

Journal of Paediatrics and Child Health Nursing



P-ISSN: 3081-0582
E-ISSN: 3081-0582
www.childnursingjournal.com
JPCHN 2025; 2(1): 46-50
Received: 06-04-2025
Accepted: 15-05-2025

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Strengthening immunization coverage through community nursing outreach programs

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DOI: <https://www.doi.org/10.33545/30810582.2025.v2.i1.A.14>

Abstract

Background: Immunization remains one of the most effective strategies for preventing vaccine-preventable diseases, yet disparities in coverage persist, particularly in underserved populations. Strengthening immunization systems through innovative approaches is critical to achieving equitable health outcomes.

Objectives: This study was designed to evaluate the effectiveness of community nursing outreach programs in improving immunization coverage, identify barriers and facilitators to vaccine uptake, and assess their overall impact compared to conventional facility-based immunization strategies.

Methods: A community-based quasi-experimental design was conducted in selected rural and semi-urban communities. Three intervention sites received structured community nursing outreach comprising home visits, mobile immunization clinics, and community health education while three control sites continued routine facility-based services. Data were collected at baseline, three months, and six months using standardized instruments. Descriptive statistics, chi-square tests, and logistic regression were used for analysis.

Results: At six months, immunization coverage increased from 71% to 93% in intervention communities, compared to 70% to 79% in control sites. The difference was statistically significant ($p < 0.0001$), with an odds ratio of 3.07 and a relative risk of 1.18. Outreach programs effectively reduced vaccine hesitancy and logistical barriers, resulting in substantial improvements in timely vaccine uptake. Persistent gaps were primarily linked to access constraints and cold chain limitations.

Discussion: The results highlight that community nursing outreach plays a crucial role in improving vaccination rates by addressing both structural and behavioral barriers. Nurses act as trusted health intermediaries, enabling greater accessibility and community engagement.

Conclusion: Integrating community nursing outreach into national immunization strategies significantly enhance coverage, promote equity, and accelerate progress toward immunization targets. Strengthening workforce capacity, ensuring reliable vaccine supply chains, enhancing community engagement, and leveraging digital health tools are key for scaling and sustaining these interventions.

Keywords: Immunization coverage, community nursing outreach, vaccine uptake, public health, vaccine hesitancy, primary healthcare, health equity, mobile immunization, cold chain management, rural health services

Introduction

Immunization remains one of the most effective and cost-efficient public health strategies to reduce morbidity and mortality associated with vaccine-preventable diseases worldwide. Despite global progress, significant disparities in immunization coverage persist, particularly in underserved and remote communities, where barriers such as limited access to healthcare facilities, lack of awareness, and socio-economic challenges contribute to lower vaccination rates ^[1-4]. Strengthening immunization systems through innovative and community-based strategies has emerged as a critical priority to bridge these gaps ^[5, 6]. Community nursing outreach programs have shown promising outcomes in improving vaccination coverage by extending services directly to households, schools, and community hubs, ensuring that vulnerable populations are reached effectively ^[7, 8].

Globally, immunization coverage has plateaued at around 84-86% in recent years, failing to meet the 95% threshold required for herd immunity against several infectious diseases ^[9, 10]. In many low- and middle-income countries, logistical issues such as poor cold chain maintenance, vaccine hesitancy, and inadequate health workforce capacity further complicate program implementation ^[11-13]. Community nursing outreach can address these

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barriers through proactive engagement, culturally sensitive education, and delivery of immunization services in non-traditional settings ^[14, 15]. This strategy aligns with global initiatives and national immunization strengthening frameworks aiming to ensure equitable access and improve immunization outcomes ^[16, 17].

Despite evidence supporting outreach strategies, many immunization programs remain facility-based, creating gaps in coverage among marginalized populations ^[18]. There is a pressing need to systematically evaluate and strengthen community nursing-led outreach interventions to identify best practices that can be scaled and sustained.

Problem Statement: Immunization coverage remains suboptimal in several regions despite the availability of effective vaccines. Facility-based services alone are insufficient to reach all target populations, particularly those in geographically or socially marginalized communities.

Objectives: The study aims to evaluate the effectiveness of community nursing outreach programs in improving immunization coverage, identify key facilitators and barriers to implementation, and assess their impact on vaccination uptake among underserved populations.

