https://dx.doi.org/10.4314/dujopas.v10i4a.11
ISSN (Print): 2476-8316
ISSN (Online): 2635-3490
Dutse Journal of Pure and Applied Sciences (DUJOPAS), *Vol. 10 No. 4a December 2024*

Human Papilloma Virus (HPV) Vaccine: Hesitancy and Strategies for Increasing Acceptance Among Health Care Workers in Parts of Kano, Nigeria

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Abstract

Cervical cancer is the second leading cause of maternal cancer deaths in Nigeria, and addressing HPV vaccine hesitancy could help reduce maternal mortality. This study explored HPV vaccine hesitancy among healthcare workers in Kano State and identified strategies to enhance vaccine uptake. Sixteen healthcare workers were interviewed using a purposive sampling technique. Interviews, lasting about 30 minutes each, were recorded, transcribed, and analyzed through thematic analysis. The findings revealed varied perceptions of the vaccine. While some participants were positive and willing to vaccinate their daughters, others expressed concerns about its safety and efficacy. Major barriers to vaccine acceptance included lack of awareness, misinformation, and cultural and socioeconomic factors. Knowledge gaps were also noted regarding dosage, administration, and eligibility criteria. To increase uptake, comprehensive education and awareness initiatives were recommended.

Keywords: Hesitancy, healthcare workers, HPV vaccine, Nigeria

INTRODUCTION

Cervical cancer is one of the reproductive cancers that affect women worldwide, presumed to be associated with human papillomavirus (HPV) infection, which can be transmitted via sexual intercourse. It kills about 7,968 women annually in Nigeria (Human Papilloma Virus Centre, 2023). This makes it the second leading cause of maternal cancer deaths in Nigeria. Despite cancer not being a major priority in Africa, as the continent was ranked second to last in incidence rates by the World Health Organization (International Agency for Research on Cancer, 2022), the disease is forecast to increase in prevalence in the coming years.

The first strategy outlined by the World Health Assembly in 2020 to eliminate cervical cancer was through the vaccination of 90% of girls with the HPV vaccine by age 15 (World Health Organization [WHO], 2020). Vaccination of adolescent girls before the onset of sexual activity

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is considered the most effective long-term intervention to reduce cervical cancer risk (Okolie & Nwadike, 2023). Evidence from population studies, including post-vaccination follow-up, has shown HPV vaccines to be highly immunogenic, safe, and effective in preventing HPV infection, cervical lesions, anogenital warts, and other related diseases (Drolet *et al*., 2019).

Despite healthcare workers' (HCWs) knowledge of cervical cancer and the effectiveness of HPV vaccines, there remains hesitancy in accepting the vaccines for eligible girls. Vaccine hesitancy contributes to lower coverage and increases the risk of vaccine-preventable diseases, which has been a longstanding challenge (Adeyanju *et al*., 2022; Brisson *et al*., 2016). In Malawi, it was found that socio-cultural factors such as religious beliefs and misinformation contributed significantly to vaccine hesitancy (Adeyanju *et al*., 2022). Similarly, parental vaccine hesitancy has been shown to reduce coverage by 18% to 24% in adolescents, according to Kimberly *et al*. (2021).

Vaccine hesitancy undermines efforts to achieve herd immunity (Brisson *et al*., 2016). A study on Nigerian mothers' willingness to vaccinate their daughters revealed a need for targeted education to promote cervical cancer screening and vaccination (Azuogu *et al*., 2019). In Kano State, Nigeria, where this study is set, public acceptance of HPV vaccines remains low. The lack of awareness and access to vaccines, combined with misinformation, has contributed to this issue (Egbon *et al*., 2022).

