Review Article

Conducting community-based pediatric research in rural India: Experience from vadu rural health program

Aditi Apte, Girish Dayma, Himangi Lubree, Anand Kawade, Sanjay Juvekar, Ashish Bavdekar

Vadu Rural Health Program, KEM Hospital Research Centre, Pune, Maharashtra, India.

Abstract

This paper describes unique challenges faced during conduct of community research studies in rural population of Maharashtra at Vadu Rural Health Program, Pune, India. Some of the ethical issues faced include difficulty in comprehending the informed consent by rural families with low education levels and ensuring adequate compensation for study participation without undue inducement, ensuring large number of recruitments during early infancy, ensuring adherence to intervention by care-providers, retention of participants especially in studies having long follow-ups and regulatory compliance for serious adverse event reports are major operational challenges. The delays faced in approvals from the Health Ministry Screening Committee and lack of specific regulatory guidance on community-based conduct of studies pose challenges in terms of study timelines and operational aspect of these studies. Provision of study-related information during prestudy visits, designing patient information sheets in simple language, involving the decision-making member of the family, adequate time for families for decision-making are certain measures that have been useful for effective informed consent administration. Collaboration with accredited social health activists and auxillary nurse midwives for line-listing of pregnancies and births and regular conduction of prestudy visits or community sensitization meetings have been useful for the recruitment of large number of study participants during infancy. Strategies such as provision of universal immunization, selection of field research assistants from the local population, regular home visits, and provision of medical care has been helpful in retention of the study participants. Networking with local health facilities and local government bodies has helped in the provision of medical care to the study participants and in the management of serious adverse events. Our experience can provide important learnings to other investigators from developing countries working in the domain of child health.

Keywords: Challenges, children, field, population-based

Address for correspondence: Dr. Aditi Apte, KEM Hospital Research Centre, Sardar Moodliar Road, Rasta Peth, Pune - 411 011, Maharashtra, India.
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INTRODUCTION

Community-based research studies are often conducted for testing various public health interventions and for generating epidemiological evidence base for policy decisions. This evidence base is beyond that obtained by individual-based clinical studies which are designed to test an intervention in a specific disease condition in specific population settings. Community-based study aims to further assess generalizability of the health intervention in a population, thus moving from medical approach toward public health

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approach.[1,2] Several important public health interventions for child health such as oral rehydration solution and zinc for diarrhea, vaccines for the prevention of childhood infections and micronutrients for prevention of anemia have emerged through community-based research studies.

Field clinical investigations especially amongst children in a rural community of a developing country like India are always in the context of community practices of child rearing, social, and cultural beliefs and concept of health and disease in the community perspective.[3] The complexities in conduct of large research studies in such vulnerable population of developing countries are sparsely reported in Indian literature.

We describe here challenges and lessons learnt during experience of conducting community-based pediatric research studies in rural Maharashtra.

VADU RURAL HEALTH PROGRAM

Vadu rural health program (VRHP) is an outreach program of KEM Hospital Research Centre, Pune established since 1970 and is an example of public (State Government of Maharashtra) and private (KEM Hospital, Pune) partnership. Since the last three decades, VRHP has been involved in community research of national and international relevance in child health among rural population of Maharashtra[4] These include landmark vaccine studies,[5-7] nutritional intervention studies,[8-10] and disease burden studies.[11,12] Some of our experiences and learnings have been described here.

REGULATORY AND ETHICAL ISSUES

Approvals

Vaccine studies require approval from the Drug Controller General of India and many studies that require transport of bio-samples outside the country or are funded by foreign funders, have to undergo Health Ministry Screening Committee approval after obtaining institutional ethics committee approval. There have been instances of significant time lost for getting these approvals leading to delay in initiation of the field activities. This has even led to cancellation of some studies from the international sponsor or funder. Based on our experience, the approval processes can be started early in the course with at least 3–4 months of expected time lag that can be anticipated.

