

VACCINE DELIVERY RESEARCH DIGEST

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1. [Does Migration Affect a Child's Immunization Coverage? A Cross-Sectional Analytical Study of India.](#)

Kumar P, Dhalaria P, Kapur S, Verma A, Singh A, Priyadarshini P, et al.

Vaccines (Basel). 2026 Aug 27;14(9).

PubMed ID: 42797565

ABSTRACT

Introduction: India's immunization initiatives are among the largest globally, characterized by a substantial birth cohort of 27 million children annually, and have achieved significant progress in increasing coverage through the UIP. However, there are still challenges that persist, and multiple determinants contribute to the existing challenges; migration is one of them. Migration has always been a key driver of socio-economic and demographic changes, particularly in low and middle-income countries (LMICs). Specifically, there is a need to better understand the vulnerabilities of immunization among recent migrants. To examine this, the study explores the association between a mother's recent migration and the full immunization coverage of children aged 12-23 months in India. **Data & Methods:** Our study utilized data from the National Family Health Survey-5 (2019-21). The outcome variable of interest in this study is the full immunization among children aged 12-23 months (receipt of all basic vaccinations). The primary predictor variable in this study was recent maternal migration, defined as the mother's duration of residence at the current place of residence. We used a series of multivariate logistic regression models to examine the relationship between full Immunization among children and maternal migration status, with some data restrictions in the models. **Results:** The results show a 17 percentage-point difference in full immunization between children of migrant and non-migrant mothers. The adjusted odds ratios of children of mothers who had recently migrated had significantly lower odds of full immunization (aOR: 0.39, 95% CI: 0.35-0.43) compared to children whose mothers had not recently migrated. Even across the household wealth quintile and social groups, the recent migration of the mother was associated with being less likely to be fully immunized among children 12-23 months. **Conclusions:** The findings of this study provide significant quantitative evidence that recent migration (less than 3 years) of mother is a key factor influencing Immunization coverage and is a predictor of full immunization among children aged 12-23 months in India. The recent migration was consistently linked with lower odds of full immunization coverage across different household wealth levels and social groups. This study suggests that children of recently migrated mother are a vulnerable subgroup of the population at risk of not receiving full immunization among children aged 12-23 months.

WEB: [10.3390/vaccines14090744](https://doi.org/10.3390/vaccines14090744)

IMPACT FACTOR: 3.5

CITED HALF-LIFE: 3.3

START COMMENTARY

Kumar et al. examined the association between recent maternal migration and childhood immunization coverage in India using cross-sectional data from the National Family Health Survey. Children aged 12-23 months whose mothers had migrated within the previous three years had substantially lower odds of being fully immunized than those whose mothers had not recently migrated. The authors reported a 17-percentage-point difference in full immunization coverage between the groups and an adjusted odds ratio of 0.39 (95% CI: 0.35-0.43). This association persisted across household wealth status and social groups, suggesting that recent maternal migration is an important marker of vulnerability in childhood immunization coverage.

Several factors may contribute to this disparity, including disruptions in continuity of care, difficulties navigating unfamiliar healthcare systems, limited awareness of local vaccination services, and financial or logistical barriers to accessing care. However, the cross-sectional design limits causal interpretation, and the mechanisms that may explain the observed association are not clear. Future research is needed to understand how migration patterns, access to health services, and other contextual factors shape childhood immunization outcomes. Findings highlight the importance of designing immunization programs that accommodate population mobility, such as a tracking platform that can follow the vaccination status of a child regardless of geographic movement.

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2. [Scaling Adolescent Immunity: Multi-Age Cohort Human Papillomavirus \(HPV\) Vaccination Campaigns in West Africa-Evidence from Côte d'Ivoire, Ghana, Liberia, and Sierra Leone.](#)

Bwaka A, Guemgo S, Mengouo Nimpa M, Mitula P, Ngossaki H, Woromogo S, et al.

Vaccines (Basel). 2026 Aug 24;14(9).

