

Original Research Article

Process evaluation of recruitment and retention strategies in a cohort study: qualitative insights from a rural site in Telangana, India

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ABSTRACT

Background: Longitudinal cohort studies are important for generating evidence on disease patterns, risk factors, and outcomes, informing public health policies and interventions. However, participant recruitment and long-term retention pose significant challenges, particularly in rural and resource-limited settings. Maintaining participant engagement over extended periods is essential to ensure data validity in such studies. Effective recruitment and retention strategies, tailored to the study design, population characteristics, and setting are therefore crucial. At our site, a robust recruitment and retention plan contributed to a high retention rate of 99.6%.

Methods: This study presents a qualitative process evaluation from a rural site in Telangana, which was part of a multicentric cohort study designed to estimate the incidence of acute febrile illnesses, including dengue, over 12 months. In-depth interviews and focus group discussions were conducted with 20 stakeholders, including program personnel, field staff, community health workers, and participants. A manual thematic analysis was performed based on the transcribed interviews.

Results: The study identified key facilitators for recruitment and retention, including strong community engagement, support from CHVs and village leaders, cultural sensitivity, flexibility in follow-ups, and a participant-centered approach. Major challenges included participant fatigue, seasonal migration, reluctance to provide blood samples during illness, limited incentives, and increased documentation burden. Strategies like addressing broader health needs, medical camps, and capacity-building trainings enhanced trust and engagement.

Conclusions: The findings from this study offer valuable insights into context-specific strategies that can inform the design and implementation of future cohort studies in similar rural environments, thereby ensuring high retention and data quality with minimal attrition.

Keywords: Cohort studies, Longitudinal studies, Retention strategies, Community engagement

INTRODUCTION

Evidence-based public health requires reliable, high-quality data generated through various appropriate study designs. Longitudinal cohort studies appear third in the

evidence pyramid for research studies.¹ This study design tracks the progression of a condition from exposure to a risk factor to the development of an outcome. They are critical in establishing an association between risk factors and the condition, calculated via the risk ratio. Cohort

studies typically run for long durations (months to years), which makes the retention of the study participants challenging. Challenges can be due to the long duration of the study, repeated assessments, or population characteristics (mobile age group, migrant population).^{2,3} However, the retention rate is an important determinant of the quality and strength of the results obtained in a cohort study. Careful recruitment of participants and retention of enrolled participants becomes paramount to obtain good retention rates. Context and population-specific recruitment and retention strategies are essential to ensure good follow-up through the study period and maximize the retention rate. Additionally, good retention rates reduce the scope of data manipulation and fraudulent results. Missing data due to attrition and loss to follow-up may result in reduced statistical power, affecting the study's internal and external validity.^{4,5} Satisfactory retention rates also demonstrate the efficient use of funding and resources, highlighting the credibility of the study site to funding agencies and stakeholders.⁶ This opens opportunities for collaborations and future projects.

A multicentric longitudinal cohort study conducted between 2023 and 2024 across 10 sites in India aimed to estimate the incidence of acute febrile illnesses in people aged 2 years and above. At our site in Telangana, 770 participants aged >2 years were enrolled, and baseline blood samples were collected to assess dengue and chikungunya seroprevalence. Weekly follow-ups over 52 weeks identified febrile episodes (>38°C lasting >48 hours), during which acute, follow-up, and convalescent blood samples were collected. Laboratory investigations assessed malaria, dengue, chikungunya, enteric fever, leptospirosis, and scrub typhus, while endline samples reassessed seroprevalence. Of the 770 enrolled, 10 died and 757 completed follow-ups, yielding a 99.61% retention rate. The study involved rigorous follow-up, which necessitated strong community support and high levels of compliance throughout the study. The present study aimed to conduct a post-study qualitative evaluation to describe and analyze on the recruitment and retention strategies adopted at our site.

METHODS

Study design, sampling method and sample size

A qualitative study was conducted with the staff involved in the implementation of the study. Purposive sampling was employed to ensure that the required insights and information were obtained. An a priori sample size of 3 focus group discussions and 7 in-depth interviews was decided. Theoretical saturation was reached at 3 focus group discussions and 5 in-depth interviews.

