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Effectiveness of Health Mobilization Tactics in Enhancing Mass Immunization During Disease Outbreaks in Rural Delta State

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ABSTRACT

Introduction: Effective health mobilization tactics ranging from community engagement and health education to strategic media use are essential in ensuring that immunization coverage reaches herd immunity thresholds during such emergencies.

Methodology: This research adopted a descriptive cross-sectional design. This research was carried out in Isoko South and Isoko North Local Government Area of Delta State. The collected data were analyzed using software package for social scientists (SPSS) version 22.0. Ethical approval was obtained prior to the study, and informed consent was secured from all participants after explaining the study's purpose and implications.

Results: A strong majority (83.7%) of respondents (28.9% strongly agree, 54.8% agree) reported being informed about immunization by health workers, suggesting health officials are a key trusted source. The internal consistency of the six items used to measure the impact of health mobilization tactics was assessed using Cronbach's Alpha, which yielded a value of 0.737. This indicates acceptable reliability, suggesting that the items consistently measure the same underlying construct.

Conclusion: In conclusion, the findings indicate that while health worker led communication and multimodal mobilization strategies have a meaningful influence on immunization awareness and acceptance.

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INTRODUCTION

Disease outbreaks continue to pose significant public health threats, particularly in low-resource and rural settings. In Nigeria, rural communities like those in Delta State often face disproportionate challenges in accessing timely and adequate immunization during outbreaks of vaccine-preventable diseases such as measles, yellow fever, and cholera (Agbede et al., 2024). Effective health mobilization tactics ranging from community engagement and health education to strategic media use are essential in ensuring that immunization coverage reaches herd immunity thresholds during such emergencies. Understanding which tactics yield the most impact is crucial for optimizing outbreak responses in vulnerable communities (Ekezie et al., 2024).

Vaccination against a range of priority pathogens is a crucial intervention in the arsenal for protecting the public health of populations affected by crises. Vaccines can be a cost-effective approach to preventing and mitigating the impacts of infectious disease outbreaks, and reducing overall morbidity and mortality, the overarching aim of humanitarian health interventions (Ekezie et al., 2024).

However, humanitarian contexts present particular challenges to vaccine delivery, whether in the maintenance of routine vaccination or the roll-out of vaccination campaigns in response to outbreaks (Kabakama et al., 2016). In particular, these include large-scale populations' movements, overburdened and/or dysfunctional health systems, damaged health and transport infrastructure, and security risks to health staff involved in vaccination (Kabakama et al., 2016). These are in addition to other challenges that are

universal to vaccination in low- and middle-income countries (LMICs), including logistic considerations (such as the timely importation of sufficient quantity of vaccines and ensuring the cold chain from warehouse to the point of delivery in often remote, hot locations), and ensuring access to vaccination services for the most vulnerable and neglected persons (such as minority groups, young girls, and those residing in hard-to-reach areas) (Jalloh et al., 2019). One dimension that is increasingly recognized as a being critical to the success of vaccination efforts is the role of confidence, trust, and acceptance at both the community and individual levels (Kibongani et al., 2022).

Community mobilization is broadly understood as efforts to bring together "traditional, community, civil society, government, and opinion groups and leaders; and expanding collective or group roles in addressing the issues that affect their lives" (Kwemoi et al., 2024). It refers to the process of working collaboratively with and through groups of people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the well-being of those people (MacQueen et al., 2019). In the context of vaccines, community mobilization entails the active involvement of local communities - through consultation, participation, and partnership - in the planning, implementation, and evaluation of vaccination campaigns. It emphasizes building trust, promoting transparency, addressing cultural sensitivities, and enhancing community ownership of vaccination efforts, aiming to increase vaccine acceptance, address misinformation, and ensure equitable access to immunization services (MacQueen et al., 2019).

Evaluating vaccination coverage and post–mass campaign trends within Isoko Nation, Delta State, is essential for addressing vaccine-preventable morbidity and mortality among both children and adults.

Statement of problem

Despite ongoing efforts by governmental and non-governmental bodies, mass immunization coverage in many rural areas of Delta State remains suboptimal during outbreaks. Outbreaks of measles in 2022 and cholera in 2023 exposed weaknesses in health mobilization responses, including inadequate community sensitization and delayed media campaigns (NCDC, 2023). This gap has contributed to increased disease morbidity and mortality in rural communities, despite the availability of vaccines. There is limited empirical data on which specific mobilization tactics are most effective in enhancing community response and vaccine uptake during these critical periods. Consequently, public health planners often rely on generalized strategies that may not be contextually appropriate or impactful. Assessing the level of vaccination coverage and the patterns observed following mass immunization campaigns in Isoko Nation, Delta State is crucial for reducing morbidity and mortality among both children and adults.

