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Original Research Article

Integrating human papillomavirus vaccination into maternal, newborn, and child health week in Abia State, South-East Nigeria: a programmatic experience

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ABSTRACT

Background: Despite being preventable, cervical cancer incidence continues to rise amid ongoing interventions. Following the introduction of the single-dose human papillomavirus (HPV) vaccine in October 2023, Nigeria has faced several challenges. Integrating HPV vaccination into the Maternal Newborn and Child Health Week (MNCHW) is a potential strategy to increase HPV vaccine uptake. Our objective was to assess the feasibility, acceptability, and operational processes of integrating HPV vaccination into MNCHW.
Methods: This was a descriptive, cross-sectional study among the immunization and nutrition program officers at the State and LGA levels. Secondary data from the final MNCHW call-in data were retrieved and data on HPV vaccine doses given were extracted for analysis. Open data kit (ODK) collect forms were used to obtain data from the respondents. The IBM Statistical Product and Service Solutions (SPSS) version 26 was used for data analysis.
Results: A total of 93 program officers participated in the survey. The mean age was 44.8±8.0 years. Females constituted 76.3% and the majority (94.8%) were from the LGA level. A total of 30,523 HPV vaccine doses were reported on DHIS2 for June, representing a five-fold increase compared to pre-integration months. The most prevalent challenges reported were inadequate funding (24%) and team insufficiency (24%). Most (95.6%) had overall satisfaction with the program.
Conclusions: The integration of HPV vaccination into the MNCHW in June significantly improved HPV vaccine uptake. Most respondents were satisfied with the integration. Programmatic challenges and areas of improvement were noted. It is recommended that this integrative approach be sustained, scaled up, and further strengthened to maximize its impact in Abia State.

Keywords: Cervical cancer, Child health, HPV vaccination, HPV vaccine, Immunization, Nigeria

INTRODUCTION

Cervical cancer, though preventable, remains the fourth most common cancer in women, with a rising incidence. In 2022, an estimated 662,301 new cases and 348,874 deaths were recorded worldwide, 94% of which occurred in low- and middle-income countries, highlighting global health inequities.[1,2] If current trends continue, the global burden

is projected to rise to 760,082 new cases and 411,035 deaths by 2030, respectively.[2] The disease disproportionately affects countries with low human development index (HDI), where incidence and mortality rates remain significantly higher compared to high-HDI settings.[2] In Nigeria, cervical cancer poses a serious public health concern, with over 12,000 new cases and more than 50% mortality reported in 2020.[3] In 2020, the World Health Organization (WHO) launched a global strategy to eliminate cervical cancer as a public health problem, aiming to reduce incidence to fewer than 4 cases per 100,000 women-years.[4] The initiative is guided by the 90–70–90 targets: 90% of girls vaccinated against human papillomavirus (HPV) by age 15, 70% of women screened by ages 35 and 45, and 90% of those diagnosed receiving treatment.[4] Despite commitment from all 194 Member States, significant disparities in disease burden and access to preventive services persist, further compounded by the COVID-19 pandemic.[5]

Nigeria introduced the single-dose HPV vaccine into its routine immunization program in October 2023, targeting girls aged 9-14 years.[6] By May 2024, Nigeria had vaccinated over 12 million girls.[7] Despite these significant milestones achieved, the routinization of the HPV vaccines has been fraught with several challenges, such as vaccine hesitancy due to misconceptions, myths, vaccine availability, cost and cultural barriers.[8,9] Other barriers, as cited in studies, include unawareness of vaccine availability by caregivers and community members at health facilities, long distance to health facilities and poor transportation facilities, making geographical access difficult, missed opportunities to recommend the vaccines by healthcare workers and poor implementation of school-based programs leading to poor integration of adolescent-friendly services.[10-13] These barriers underscore the need for enhanced information dissemination strategies, school-based vaccinations, and continuous collaboration among government agencies while leveraging existing health programmes to optimize the uptake of HPV vaccines.