Another challenge encountered while obtaining ethics committee approvals is that, for regulatory studies, institutional ethics committees are eligible for providing oversight for clinical trial sites within the same city or within the area of 50 km from its location.[13] The new drug clinical trial guidelines lack specific guidance on the status of peripheral study centers, mobile clinics, or satellite sites that may be established during community-based studies for convenience of study participants. Unlike hospital-based studies, in order to enable simultaneous recruitment of large number of study participants, some study-related activities including informed consent process, review, and management of adverse events may have to be delegated to trained and experienced study staff under the supervision of the study investigators. This has led to ambiguity during regulatory inspections in the past and detailed clarification had to be provided by the study investigators.

Issues in administration of informed consent

Research in children is different from adult research as the decision makers for study participation are not study participants themselves. Further, while carrying out studies in children, all possible efforts need to be made to minimize risks and safeguard the health and wellbeing of children as principles of autonomy and nonmaleficence are at maximum stake. This takes into consideration social recognition of parental role and agreement within the parents or parents and guardians about the child's participation in the study.[14] In our experience, the parents are often fearful of doing wrong to the child and parents with low education levels find difficulty in understanding risks and benefits of the study. We have experienced consent refusals in about 6% individuals in a pooled data of 2227 study participants. The reasons for refusal to participate as perceived by the study personnel are shown in Figure 1. The provision of study-related information to the families during prestudy visits have helped to reduce consent refusals. In addition, careful designing of the patient information sheets into simple language, pictorial depictions, involving the decision-making member in the process, adequate time for the families to read the informed consent document, offering families to discuss with their family physician have been useful measures for effective informed consent administration.[15] Figure 2 shows the challenges that we experience during conduct of the informed consent and the solutions that were found to be helpful.

Compensation for study participation

On the one hand, compensation for study participation is essential to facilitate flow of recruitment and retention for the study. On the other hand, substantial compensation amounts can induce parents for participation of their children.[16,17] In the context of rural communities of low- and middle-income countries, minimal financial compensation provided to study participants can be viewed

as an undue inducement for the poor families.[18,19] The institutional ethics committee play a major role here in ensuring that the compensation is not too small or too large.

In our practice, we include a fixed moderate amount of compensation for every study clinic visit (Rs. 300–500 per visit) that is equivalent to loss of wages and travel cost for an average study participant. The costs are approved by the institutional ethics committee and are clearly mentioned in the written informed consent and explicitly told during consent process. In our experience, for studies on public health interventions which are addressing the health care needs of young children or addressing national health priorities, moderate amount of study compensation is not likely to induce families for study participation irrespective of their socioeconomic status.

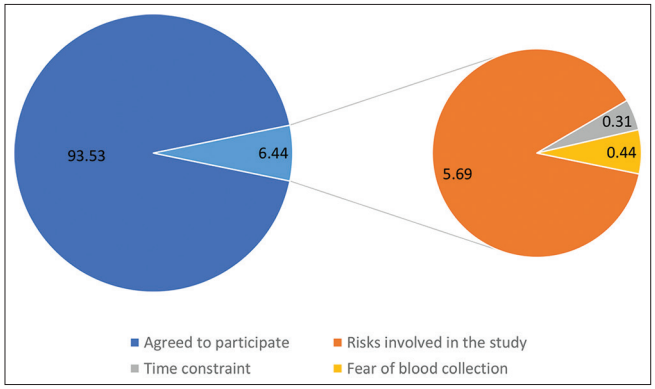

Figure 1: Percentage of individuals with refusal to participate and reasons for refusal (based on pooled data of 2227 participants)

OPERATIONAL ISSUES

Identification and recruitment of study participants

Identification and recruitment of large number of potential study participants from the study area within the given study timelines is often challenging. In case of studies to be conducted among infants, the recruitment process entails line-listing of pregnancies and births in the study area through prestudy visits. Collaboration of the field research assistants with local accredited social health activists and auxiliary nurse midwives have been useful in line listing of potential study participants. A formal and ongoing collaboration with local government health system in this regard has helped in smooth conduction of these activities and has increased overall credibility of the work from general public perspective.