Study time period and setting

Data collection was conducted after study completion, between June and July 2025. Interviews with research staff were held in the research office, while interactions

with village leaders and community health volunteers took place in their homes and common village office space, respectively.

Study participants

The study participants included field staff, program personnel, community health volunteers (CHVs), and village leaders. The field staff included data collectors, who were high school graduates trained in health research data collection, and phlebotomists, who held diplomas in medical laboratory technology. The project personnel were postgraduates in social work and public health. The community health volunteers were tenth-grade graduates with a contractual job in the government health system. The demographic details of the participants are provided in Table 1. The study participants were involved in the entire gamut of project implementation, from recruitment, follow-up, to endline sample collection.

Table 1: Age and gender details of participants.

Age group (Years)	Female	Male	Total
18–25	3	0	3
26–35	5	0	5
36–45	7	2	9
≥46	0	3	3
Total	15	5	20

Inclusion and exclusion criteria

Inclusion criteria included field staff who had been actively involved in implementing the project since its inception, project personnel who played a role in planning, supervising, or executing various components of the study, community health workers engaged in participant mobilization and outreach efforts, and village leaders who contributed to community mobilization and provided support for project activities.

Exclusion criteria included field staff who left the organization before the completion of the project, project personnel who were present in the project for only part of the project duration, and any staff or community workers who did not consent or were not available to participate in the focus group discussions or in-depth interviews.

Data collection method

Qualitative data were collected through physical, face-to-face in-depth interviews (IDIs) and focus group discussions (FGDs). Interview guides were developed by the research team through discussion and tailored to explore key components of the recruitment and retention process. It included open-ended questions and probes to elicit detailed responses. All the interviews and discussions were conducted in Telugu (local language) (except for the in-depth interview with the medical officer, which was conducted in English). The

interactions lasted for 30- 45 minutes. The interviews included the participants, a moderator, and a note-taker. Field notes were taken by the note-taker and moderator. The interactions were audio-recorded using a digital audio recorder.

The qualitative evaluation included 3 focus group discussions (FGDs) and 5 in-depth interviews (IDIs).

Details of the FGDs are as follows:

FGD-1 was conducted with 5 data collectors involved in household visits and participant tracking.

FGD-2 was conducted with 5 phlebotomists who were involved in sample collection and follow-up.

FGD-3 was conducted with 5 community health volunteers (CHVs) who supported participant engagement and mobilization activities.

Details of the IDIs are as follows:

Two in-depth interviews were conducted with program personnel involved in the implementation and coordination of the cohort study, Three in-depth interviews were held with village leaders from the five villages involved in the study.

Ethical considerations

Ethical approval was obtained from the ethics committee of MediCiti Institute of Medical Sciences. (Ethics approval number-Approval/EC21/VI2K25/14). Written informed consent was obtained from all participants, and they were assured of confidentiality. Personal identifiers were removed during analysis to maintain participant privacy.

Data processing and analysis

The audio recordings of the interviews and focus group discussions were transcribed and translated by the principal investigator and reviewed by the co-investigator. The note-taker's notes were reviewed and insights were incorporated in the analysis. The data was de-identified to preserve privacy and confidentiality.

A manual thematic analysis was conducted. Three authors independently reviewed the transcripts to ensure researcher triangulation and minimize bias. An iterative process was followed, with initial codes developed from the interview guides and refined inductively into sub-themes and broader themes aligned with the study aims. Memos were maintained to document coding decisions. This ensured researcher reflexivity, transparency and accountability. Regular discussions were held to resolve discrepancies, achieve consensus, and ensure consistency and depth of interpretation. The results were reported in

accordance with the Standards for Reporting Qualitative Research (SRQR) guidelines.⁷

RESULTS

The results were organized under three main themes: facilitators to recruitment and retention, barriers to recruitment and retention, and recommendations for future studies. Sub-themes identified under the themes are described in Table 2. Table 3 summarizes the retention Strategies categorized according to the standardized framework

Facilitators to recruitment and retention

Community engagement and trust

Community engagement emerged as a critical factor in participant recruitment and retention. A community advisory board comprising CHVs and village heads was established before the start of the study. Regular community advisory board meetings were held. The village heads and the volunteers were apprised of the study's progress. Proper feedback mechanisms were implemented, and problem troubleshooting was done regularly. Any additional needs of the community were ascertained from the volunteers and appropriate steps were taken to meet them.