In 2009, the National Primary Health Care Development Agency (NPHCDA) introduced the MNCHW as a pilot in two States.[14] Subsequently, it was approved by the National Council on Health for a biannual implementation in all States of Nigeria to improve the progress in Millennium Development Goals (MDG) 4 and 5 targets in 2010.[14] MNCHW aims to strengthen routine primary health care services by providing and improving access to a consolidated package of preventive and curative interventions, thereby improving the indices of maternal and child health as documented in Nigeria.[15] It also serves as a platform for integrating additional health services. Such integration has enhanced the uptake of HIV testing among pregnant women in Nigeria.[16]

Integrating HPV vaccination into the MNCHW has been explored as a potential strategy to increase uptake by leveraging existing community mobilization, infrastructure, and health personnel already engaged in the MNCHW campaign. This is largely because MNCHWs are widely accepted, well-organized, and reach a broad segment of the population. Despite the potential for improved health outcomes and service delivery efficiency, a notable paucity of data remains to document the outcomes of such integrated approaches. There is a need to identify best practices and key lessons to inform future integrated service delivery models. The study's findings are expected to inform policy decisions and guide programmatic adjustments for future integration efforts. Our objective was to assess the feasibility, acceptability, and operational processes of integrating HPV vaccination into MNCH week.

METHODS

Study design and setting

This study was conducted in Abia State, located in the southeastern region of Nigeria. Abia is one of the 36 states of Nigeria and comprises 17 Local Government Areas (LGAs), including both urban and rural settlements. The State has a projected population of 4,701,518 at a growth rate of 2.7%, with 1,034,334 women of reproductive age. The State has a total of 749 primary healthcare facilities that serve as the primary entry point for maternal, newborn, and child health (MNCH) services, including immunization, antenatal care, and health education. This is complemented by privately owned, faith-based secondary and tertiary health facilities.[17]

The MNCHW is a biannual, week-long campaign in Nigeria, conducted in collaboration with the NPHCDA, State Primary Health Care Development Agencies (SPHCDA), State Ministries of Health, and other development partners. It is designed to enhance the delivery of essential primary health services, including immunization against vaccine-preventable diseases. The primary beneficiaries of the MNCHWs are pregnant, lactating women, and children under the age of five years. The campaign is typically conducted in May and November, utilizing both fixed and mobile health posts to reach diverse populations, including those in hard-to-reach areas. The packages include antenatal care, family planning, routine immunization, de-worming, vitamin A supplementation, screening for malnutrition, birth registration, health education messages on exclusive breastfeeding and complementary feeding.

The first round of the MNCHW in Abia State commenced from 21st to 28th June 2025. HPV vaccination was integrated across several thematic areas to ensure effective implementation. In the area of planning and coordination, a steering committee was established with the inclusion of State RI teams, and various sub-committees were set up to support specific activities. Weekly Technical Working Group (TWG) meetings were convened with key stakeholders and partners. The partners included WHO, the United Nations Children's Fund (UNICEF) and John Snow Inc. (JSI). The purpose of the meeting was to plan and

track the dashboard for the assessment of readiness. For advocacy, communication, and social mobilization, HPV key messages were incorporated into IEC materials such as banners and fliers, while radio jingles were used to disseminate information on the HPV vaccine. Community members were mobilized through town announcers and community dialogues. There was also a cross-sectoral collaboration with non-EPI stakeholders such as the Ministry of Education, National Association of Proprietors of Private Schools (NAPPS), National Orientation Agency (NOA), and other relevant Ministries, Departments and Agencies (MDAs) on the adequate mapping and reach of eligible girls.

Vaccine delivery strategies for the HPV vaccine included the fixed posts by leveraging the existing immunization infrastructure, and at temporary posts supported by MNCHW teams. There were additional special school teams to take the vaccines to schools. A total of 291 school teams (1 per ward) were deployed to carry out HPV vaccination in schools. Each team consisted of a vaccinator, a recorder, and a teacher who served as a guide.

For the supervision of the activities, a one-day orientation was held for the state supervisors, independent monitors, and State Technical Facilitators (STFs), focusing on effective monitoring and supervision throughout the MNCHW period. A supervisory plan was drafted for the 17 LGAs. Hybrid sessions of the evening review meetings were held daily, at the EOC hall as well as on the Google Meet platform.