In our experience, recruitment of young infants especially newborn is a challenging aspect as many women travel to their maternal house during childbirth and return after variable period of time. There is a traditional practice that the mothers and their young ones are not allowed to step out of the household for 5 weeks from birth. A prior communication with the families regarding recruitment timeliness is helpful to prepare them better and improved

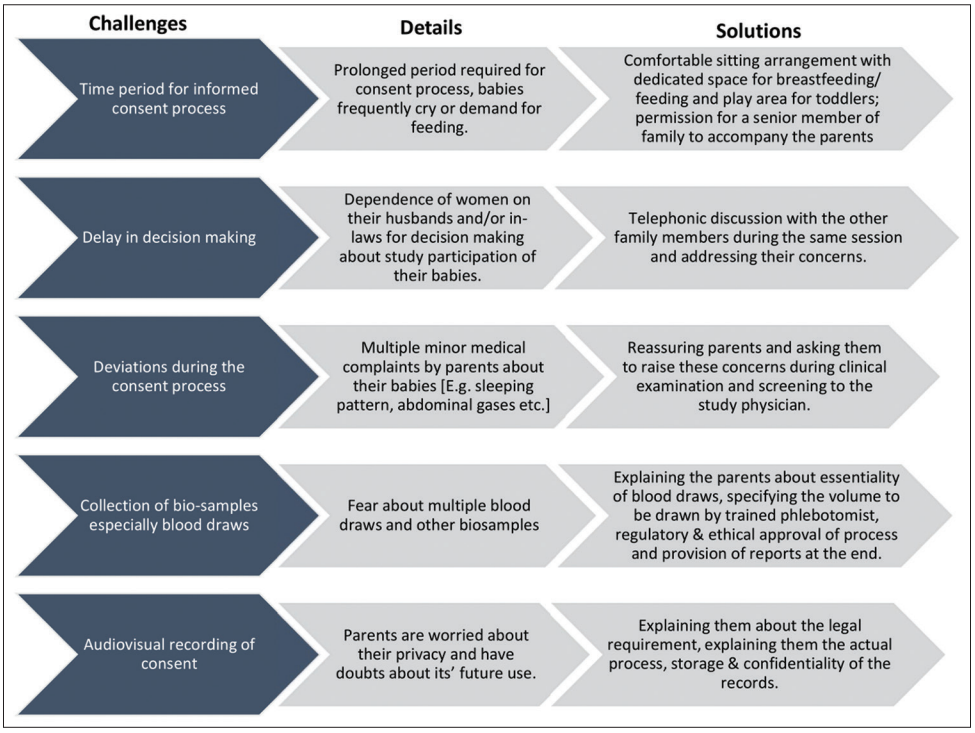

Figure 2: Challenges experienced during informed consent process

co-operation from the families. A prestudy visit couple of days prior to recruitment is very useful for briefing about study, seeking verbal willingness to participate and verifying the necessary documents.

On the other hand, provision of vaccines under universal immunization programs as a part of research project in vaccine studies has facilitated recruitment and compliance from families. Collaboration with local health-care providers and health facilities has helped for recruitment in several studies. Networking with local health-care providers through the organization of continuing medical education (CME) meetings have improved their understanding of the research project and co-operation while recruitment as well as in retention of the subjects. Apart from this, selection and training of field research assistants from the local population have helped to build rapport, confidence and establish a candid communication in the local dialect with the study population. For pediatric studies, local women trained as field research assistants have played an important role in establishing good communication with the care-providers who are usually mothers.

Regular conduct of community sensitization meetings before initiation of projects in the presence of Gram panchayat members have helped in convincing the local population about the public health benefits of the research and increase community participatory approach. The meetings conducted prior to initiation of a research study have helped to provide firsthand unbiased information to the local population and have provided a good platform for people to raise their queries. Deliberations on vaccines that have been included in the universal immunization program following completion of research studies in VRHP (e.g., ROTASIIL) have boosted the trust and participation by local population and reduced the refusal rates.