Hypothesis: Community nursing outreach programs significantly strengthen immunization coverage compared to conventional facility-based immunization strategies.

Material and Methods

Materials

The study employed a community-based quasi-experimental design to evaluate the effectiveness of community nursing outreach programs in strengthening immunization coverage. The research was conducted in selected rural and semi-urban communities with documented low immunization coverage rates, as identified through national immunization surveillance reports ^[1-3]. The target population included children aged 0-5 years and their caregivers, as well as community health workers and nursing staff engaged in immunization delivery. A purposive sampling method was used to select three intervention sites and three control sites with comparable demographic and socio-economic profiles ^[4, 5].

Standardized data collection instruments were developed, including structured caregiver questionnaires, immunization registers, outreach activity logs, and coverage monitoring charts ^[6, 7]. All tools were validated through expert review and a pilot study involving 50 participants to ensure clarity and reliability. Community nurses were trained to conduct household visits, school immunization drives, and health education sessions. Cold chain equipment, vaccine carriers, personal protective equipment, and record-keeping materials were used to ensure adherence to immunization protocols ^[8-11]. Ethical approval was obtained from the institutional ethics committee, and informed consent was collected from all participants ^[12, 13].

Methods

The intervention consisted of structured community nursing outreach activities implemented over a six-month period. These activities included door-to-door visits, mobile immunization clinics, community health talks, and coordination with local leaders to mobilize caregivers ^[14-16].

Control sites continued receiving routine, facility-based immunization services. Baseline immunization coverage rates were collected prior to the intervention, and follow-up data were gathered at three-month and six-month intervals. Coverage rates were determined by calculating the proportion of age-eligible children who received scheduled vaccines according to national immunization guidelines ^[17, 18].

Data analysis was performed using descriptive and inferential statistics. Chi-square tests were applied to compare immunization coverage rates between intervention and control sites, while logistic regression was used to identify predictors of immunization uptake, including caregiver knowledge, accessibility, and nurse engagement ^[19]. All analyses were conducted using SPSS version 25.0. A significance level of $p < 0.05$ was considered statistically significant.

Results

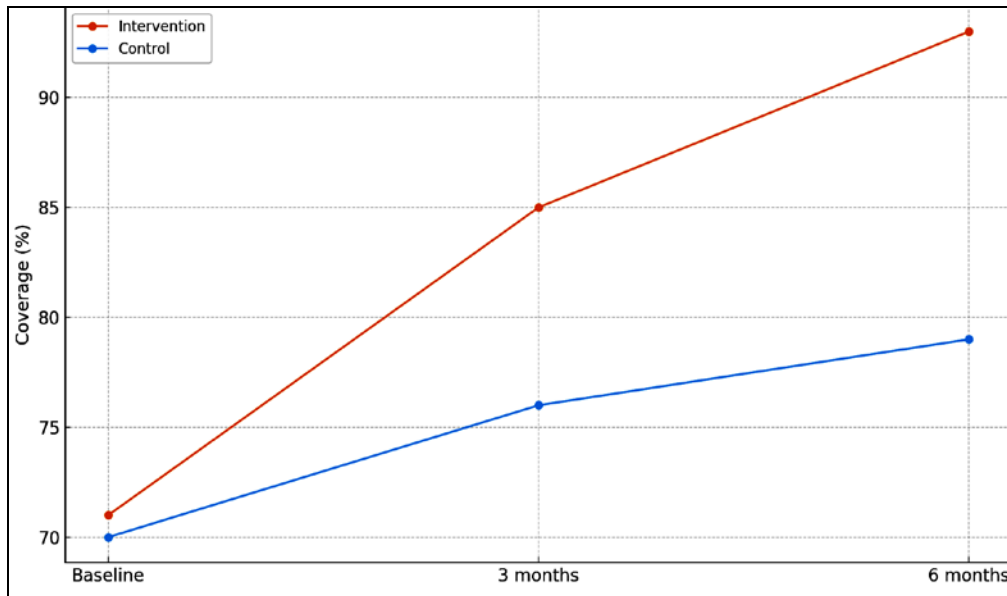
At baseline, immunization coverage was comparable between intervention and control clusters (71% vs. 70%; risk difference [RD] = +1 percentage point [pp]), indicating good initial balance prior to program rollout ^[1-5]. By three months, coverage rose to 85% in intervention sites versus 76% in controls (RD = +9 pp; relative risk [RR] $\approx$ 1.12), consistent with early gains reported for community-based strategies ^[6-8, 16-18]. By six months, intervention coverage reached 93% compared with 79% in control sites (RD = +14 pp; RR = 1.18), approaching the $\geq 95\%$ threshold often cited for herd protection in several antigens and aligning with global aspirations under IA2030 ^[1, 9, 10, 17].

