Section: Miscellaneous

Original Research Article

IDENTIFY, DELIBERATE, RESOLVE, REPEAT: A CASE STUDY FOR VACCINE COVERAGE IMPROVEMENT IN NAGALAND, INDIA

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Received *: 07/10/2025*
Received in revised form *: 16/11/2025*
Accepted *: 03/12/2025*

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DOI: 10.70034/ijmedph.2025.4.459

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2025; 15 (4); 2551-2555

ABSTRACT

Background: Immunization is a cost-effective public health measure, preventing over 37 million deaths since 2000 in low and middle-income countries. Despite India's Universal Immunisation Programme (UIP) providing free vaccines, Nagaland reports a low vaccine coverage. The state's unique geographic and socio-economic challenges contribute to this, particularly in the coverage of the Pneumococcal Conjugate Vaccine (PCV). This study aims to document the comprehensive exercise to identify and address issues associated with low PCV vaccine coverage in Nagaland.

Materials and Methods: The study involved analyzing Health Management Information System (HMIS) data from January 2020 to December 2023 to identify trends and correlations in vaccine coverage rates. Key stakeholder meetings with state and district program managers, facilitated by partner organizations were conducted to understand barriers and design solutions. A two-day training session was organized in Kohima on July 4-5, 2024, focused on improving skills in microplanning, addressing PCV concerns, and enhancing Adverse Events Following Immunization (AEFI) surveillance.

Results: The HMIS data analysis revealed a PCV-1 coverage of 61.8% in Nagaland, with significant inter-district disparities. Key barriers identified included the need for refresher training, accurate headcounts, quality microplanning, and overcoming geographic and human resource challenges. The training session resulted in improved knowledge, development of district-specific action plans, and enhanced collaboration among officials and development partners.

Conclusion: The study underscores the importance of accurate data, ongoing training, and community engagement to improve immunization coverage. The collaborative approach and lessons from Nagaland can inform similar efforts in other regions, contributing to universal immunization coverage.

Keywords: Immunization, Pneumococcal Conjugate Vaccine, Coverage.

INTRODUCTION

Immunization is one of the most cost-effective public health preventive measures for countries of all income levels, preventing over 37 million deaths since 2000 in low and middle-income countries.[1] In India, routine vaccination is provided free of charge under the Universal Immunisation Programme (UIP) and aims to provide vaccines to all children and pregnant women.[2]

Despite the nationwide implementation of UIP, certain regions struggle with achieving optimal vaccine coverage. Nagaland, a mountainous state

nestled in the hills and mountains of north-eastern India is one such region. With its state capital in Kohima, the state is one of the smallest states of India with a population of 1,978,502 as per the 2011 census. It is home to 17 major tribes and a land of diverse local languages and dialects.[3]

As mentioned, delivering vaccination services to the remote regions of Nagaland is a big challenge. The Pneumococcal Conjugate Vaccine (PCV) and other antigens have lower coverage rates in Nagaland compared to other states in India. As per the National Family Health Survey (NFHS) 5, the full immunization coverage of Nagaland is 57.9%.[4]

Nagaland's unique geographic, socio-economic, and infrastructural challenges contribute to these discrepancies. The state's difficult terrain, including mountainous regions and frequent natural disasters like floods and landslides, pose significant barriers to healthcare delivery.[5] Additionally, there are systemic issues such as difficulty in conducting headcounts for target estimation, vacancies in critical healthcare positions, and multiple logistical challenges for training.[6,7]

The Health Department of Nagaland, in collaboration with development partners like JSI India, UNICEF, WHO, and UNDP, undertook a comprehensive exercise to identify and address issues associated with low PCV vaccine coverage in the state. This paper aims to chronicle the process of this exercise.

MATERIALS AND METHODS

The present study documents the various steps of a problem resolution cycle including identification of the issue, deliberation, and planning of next steps, and undertaking identified measures (Figure 1).[8] As per the delineated steps, the issue of low PCV coverage in Nagaland was analyzed using HMIS data. This was followed by key stakeholder deliberations to design solutions. Consequently, we discussed the implementation of the capacity-building domain of the identified measures here.