Retention of study participants and maintenance of compliance

Parents are often concerned about the study-related blood draws and the direct benefits to the child during study participation. We have experienced drop-out rate of 8%–10% in our studies. However, there can be unforeseen circumstances. During one of the studies, closure of a factory in the study area resulted in loss of income for many participant families and resulted more than expected number of out-migrations. The lesson learnt is to take into consideration such possibility while calculating sample size. Some migrant workers visit the study area only during the harvest season. Thus, precautions have to be taken to ensure the length of stay in study area by the families, in order to avoid unnecessary dropouts. Regular home visits and telephonic contact by field research assistants and visits by senior staff whenever required, rapport building with the mothers, provision of essential medical care to the children have been useful measures for reducing the attrition. In case of extraordinary circumstances of death or separation, discussing with family, addressing their concerns and providing possible solutions (e.g., providing travel) have been useful for retention.

Adherence to intervention is not a major problem in vaccine studies where the participants are vaccinated at the study clinic. However, for studies with daily health intervention for children, for example, consumption of health supplement, often mother is the usual care-provider for children. In a recently conducted study that involved use of a fortified oil for body massage in infants, we experienced that mothers are fearful of providing the intervention if the child is suffering from any illness. In some cases, senior members of the family (e.g., mother-in-law) may oppose use of the health intervention. Certain factors such as family/marital conflict, travel during vacations, birth of a new baby can occasionally lead to suboptimal adherence to the intervention.[20] Monitoring compliance through home visits and maintenance of compliance cards, investigation by a senior team member in case of noncompliance have been found to minimize these issues.

Provision of medical care and management of adverse events

In large community-based studies in infants and children, it becomes difficult for families to travel long distances to access health care for the study participants. Further, care-seeking behavior in rural areas is determined by education levels, affordability and availability of health services.[21] In our experience, the establishment of network of local health providers has been a useful support, where the participants can get quick access to health care. The local health-care providers need to be informed about the details of the research study and reassured that the study participants would continue to follow-up with them for their health-care needs. Timely and appropriate communication with these local health-care providers has been helpful for management and documentation of adverse events. In regulatory studies, the cost towards medical management of adverse events is reimbursed. The reimbursement ensures timely reporting and adequate documentation of these events. Apart from this, counseling for breast feeding, appropriate complementary feeding are certain important activities that the study personnel have to undertake.

Detection of clinical or laboratory or radiological anomaly not related to the study in healthy children during screening or during the study has been a common finding in our experience, for example, diagnosis of cardiac murmur, detection of nutritional deficiency. As the children may not be clinically symptomatic, the caregivers have to be counseled about the clinical relevance and future risk of these findings. As this is an ethical responsibility of the research team to provide appropriate medical or surgical treatment in such cases, we have investigated such cases further and provided the appropriate management. This has been highly appreciated by the local community as they were offered a consultation by an expert pediatrician and it helped in timely diagnosis and treatment of the underlying medical condition. The lessons learnt here are to anticipate these issues while planning the study budget and establish dialogue with study sponsors or funders regarding the same.

On the other hand, some of the laboratory or radiological findings may not be clinically relevant but may create apprehension in the minds of the parents. For example, detection of pneumococci in a nasopharyngeal swab of a healthy child does not indicate a disease state and does not require any treatment. However, the families may consult other pediatricians/health-care providers regarding such findings and this may even lead to unnecessary use of antibiotics. The lesson learnt here is to counsel the parents in easy language about relevance of study reports to avoid any irrational and unwanted treatment. These can also be tackled during dissemination of study results. Furthermore, providing detailed information about the research projects to local health-care providers through CMEs can reduce unnecessary use of medications or antibiotics.

Reporting serious adverse events

Abiding by the regulatory timelines for serious adverse event reporting in community-based set up is challenging, as the hospitalizations have to be reported to the ethics committee and regulatory body within 24 h of occurrence. This requires immediate action from the child's parents, training of field personnel for timely action and support from clinical research team. A 24-h on call medical team has helped in ensuring prompt and appropriate medical management of serious adverse events. Long-term networking with local health-care facilities and nearest tertiary care facilities has improved referral of study participants.