Moreover, HCWs reported gaps in their knowledge regarding the HPV vaccine's specific requirements, such as dosage and eligibility, highlighting the importance of comprehensive training and education (Kimberly *et al.*, 2021; Egbon *et al.*, 2022). Strategies to combat hesitancy include community engagement, educational campaigns, and improved access to vaccination services (Azuogu *et al*., 2019; WHO, 2019). Studies have emphasized the need for public awareness campaigns to improve vaccination rates (Egbon *et al*., 2022; Premium Times, 2023).

METHODS

This study used a qualitative research design, which sought to understand and describe the universal essence of a phenomenon. Interviews were conducted with sixteen health workers across Kano state with interviewer guides that cover the objectives of the study. The participants were recruited using a purposive sampling technique to participate in the study and the sample size was obtained when data saturation was reached. Each interview lasted for about thirty minutes. Interviews were recorded and transcribed for extracts and analysis.

Study area

The study was conducted in Kano State. Kano is one of the 36 states of Nigeria and located in the north western part of Nigeria. Kano is the most populous state in Nigeria. With a population of 12,757,211 and area of 20,131 km and latitude and longitude coordinates of 12.000000, 8.516667. Kano is a large city and the capital of the same name province, which is situated in the northern part of Nigeria. Kano is one of the largest cities in Nigeria consisting of 44 local government areas (Maternal, Newborn & Child Health Program Kano, 2006). The state shares boundary with Jigawa, Katsina, Bauchi, and Kaduna states. Kano has several hospitals including public and private health facilities. Aminu Kano Teaching Hospital (AKTH) is the teaching hospital that offer expert care.

PROCEDURES

The data analysis method utilized in the provided excerpts is thematic analysis, a qualitative research approach aimed at identifying, analyzing, and reporting patterns (themes) within

qualitative data. The process began with data collection through interviews, followed by data familiarization to gain an understanding of the content and context. Initial coding involved identifying keywords and concepts, which are then grouped into themes based on similarity. These themes were reviewed to ensure consistency and coherence before being defined and named descriptively. Through data interpretation, the researcher explored the implications of each theme in relation to the research question, ultimately leading to the writing up of findings that provide a comprehensive overview supported by excerpts from the interview transcripts. Thematic analysis offers a systematic and insightful exploration of qualitative data, allowing for a deeper understanding of the phenomena under investigation.

Theme 1: Awareness and Basic Understanding of HPV Vaccine

The findings from the thematic analysis revealed that healthcare workers in Kano State have a foundational understanding of the HPV vaccine and its importance in preventing cervical cancer. However, there are significant gaps in knowledge regarding the vaccine's dosage, site of administration, and specific eligibility criteria. Participants rely on a mix of sources for their information including the internet, professional settings, and seminars. There is a willingness among some healthcare providers to educate and advocate for the HPV vaccine, indicating potential pathways for increasing vaccine acceptance and knowledge among both healthcare workers and the general public. Addressing the identified knowledge gaps through targeted educational interventions could enhance healthcare workers' ability to effectively promote HPV vaccination.

Table 1: Healthcare Workers' Awareness and Basic Understanding of the HPV Vaccine

Understanding Level	Frequency	Examples of Statements
Basic understanding (purpose and target population)	Majority	"HPV vaccine is a prophylactic vaccine given to adolescent girls to prevent cervical cancer."
Knowledge gaps (dose, administration site, eligibility)	Majority	"I don't know the dose and dosage of the vaccine and the site of administration."
Misconceptions (incorrect information on eligibility, gender, age)	Few	"It's given to all girls that are virgin," or "It's mostly administered to females, but males can also receive it."
Source		
Internet	Few	"Sources of information about the HPV vaccine are the internet, workplace, and colleagues."
Workplace seminars	Few	"We had a seminar about cervical cancer and the vaccine at AKTH."
Colleagues	Few	"I get the information from colleagues."
Media (general)	Few	"Media awareness on how cervical cancer affects women."
Misconception Type		
Virginity as a prerequisite	Few	"From what I read, it's given to all girls that are virgin."
Incorrect gender/age information	Few	"Males can also be given the vaccine as a preventive measure, according to recent research."
Willingness to Educate		
Willing to educate and promote	Few	"My role as a healthcare provider is to provide health education about cervical cancer and the prevention via HPV vaccine."
Hesitant due to knowledge gaps	Few	"I wanted to read more about it but never had the time because I'm not interested in the vaccine."