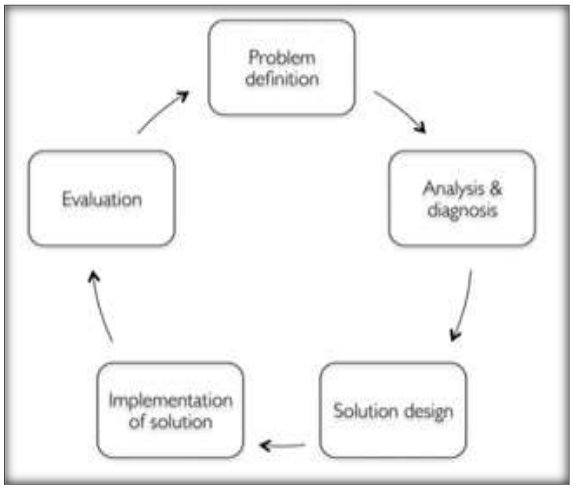

Figure 1: Problem Solving Cycle used as guide for present study

2.1 Desk Review

Data was extracted from the HMIS for the period from January 2020 to December 2023, focusing on immunization coverage rates for PCV and other key antigens. The HMIS provides comprehensive data on immunization activities across the state, including the number of children vaccinated, the number of sessions conducted, and the dropout and missed opportunity (with respect to co-administered vaccines) rates.

Quantitative data from the HMIS was analyzed using Excel to identify trends and correlations in vaccine coverage rates. Descriptive statistics, such as means and percentages, were calculated to summarize the data.

2.2 Key Stakeholder Meetings

To understand the underlying causes of low vaccine coverage, multiple rounds of meetings were conducted with state and district programme managers. The development partners (JSI India, UNICEF, WHO, and UNDP) provided technical assistance and facilitated discussions to ensure a comprehensive understanding of the issues.

The key topics discussed during these meetings included the methods used for head counts and the difficulty in conducting the same, which often lead to discrepancies in coverage and target data. Geographic and climatic challenges that might hinder effective immunization coverage were also discussed. Human resource limitations and their impact on service delivery were another significant domain that was deliberated on, emphasizing the need for regular trainings and supportive supervision. The discussions were meant to identify training needs and gaps in current knowledge and practices among program managers and healthcare workers. Additionally, issues with quality microplanning and session planning were enlisted.

RESULTS

The detailed analysis of Health Management Information System data reported Nagaland with a Pneumococcal Conjugate Vaccine (PCV-1) coverage of 61.8% (May 2023 to April 2024). The PCV coverage varied from over 90% to under 40% within the state highlighting the large inter-district disparity. Insights from stakeholder meetings revealed several key barriers to achieving high vaccine coverage in Nagaland including the need for refresher training of district officials and healthcare workers to stay informed about the latest immunization guidelines, protocols, and best practices. This might also result in another challenge of conducting head count surveys which may not correctly reflect the target population. Quality microplanning is imperative to ensure that there are no left-out children in the state of Nagaland. In the absence of quality microplanning, coverage rates might be miscalculated, leading to challenges in planning for immunization efforts.

Other potential challenges highlighted were Nagaland's rugged mountainous terrain and the frequent occurrence of natural disasters, such as floods and landslides, which make it difficult for healthcare workers to access certain areas, particularly during adverse weather conditions. Consequently, some communities may become isolated for extended periods, interrupting the continuity of immunization services and contributing to lower vaccine coverage. Another challenge faced by the state put forth was the shortage of essential healthcare personnel, including medical officers and Auxiliary Nurse Midwives (ANMs).

Additionally, it was discussed that addressing these gaps in quality microplanning is crucial for optimizing the reach and efficiency of immunization programs in the state.

3.1 Resolution-

3.1.1 State level training session

A two-day training session was held in Kohima on July 4-5, 2024, targeting district and state immunization officials and program managers. The session aimed to enhance the skills and knowledge of the attendees. The key areas covered during the training included:

- National Immunization Schedule: The training session commenced with a detailed session on the Immunization Schedule followed under the UIP. Field scenarios and individual queries were taken up and explained by the trainers.
- Microplanning: The session provided detailed training on microplanning techniques, which will allow officers to help FLW develop and implement effective immunization plans tailored to local needs. This included identifying target populations, planning vaccine logistics, and scheduling vaccination sessions.
- PCV FAQs: To address common concerns and misconceptions about the Pneumococcal Conjugate Vaccine (PCV), the training included a session on frequently asked questions. This helped clarify doubts and provided officers with the necessary information to educate and reassure the community.
- AEFI Surveillance: The training emphasized the importance of monitoring Adverse Events Following Immunization (AEFI). Officers were trained on how to identify, report, and manage AEFI cases to ensure vaccine safety and build public trust.
- Communication Planning: To enhance community engagement and awareness, the session included strategies for effective communication planning. Officers learned how to design and implement communication campaigns to promote immunization and address vaccine delivery issues.
- Session Planning: The training focused on optimizing the delivery of immunization services. This included planning and organizing vaccination sessions to ensure smooth and efficient operations, minimizing wait times, and maximizing coverage. It was suggested that tailored session timings should be used depending on local conditions and suitability.
- MO Handbook Recap: A comprehensive recap of the Medical Officer (MO) handbook for immunization was conducted. This ensured that all officers were up-to-date with the latest guidelines and protocols, enabling them to provide accurate, consistent, and updated information during immunization campaigns.