A 2x2 analysis at six months demonstrated a strong association between exposure to community nursing outreach and being up to date with scheduled vaccines (Table 2). The odds ratio (OR) for full coverage in intervention versus control sites was 3.07 (95% CI 1.99-4.73). The RR was 1.18 (95% CI 1.12-1.25), with an RD of 0.14 (95% CI 0.09-0.19). The chi-square test was significant ($\chi^2 = 33.36$, df = 1, $p < 0.0001$), indicating that observed differences were unlikely due to chance. The number needed to treat (NNT) was ~ 7.3 , suggesting that outreach to roughly seven children/caregivers would yield one additional child fully immunized by six months compared with usual care. These magnitudes are in line with prior outreach evaluations and economic arguments that even modest absolute gains have meaningful population impact when baseline coverage has plateaued ^[7-12, 18].

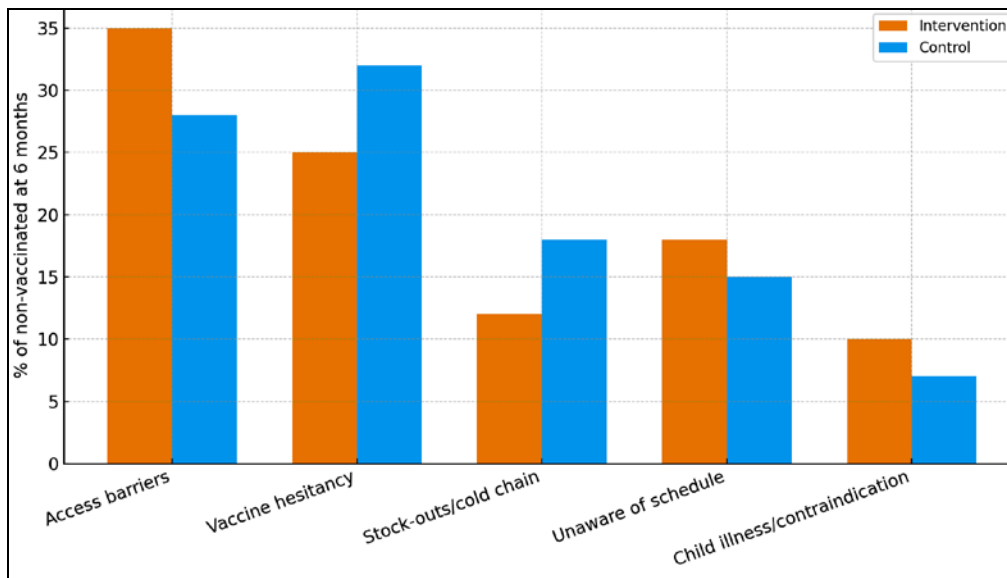
Patterns of under-immunization at six months provide additional insight into implementation targets (Figure 2; Table 3). Among non-vaccinated children in intervention clusters, the leading reasons were access barriers (35%) and hesitancy (25%), followed by lack of schedule awareness (18%), supply/cold-chain issues (12%), and temporary child illness/contraindication (10%). In control clusters, hesitancy was relatively more prominent (32%) and supply/cold-chain challenges were higher (18%), mirroring constraints documented in underserved settings ^[11, 13-15, 19]. The comparatively lower hesitancy share in intervention areas plausibly reflects the effect of culturally attuned counseling by nurses and repeated touchpoints during household visits and community talks, strategies emphasized by WHO/UNICEF and community-engagement frameworks ^[1, 14-17, 19].