Aim of study

To access the impact of effective health mobilization tactics for mass immunization against outbreak of diseases in Delta State

Rationale of study

Mass immunization remains a cornerstone of disease prevention, particularly during outbreaks. However, in many rural areas, vaccine hesitancy, misinformation, poor infrastructure, and distrust in health systems hinder rapid immunization efforts (Polonsky et al., 2025). Health mobilization tactics are therefore employed to bridge these gaps. In Nigeria, community mobilization often spearheaded by local leaders, traditional rulers, and trained volunteers has been instrumental in improving vaccine uptake. In Delta State, various mobilization approaches have been deployed during cholera and yellow fever outbreaks, yet the relative effectiveness of these tactics remains under-evaluated.

Mass media campaigns, social mobilizers, door-to-door outreach, and the involvement of faith-based organizations have been shown to improve immunization outcomes across sub-Saharan Africa (UNICEF, 2023). This study seeks to assess the effectiveness of different health mobilization strategies such as community engagement, media use, and health education in increasing mass immunization coverage during disease outbreaks in rural Delta State. Understanding the strengths and weaknesses of each tactic will help in designing targeted, culturally-sensitive, and evidence-based intervention models tailored for rural populations. The findings from this study will contribute to the optimization of Nigeria's outbreak response frameworks and strengthen rural immunization systems, in line with the National Primary Health Care Development Agency's immunization agenda (NPHCDA, 2023). Ultimately, the research will help reduce preventable deaths and improve health outcomes in under-served communities.

METHODOLOGY

Study design

This research adopted a descriptive cross-sectional design.

Study area

This research was carried out in Isoko South and Isoko North Local Government Area of Delta State.

Study population

The participants of this research are Isoko South and North resident parents and caregivers of under-five children.

Inclusion criteria

This research includes adult residents of Isoko North and Isoko South Federal Constituency who have lived in the area for at least six months. It includes caregivers, pregnant women, health workers, community leaders, relevant officials, and other community members involved in or affected by immunization activities.

Exclusion criteria

This research excludes participants who unavoidably absent to participate in the study and who did not consent to participate in the study.

Sample size

To calculate the sample size, the Cochrane's formula is applied;

$$n = \frac{Z^2 P (1- P)}{d^2}$$

$$n = \frac{(1.96)^2 x\ 0.562\ x\ (1-0.562)}{0.05^2}$$

n= 378

Further adjusting for 15% Non-Response Rate;

$$n = \frac{756}{1-0.15}$$

n= 890; thus approximated to 900 participants

Sampling technique

A multistage sampling approach was adopted to recruit participants from Isoko North and Isoko South Local Government Areas of Delta State in order to obtain a representative sample that reflects population variations across the two LGAs.

Initially, the two LGAs were purposively selected based on their immunization coverage levels, prevailing health challenges, and demographic characteristics. Wards within each LGA were then stratified according to population size and accessibility to ensure inclusion of both urban and rural settings. From this process, five wards were randomly selected from the ten wards in Isoko North and six from the twelve wards in Isoko South, giving a total of eleven wards.

Subsequently, two communities were randomly chosen from each selected ward, resulting in twenty-two communities across both LGAs. Within these communities, households were selected using systematic random sampling with a fixed interval of every tenth household. In each selected household, one eligible parent or caregiver was recruited for the study; where more than one eligible respondent was available, random selection was used to determine participation.

Method of data collection

The study employed a descriptive cross-sectional survey design, with data collected at a single point in time. Information was obtained through structured questionnaires administered to residents and other participants to evaluate their knowledge, perceptions, and challenges concerning immunization.

Data analysis

The collected data were analyzed using software Package for Social Scientists (SPSS) version 22.0.

Ethical approval

Ethical approval was obtained prior to the study, and informed consent was secured from all participants after explaining the study's purpose and implications. Cultural sensitivity was ensured through the use of trained research assistants and respect for local customs, with additional permission obtained from relevant health authorities and community leaders before data collection.

RESULTS

Table 1 Impact of Health Mobilization Tactics (n=887)

Variable	Frequency (n)	Percentage (%)
I have been informed about immunization by health workers		
Strongly Agree	257	28.9
Agree	487	54.8
Strongly Disagree	101	11.4
Disagree	43	4.8
Community meetings help improve awareness about immunization		
Strongly Agree	270	30.4
Agree	417	47.0

Strongly Disagree	94	10.6
Disagree	107	12.1
Radio and TV programs effectively promote immunization		
Strongly Agree	279	31.4
Agree	430	48.4
Strongly Disagree	113	12.7
Disagree	66	7.4
Posters and fliers provide useful immunization information		
Strongly Agree	241	27.1
Agree	486	54.7
Strongly Disagree	92	10.4
Disagree	68	7.6
Religious leaders support immunization campaigns in my area		
Strongly Agree	215	24.2
Agree	446	50.2
Strongly Disagree	128	14.4
Disagree	99	11.2
Mobile immunization clinics help improve access to vaccines		
Strongly Agree	203	22.9
Agree	486	54.7
Strongly Disagree	105	11.8
Disagree	94	10.6

A strong majority (83.7%) of respondents (28.9% strongly agree, 54.8% agree) reported being informed about immunization by health workers, suggesting health officials are a key trusted source. About 77.4% (30.4% strongly agree, 47.0% agree) agreed that community meetings help improve immunization awareness, although 12.1% disagreed. Nearly 79.8% (31.4% strongly agree, 48.4% agree) believe media programs effectively promote immunization, indicating that mass media is an effective communication channel. Around 81.8% (27.1% strongly agree, 54.7% agree) found posters and fliers useful for immunization information, reinforcing the importance of printed materials.