Theme Two: Perceptions and Acceptance of HPV Vaccine

The thematic analysis revealed a spectrum of perceptions and attitudes towards the HPV vaccine among healthcare workers in Kano State. While some participants viewed the vaccine positively and expressed readiness to vaccinate their daughters, others harbored concerns about safety and efficacy. Public acceptance was deemed low, highlighting the need for comprehensive education and awareness campaigns to address misconceptions and promote vaccine uptake. These findings emphasize the importance of tailored strategies to enhance HPV vaccine acceptance and uptake among healthcare workers and the wider community.
Participants expressed diverse views regarding the HPV vaccine. Some acknowledged its potential benefits in preventing cervical cancer, while others raised concerns about perceived risks and stigmatization associated with the vaccine.

Table 2: Perceptions and Acceptance of HPV Vaccine

Theme	Findings	Participants' Quotes
Perceptions of HPV Vaccine	- Mixed perceptions: some healthcare workers acknowledged the benefits, while others were concerned about safety and efficacy. - Public acceptance deemed low due to misconceptions.	- Participant 1: "Yes, I think it has its own benefit and some risk attached to it..." - Participant 3: "HPV vaccine is not widely accepted, there is a lot of misconceptions..." - Participant 4: "HPV vaccine is widely recommended by healthcare professionals..."
Concerns About Safety and Efficacy	- Participants raised concerns about the perceived risks of the vaccine. - Some participants cited misinformation and lack of awareness as reasons for hesitancy.	- Participant 5: "...had it been the vaccine is available and easily accessible, people will go for it..." - Participant 11: "I will advise that people should be well informed about the vaccination."
Willingness to Vaccinate Daughters	- Willingness to vaccinate daughters varied based on safety concerns, need for more information, and the influence of awareness campaigns. - Cultural factors influenced the decision.	- Participant 1: "If it's 100% safe, I will allow her to have the vaccine." - Participant 5: "No... we need more seminars and workshops about it..." - Participant 9: "Of course yes, I will take them to receive the vaccine."
Public Awareness and Acceptance	- Public acceptance was perceived as poor due to limited awareness and misconceptions. - Some participants recognized the potential for increased acceptance with education and community engagement.	- Participant 1: "Public acceptance is very poor because people in the community are not fully aware..." - Participant 6: "As time goes by through proper awareness... they will be more aware." - Participant 9: "Adequate awareness will increase acceptance..."
Role of Education in Acceptance	- Many participants emphasized the role of education and public awareness campaigns in improving vaccine acceptance. - Public education was seen as crucial in addressing fears and misconceptions.	- Participant 4: "The acceptance of the HPV vaccine has been increasing... as more people become aware of its benefits..." - Participant 7: "People are aware now, people are even craving to have the vaccine." - Participant 9: "Having adequate awareness will go a long way..."

Theme Three: Barriers to Acceptance of HPV Vaccine

The barriers to HPV vaccine acceptance among healthcare workers in Kano State can be broadly categorized into three key areas: lack of awareness and misinformation, access and availability, and cultural and socioeconomic factors. Many participants highlighted a significant lack of awareness about cervical cancer and the vaccine, coupled with widespread misconceptions, such as fears that the vaccine could reduce fertility. Additionally, uncertainty

regarding where to receive the vaccine further hindered its acceptance. Access challenges, such as limited availability in remote areas and the high cost of the vaccine, also posed significant barriers, with some healthcare workers struggling to find time to vaccinate their children due to work demands. Cultural beliefs, religious influences, and socioeconomic conditions added further complexity, with misconceptions about infertility and non-involvement of community leaders contributing to vaccine hesitancy.