In case of serious adverse events resulting into deaths, obtaining death certificates and autopsy reports (wherever indicated) has been difficult due to hindrance from families. Based on our experience, for more than 65% of pediatric deaths reported death certificates are not available. Here, regular conduct of verbal autopsies for all study deaths has helped in estimating the cause of death and relatedness.

Other logistic issues

The maintenance of cold chain for vaccines and bio-samples despite power cut offs, arrangement of study clinics in remote villages using public spaces, scarcity of trained personnel for collection of bio-samples in children are certain important logistic challenges in the field level management. Long term investments into research infrastructure and collaboration with local government authorities have helped to certain extent. Microplanning of study procedures, designing of standard operating procedures, comprehensive training of the study staff that enables multitasking, mock runs for the study are certain steps that have been found to be useful in avoiding the last minute rushes.

DISCUSSION

There is paucity of academic institutions in developing countries that conduct research into public health and there are limited examples of effectiveness research from developing countries that have led to evidence-based policy decisions.[22] Researchers in a developing country like India face unique ethical and logistic challenges while conducting community-wide, scientifically-meaningful and policy-relevant research in rural population in the important area of child health. Such experiences especially from developing countries have been scarcely reported in scientific literature.

In our experience, lack of suitable regulatory framework for community-based studies, stringent timelines for completion of large number of recruitments, maintaining high ethical standards and high quality data while working in vulnerable population like in children in rural communities have been some of our important challenges. Our experiences have been similar to few others reported from research institutes in India.[23,24] Decosta *et al.* from North India have reported that the decision-making role for a child's participation in one of their studies was made by various people including father, mother, grand-father, grand-mother in consultation with one another and their friends and other family members.[3]

Summary of lessons learnt from our experiences is shown in Table 1.

Our experiences highlight importance of the involvement of community through community sensitization meetings

Table 1: Summary of lessons learnt

Challenges	Solutions
Delay in regulatory approval	Start early, utilize the time for preparatory activities
Ensuring informed consent administration in parents from rural population	Community dissemination meetings, using easy language and pictorial depictions in patient information sheets
Managing large recruitments in study timelines	Preparation of line-listing of pregnancies and births, pre-study visits, use of local field research assistants, collaboration with accredited social health activists
Retention of study participants and maintenance of compliance	Repeated home visits by field research assistants, representatives from local population, counseling by the senior research staff/doctor (if required)
Provision of medical care and reporting of adverse events	Networking with local health facilities, availability of 24-h on call medical team, reimbursement of cost

and involvement of local population as field research assistants for conveying unbiased research information to the study population. Collaboration with local government bodies and health facilities can go a long way in creating a multi-institutional network that can in turn facilitate both health-care delivery and research in rural population like ours. Building experienced field research team, a strong data management platform and infrastructure have been our strengths while conduction of community research. We also emphasize need for developing regulations that are more accommodative for community-based research.

Research at VRHP is immensely benefited due to availability of a health and demographic surveillance system that is established across 22 villages and independently tracks vital events including births, deaths, cause of death and migrations. This has been a facilitator for our research activities but is not mandatory for conduction of community-based research considering the significant investment that it undertakes. In addition, we have a rural hospital which is 30 bedded secondary care hospital providing health-care services specially, maternal and child health care to population around Vadu area for more than 40 years. This has built the trust and confidence among the local population toward the institution and helped in successful conduct of trials.

Despite the challenges and limitations, we share a success story in conducting nationally relevant community research in children. Our experience can provide important learnings to other investigators from developing countries working in the domain of child health.

CONCLUSION

There are several regulatory, ethical, operational, and logistic challenges while conducting nationally relevant community research in child health in Rural India. Winning trust and confidence of community through community engagement, collaboration with local government bodies and health systems and development of robust operational systems are some important takeaways from our experience.

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Conflicts of interest

There are no conflicts of interest.

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