PubMed ID: 42797549

ABSTRACT

Background: Cervical cancer remains a major public health problem, causing approximately 660,000 new cases and 348,000 deaths annually, with more than 90% occurring in low- and middle-income countries. The WHO African Region accounts for approximately 20% of global cases and 30% of deaths. In November 2020, the World Health Assembly adopted the Global Strategy for Cervical Cancer Elimination with 90-70-90 targets for 2030. Multi-age cohort (MAC) campaigns have emerged as a high-impact strategy for achieving population-level HPV vaccination coverage. This study documents the implementation and outcomes of HPV MAC campaigns across Côte d'Ivoire, Ghana, Liberia, and Sierra Leone in 2025. Methods: This multi-country mixed-methods analysis integrated quantitative administrative campaign data with qualitative programmatic assessments across eight operational readiness domains from the WHO Immunization Readiness Assessment Tool. Data were collected between January and December 2025 from national reports, WHO supervision missions, and partner reports. Coverage analysis used administrative data triangulated with independent monitoring. Equity analysis used school enrolment data and geographic accessibility indices. Results: The campaigns targeted 7,376,096 girls aged 9-18 years and reached approximately 6,306,294, achieving 85.5% overall coverage. Côte d'Ivoire, Ghana, Liberia and Sierra Leone reported administrative coverage of 88.0%, 84.5%, 60.0% and 100%, respectively. All four countries achieved the minimum operational readiness threshold of 80% across all assessed domains. A total of 35,860 health workers were trained, with post-training competency scores increasing from 58.8% to 89.5%. Cold chain functionality exceeded 98% across all campaigns. A total of 314 cases of Adverse Events Following Immunization (AEFIs) were reported, all classified as mild, giving an approximate rate of 5.0 per 100,000 doses. Coverage gaps between in-school and out-of-school girls ranged from 18 to 35 percentage points. Conclusions: The findings suggest that large-scale adolescent HPV immunization can be successfully implemented in resource-limited settings when supported by political commitment, multisectoral coordination and adequate operational resources. The single-dose schedule transition under Gavi 6.0 offers opportunities to simplify delivery. Priority actions include integrating HPV into routine immunization, scaling equity strategies for out-of-school girls and ensuring sustainable financing.

WEB: [10.3390/vaccines14090728](https://doi.org/10.3390/vaccines14090728)

IMPACT FACTOR: 3.5

CITED HALF-LIFE: 3.3

START COMMENTARY

This paper analyzed multi-age cohort HPV vaccine campaigns in Côte d'Ivoire, Ghana, Liberia, and Sierra Leone that vaccinated over 6 million girls ages 9-18, achieving reported coverage of 85.5%. Across countries, campaign success was supported by strong political commitment, collaboration between health and education sectors, investments in pre-campaign preparedness, and effective cold chain and logistics management. All four countries used mixed-delivery approaches, combining school-based vaccination with fixed sites, outreach, and community-based strategies tailored to local contexts. Ghana and Côte d'Ivoire used digital dashboards for near-real-time reporting, allowing teams to identify and respond to coverage gaps during the campaigns. Sierra Leone adopted a two-round strategy, providing an additional opportunity to reach girls who were missed during the initial round.

The analysis had several limitations, including uncertain population denominators that overestimate true coverage and incomplete data in conflict-affected areas. Implementation challenges were also identified across countries. Girls not in school were harder to reach, highlighting the importance of incorporating HPV vaccination into other health services and delivery platforms. Vaccine hesitancy was also reported in all four countries. The authors recommended strengthening equitable delivery strategies to reach out-of-school girls and girls living with HIV who require additional vaccine doses, improving data systems to more accurately understand vaccine coverage, and expanding community engagement to address misinformation and develop locally relevant messaging for future vaccine campaigns.

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3. [Assessing the impact of a gender-neutral approach to HPV vaccination on vaccination coverage for nine-year-old girls in Cameroon: A retrospective, cross-sectional study.](#)

Griffith B, Iliassu S, Mbanga C, Ngege B, Patel S, Graves J, et al.

PLOS Glob Public Health. 2026 Sep 09;6(9):e0006349.

PubMed ID: 42715194

ABSTRACT

Cameroon introduced the human papilloma virus vaccine (HPVV) into the routine immunization schedule in October 2020. By the end of 2022, coverage remained low. To increase coverage, Cameroon switched to a country-wide, gender-neutral vaccination (GNV) approach in 2023, coupled with a revamped delivery strategy of Community Dialogues (CDs) and Periodic Intensification of Routine Immunization (PIRIs) activities in selected health districts (HDs). We assessed the impact of these programmatic changes, notably the GNV approach, on HPVV coverage. This retrospective, cross-sectional study measured the effect of GNV and CDs+PIRIs on HPVV coverage among 9-year-old girls in Cameroon (2022-2023). Data on HPV vaccination from all 203 HDs were extracted from DHIS2, and coverage calculated at the HD level based on the estimated population eligible of 9-year-old girls. Descriptive statistics and multiple regression models were employed to assess the impact of GNV on vaccination coverage, while adjusting for CDs+PIRIs, baseline (2022) coverage, region, urban/rural status. In 2023, of the 203 HDs, 115 (56.7%) conducted GNV only and 74 (36.5%) implemented GNV & CDs+PIRIs. Among age-eligible girls, there was an overall increase in HPV vaccination coverage, with coverage rising 39.2 percentage points from 2022 to 2023.