“We were given proper information about what was going on in the project from time to time. This gave us confidence that the project is benefiting our people.” – Village Leader

“Some people used to ask me to check their BP and sugar levels frequently at their homes. So, when I asked Sir (Field Manager) if I can keep the equipment with me till the study ended, he readily agreed. This was very useful to gain trust of the participants and make them feel cared.”

A field team consisting of a data collector, a phlebotomist, and a community health volunteer was assigned to each village. The same team continued the follow-up throughout the year, which helped increase familiarity and foster a bond with the participants. The team took ownership of their respective villages, ensuring they achieved the best results from their cluster. Participants, especially the elderly, looked forward to these interactions.

“We had already visited most houses multiple times; they knew our faces and welcomed us.” – Data Collector

Support from CHVs and village health leaders

The involvement of CHVs and village heads significantly enhanced participation and trust. The village heads and their families also participated in the study, encouraging the community to participate while building trust and

credibility. CHVs, being native to the study villages and part of the public health system, played a pivotal role in mobilizing participants. Their familiarity with local dialects and customs helped ease communication.

“People listened to us because we live among them; they asked us first before agreeing.”-CHV

“When the sarpanch and ward members came with us and explained the study, people were more willing to join and cooperate.” – Data Collector

“I personally informed families about how this will help their children; that’s why they trusted.” – Village Leader

Socio-cultural compatibility and sensitivity

All field staff spoke the local language and respected the cultural norms of the community. This cultural competence strengthened relationships and encouraged continued engagement. The follow-up visits were not merely a study requirement but became an opportunity for participants (especially women and the elderly) to interact and share their problems with the field staff. Participants often expressed appreciation through gestures like sharing farm produce or inviting staff to personal events.

“They treated us like family. They used to call us and give us a lot of seasonal fruits from their farm.” – Data Collector

Flexibility and adaptation

Teams adjusted their visit timings around agricultural cycles and individual availability to maintain follow-ups.

“Even when it rained or people were out for farming, our team adjusted timings to ensure weekly visits.” – Program Personnel. “We visited early mornings or evenings depending on their availability, especially during harvesting season.” – Data Collector

Team dynamics and motivation

Weekly team meetings were organized, which focused on quality improvement and mutual support. Program personnel ensured active supervision and prompt resolution of field issues. This contributed to the smooth implementation of the project.

“We were appreciated during team meetings when someone did well. That kept us motivated to keep going.” – Phlebotomist

“The team lunches were fun. It gave us some break and relaxation, and we could get back to work with a fresh mind”- Data Collector

The field manager regularly accompanied and monitored the staff, which ensured accountability, oversight, and immediate resolution of any issues in the field. A medical professional's presence during field activities also enhanced credibility and participant assurance.

Participant-centered approach

The field staff addressed broader health issues, which built goodwill and contributed to retention.

“People told us, even if we go to private clinics, they won’t take this much care. That’s why they stayed till the end.” – Village Leader

Challenges to recruitment and retention

Participant fatigue

Since the study required a long follow-up duration of 52 weeks, participant fatigue was a challenge that the team encountered as the study progressed. Some participants grew weary of continued interactions. *“After 6 months, some started asking why we were still coming every week.” – Data Collector.* This was managed by using different strategies during the follow-ups, like addressing other health-related concerns or any other issues that required liaising with the village health leaders. This deepened trust and kept the participants engaged.

Migration during harvest seasons

Participant mobility during farming seasons posed challenges in maintaining consistent follow-up. *“During peak farming time, many left for work in other places, we had to track them or wait.” – CHV*

Blood sample collection during illness/fever

Drawing blood during febrile episodes, especially among pediatric and geriatric participants, led to discomfort and reluctance. This was a challenge, especially among the pediatric and geriatric participants, since they did not cooperate due to existing pain and discomfort.