Study population

These included the program officers of immunization and nutrition units of the Local Government and State under the supervision of Abia State Primary Health Care Development Agency (ABSPHCDA). Those who were officially absent during the integration exercises were excluded from the study.

Data tools and collection

MNCHW call-in data tools were revised to include a column for the HPV vaccine as part of immunization data. A self-administered, semi-structured short questionnaire built on KoboCollect, was used to collect data from the program officers. The questionnaire had 4 sections. Section 1 contained socio-demographic information. Section 2 addressed the pre-implementation and implementation activities. Section 3 assessed the respondents' satisfaction with the operational processes and section 4 included the challenges and the recommendations for program sustainability.

Measurement of variables

The satisfaction with various activities and the program was measured on a 5-point Likert scale of 'very satisfied', 'satisfied', 'neutral', 'dissatisfied' and 'very dissatisfied'. At the analysis stage, responses were further grouped into 'satisfied' (very satisfied and satisfied), 'neutral' and 'dissatisfied' (dissatisfied and very dissatisfied). Availability of logistics, supplies and resources was assessed using binary responses of 'yes' and 'no', which were coded as '1' and '0' respectively.

Statistical analysis

Data for HPV vaccine doses were extracted from the MNCHW call-in data. Data from the respondents was downloaded from the KoboCollect Server, cleaned, and coded. All data were analyzed using IBM SPSS version 26. Frequency tables and proportions were generated. Appropriate charts were used for further representation of the data.

Ethical consideration

Ethical clearance was obtained from the Health Research Ethics Committee of Abia State Ministry of Health, Nigeria, with reference number AB/MH/PRS/ECS/T.1/740. Personal identifiers were removed from the database to ensure the confidentiality of the program officers. Data was stored in a password-protected computer with access limited only to the principal investigator.

RESULTS

A total of 93 program officers participated in the survey with a response rate of 74.4%. The predominant group was 40 – 49 years with a proportion of 40.9%. The mean age was 44.8±8.0 years. Females constituted 76.3% and the majority (94.8%) were from the LGA level. Concerning their designation, most were monitoring and evaluation officers (18.2%), followed by Health Authority Secretaries and Social Mobilization Officers, each accounting for 15.9%. Most of them (40.9%) had a working year experience of 11 to 20 years (Table 1).

Most respondents (75.3%) reported attending the training on preparedness and implementation of the MNCH Week - HPV vaccine integration. Among attendees, the most valuable components of the training were service delivery (56%) and data reporting (52.2%). Respondents who did not attend cited lack of awareness of the training (34.5%) and some (26.1%) indicated that no training was communicated. In general, most respondents (93.5%) reported being adequately prepared for the MNCH–HPV vaccine integration. Half (50.5%) of them rated vaccine availability as "good", followed by 43.5% of the respondents who rated "excellent", while 6.5% rated it as "fair". Stockouts were reported by 8.6% of the respondents, mainly due to logistics gaps and sub-optimal supply, each accounting for 50.0%. Only 22.6% of the respondents experienced increased workload, primarily from additional tasks (40.9%) and shortage of skilled staff (22.7%). Most believed staffing was adequate (74.2%) and rated coordination of the program as "good" (61.3%).

Concerning their perception of the community acceptance of the HPV vaccine, 62.4% of them reported high acceptance, 34.4% indicated moderate acceptance, and only 3.2% reported low acceptance. Additionally, 86% of all respondents reported well-coordinated social mobilization, and only 28.0% encountered challenges during implementation (Table 2).

Table 1: Socio-demographic characteristics of respondents (n=93).