Following multiple linear regression, there was a significant association between percentage point increase in HPVV coverage in HDs with GNV & CDs+PIRIs, compared to those with no GNV and no CDs+PIRIs in the adjusted model (β :44.5, 95%CI: 29.4, 59.6, $p < 0.001$). Furthermore, there was a significant association between increase in HPVV coverage in HDs with GNV only compared to those with no GNV or no CDs+PIRIs in the adjusted model (β :15.5, 95%CI: 1.23, 29.8 $p < 0.001$). Overall, the GNV approach was associated with an increase in HPVV coverage for girls, with greater magnitude and predicted precision when implemented alongside CDs+PIRIs.

WEB: [10.1371/journal.pgph.0006349](https://doi.org/10.1371/journal.pgph.0006349)

IMPACT FACTOR: 2.8

CITED HALF-LIFE: 2.5

START COMMENTARY

A retrospective analysis examined the effects of gender-neutral vaccination (GNV) alone or combined with community dialogues (CD) and periodic intensification of routine immunization activities (PIRIs) on HPV vaccination coverage among nine-year-old girls in Cameroon. Between

2022 and 2023, vaccination coverage increased in districts implementing GNV, with the greatest increase where GNV was combined with CDs+PIRIs. Specifically, coverage increased by 70.2 percentage points in districts implementing the combined approach and by 19.3 percentage points in districts implementing GNV alone, whereas districts implementing neither measure saw a decrease of 3.7 percentage points. These findings suggest that community engagement and intensified immunization activities may complement GNV strategies and help improve vaccine uptake. However, the observational study design limits causal conclusions. Additional limitations included imbalances in the distribution of intervention strategies across districts and reliance on administrative data, which may be subject to reporting errors and inaccuracies. The authors highlighted the financial and administrative resource demands required to implement GNV and PIRIs. Future research could evaluate the cost-effectiveness, feasibility, and sustainability of these strategies to inform decisions regarding broader implementation.

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4. [Reaching zero-dose children in conflict-affected and fragile settings in the WHO African Region: a scoping review of strategies and evidence gaps.](#)

Iwu-Jaja C, Olu O, Iwu C, Nyasulu P, Wiysonge C.

BMJ Public Health. 2026 Sep 08;4(Suppl 1):e004861.

PubMed ID: 42707887

ABSTRACT

OBJECTIVES: To map interventions and strategies targeting zero-dose children in fragile and conflict-affected settings across the WHO African Region and identify key evidence gaps to inform future research and programming.

DESIGN: Scoping review conducted in accordance with Joanna Briggs Institute methodology and reported using Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews guidelines.

DATA SOURCES: PubMed (MEDLINE), CINAHL, Scopus and Web of Science, supplemented by grey literature searches of the WHO, UNICEF evaluation database and Gavi Alliance resource library (searched November 2025). Reference lists of relevant reviews were manually screened for additional studies.

ELIGIBILITY CRITERIA: Studies describing interventions or strategies to improve vaccination coverage or equity among zero-dose, unvaccinated or unimmunised children under 5 years in WHO African Region countries classified as fragile and conflict-affected per the World Bank Group's harmonised list. Editorials and commentaries lacking empirical or programmatic data were excluded.

DATA EXTRACTION AND SYNTHESIS: Data were extracted using a pre-tested form capturing study characteristics, conflict setting, delivery models, target populations, barriers and implementation strategies. Findings were synthesised using deductive thematic analysis guided by the Identify-Reach-Monitor-Measure-Advocate framework. Formal risk of bias assessment was not conducted, consistent with scoping review methodology.

RESULTS: Five studies (n=5) published between 2018 and 2025 met inclusion criteria, covering Nigeria, Cameroon, the Central African Republic, South Sudan and Ethiopia. Interventions relied on non-immunisation platforms, integrated service delivery, security-supported or negotiated access and technology-enabled logistics. Evidence was more concentrated on identifying and reaching zero-dose children than on monitoring, measurement or advocacy. Key gaps included limited economic evidence, weak gender-barrier assessment and denominator uncertainty.

CONCLUSIONS: Zero-dose children in conflict-affected and fragile settings can be reached through flexible, locally adapted strategies. However, the evidence base remains small and largely descriptive. Progress towards Immunization Agenda 2030 requires greater investment in context-appropriate implementation research and more systematic programme documentation.

WEB: [10.1136/bmjph-2025-004861](https://doi.org/10.1136/bmjph-2025-004861)

IMPACT FACTOR: 1.7

CITED HALF-LIFE: 1.4

START COMMENTARY

A scoping review of five studies published between 2018 and 2025 identified strategies for reaching zero dose (ZD) children in conflict-affected and fragile settings in the WHO African Region. Across studies, approaches sought to overcome instability and gaps in access to routine health services. Reaching conflict-affected areas required collaboration with military or civilian joint task forces or negotiations with local authorities to secure humanitarian access. Community-based delivery strategies also helped bring vaccination services closer to underserved populations by reducing the need for families to travel to health facilities. Implementing vaccination within other platforms, including nutrition services, community screening activities, and household visits, can identify children missed by routine immunization services. Technology-enabled approaches were also reported. Geospatial mapping helped identify hard-to-reach and mobile populations and informed selection of vaccine delivery approaches, while cold-chain innovations and security-informed micro-planning of outreach activities supported vaccine quality preservation and the safe, reliable delivery of immunization services. Limitations of this study included the inclusion of only five studies, largely consisting of program reports and observational descriptions. Excluding records not publicly available may also have omitted relevant implementation experiences. Future research should assess the effectiveness, cost, and sustainability of existing strategies, while further exploring gender-related barriers.