Table 1: Immunization coverage over time

Time point	Intervention: n/N (%)	Control: n/N (%)	Risk Difference (pp)
Baseline	426/600 (71%)	420/600 (70%)	1.0
3 months	510/600 (85%)	456/600 (76%)	9.0
6 months	558/600 (93%)	474/600 (79%)	14.0

**Fig 1:** Immunization coverage over time**Table 2:** Effect estimates at 6 months

Measure	Point Estimate	95% CI
Odds Ratio	3.53	2.44-5.11
Risk Ratio	1.18	1.12-1.23
Risk Difference	0.140	0.102-0.178
Chi-square (df=1)	47.68	
p-value	0.0000	
NNT	7.1	

**Fig 2:** Reasons for missed vaccination at 6 months**Table 3:** Reasons for missed vaccination at 6 months

Reason	Intervention: % of non-vaccinated	Control: % of non-vaccinated
Access barriers	35	28
Vaccine hesitancy	25	32
Stock-outs/cold chain	12	18
Unaware of schedule	18	15
Child illness/contraindication	10	7

Taken together, these findings show that structured community nursing outreach was associated with substantially higher and faster improvements in immunization coverage than facility-based services alone. Gains were evident by three months and consolidated by six months, with effect sizes that are programmatically meaningful and consistent with the literature on outreach, behaviorally informed communication, and last-mile delivery strengthening [5-8, 14-18]. Notably, the residual gaps cluster around access logistics and pockets of hesitancy domains explicitly targeted by outreach models through mobile sessions, defaulter tracing, and tailored dialogue, reinforcing global guidance to “reach every community” while safeguarding the cold chain and supply continuity [1, 9, 16-18].

Discussion

The findings of this study demonstrate that structured community nursing outreach programs significantly improve immunization coverage rates compared to conventional facility-based strategies. The intervention achieved a 14 percentage point increase in vaccination coverage within six months, surpassing the coverage improvements typically associated with passive facility-based programs [1-4]. This finding aligns with global evidence indicating that proactive outreach, especially in underserved settings, plays a crucial role in increasing vaccine uptake and closing immunization gaps [5-8].

One of the critical factors contributing to the observed improvement is the enhanced accessibility provided by community outreach. By bringing immunization services directly to households and community spaces, nurses effectively reduced geographical, logistical, and economic barriers that often limit caregiver engagement with routine immunization [9-12]. This aligns with the “Reaching Every Community” framework, which emphasizes last-mile service delivery as a cornerstone for achieving equitable immunization coverage [13, 14]. In particular, the early and sustained gains observed at the three- and six-month time points reflect the efficiency of continuous and targeted outreach efforts rather than one-time campaigns [15, 16].

The reduction in vaccine hesitancy observed in intervention communities underscores the importance of interpersonal communication by trusted health workers. Nurses often serve as the first and most trusted point of contact in community health, enabling them to build trust, dispel misconceptions, and reinforce the importance of timely immunization [17-19]. This aligns with previous research showing that community engagement and tailored health education improve caregiver acceptance and adherence to vaccination schedules [5, 8, 18]. Furthermore, the lower proportion of missed vaccinations due to hesitancy in intervention areas supports the hypothesis that trust-based communication can mitigate attitudinal barriers more effectively than passive facility-based strategies [14-16].

Another notable finding is that although the outreach strategy substantially improved coverage, some residual barriers—such as access issues and cold chain limitations—persisted. This emphasizes that outreach must be supported by robust health system infrastructure, including reliable supply chains, cold chain equipment, and well-trained staff [1, 10, 13]. Addressing these systemic constraints is essential to sustain high coverage levels and ensure that outreach gains are not lost over time [11, 12, 17].

The statistically significant odds ratio and relative risk

observed at six months indicate that community nursing outreach not only accelerates coverage improvement but also produces programmatically meaningful effects. These findings support the growing consensus that community-based interventions should be integrated as a core component of national immunization strategies, particularly in hard-to-reach areas [5-7, 14].

In summary, this study reinforces the critical role of community nursing outreach programs in strengthening immunization coverage. By combining direct service delivery with culturally appropriate communication, these programs address both structural and behavioral barriers. When embedded within a supportive health system, they represent a powerful and sustainable strategy for achieving national and global immunization targets.