Variable	Frequency	Percentage
Age group (in years)		
<39	29	31.1
40-49	38	40.9
≥50	26	28.0
Mean±SD	44.8±8.0	
Sex		
Male	22	23.7
Female	71	76.3
Level of practice		
State	5	5.4
LGA	88	94.6
Designation*		
Health authority secretary	14	15.9
Immunization officer	13	14.8
Cold chain officer	7	8.0
Social mobilization officer	14	15.9
Monitoring and evaluation officer	16	18.2
State technical facilitator	11	12.5
Nutrition officer	13	14.8
Working years		
1–10	23	24.7
11–20	38	40.9
≥20	32	34.4

*n=88

A total of 36,141 eligible girls vaccinated were uploaded on the District Health Information System (DHIS2) from January to May. Before the integration in June, only 5,618 were reported and fluctuated across the months. There was a surge in June (the month of integration) with a total of 30,523, out of which 25,639 (83.9%) were reported from the MNCHW call-in data (Figure 1).

Inadequate funding and team insufficiency emerged as the most critical challenges, each accounting for 24% of all the responses received. Furthermore, poor preparedness and planning, and vaccine rejection were each attributed to 16%. Other notable challenges included poor network and inaccessible roads (8%) and excess workload among health workers (8%) (Figure 2).

The intensification of awareness and sensitization programs emerged as the highest priority, contributing 23.3% of all the responses. A fifth of them (20.0%) suggested an expansion of the special school health teams. This was followed closely by adequate and timely release of funds (18.9%). Also, another suggestion on early planning and stakeholder engagement accounted for 14.4%. Other notable areas of improvement, as reported by the respondents, included reorientation of teachers and healthcare workers (HCWs), contributing 8.9% and strengthening community mobilization and dialogue (6.7%). Further down the scale, use of pluses (incentives) for eligible girls was rated at 4.4%. Very few talked about the integration of HPV vaccination into routine school health services (2.2%) and a post-MNCHW structured mechanism to capture missed girls (1.1%) (Figure 3).

Table 2: Programmatic assessment of preparedness and implementation.

Variables	Frequency	Percentage
Attended training		
Yes	70	75.3
No	23	24.7
Adequately prepared for HPV vaccine-MNCH week integration		
Yes	87	93.5
No	6	6.5
Availability of HPV vaccines and related logistics		
Fair	6	6.5
Good	47	50.5
Excellent	40	43.0
Experience stock-outs/cold chain failures		
Yes	8	8.6
No	85	91.4
Integration affected the workload		
Yes	21	22.6
No	72	77.4
Adequate staffing		
Yes	69	74.2
No	24	25.8
Effective coordination		
Good	57	61.3
Excellent	35	37.6
Poor	1	1.1
Communal acceptance of the HPV vaccine		
High	58	62.4
Moderate	32	34.4
Low	3	3.2
Well-coordinated social mobilization activities		
Yes	80	86.0
No	13	14.0
Encountered challenges		
Yes	26	28.0
No	67	72.0

Most respondents expressed satisfaction with various aspects of the HPV vaccine integration into the MNCH week. Almost all (98.6%) who participated in the training were satisfied with it as well as with the supervision during

the implementation (90.3%). Consequently, 95.6% had overall satisfaction with the program, with only 2.2% each reporting neutrality and dissatisfaction (Table 3).

Table 3: Graded responses to satisfaction with HPV vaccine-MNCH week integrated activities.

Variables	Frequency	Percentage
Pre-implementation training of HPV vaccine-MNCH week (n=70)		
Satisfied	69	98.6
Neutral	1	1.4
Supervision of HPV vaccine-MNCH implementation		
Satisfied	84	90.3
Neutral	7	7.5
Dissatisfied	2	2.2
Overall satisfaction with the integration		
Satisfied	89	95.6
Neutral	2	2.2
Dissatisfied	2	2.2