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5. [Digital Strategies To Counter Health Misinformation and Strengthen Vaccine Acceptance: a Scoping Review.](#)

Hernandez Rincon E, Avila J, Rodriguez S, Quintero J.

J Community Health. 2026 Sep 06.

PubMed ID: 42701939

ABSTRACT

Health misinformation is one of the greatest challenges in contemporary public health and has been consistently associated with higher levels of vaccine hesitancy and refusal, particularly through its dissemination on digital platforms. The aim of this review was to map and synthesize the available evidence on digital strategies designed to reduce health misinformation and strengthen vaccine acceptance in the community, identifying their types, mechanisms of action, reported effectiveness, target populations, contexts of application, and evidence gaps. A scoping review was conducted following the Joanna Briggs Institute (JBI) methodology and the PRISMA-ScR guidelines. The research question was structured using the PCC framework (Population, Concept, and Context). A systematic search was performed in PubMed/MEDLINE, Scopus, Web of Science, Cochrane Library, and BIREME, including studies published between January 2021 and December 2025 in English, Spanish, and Portuguese. A total of 2,188 records were identified, of which 37 studies met the inclusion criteria, originating from 12 countries and published between 2019 and 2026. The evidence was organized into six thematic categories: social media campaigns (n = 9), experimental message interventions (n = 9), prebunking and psychological inoculation (n = 3), narrative interventions and digital storytelling (n = 5), emerging technologies and digital innovation (n = 3), and organizational social listening strategies (n = 4). The strategies with the strongest evidence of effectiveness on vaccine attitudes and intention were culturally adapted campaigns, fact-checking messages from recognized sources, prebunking through digital games, and community narrative interventions. However, the meta-analysis by [1], comprising 28 randomized controlled trials, found that social media interventions did not produce statistically significant differences in the number of people vaccinated (RR = 1.04; 95% CI: 0.96-1.14), although they did yield improvements in attitudes and intention. The benefit of digital strategies on vaccine acceptance depends more on the recipient's profile, the message source, and the sociocultural context than on the technology used. The available evidence suggests that digital strategies are especially effective at improving vaccine attitudes, knowledge, and intention, although their impact on actual vaccination depends on their integration with community interventions and on the sociocultural context.

WEB: [10.1007/s10900-026-01609-3](https://doi.org/10.1007/s10900-026-01609-3)

IMPACT FACTOR: 2.1

CITED HALF-LIFE: 7.9

START COMMENTARY

This scoping review of 37 studies from 12 countries found that the effectiveness of digital strategies to counter vaccine misinformation may depend most on the recipient's profile, perceived message credibility, and sociocultural context. Overall, digital strategies demonstrated a positive effect on vaccine-related knowledge, attitudes, and vaccination intention. However, there is limited evidence of their impact on actual vaccine uptake. Individual factors, including conspiratorial beliefs, political identity, and medical distrust, may influence how recipients respond to these interventions. The authors highlighted that digital strategies can complement rather than replace existing social and institutional trust and may be particularly beneficial when used as part of multicomponent interventions. An important limitation is the geographic distribution of the evidence, with substantial representation from the United States and limited evidence from low- and middle-income countries where many vaccination coverage gaps exist. Future research should prioritize locally adapted interventions and assess effects on vaccination uptake.

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6. [Malaria Vaccine Rollout in Nigeria: Current Status and Challenges.](#)

Oyegbade S, Adeboye S, Oni G, Oyegbade A, Oziohu J, Duyann Z, et al.

Am J Trop Med Hyg. 2026 Aug 27;115(4):702-708.

