
Title registration for a systematic review: Use of community participation to improve child immunisation in low- and middle-income countries: a systematic review

Monica Jain, Mark Engelbert, Marie Gaarder, Avantika Bagai, and John Eyers

Submitted to the Coordinating Group of:

- Crime and Justice
- Education
- Disability
- International Development
- Nutrition
- Food Security
- Social Welfare
- Methods
- Knowledge Translation and Implementation
- Business and Management
- Other:

Plans to co-register:

- No
- Yes Cochrane Other
- Maybe

Date submitted: 29 June 2018

Date revision submitted: 16 July 2018

Publication date: 2 November 2018

Title of the review

Use of community participation to improve child immunisation in low- and middle-income countries: a systematic review.

Background

Rates of routine vaccination of children in low- and middle-income countries (LMICs) are strikingly low or stagnant, leading to a high disease burden and high infant and child mortality. Therefore, there is an urgent need for interventions that improve immunisation of children in these countries. A number of innovative approaches to this problem have arisen in recent years. These approaches include strategies and technologies that enhance communities' participation in the planning, delivery, monitoring and uptake of routine vaccinations of children. These strategies have received considerable attention from funders, researchers, and practitioners, as evidenced by (Unicef.org; WHOa, 2008). However, there is at present a dearth of rigorous and systematic evidence about the effectiveness and cost-effectiveness of these interventions. There is therefore a need for such evidence to guide policymakers and public health practitioners in making informed decisions about these interventions. This review will systematically analyse the literature on this topic, conduct causal chain analysis to identify key facilitators and inhibitors of intervention success, and perform cost-effectiveness analysis to assess the value-for-money of enhancing community participation to improve immunisation of children.

Policy relevance

Even though immunisation coverage in LMICs has increased in recent years, several WHO-member countries still struggle to reach the target of 90% coverage for DPT and provide equitable access to life-saving vaccines (WHOd, 2017). Even with strengthened routine immunisation programmes, marginalised and vulnerable communities— which may also be geographically or socially secluded—are susceptible to being left out. Increasingly, international and national policy frameworks emphasise community participation or engagement to increase immunisation coverage and reach the hardest-to-reach (Unicef.org; WHOb, 2015; WHOc, 2017; WHOd, 2017). This includes educating community members about immunisation and its importance, getting their feedback on developing viable solutions to improve immunisation services, motivating them to take action to further coverage, collaborating with them to identify and resolve issues that contribute to low immunisation rates, and empowering them to develop and improve systems for immunisation service delivery that fit the local context.

For instance, in 2011 the Ethiopian government launched a social mobilisation scheme, the Health Development Army (HDA), organising women from rural communities into volunteer networks to promote proper maternal and child health practices, including immunisation

(Adamsu et al., 2014). Similarly, in 2014, the central government of India launched Mission Indradhanush (MI), which besides involving health administration at various levels, also involves community-level workers to enlist beneficiaries in areas where routine immunisation coverage is weak. MI is also mobilising communities using communication strategies to improve immunisation (Mission Indradhanush guidelines: MoFHW, 2018). Several other countries and international organisations have also adopted similar policies to strengthen planning, delivery and uptake of health services in order to reach the children, especially in the most vulnerable and marginalised populations. Reflecting the demand for evidence on the effectiveness of these approaches, the Gates Foundation, in collaboration with the International Initiative for Impact Evaluation (3ie), has commissioned a series of impact evaluations on immunisation interventions with a focus on community participation.¹

Objectives

1. What evidence exists regarding the effectiveness of community participation interventions in improving immunisation coverage of children in LMICs?
2. Is there evidence for heterogeneous effects of community participation strategies (i.e., does effectiveness vary by region, population, gender or program implementation)?
3. What intervention and implementation features are associated with relative success and failure in improving childhood immunisation outcomes?
4. What are the contextual barriers to, and facilitators of, the effectiveness of community participation in immunisation interventions?
5. What is the cost-effectiveness of different community participation interventions in improving children immunisation outcomes?

Existing reviews

There are a number of existing systematic reviews that address the effectiveness of interventions to increase immunisation coverage. However, none of these reviews are adequate for the purpose of guiding policymakers in deciding whether and how to pursue strategies that substantively involve various members of the community to address barriers all along the causal chain leading to vaccination delivery. We also believe it is important to have a review specific to LMICs. Many LMICs face similar barriers to achieving universal immunisation coverage, such as low rates of institutional births and poor infrastructure, which creates logistical challenges for maintaining vaccination stocks and cold chains. In addition, health professionals in LMICs typically have lower literacy and skill levels which affects the delivery of quality immunisation services. As these specific barriers are largely absent in high-income countries (HICs), reviews in which much of the evidence comes from HICs are of limited relevance to the needs of policymakers in LMICs.