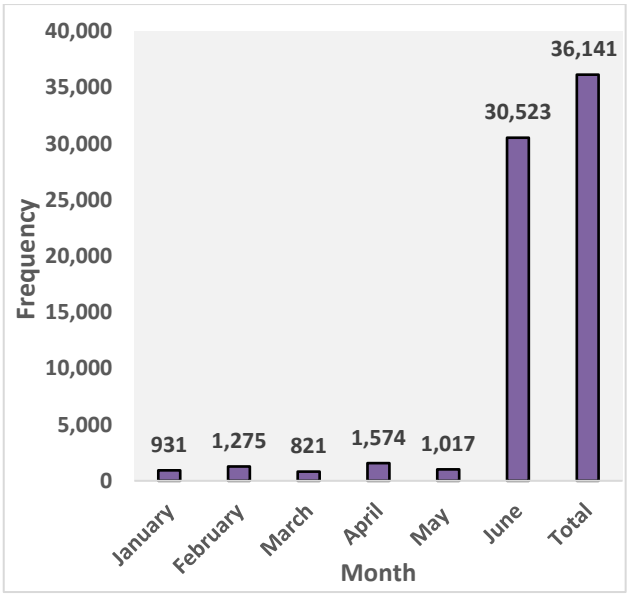

Figure 1: HPV reported data in Abia State (January to June 2025).

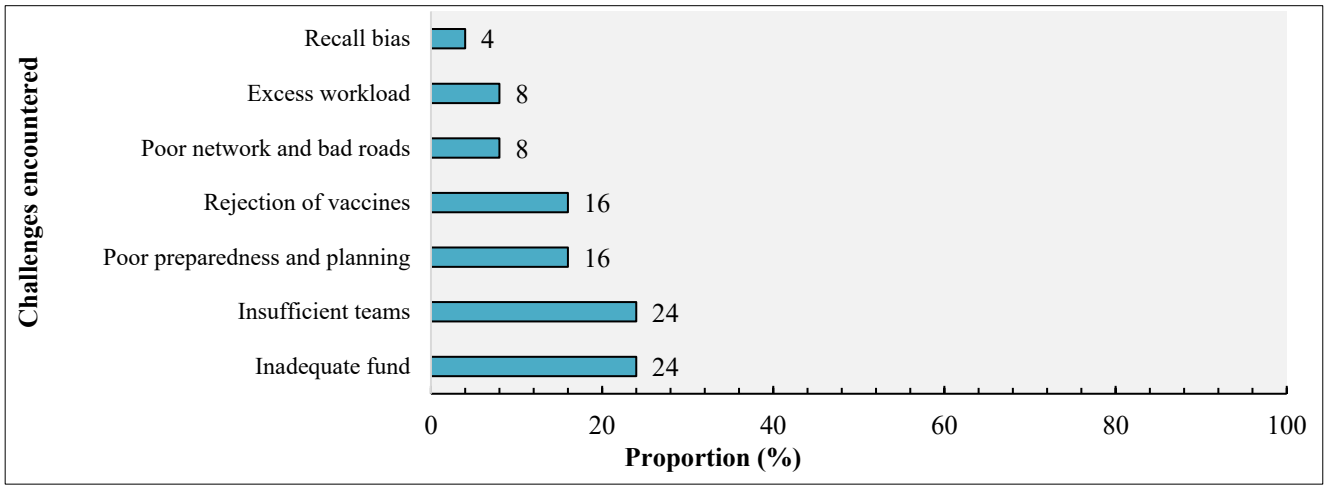

Figure 2: Key challenges to HPV vaccine integration during MNCH Week.