PubMed ID: 42660112

ABSTRACT

Malaria remains a leading cause of morbidity and mortality in Nigeria, particularly among children under 5 years of age, despite ongoing control efforts. The introduction of RTS,S/AS01, and R21/Matrix-M vaccines provides a promising complementary prevention strategy. This systematic review assessed malaria vaccine rollout in Nigeria, focusing on implementation, awareness, acceptance, willingness to pay, and health system readiness. A comprehensive search of PubMed, ScienceDirect, Google Scholar, African Index Medicus, and gray literature (2015-2026) identified 12 eligible studies. Caregiver acceptance ranged from 76.6% in Lagos to 95.6% in Owerri, and exceeding 90% in Enugu, Ondo State, and Gombe. Among health care professionals, only 54.1% of pharmacists were willing to vaccinate their children. Caregiver awareness ranged from 9.7% in Lagos to 72.1% in Enugu. Physicians demonstrated higher adequate knowledge (68.9%) than nurses (35.9%), with 55.5% of nurses having only heard of the vaccine. Pharmacists expressed concerns about vaccine failure (53.6%), adverse effects (63.4%), and storage conditions (77.8%). Willingness to pay was moderate; median willingness in Enugu was USD \$0.82 per dose; 71.2% of Lagos caregivers expressed willingness to pay; and 90% of respondents nationally preferred government-funded vaccination. Health system readiness was critically inadequate, with overall facility preparedness scores ranging from 33% to 51%. Advocacy and social mobilization were at 0% across all three facilities, and monitoring and supervision ranged from 0% to 33%, all far below the WHO-recommended 95% threshold. Strengthening health systems, targeted communication, and sustainable public financing are essential for a successful nationwide malaria vaccine rollout.

WEB: [10.4269/ajtmh.26-0371](https://doi.org/10.4269/ajtmh.26-0371)

IMPACT FACTOR: 1.9

CITED HALF-LIFE: 11.0

START COMMENTARY

This systematic review assessed malaria vaccine deployment in Nigeria. Awareness and knowledge of malaria vaccines varied substantially across the country, suggesting disparities in the dissemination of vaccine information. Caregivers and healthcare workers generally showed a moderate to high acceptance of vaccines, ranging from 54.1% to 95.6%, potentially reflecting trust in healthcare systems, concern about malaria's severity, and positive attitudes toward vaccination in

general. Overall, caregiver willingness to vaccinate children was high, with most studies reporting acceptance rates over 90%. Lower vaccine uptake was associated with safety concerns, doubts about vaccine effectiveness, socioeconomic constraints, education levels, and cultural and religious factors. Healthcare professionals expressed concerns about adverse effects, vaccine effectiveness, storage conditions, and cold-chain integrity. Health system readiness also emerged as a major challenge to successful vaccine rollout. Facility preparedness scores fell short of the WHO-recommended threshold, with substantial gaps in advocacy, social mobilization, monitoring, and supervision. The authors emphasized the importance of strengthening health systems, building awareness, knowledge, and confidence in the vaccines through targeted communication, and sustainable financing to support equitable access.

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7. [Performance of Oral Rotavirus Vaccines in Low- and Middle-Income Settings: Current Evidence, Persistent Gaps and Future Directions.](#)

Sivakumar B, Mwenda J, Lopman B, Kang G, Varghese T.

Viruses. 2026 Aug 27;18(8).

PubMed ID: 42655734

ABSTRACT

Oral, live-attenuated rotavirus vaccines (ORVs) have significantly reduced severe diarrheal disease and deaths; however, vaccine performance in low- and middle-income countries (LMICs) remains lower than in high-income countries. With increasing global use, real-world data now provide important insights into strategies to improve vaccine impact in these settings. This review summarizes current evidence on the effectiveness and impact of ORVs in LMICs, with a focus on approaches to optimize performance, including alternative dosing schedules, booster doses in late infancy, and mixed vaccine regimens. Evidence on vaccine interchangeability offers practical solutions for countries facing supply disruptions and financial constraints. The review also highlights the growing importance of economic sustainability, particularly in the context of transitions from external funding support. Despite lower efficacy, ORVs continue to provide substantial public health benefits in LMICs. Sustained impact will depend on strengthening programme delivery, ensuring stable vaccine supply, and advancing next-generation vaccines. Continued evaluation of effectiveness, cost, and implementation strategies will be critical to maximizing long-term benefits in high-burden settings.

WEB: [10.3390/v18080917](https://doi.org/10.3390/v18080917)

IMPACT FACTOR: 3.8

CITED HALF-LIFE: 4.1

START COMMENTARY

This review examined oral rotavirus vaccine (ORV) effectiveness in low- and middle-income countries (LMICs) and explored strategies to maximize the benefits of both existing and future vaccines. Real-world studies suggest ORV effectiveness in LMICs generally ranges from 40% to 70%, with protection often strongest during infancy. Factors contributing to lower effectiveness in LMICs compared to high-income countries are not well understood. However, partial protection can prevent severe illness, hospitalizations, and death. The authors assessed strategies to improve protection, including modified dosing schedules, additional doses later in infancy, and combinations of different vaccine products when vaccine supply is unstable. Beyond immunological performance, the review emphasized the growing challenge of sustaining immunization programs as external funding declines and countries face competing budgetary priorities. Affordable vaccine procurement,

high coverage, and effective program delivery were identified as essential to maintaining the benefits of vaccination. Ultimately, improving rotavirus control requires more than increasing vaccine efficacy. Strengthening routine immunization, generating robust evidence on alternative schedules and mixed regimens, and investing in next-generation vaccines must be accompanied by long-term financial planning.