Below we list 10 existing reviews and briefly document why they do not already accomplish the goals of our proposed review. See “References” section for a list of full references.

¹ See <http://3ieimpact.org/en/funding/thematic-window/increasing-immunisation-thematic-window/>

- Batt et al. (2004): This review covers only grey literature and is nearly 15 years old.
- Glenton et al. (2011): This review covers the use of lay health workers for increasing immunisation rates. While this overlaps with our proposed focus, our review will encompass other types of interventions that encourage community participation beyond those involving lay health workers (for example, interventions aimed at community leaders and caregivers). In addition, only about half of the studies included in this review were conducted in LMICs.
- Kaufman et al. (2018): While the interventions covered in this review overlap with those in our proposed SR, there are key differences in scope. Kaufman et al.'s review covers only face-to-face interventions, whereas our review will include studies using any form of communicating with community members, including mass media and ICT (information and communication technology) modalities. In addition, 7 of 10 studies included in this review were conducted in HICs.
- Lassi et al. (2015): Similar to our proposed review, the scope of Lassi et al.'s review is related to both community engagement as an intervention strategy and child health as an outcome. However, Lassi et al.'s review focuses on neonatal health and thus excludes most immunisation-related interventions.
- Mureed et al. (2015): The reporting in this review is limited so it is not clear what interventions were included in the scope of the review. In addition, the review did not include grey or non-English literature and lacks key policy-relevant components such as causal path analysis and cost-effectiveness information.
- Oyo-Ita et al. (2016): This review is comprehensive and recent, covering a broad range of interventions targeting DPT immunisation in LMICs. However, this review covers only interventions that target either caregivers or health service providers, whereas our review will also include interventions aimed primarily at other community members (such as religious or other community leaders). Thus, an intervention that aimed to improve immunisation coverage by enlisting influential community members (who may not have young children themselves) to spread information about the importance of immunisation would not meet the intervention criteria reported in Oyo-Ita et al.'s review, but would be included in ours. In addition, the literature in this area is expanding rapidly, so we anticipate that there will be a substantial amount of new evidence to be included in our review.² Moreover, we plan to look at outcomes beyond DPT3 in our review and use an analysis framework focusing on levels of community participation which is different from the one used in this review.
- Pegurri et al. (2005): This review did not include grey literature and is over 10 years old.
- Ryman et al. (2008): This review is comprehensive and targets many of the same interventions as our proposed review (though without the specific focus on community-participation strategies). However, it is now 10 years old.
- Saeterdal et al. (2014): This review is relatively recent (and we understand an update will likely be published soon) and focuses specifically on interventions targeting communities.

² A list of representative studies likely to be included in our review is provided in the "Study designs" section below, including several that have been published in the last two years.

However, the interventions covered in this review address only one of the barriers to vaccination delivery, viz., lack of knowledge or information. In contrast, our review will include interventions aimed at barriers all along the causal chain leading to vaccine delivery. For example, interventions that aim to *motivate* (caregivers to vaccinate or health workers to strengthen outreach efforts) would not fall under Saeterdal et al.'s scope but would be included in ours. In addition, our review will include multifaceted interventions, whereas the Saeterdal et al. review will include such interventions only if the effects of the information/education component can be isolated.³ Thus, while Saeterdal et al.'s review did not include studies such as Bolam et al. (1998) or Ryman et al. (2011), these studies would likely meet the intervention criteria for our review.⁴

- Shea et al. (2009): This review is nearly 10 years old and focuses exclusively on demand-side interventions, whereas our proposed review will cover both demand- and supply-side interventions.

Intervention

The review will focus on all interventions that use community participation or engagement to improve immunisation coverage of children.

In principle, communities may be identified in multiple overlapping ways. In this context, however, we define “communities” in reference to the lowest level of the health service delivery system (or whatever level provides routine immunisation services in the local context). That is, for the purposes of our review, a community comprises a group of people who are served by a particular primary health facility (e.g., a subdistrict-level health centre). Thus, communities as we define them encompass a wide range of stakeholders, including caregivers, health service providers, and influential community members such as religious or other traditional leaders. Therefore, our review will include any intervention that is directed towards any of the above types of community members. Interventions that target higher levels of the health system—such as a programme to improve state-level officials’ use of immunisation-related data—will be excluded.