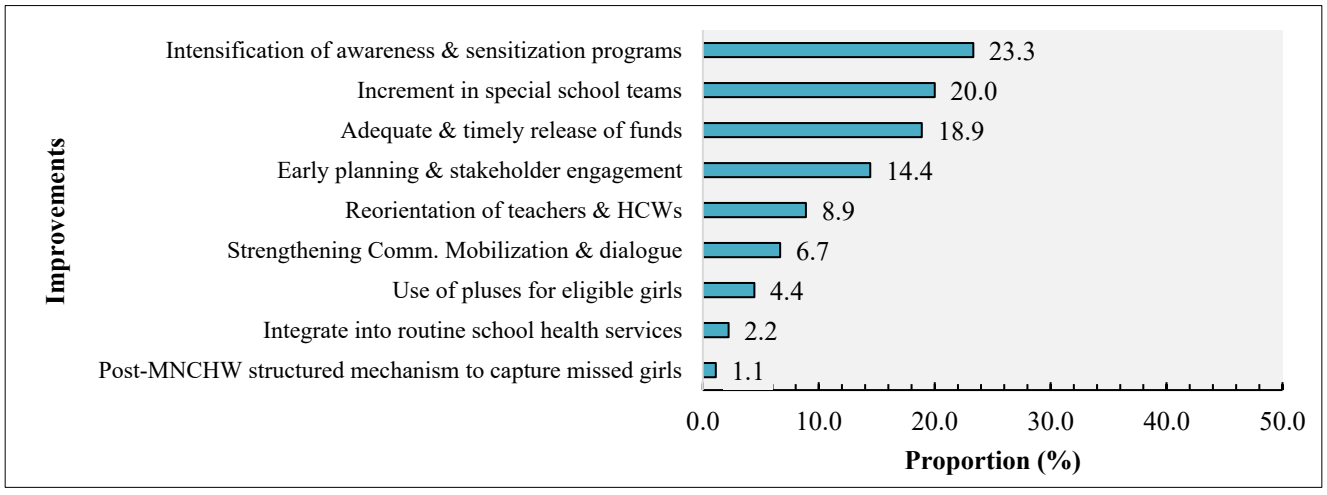

Figure 3: stakeholder-identified improvements for effective HPV vaccine integration during MNCH week.

DISCUSSION

This study assessed the feasibility, acceptability, and operational processes of integrating HPV vaccination into MNCHW. Data showed a more than five-fold increase in the uptake of HPV vaccines and a high positive overall satisfaction rate was reported among the respondents. Key challenges affecting the effective delivery of HPV vaccination during the MNCH week were noted. Respondents suggested several strategies to improve HPV vaccine delivery during subsequent MNCHWs.

The monthly HPV vaccination uptake revealed a significant increase following the integration of the vaccination program into the MNCHWs in June. Before integration, vaccination numbers were low and inconsistent, highlighting the challenges associated with routine service delivery, such as poor demand creation, logistical constraints and insufficient coordination. The dramatic surge of HPV vaccinations in June, up to a 3,000% increase compared to May, provides strong evidence that integration into structured health campaigns, such as MNCHW, can significantly enhance vaccine uptake. This finding is consistent with previous studies that underscore the effectiveness of campaign-based delivery approaches, particularly in settings with weak routine immunization infrastructure or limited public awareness, as seen in Nigeria.[18,19] This exponential increase may be explained by more vaccination teams, stronger health education coordination, better planning, and MNCHW's visibility in overcoming hesitancy and improving school-based access.[20] However, the data show heavy reliance on campaigns, raising concerns about sustaining high coverage. Priority should be on strengthening routine services, integrating HPV vaccination into school health systems, and using MNCHW for catch-up.

Among the challenges identified were inadequate funding and insufficient school teams. These findings are consistent with existing literature, which emphasizes the strong correlation between resource availability and the effectiveness of immunization campaigns in low-resource settings.[19] This underscores the importance of sufficient financial resources and human capital in ensuring the successful implementation of school-based vaccination programs. Financial constraints can delay planning and hinder the supply of essential logistics and commodities. Other significant challenges included poor preparedness and planning as well as pockets of vaccine rejection, highlighting the impact of insufficient logistical coordination and sociocultural resistance on program performance. Poor planning often leads to inefficiencies in logistics, late mobilization, and weak coordination among stakeholders, which can directly affect service coverage.[21] Meanwhile, vaccine rejection, often driven by misinformation, fear, and cultural beliefs, remains a persistent obstacle to HPV vaccine uptake, particularly in school and community settings. This highlights the need for targeted health communication strategies that build trust and address misconceptions around the vaccine.

In this current study, the respondents recommended the intensification of awareness and sensitization programs of key stakeholders, indicating strong recognition of the role of community engagement in combating vaccine hesitancy. A study conducted in Cameroon reported that the active involvement of key stakeholders was influential in the uptake of the HPV school-based vaccine campaign.[22] In the United States, a systematic review found that HPV-related education targeting parents improved vaccination rates among adolescents and young adults.[23] An additional study identified schools as an ideal, sustainable vaccination platform, emphasizing the need for greater sensitization of teachers and students.[21] There is a crucial need for enhanced health communication efforts to optimise vaccine acceptance and demand among adolescents, caregivers, and school authorities.