“Few were scared about blood tests being frequent; they thought it might weaken them.” – Phlebotomist “In the beginning, people thought we were taking blood for some other use. But after repeated visits and explaining, they trusted us.” – Phlebotomist.

This was overcome by regular visit and counselling by a medical professional. This helped to reduce hesitancy among parents and assured them of good medical support, which led to good retention till the end of the follow-up period.

Limited incentives

The participants expected some incentive for being part of the cohort, apart from the medical support provided. This was not part of the protocol, and it was at times difficult to continue visits in the absence of material incentives.

“Participants expected other than the medical support and tests conducted, like financial incentives.” – Program Personnel

Increased documentation

The combination of written and digital documentation created difficulties for the field staff. Some steps required increased documentation and repeated entries, leading to decreased efficiency.

“Sometimes we spent more time filling forms than talking to people.” – Field Investigator.

This was overcome by regular refresher training and the distribution of work among the staff to reduce the burden.

Table 2: Extracted themes and subthemes of the study.

Themes	Sub-themes
Facilitators to recruitment and retention	Community engagement and trust
	Support from CHVs and village health leaders
	Socio-cultural compatibility and sensitivity
	Flexibility and adaptation
	Team dynamics and motivation
	Participant-centred approach
Challenges to recruitment and retention	Participant fatigue and dropout risk
	Migration during harvest seasons
	Blood sample collection hesitancy
	Misconceptions and mistrust
	Limited incentives and high documentation burden
Recommendations for future studies	Integrated health approach
	Community awareness and IEC
	Capacity building and sensitization
	Operational improvements

Table 3: Retention strategies categorized according to standardized frameworks.

Standardized framework category	Strategies used in our study
Barrier-reduction strategies	Flexible scheduling around agricultural cycles
	Addressing broader health needs
	Using local CHVs and village leaders for communication
	Health camps and referral support
Community-building strategies	Establishment of community advisory board
	Repeated home visits by familiar teams
	Culturally appropriate communication
	Emotional support during interactions
Follow-up / reminder strategies	Weekly home visits by assigned teams
	Regular feedback and supervisory meetings
	On-site medical professional support
Tracing strategies	Coordination with village leaders
	Leveraging local networks for participant whereabouts
	Maintaining bonds for voluntary updates

Recommendations for future studies

Integrated health approach

Beyond the study objectives and requirements, initiative was taken to address other health ailments of participants

and guide them on appropriate management. The weekly follow-up visits greatly aided the in non-communicable disease monitoring, like diabetes and hypertension. Lifestyle modifications were recommended, and necessary adjustments to medications were made in consultation with a physician whenever required.

Emotional and mental well-being needs of the participants were also supported. Many women shared their problems and confided in our field staff. We also provided counseling and support in cases of marital discord and alcohol addiction issues.

“The guidance and medical advice provided from our side made them trust us. They believed that we were not just using them for research purposes, but actually cared for them.” - Data Collector

This approach enhances participant trust and makes the follow-up and retention easy.

Medical camps, health awareness, and advocacy

Medical camps were conducted at some of the study village with organizational support. The participants and other village members could consult specialist doctors for their ailments and seek referrals/ treatment. This also included awareness sessions on nutrition and WASH components to prevent seasonal infectious diseases and maintain a healthy lifestyle.

“The strategy of conducting health camps was very good. It left a mark in the minds of the people and will help to conduct future studies in the community.” – Project Personnel

This ensured that the entire village and not just the study participants were benefitted. The strategy helps to gain the support of the village leadership and the village residents.

Innovative capacity building methods

Training modules incorporated culturally appropriate communication strategies and responses to community resistance.

“The trainings by Sir and Madam were helpful. We were able to handle villagers when they are angry or doubtful.” – Phlebotomist

Apart from regular project protocol trainings, the inclusion of communication methods, scenario-based discussion and role-play methods for the trainings makes field staff confident.

DISCUSSION

The retention rate in cohort studies reflects the extent of the study team's community engagement. Recruitment and retention of participants are determined by various factors, such as careful selection of participants, cultural competence of the researchers and field workers, benefits provided during the study, stakeholder support, and smooth transition at the end of the study. The high retention rate in this study was attributed to strong

community engagement, regular home visits, and a combination of tailored retention strategies.