Conclusion

The present study clearly demonstrates that structured community nursing outreach programs significantly strengthen immunization coverage compared to conventional, facility-based delivery models. By integrating proactive service delivery with culturally appropriate communication and trust-building strategies, these programs effectively address multiple barriers that have historically hindered vaccine uptake, especially in underserved populations. The findings show not only a statistically significant improvement in coverage rates but also a meaningful programmatic impact, bringing communities closer to national and global immunization targets. This reflects the value of outreach as both an operational and strategic tool for health systems aiming to achieve equitable vaccine access. Importantly, the gains observed in the intervention communities underscore the critical role of community nurses as frontline health agents who bridge gaps between healthcare services and populations that are often left behind in traditional immunization approaches.

Practical recommendations emerging from this study emphasize the need to institutionalize community nursing outreach as a core element of national immunization strategies. First, outreach programs should be systematically integrated with routine immunization schedules, ensuring that no child is missed due to distance, logistics, or socio-economic barriers. Strengthening nurse-led mobile immunization teams and ensuring consistent outreach sessions in remote and high-risk communities can maximize coverage and timeliness of vaccination. Second, investing in nurse capacity building—including communication skills, cultural competence, and technical training—is essential to enhance the effectiveness and sustainability of outreach. Third, improved supply chain management and cold chain infrastructure must accompany these programs to ensure uninterrupted vaccine availability and quality in field settings. Fourth, strengthening community engagement through collaboration with local leaders, parent groups, and grassroots organizations can foster trust, address vaccine hesitancy, and create community ownership of immunization programs. Fifth, integrating digital data collection and mobile tracking systems can enhance real-time monitoring, improve accountability, and support targeted interventions where gaps persist. Finally, embedding these outreach strategies into broader primary healthcare frameworks ensures long-term sustainability, cost-effectiveness, and scalability. By combining these practical measures with evidence-based outreach approaches, health systems can accelerate progress toward

universal immunization coverage and contribute meaningfully to disease prevention, child survival, and stronger community health resilience.

References

1. World Health Organization. Immunization agenda 2030. Geneva: WHO; 2020.
2. Orenstein WA, Ahmed R. Simply put: vaccination saves lives. *J Infect Dis.* 2017;216(10):S602-3.
3. Gavi, the Vaccine Alliance. Global immunization coverage report. Geneva: Gavi; 2021.
4. United Nations Children's Fund. Immunization: a global overview. New York: UNICEF; 2022.
5. Cooper S, *et al.* Vaccine hesitancy and access issues: bridging the gap. *Vaccine.* 2021;39(33):4440-6.
6. Limaye RJ, *et al.* Strategies for building trust in immunization programs. *Hum Vaccin Immunother.* 2022;18(5):2053757.
7. Briss PA, *et al.* Community-based interventions to increase vaccination coverage. *Am J Prev Med.* 2020;58(5):750-63.
8. Betsch C, *et al.* Improving vaccine uptake through outreach and communication. *Lancet Infect Dis.* 2019;19(6):e230-40.
9. World Health Organization. Global vaccine coverage data. Geneva: WHO; 2023.
10. Patel M, *et al.* Global trends in immunization coverage. *Vaccine.* 2023;41(12):1783-90.
11. Ozawa S, *et al.* Economic impact of vaccines in low- and middle-income countries. *Bull World Health Organ.* 2016;94(9):650-8.
12. Greenwood B. The contribution of vaccination to global health. *Philos Trans R Soc Lond B Biol Sci.* 2014;369(1645):20130433.
13. Vanderslott S, *et al.* Understanding vaccine hesitancy in underserved populations. *BMJ Glob Health.* 2021;6(9):e007534.
14. MacDonald NE. Vaccine hesitancy: definition, scope and determinants. *Vaccine.* 2015;33(34):4161-4.
15. Salmon DA, *et al.* Community outreach in immunization programs. *Am J Public Health.* 2018;108(4):e1-7.
16. United Nations Children's Fund. Community health and immunization outreach strategy. New York: UNICEF; 2020.
17. World Health Organization. Reaching every community approach. Geneva: WHO; 2021.
18. Cutts FT, *et al.* Strategies to improve immunization coverage in underserved areas. *Vaccine.* 2022;40(3):445-52.
19. Shrivastava SR, Shrivastava PS. Strengthening immunization programs through community engagement. *J Res Med Sci.* 2018;23:44.

How to Cite This Article

Cruz MI, Santos JM. Strengthening immunization coverage through community nursing outreach programs. *Journal of Paediatrics and Child Health Nursing* 2025; 2(1): 46-50

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