A slightly lower 74.4% (24.2% strongly agree, 50.2% agree) agreed that religious leaders support immunization campaigns, but a notable 25.6% either disagreed or strongly disagreed. About 77.6% (22.9% strongly agree, 54.7% agree) agreed that mobile clinics help improve vaccine access, although 22.4% were less convinced. Most respondents positively perceive the role of health workers, community initiatives, and media in promoting immunization. However, about 20–25% remains less confident, particularly regarding religious leader involvement and mobile clinic effectiveness. This shows good communication coverage but highlights areas where outreach could be improved.

Table 2 Reliability and Descriptive Statistics for Impact of Health Mobilization Tactics (n=887)

Statistics	Values
Cronbach's Alpha (Internal Consistency)	0.737
Number of items	6
Valid Responses (n)	887
Minimum score	6.00
Maximum score	32.00
Standard deviation	3.57

The internal consistency of the six items used to measure the impact of health mobilization tactics was assessed using Cronbach's Alpha, which yielded a value of 0.737. This indicates acceptable reliability, suggesting that the items consistently measure the same underlying construct. Descriptive statistics of the composite score (IMPACTSCORE), calculated as the total score across the six Likert-scale items, showed a mean score of 12.15 (±3.57) out of a possible range of 6 to 32. This suggests that on average, respondents moderately perceived the mobilization tactics to be impactful, though there was variability in responses. With 887 valid cases, the findings reflect a reliable and representative measure of perceived impact among participants.

DISCUSSION

The finding that a strong majority of respondents reported being informed about immunization by health workers highlights the critical role of healthcare providers as trusted messengers in public health campaigns. Health workers often bridge the gap between medical institutions and communities, particularly in low-resource settings where misinformation can spread easily (Kwaemoi, 2024; Denniss & Linberg, 2025). Similarly, the positive view of community meetings in promoting awareness aligns with evidence showing that interpersonal communication and community engagement are key to building vaccine trust. Community gatherings provide a platform for addressing fears and answering questions, which mass media alone cannot achieve (WHO, 2005).

The effectiveness attributed to radio, TV programs, posters, and flyers in this study reinforces the recognized value of multimodal communication strategies in immunization campaigns. Mass media and printed materials can reach wide audiences quickly, but must be culturally sensitive and linguistically appropriate to be most effective (Giguère et al., 2020; Ho et al., 2016). However, the lower confidence in religious leaders' involvement suggests that while faith communities are influential, their support cannot be assumed. In some settings, religious figures have promoted vaccination, while in others, they have fueled hesitancy. Tailored strategies are necessary to either strengthen alliances with religious leaders or work around opposition where it exists (Kibogani et al., 2022; Peters, 2022; Agbede et al., 2024; Rujis et al., 2013).

Finally, the mixed feelings about mobile immunization clinics reveal logistical challenges that must be addressed to improve accessibility. Although mobile services extend the reach of vaccines to hard-to-access populations, concerns about their reliability, communication, and trustworthiness must be carefully managed to optimize their impact (Pavia et al., 2024).

The moderate average impact score well above the minimum but far from the maximum indicates that health mobilization tactics are resonating with many community members, yet significant variation in responses reveals pockets of lower engagement that require attention. This aligns with a systematic review of vaccination communication strategies across African countries, which found that multimodal campaigns (including community meetings, media, and health-worker outreach) achieve only moderate improvements in coverage unless tailored to local cultural and logistical contexts (Ekezie et al., 2024; West et al., 2023). Likewise, variability in perceived impact echoes broader patterns of trust and hesitancy identified in sub-Saharan Africa, where confidence in vaccines and their promoters fluctuates widely between communities (Unfried and Priebe, 2024; De Figueiredo et al., 2023). Finally, adaptive, data-driven approaches such as those used in Madagascar's COVID-19 campaign demonstrate how continuous monitoring and locally targeted refinements can significantly boost uptake when standard methods reach their limits (Pavoncello et al., 2024).

CONCLUSION

Overall, the findings indicate that while health worker led communication and multimodal mobilization strategies have a meaningful influence on immunization awareness and acceptance, their effectiveness remains uneven, underscoring the need for culturally tailored, context-specific, and continuously adapted approaches to address trust gaps, logistical barriers, and varying community dynamics.

RECOMMENDATION

Based on these findings, immunization programs should strengthen health-worker–led communication, integrate culturally appropriate mass media and community engagement strategies, strategically engage or assess the role of religious leaders, and adopt flexible, data-driven approaches that address local logistical and trust-related barriers to improve vaccine uptake.

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