Retention strategies used in longitudinal studies have been documented in a systematic review and meta-analysis by.⁶ The review categorized strategies into barrier reduction, community-building, follow-up/reminder, and tracing strategies. The meta-analysis found that barrier-reduction strategies worked best to improve retention rates. The barrier reduction strategies described in the review are similar to those identified from our qualitative analysis. However, Indian and South Asian studies were poorly represented in the review.

Longitudinal cohort studies assessing the prevalence of febrile illnesses performed in India and neighbouring countries achieved retention rates of 44.4%, 8 95.9%,9 99.3%,10 and 90 %.¹¹ Some of the studies described retention strategies used, which were akin to the ones identified through our analysis. However, the study by Nayak et al did not include blood draws.⁸ This indicates that the component of the blood draw plays an important role in the retention of participants.

The cohort study by Nayak et al also followed similar strategies as our study, but additionally, participants received a cash incentive, which further strengthened the retention rate.⁸ In our study, though we did not provide any incentives in cash incentives, the support provided to the participants for their health needs was a crucial step in garnering support and maximizing retention rate. Our holistic health approach, which included routine blood pressure and sugar checks and connecting participants to healthcare for all family members, helped build trust and rapport with the field team.

The study by Tissera et al, which achieved a high retention rate of 99.3%, employed multiple retention strategies, including weekly and telephone contacts, scheduled clinic visits, unscheduled visits as needed, and compliance monitoring, all of which contributed to maintaining participant engagement over the extended follow-up period.¹⁰ This is comparable to our approach and sustained community engagement efforts, which led to a retention rate of 99.6%. The dedication of the field team was reinforced by program staff supervision and weekly feedback loops.

A qualitative study by Jong et al investigated adolescent perspectives on participation in longitudinal studies.¹² The results indicated that social connections and financial incentives played a significant role in their decision to participate. Lack of interest and time commitment were identified as barriers to participation. During our interviews, we also found that some participants, though interested, could not take part due to time constraints. Others chose not to enrol unless some of their relatives were also part of the cohort. This highlights the role of social connections and mutual trust within the

community, factors which should be considered during participant recruitment.

Bailey et al conducted a qualitative study among research staff, stakeholders, and participants of a study in the Caribbean region to identify best practices for achieving good enrolment and retention rates in cohorts.¹³ The findings indicated that strong interpersonal skills, cultural competence, and the proficiency of field staff were key factors in attracting participants. In our study, we emphasized thorough training and the use of skilled personnel to conduct field activities, which increased participants' confidence and contributed to achieving a high retention rate.

CONCLUSION

Recruitment and retention strategies in a longitudinal cohort study should be devised based on the local context and the needs of the study population. Building good communication and rapport with participants is essential to ensure they stay engaged throughout the study. The present study emphasized the importance of trust-building through community involvement, familiar field teams, and the role of CHVs and local leaders in participant mobilization and follow-up.

A supportive work environment with strong team dynamics helps reduce staff turnover and maintain continuity. Regular team meetings, supervisory support, and cultural competence contributed to a motivated workforce and built strong relationships with the community. This strengthened connections by fostering familiarity and sustained bonds throughout the follow-up period. Involving every member of the study team, including investigators, promotes unity and ensures everyone works together to achieve the study's goals. High retention rates reflect the team's dedication, enthusiasm, and the depth of the community's voluntary involvement in the study.

While working with resource-poor rural populations, it is important to consider their overall health needs and cater to them or connect them to services. Integrating health support during follow-ups, addressing concerns around blood draws, and offering regular counselling contributed to minimizing dropouts and promoting long-term engagement. Research with communities is an opportunity to build trust and give back to the community; it should not be of a transactional nature.

The findings from the present study provide insights into the on-ground realities, strategies, and challenges that field workers face while working with participants for a long-duration cohort study in a rural part of South India. The findings can serve as a framework for making the best use of limited resources in achieving strong retention rates in longitudinal cohort studies conducted in rural India.

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