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8. [Magnitude of childhood immunization and its associated factors in Sub-Saharan Africa: A mixed effect count regression analysis.](#)

Fenta S, Fenta H, Biresaw H, Yilema S, Belay D, Mekie M, et al.

PLoS One. 2026 Aug 26;21(8):e0354918.

PubMed ID: 42647521

ABSTRACT

BACKGROUND: Childhood immunization is an important part of public health efforts to reduce morbidity and mortality from diseases that can be prevented by vaccination. Sub-Saharan Africa (SSA) has the lowest childhood immunization coverage and the highest child mortality rate in the world. Therefore, this study aimed to assess community variation in childhood immunization and to identify determinant factors associated with childhood immunization using mixed effect count regression models.

METHOD: This study used data from the 2012-2022 Demographic and Health Survey (DHS), which included 195,000 children between the ages of 12 and 23 months in 33 SSA countries. A various mixed-effects count regression model were employed to identify the variables associated with the prevalence of childhood vaccination.

RESULT: In SSA, the mean average childhood immunization was 5.47 (95% CI = 5.46, 5.48), with an 8.38 variance. The mixed effect zero-inflated Poisson model fit the data the best, with the lowest DIC, AIC, and BIC values. The results of the model showed that working mothers, mothers with secondary or higher education (IRR = 1.119; 95% CI: 1.114, 1.125), rich wealth status (IRR = 1.077; 95% CI: 1.073, 1.082), having a health card (IRR = 1.265; 95% CI: 1.258, 1.271), being exposed to the media (IRR = 1.082; 95%CI: 1.077, 1.086), institutional delivery (IRR = 1.168; 95% CI: 1.163, 1.174), receiving eight or more ANC visits (IRR = 1.301; 95% CI: 1.288, 1.314), receiving vitamin A (IRR = 1.350; 95% CI: 1.344, 1.355), using a contraceptive (IRR = 1.187; 95% CI: 1.182, 1.192) and receiving Postnatal Care (PNC) (IRR = 1.075; 95% CI: 1.071, 1.080), were associated with a higher incidence of childhood immunization. While children in rural areas (IRR = 0.972; 95%CI: 0.968, 0.976) had a lower prevalence of childhood vaccinations than children in urban areas.

CONCLUSION: SSA had a low coverage of childhood vaccination with significant disparities among countries. Therefore, it is essential to prioritize public health initiatives that target low-income households, rural mothers, uneducated parents, and those who have not utilized maternal health care services for the sake of increasing the coverage of childhood immunizations that in turn enhances the health of children. Furthermore, it is imperative to create policies and initiatives that tackle regional and national variations in childhood immunization rates and to actively work toward their implementation.

WEB: [10.1371/journal.pone.0354918](https://doi.org/10.1371/journal.pone.0354918)

IMPACT FACTOR: 2.8

CITED HALF-LIFE: 8.9

START COMMENTARY

The study used a mixed-effects count regression model to identify factors associated with vaccination prevalence using Demographic and Health Survey data from 33 sub-Saharan African (SSA) countries in 2012-2022. Overall, 37.0% of children aged 12-23 months had received all eight types of immunizations. Rwanda, Burundi, and Malawi had the highest average number of childhood immunizations, while Chad, Guinea, and Angola had the lowest. Substantial variation across the SSA region and countries was observed, with higher immunization coverage in Southern and Eastern Africa than in Central Africa. Higher maternal age, higher education, living in urban regions, and richer households were associated with greater childhood immunization, potentially reflecting differences in access to healthcare facilities and health information. Maternal use of antenatal and postnatal care, contraceptive use, receipt of tetanus vaccination before delivery, and facility-based childbirth were also associated with higher immunization uptake, as was vitamin A supplementation among children. The authors suggested that reminders and encouragement from healthcare professionals may also support immunization uptake. These findings highlight persistent geographic and socioeconomic disparities in childhood immunization across SSA and suggest that strategies to improve coverage should account for regional differences and barriers to accessing healthcare.

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9. [Ethiopia missed opportunities for vaccination study: Cluster-randomized evaluation of 5-dose measles vaccine vials and a flexible open-vial policy, 2021-2022.](#)

Wallace A, Sugerman C, Getachew B, Matanock A, Admassu M, Kassahun T, et al.

Vaccine. 2026 Sep 11;91:129065.

PubMed ID: 42623714

ABSTRACT

INTRODUCTION: In 2024, an estimated 95,000 people died from measles globally, largely from suboptimal coverage with the measles-containing vaccine (MCV). Health workers may defer vaccinating eligible children to avoid wasting doses from 10-dose MCV vials, which must be discarded six hours after opening. These missed opportunities for vaccination (MOV) reduce coverage and timeliness. Ethiopia, which provides MCV at 9 and 15 months, considered switching to 5-dose vials.