Likewise, we define community participation as a process wherein communities are included, to various degrees, in planning, decision-making, and implementation for activities that directly impact them (Stuart, 2017). The Spectrum of Public Participation, developed by the International Association for Public Participation (iap2.org), identifies five levels of public (community) participation, ranging from *informing* communities to *empowering* them (Table 1). Our review will include interventions in which communities participate at any level of the spectrum. Interventions that do not include community members in any of these ways will be excluded.

³ Simon Lewin, personal communication.

⁴ Ryman et al. is listed among Saeterdal et al.'s excluded studies, with “Intervention” given as the reason for exclusion. Bolam et al. is not cited in Saeterdal et al.'s review.

Table 1: Spectrum of Public Participation

Level of involvement	Description
Inform	Public receives balanced and objective information on an intervention
Consult	Target participants are consulted or their feedback is solicited on an intervention
Involve	Communities are proactively involved in various aspects of an intervention
Collaborate	Interventions are developed and delivered in partnership with communities
Empower	Communities are the decision makers from design to execution of an intervention

Source: International Association for Public Participation (2018)

Note that these levels refer to degrees of participation rather than types of intervention activities—indeed, these participation levels cross-cut intervention activities. For example, an intervention to inform or educate community members about the importance of immunisation could engage communities at the *inform* level (if communities are merely told that an informational campaign will be introduced in their area), at the *empower* level (if community members direct and manage all aspects of designing and implementing the informational campaign), or at any level in between. Similarly, interventions to motivate community members or increase health system capacity could engage communities at any of these levels.

While interventions must include a community engagement/participation component to be included in our review, the delivery (mechanism) of the intervention can be at the community, household or individual level. Also, these could be delivered as single or multi-faceted interventions.

This review will not be looking at immunisation interventions for children above five years of age, or those that do not have some form of community participation component, or those that may be using community participation but not for immunisation.

Population

For this review, we will include studies evaluating programmes targeted at rural, peri-urban and urban populations to increase immunisation of children under five in low- and middle-income countries (where a country’s income status is determined by its World Bank classification at the time an intervention was carried out). All interventions that do not focus on immunisation outcomes for children will be excluded. We will also exclude studies from high income countries, as the evidence from these countries will have limited applicability to the contextual factors prevalent in LMICs. As for the participants, while our review will focus on interventions targeting community members, interventions need not target the

community as a whole; it is sufficient that an intervention targets any subgroup of a community as defined above.

Outcomes

To be included the studies need to assess at least one of the outcomes given below:

- Full immunisation coverage (FIC)
- Antigen specific immunisation coverage
- Timely uptake of vaccines
- DPT 1 – DPT 3 dropout rates
- Penta 1 – Penta 3 dropout rates
- OPV1 – OPV3 dropout rates
- Mortality
- Morbidity
- Knowledge, attitudes and practices related to immunisation
 - Increase in awareness
 - Increase in health seeking activities
- Access to immunisation (health services in general)
- Cost-effectiveness of interventions
 - Cost per additional child fully immunised
 - Cost per additional child not dropping out from penta 1 to penta 3
 - Cost per additional DALY averted
 - Cost per additional death averted
- Partial routine immunisation for children
- No routine immunisation for children
- Reporting the heterogeneous impacts (by gender, economic indicators, etc.)

Study designs

To address questions 1-2 and 5 listed above, we will include study designs that allow for attribution. These include experimental and quasi-experimental designs. Specifically, we will include: (1) Studies where participants are randomly assigned to treatment and comparison group; (2) Studies where assignment to treatment and comparison group is based on other known allocation rules, including a threshold on a continuous variable (regression discontinuity designs) or exogenous geographical variation in the treatment allocation (natural experiments); (3) Studies with non-random assignment to treatment and comparison group, provided they include pre- and post-test measures of the outcome variables of interest to ensure equity between groups on the baseline measure, as well as use appropriate methods to control for selection bias and confounding, such as: statistical matching (for example, propensity score matching, or covariate matching), regression adjustment (for example, difference-in-differences, and instrumental variables, and 'Heckman' selection models).

To address questions 3 and 4, we will include qualitative studies, descriptive quantitative studies, process evaluations and project documents, linked to the interventions that were evaluated in the included experimental and quasi-experimental studies.

Studies that do not use experimental or quasi-experimental techniques to measure attributable impact will be excluded.