Additional recommendations made by the respondents included the expansion of special school health teams and the timely release of funds. Both are critical strategies for improving the integration of HPV vaccination into MNCHW. Increasing the number of dedicated school health teams enables broader geographic coverage and faster outreach to schools in hard-to-reach areas, thereby reducing missed opportunities and increasing uptake of HPV vaccines alongside maternal, neonatal, and child health (MNCH) services.[24] These teams can also strengthen collaboration with teachers, parents, and community leaders to boost awareness and address hesitancy. Inadequate or delayed funding has been shown to undermine outreach and immunization activities due to disruptions in planning and stock-outs.[25] When school health teams are well-resourced and funding aligns with program timelines, MNCHW can incorporate HPV vaccination seamlessly, ultimately leading to higher vaccine coverage and better overall outcomes for HPV vaccination during MNCH Week. We emphasize the need to deploy adequate, dedicated personnel for school outreach vaccination and to promote financial preparedness for successful implementation.

Almost all the respondents were satisfied with the integrated approach of MNCHW. High levels of respondents' satisfaction reflect strong approval of the HPV vaccine delivery approach during MNCHW. Evidence from multiple settings shows that integrating HPV vaccination with other services is both acceptable and effective. Across Africa, combining HPV vaccination with health education, digital tools, and school-based adolescent health services has proven to be feasible, effective, and well-supported by providers and stakeholders.[26-28] In the United States, HPV vaccination incorporation into pre-exposure prophylaxis (PrEP) care and school-based programs was valued for convenience, efficiency, and expanded reach.[29] These findings indicate that integrating the HPV vaccine into MNCH activities was well-received, operationally feasible, and perceived as highly successful, with minimal negative sentiment.

Satisfaction was probably driven by strong coordination, school health teams, and use of the established MNCHW platform to ease logistics and expand access. Satisfaction remains crucial for program sustainability, boosts ownership, and lowers resistance. The low rate of dissatisfaction points out minor gaps that should be addressed.

The limitations of this study highlight the use of self-reported data, which may be subject to recall bias or social desirability bias, especially in areas such as satisfaction. The respondents were not randomly selected, which may affect the generalizability of the study's findings. To mitigate this, we ensured that the research process was thorough and that the purpose of the research was well communicated to the respondents. Also, we did not assess the perspectives of the community members or beneficiaries, which could have provided a fuller picture of acceptance and coverage challenges. Notwithstanding, the findings from this study provide practical and actionable insights that can guide policymakers, program managers, and partners, thereby strengthening future HPV vaccine integration efforts within MNCH and similar health programs.

CONCLUSION

This study demonstrates that the integration of HPV vaccination into the MNCH Week in June significantly improved vaccine uptake. Key challenges identified included inadequate funding, insufficient teams, poor planning, and vaccine hesitancy as barriers to effective integration. The study also highlighted the priority improvement areas that can enhance future programming to include intensification in awareness and sensitization, the deployment of sufficient special school teams, and early release of funds. The findings also revealed a high level of stakeholder satisfaction with the HPV vaccine delivery process during the MNCHW integration, suggesting that the integration was well-executed, effectively coordinated, and widely accepted by those involved.

Recommendations

Based on the findings of this survey, we make the following recommendations- continuous leveraging MNCH Week and other national health campaigns to reach missed girls, while progressively building capacity for routine school-based HPV vaccination, provision of sufficient teams for future campaigns while ensuring adequate and timely release of funds at all levels to support planning, logistics, and implementation activities, implement community-centered communication strategies to address misinformation and vaccine hesitancy, initiation of early planning processes involving education authorities, health workers, and community stakeholders to ensure effective coordination, maintaining and scaling up the key strategies that contributed to high satisfaction among the respondents. Further studies are needed to follow up on the areas of dissatisfaction and resolve the specific concerns raised by the minority who reported dissatisfaction.

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