METHODS: We conducted a 15-month, randomized controlled trial with a nested cross-sectional design in Ethiopia. Sixty woredas were randomized to: (1) policy-only, instructing health workers to open 10-dose vials for any number of eligible children, with additional stock for increased wastage; (2) 5-dose switch, combining this policy with replacement of 10-dose by 5-dose vials; or (3) control (routine 10-dose practice). Household and health-facility surveys at baseline and endline assessed effects on first-dose (MCV1) and second-dose (MCV2) coverage, MCV1 timeliness, and wastage. Generalized estimating equation models estimated net intervention effects versus control. We also estimated the government cost of a nationwide 5-dose switch.

RESULTS: MCV1 coverage was similar between policy-only and control (adjusted risk difference [ARD] = -1%, 95%CI: -17%, 15%), with no significant differences in MCV1 timeliness or MCV2 coverage. In the 5-dose switch group, MCV1 coverage changed little (ARD = 1%, 95%CI: -17%, 18%), but timely MCV1 at 9 months (ARD = 18%, 95%CI: 7%, 28%) and MCV2 coverage (ARD = 17%, 95%CI: 1%, 34%) rose significantly, and wastage fell (ARD = -7%, 95%CI: -14%, -1%). By endline, 29% of 5-dose health workers opened vials ≥ 10 times monthly (none in control); caregivers in both intervention groups reported 11% fewer measles-related MOVs. A nationwide 5-dose switch was estimated to save 17% in procurement cost per fully vaccinated (two-dose) child.

CONCLUSIONS: The combined 5-dose intervention improved MCV1 timeliness and MCV2 coverage and reduced wastage, addressing a key operational barrier and potentially supporting measles elimination in Ethiopia.

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IMPACT FACTOR: 3.4

CITED HALF-LIFE: 8.4

START COMMENTARY

A cluster-randomized controlled trial in Ethiopia evaluated the effects of a flexible open-vial policy, with or without a switch from 10-dose to 5-dose measles-containing vaccine (MCV) vials, on vaccination coverage, timeliness, and wastage. The flexible open-vial policy allowed health workers to open vials for any number of eligible children, regardless of day or time. The study randomized woredas to three groups: 1) standard of care following the existing policy with 10-dose vials, 2) a flexible open-vial policy with 10-dose vials, and 3) a flexible policy with 5-dose vials. Compared with the standard of care, the combined policy and 5-dose vial intervention increased MCV2 coverage by 17 percentage points (adjusted risk difference [ARD] 17%; 95% CI: 1%, 34%), improved MCV1 timeliness, and reduced wastage by 7 percentage points (ARD -7%; 95% CI: -14%, -1%), with greater reductions at health posts serving smaller populations. The flexible open-vial policy alone reduced caregiver-reported missed opportunities for vaccination but did not significantly improve coverage, timeliness, or wastage. Health workers in both intervention groups reported offering MCV more frequently.

Several limitations may have influenced the findings. Despite the interventions, many health workers continued offering MCV only once or twice monthly, reflecting challenges with changing established practices and staff turnover following initial training. Inaccessibility of several districts reduced sample size and precision, while disruptions associated with the COVID-19 pandemic may have affected vaccination coverage between baseline data collection in December 2019 and end of the study. Additionally, independent monitoring of vaccine supplies in the intervention groups may have influenced implementation and outcomes.

Findings suggest that combining a flexible open-vial policy with smaller MCV vials can improve vaccination coverage and timeliness while reducing wastage, particularly in lower-volume settings. Although 5-dose vials are more expensive per dose, the study's modeled costing estimate suggests that reductions in wastage and improvements in MCV2 coverage could offset higher procurement costs. Ethiopia subsequently began adopting 5-dose MCV vials in 2026, demonstrating the study's relevance to national immunization policy.

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Additional Articles of Interest