Table 3: Barriers to Acceptance of HPV Vaccine

Sub-theme	Barriers	Participants' Quotes
Lack of Awareness and Misinformation	- Lack of awareness about cervical cancer and the vaccine. - Misconceptions about the vaccine's safety and purpose (e.g., fear of reduced fertility). - Uncertainty about where to get the vaccine.	- P1: "Some people are not aware of cervical cancer, talk less of its vaccine..." - P3: "Some think the vaccine is there to reduce fertility..." - P7: "I don't know the proper place they are giving the vaccine..." - P9: "I don't know the standard place they are giving the vaccine."
Access and Availability	- Limited access to vaccination services, especially in remote areas. - High cost of the vaccine as a barrier. - Time constraints for some healthcare workers to take their children for vaccination.	- P8: "The cost is another problem because this vaccine is damn expensive..." - P2: "The disease is not common... if it's 100% safe, I will allow her to have the vaccine." - P7: "I don't have enough time to take them to receive the vaccine due to the nature of my work..."
Cultural and Socioeconomic Factors	- Cultural beliefs and norms contribute to hesitancy (e.g., misconceptions about infertility). - Religious beliefs and lack of involvement of community gatekeepers. - Socioeconomic challenges impact vaccine uptake.	- P12: "Cultural beliefs, gatekeepers' non-involvement, religious belief, and ignorance... contribute to the reluctance." - P3: "There is a lot of misconceptions about it due to beliefs and norms..." - P15: "If you explain it in detail... I think there will be nothing to stop some parents..."
Recommended Interventions	- Education campaigns to dispel myths and address cultural sensitivities. - Emphasize the benefits of vaccination. - Ensure vaccine availability, affordability, and address time constraints. - Involve healthcare workers and community leaders as advocates.	- P15: "If you show them the pictures of people that have experienced those diseases, it will be the best example..." - P12: "Involving religious and cultural gatekeepers could help..." - P3: "Addressing misconceptions about fertility is key to promoting vaccine acceptance."

Theme Four: Strategies for Increasing Acceptance of HPV Vaccine

The theme of "Strategies for Increasing Acceptance of HPV Vaccine among Health Care Workers" underscores the need for comprehensive approaches involving education, access, and community involvement. By leveraging these strategies, healthcare workers can play a pivotal role in promoting HPV vaccine acceptance and ultimately reducing the burden of cervical cancer.

Table 4: Strategies for Increasing Acceptance of HPV Vaccine

Sub-theme	Strategies	Participants' Quotes
Public Awareness and Education	- Use social media, seminars, and community mobilization to raise awareness. - Educate the public about the vaccine's benefits and purpose.	- P1: "Create awareness through social media or community mobilization..." - P3: "Health education is key for enhancing acceptance..." - P10: "Educating people about the vaccine..."
Access and Availability	- Ensure vaccine availability at health facilities and through outreach programs. - House-to-house vaccination and government policies to support access.	- P2: "Delivery of vaccination should include house-to-house visits..." - P12: "The vaccine should be readily available at close health facilities..." - P15: "Make the vaccine available in hospitals..."
Community Engagement and Involvement	- Involve community leaders, ward heads, and traditional leaders in promoting the vaccine. - Integrate vaccine education into health talks and antenatal clinics.	- P7: "Involving ward heads and community leaders in health talks..." - P9: "Start with traditional leaders to enlighten the public..." - P14: "Public awareness should involve health talks, mass media campaigns..."

DISCUSSION

This study explored the awareness and understanding of the HPV vaccine among healthcare workers (HCWs) in Kano State, Nigeria, revealing both a foundational understanding of its significance in preventing cervical cancer and notable knowledge gaps. Although participants were aware of the vaccine's role in cervical cancer prevention, they lacked comprehensive knowledge regarding its dosage, administration, and eligibility criteria. This is consistent with existing literature, such as the study by Kimberly *et al*. (2021), which showed how parental vaccine hesitancy and misinformation contribute to low vaccine coverage. Similarly, Adeyanju *et al.* (2022) highlighted how knowledge gaps fueled hesitancy in routine vaccination programs in Malawi.

