be vaccinated because she doesn't want them to be injected with cancer. Besides, she confessed that her doctor advised her against the vaccination.

Another informant 45 years male: explained that the rate of the vaccine is low because people believe the western world is trying to make their womb sterile, in other to check the rate of reproduction. He recommended that this fear can be addressed if this vaccine is locally manufactured. He also mentioned that the health workers should be our examples by taking the vaccine.

The fourth informant explained that he is not aware of any HPV! He objected to the daughter taking it. He insisted that cancer can only be prevented through lifestyle modification.

In addition, other informants who were not in support of the vaccine rejected it on grounds of religion, lack of trust in Government and influence of negative social media report on the vaccine.

CONCLUSION

The study showed that the rate of HPV vaccination among adolescents in selected schools in FCT is low. The study also established determinants of the low rate of HPV vaccination as parental disapproval of the vaccination, fear of untimely death from the vaccination, fear of deformities, fear of substandard vaccine, fear of infertility, reduce rate in fertility and lack of trust in Nigerian Government. The study revealed that the low rate of HPV vaccination affects public health challenge, cost of management of the disease, as well as death rate from it may not be reversed.

The study therefore concludes that, the public health problem of cervical cancer is still with us. Hence all hands must be on deck to ensure that the sensitization, motivation and every other thing needed to win this battle is implored.

RECOMMENDATIONS

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

1. The government at all levels especially Federal Capital Territory (FCT)Administration, should intensify sensitization on cervical cancer stressing the prognosis, cost management and death rate.

2. The Universal Basic Education Board (UBEB) should set up cancer prevention clubs in schools. Here the preventive measures of cervical cancer will be discussed frequently.

3. Government should sponsor research and production of HPV vaccine locally.

4. Health workers should take the lead by intensifying the advocacy of HPV vaccination

5. Vaccinated persons should testify positively about the vaccine so that fears of deformity, infertility and death can be arrested.

6. Training of religious leaders on the need for cancer prevention, safety and effectiveness of the HPV vaccination should be carried out

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