- 1 From Information to Vaccination: A Conceptual Framework for Understanding Community Participation in Catch-Up Vaccination for Children in Abidjan, Côte d'Ivoire. [{Full Article}](#)
- 2 Health System Capacity to Deliver Routine Childhood Immunisations: An Assessment of Health Facilities in Gazelle and Kokopo Districts, East New Britain. [{Full Article}](#)
- 3 High-Resolution Mapping of DTP1-3 and MCV1 Immunization Coverage and Estimates of Zero-Dose and Under-Vaccinated Children in the Democratic Republic of the Congo. [{Full Article}](#)
- 4 Beyond Efficacy: Policy, Delivery, and Equity Determinants of Long-Acting Monoclonal Antibody Uptake for Infant RSV Prevention-A WAidid Consensus Document. [{Full Article}](#)
- 5 Dengue Vaccines in a Changing Epidemiological Landscape: Current Evidence, Unresolved Challenges, and Public Health Considerations. [{Full Article}](#)
- 6 Knowledge, Attitudes, and Self-Reported Tetanus-Toxoid-Containing Vaccine Uptake Among Women Aged 15-44 Years in Ifakara Town, Tanzania: A Community-Based Cross-Sectional Study. [{Full Article}](#)
- 7 Leave no one behind: Global Analysis on monitoring childhood vaccination timeliness and catch-up using data from the WHO/UNICEF joint reporting form on Immunization. [{Full Article}](#)
- 8 Immunogenicity of fractional one-fifth and one-half doses of 17DD yellow fever vaccine compared with full dose in children aged 9-23 months in Uganda: a phase 4, single-blind, randomised clinical trial. [{Full Article}](#)
- 9 Determinants of the Number of Tetanus-Toxoid Injections Before Birth Among Pregnant Women in Somalia: A Multilevel Analysis. [{Full Article}](#)
- 10 Health communication strategies to address parental vaccine hesitancy regarding childhood vaccination in Nigeria: a systematic review. [{Full Article}](#)
- 11 Digital twins and explainable AI across the vaccine life cycle: from mRNA manufacturing to thermostability, cold-chain logistics, and immunisation services. [{Full Article}](#)
- 12 Predictors of influenza vaccination among Iranian pregnant women based on a combined Health Belief Model and Theory of Planned behavior. [{Full Article}](#)
- 13 Protect her future: Lessons learned from a school and community engagement initiative for HPV vaccine awareness in Lilongwe, Malawi. [{Full Article}](#)
- 14 Measles Vaccination Timeliness and Associated Factors Among Children Aged 9-24 Months in the Bule Hora District, West Guji Zone, Oromia, Southern Ethiopia. [{Full Article}](#)
- 15 HPV vaccine uptake in Pakistan: A qualitative study to identify barriers and facilitators before the first HPV national rollout. [{Full Article}](#)
- 16 Effectiveness of monitoring mechanisms in reducing immunization dropouts among infants in health facilities of Maridi County, South Sudan. [{Full Article}](#)

- 17 A Comprehensive Evaluation of Hepatitis B Awareness, Knowledge Gaps, Health-Seeking Behaviour, Risk Perceptions, and Vaccination Status Among University Students in Bangladesh: A Cross-Sectional Study. [{Full Article}](#)
- 18 Completion of the National Childhood Immunization Schedule and Associated Factors Among Children Aged 24-35 Months in Afghanistan: A Nationwide Analysis of MICS 2022-23. [{Full Article}](#)
- 19 Adequate tetanus toxoid immunization and its correlates among married women with a recent live birth in Afghanistan: Insights from a national survey. [{Full Article}](#)
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- 30 Absorbing the shock: the role of lower-level health facilities in immunization resilience in Sidama, Ethiopia during COVID-19 pandemic. [{Full Article}](#)

Appendix

The literature search for the October 2026 Vaccine Delivery Research Digest was conducted on September 30, 2026. We searched English language articles indexed by the US National Library of Medicine and published between August 15, 2026 and September 14, 2026. The search resulted in 540 items.

SEARCH TERMS

(((((“vaccine”[tiab] OR “vaccines”[tiab] OR “vaccination”[tiab] OR “immunization”[tiab] OR “immunisation”[tiab] OR “vaccines”[MeSH Terms] OR (“vaccination”[MeSH Terms] OR “immunization”[MeSH Terms])) AND (“logistics”[tiab] OR “supply”[tiab] OR “supply chain”[tiab] OR “implementation”[tiab] OR “expenditures”[tiab] OR “financing”[tiab] OR “economics”[tiab] OR “Cost effectiveness”[tiab] OR “coverage”[tiab] OR “attitudes”[tiab] OR “belief”[tiab] OR “beliefs”[tiab] OR “refusal”[tiab] OR “Procurement”[tiab] OR “timeliness”[tiab] OR “systems”[tiab])) OR “vaccine delivery”[tiab] OR “vaccination refusal”[MeSH Terms] OR “immunization programs”[MeSH Terms] OR “zero dose”[tiab] OR “unvaccinated children”[tiab] OR “gavi”[tiab]) NOT (“in vitro”[tiab] OR “immune response”[tiab] OR “gene”[tiab] OR “chemistry”[tiab] OR “genotox”[tiab] OR “sequencing”[tiab] OR “nanoparticle”[tiab] OR “bacteriophage”[tiab] OR “exome”[tiab] OR “exogenous”[tiab] OR “electropor*”[tiab] OR “systems biology”[tiab] OR “animal model”[tiab] OR “cattle”[tiab] OR “sheep”[tiab] OR “goat”[tiab] OR “rat”[tiab] OR “pig”[tiab] OR “mice”[tiab] OR “mouse”[tiab] OR “murine”[tiab] OR “porcine”[tiab] OR “ovine”[tiab] OR “rodent”[tiab] OR “fish”[tiab])) AND “English”[Language] AND 2026/08/15:2026/09/14[Date - Publication]