3.1.2 Cascade Refresher Training

The training session facilitated better communication and collaboration between state and district officials, as well as with development partners. This improved coordination aims to enhance the overall effectiveness of immunization programs. As a follow up to the State level training session, district level trainings of trainers for refresher training in routine immunization were undertaken in every district of Nagaland between July and October 2024. This resulted in cascading of the refresher training to reach the front-line health workers.

3.1.3 Headcount Survey, Microplan revision and session rationalization

As part of the district level training effort, each district developed specific action plans to address the identified barriers. This was in line with the directive from state officials to report back on the actions taken to improve vaccine coverage. This created a feedback loop to ensure continuous monitoring and improvement. The follow-up process includes regular progress reports, a review of coverage of all the antigens, and evaluations to assess the impact of the implemented strategies. These plans included strategies for improving head count accuracy, enhancing outreach to difficult-to-reach areas.

In accordance, head count survey was conducted throughout the state aimed as “not leaving a single child behind”. Additionally, a comprehensive exercise was undertaken to revise microplans and simultaneously rationalize session sites with an aim of improving coverage in the state.

3.1.4 Ensuring monthly review meetings

Following the training session, state officials issued directives to district immunization officers to ensure regular monthly review meetings as part of supportive supervision to ensure coverage improvement through data driven identification of difficult to reach areas.

Figure 2: Newspaper coverage of the training on RI and PCV coverage improvement plan in Kohima, Nagaland

DISCUSSION

The study identified several critical barriers to achieving high vaccine coverage in Nagaland, including inaccurate head counts, geographic challenges, limited human resources, and inadequate microplanning. A number of measures were undertaken to address identified issues in an attempt to improve immunization services.

Collaboration with development partners and continuous follow-up are essential to sustaining the improvements achieved through this initiative. Previous studies have consistently brought to fore the importance of close collaboration between partners resulting in the successful implementation of immunization service delivery.[9,10] Following the state-level training sessions, district-level trainings of trainers were conducted across all districts in Nagaland. Previous studies have demonstrated that providing comprehensive refresher training to representatives from each district would potentially culminate into improved vaccine service delivery.[11,12]

In addition to training, each district developed specific action plans to address identified barriers to immunization coverage. Strategies included conducting headcount surveys, revising microplans to enhance outreach to hard-to-reach areas. A previous study on routine immunization microplanning in low- and middle-income countries highlighted the importance of tailored action plans in addressing local challenges and improving immunization outcomes.[13] Revising microplans and rationalizing session sites aimed to improve immunization coverage in the state is an approach consistent with findings from another study in Kano State, Nigeria, where revised household-based microplanning led to a 38% increase in the number of settlements enumerated and a 54% reduction in target children, resulting in improved immunization outcomes.[14] Furthermore, regular review meetings, reinforced in Nagaland are essential for monitoring progress, identifying challenges, and implementing corrective actions promptly. Previously, CDC has emphasized the importance of such strategies in increasing vaccination rates within healthcare practices, highlighting that regular performance reviews and data analysis are critical components of effective immunization programs.[14]

Despite our best efforts, the present study has some limitations. Although we tried to document the entire problem resolution cycle, we were unable to include the long-term evaluation and follow-up of the measures undertaken. Additionally, we could not deep dive into sub-district level issues and challenges.

In summary, the cascade refresher training, combined with district-specific action plans, comprehensive microplanning, and regular review meetings, has strengthened the immunization program in Nagaland. These initiatives have enhanced coordination among stakeholders, improved the accuracy of target population estimates, and facilitated data-driven decision-making to address immunization challenges effectively.

CONCLUSION

Future efforts should focus on maintaining accurate data, enhancing disaster preparedness, coordination with the line departments and providing ongoing training and support for healthcare workers. Additionally, increasing community engagement and awareness about the importance of immunization will be crucial for achieving long-term success.

This study highlights the importance of a coordinated and comprehensive approach to tackling public health challenges. The lessons learned from Nagaland's experience can be applied to other regions facing similar issues, contributing to the overall goal of achieving universal immunization coverage.

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