Participants reported obtaining information from diverse sources like the internet, professional settings, and seminars, but these avenues did not adequately meet their educational needs. Misconceptions, including beliefs that virginity is required for vaccination or that the vaccine is suitable for all ages and both sexes, underscored the need for accurate information dissemination. This aligns with Egbon *et al.* (2022), who emphasized the importance of targeted educational interventions in addressing vaccine-related challenges in Nigeria.

Despite these gaps, some HCWs expressed readiness to advocate for the vaccine, signaling their potential role in promoting vaccine acceptance. Adeyanju *et al*. (2022) similarly highlighted the need for HCWs to be active in combating vaccine hesitancy through education and advocacy. However, public acceptance remains low in Kano State, with misconceptions and concerns about the vaccine's safety and efficacy further complicating the issue. This variation in acceptance could stem from individual beliefs, cultural factors, and varying levels of exposure to vaccine-related information.

Access and availability of the vaccine also emerged as significant barriers. Participants pointed to limited vaccine access in rural areas, cost challenges, and cultural resistance as factors that inhibit vaccine uptake. This reflects findings from studies like Egbon *et al.* (2022),

which emphasized how logistical challenges hindered HPV vaccination programs in Nigeria. Socioeconomic and cultural factors further contributed to vaccine hesitancy, highlighting the need for culturally sensitive approaches to improve understanding and acceptance.
Strategies to increase acceptance among HCWs included public awareness campaigns, improved access, and community engagement. Participants advocated for health education through social media, community mobilization, and involvement of traditional and religious leaders in campaigns. This is in line with recommendations from studies like Azuogu *et al.* (2019) and Kimberly *et al*. (2021), which stressed the importance of community involvement in fostering vaccine acceptance.

CONCLUSION

The findings of this study highlight that healthcare workers in Kano State possess a basic understanding of the HPV vaccine's role in preventing cervical cancer, but significant knowledge gaps remain concerning its dosage, administration, and eligibility criteria. Misconceptions about the vaccine, such as its requirement for virginity or its applicability to both genders, further highlight the need for targeted educational interventions. The reliance on informal sources of information like the internet and colleagues, along with incomplete knowledge from workplace seminars, suggests that healthcare workers may not be fully equipped to promote the vaccine effectively.

These knowledge gaps and misconceptions could hinder healthcare workers' ability to advocate for HPV vaccination confidently. However, there is a willingness among some to educate and promote the vaccine, presenting an opportunity to strengthen their role as advocates for vaccination within their communities. By addressing these gaps through tailored education, cultural sensitivity, and improved access to the vaccine, Kano State healthcare workers can play a pivotal role in increasing vaccine uptake and contributing to the prevention of cervical cancer.

RECOMMENDATIONS

Based on the findings, the following recommendations were made:
Comprehensive Education and Awareness Campaigns should be implemented in order to increase awareness on cervical cancer, HPV infection, and the importance and prevention of HPV vaccination. Access to HPV vaccination should be improved by ensuring that vaccines are readily available in healthcare facilities across Kano State. This may involve expanding vaccination programs to remote areas, offering mobile vaccination clinics, and providing information on vaccination sites through community outreach efforts.

Culturally sensitive communication materials and messaging that resonate with the beliefs and values of the local community should be developed. Engage community leaders, religious institutions, and traditional healers to disseminate accurate information and address cultural barriers to vaccine acceptance. Provide training and education for healthcare workers to equip them with the knowledge and skills necessary to effectively communicate with patients and address concerns about the HPV vaccine. This includes training on vaccine safety, efficacy, and the importance of vaccination in preventing cervical cancer.

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