Taking into account all of the above criteria for *interventions, populations, outcomes, and study designs*, our scoping work has identified the following studies as ones that would likely meet our criteria and be included in the review:

- Banerjee et al. (2010)
- Bolam et al. (1998)
- Gibson et al. (2017)
- Habib et al. (2017)
- Robertson et al. (2013)
- Ryman et al. (2011)
- Uddin et al. (2016)

References

- Admasu, D. (2014). Saving the innocent: Ethiopia is keeping the promise it made to its children [Blog]. Retrieved from <https://unicefethiopia.org/tag/health-development-army/>
- Banerjee, A. V., Duflo, E., Glennerster, R., & Kothari, D. (2010). Improving immunisation coverage in rural India: clustered randomised controlled evaluation of immunisation campaigns with and without incentives. *BMJ*, *340*, c2220. <https://doi.org/10.1136/bmj.c2220>
- Batt, K., Fox-Rushby, J. A., & Castillo-Riquelme, M. (2004). The costs, effects and cost-effectiveness of strategies to increase coverage of routine immunizations in low- and middle-income countries: systematic review of the grey literature. *Bulletin of the World Health Organization*, *82*(9), 689–696.
- Bolam, A., Manandhar, D. S., Shrestha, P., Ellis, M., & Costello, A. M. de L. (1998). The effects of postnatal health education for mothers on infant care and family planning practices in Nepal: a randomised controlled trial. *BMJ : British Medical Journal*, *316*(7134), 805–811. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC28481/>
- Gibson, D. G., Ochieng, B., Kagucia, E. W., Were, J., Hayford, K., Moulton, L. H., ... Feikin, D. R. (2017). Mobile phone-delivered reminders and incentives to improve childhood immunisation coverage and timeliness in Kenya (M-SIMU): a cluster randomised controlled trial. *The Lancet. Global Health*, *5*(4), e428–e438. [https://doi.org/10.1016/S2214-109X\(17\)30072-4](https://doi.org/10.1016/S2214-109X(17)30072-4)

- Glenton, C., Scheel, I. B., Lewin, S., & Swingler, G. H. (2011). Can lay health workers increase the uptake of childhood immunisation? Systematic review and typology. *Tropical Medicine & International Health*, 16(9), 1044–1053. <https://doi.org/10.1111/j.1365-3156.2011.02813.x>
- Habib, M. A., Soofi, S., Cousens, S., Anwar, S., Haque, N. U., Ahmed, I., ... Bhutta, Z. A. (2017). Community engagement and integrated health and polio immunisation campaigns in conflict-affected areas of Pakistan: a cluster randomised controlled trial. *The Lancet. Global Health*, 5(6), e593–e603. [https://doi.org/10.1016/S2214-109X\(17\)30184-5](https://doi.org/10.1016/S2214-109X(17)30184-5)
- International Association for Public Participation. (2018). [online] Available at: https://www.iap2.org.au/Tenant/C0000004/00000001/files/IAP2_Public_Participati on_Spectrum.pdf
- Kaufman, J., Synnot, A., Ryan, R., Hill, S., Horey, D., Willis, N., ... Robinson, P. (2013). Face to face interventions for informing or educating parents about early childhood vaccination, 91.
- Lassi, Z. S., Haider, B. A., & Bhutta, Z. A. (2010). Community-based intervention packages for reducing maternal and neonatal morbidity and mortality and improving neonatal outcomes, 81.
- Mission Indradhanush guidelines :: Ministry of Health and Family Welfare. (2018). Retrieved from <http://164.100.158.44/showfile.php?lid=4258>
- Mureed, S., Somrongthong, R., Kumar, R., Ghaffar, A., & Chapman, R. S. (2015). Enhanced immunization coverage through interventions for childhood cluster diseases in developing countries. *Journal of Ayub Medical College Abbottabad*, 27(1), 223–7.
- Oyo-Ita, A., Wiysonge, C. S., Oringanje, C., Nwachukwu, C. E., Oduwole, O., & Meremikwu, M. M. (2016). Interventions for improving coverage of childhood immunisation in low- and middle-income countries. In *Cochrane Database of Systematic Reviews*. John Wiley & Sons, Ltd. <https://doi.org/10.1002/14651858.CD008145.pub3>
- Robertson, L., Mushati, P., Eaton, J. W., Dumba, L., Mavise, G., Makoni, J., ... Gregson, S. (2013). Effects of unconditional and conditional cash transfers on child health and development in Zimbabwe: a cluster-randomised trial. *Lancet (London, England)*, 381(9874), 1283–1292. [https://doi.org/10.1016/S0140-6736\(12\)62168-0](https://doi.org/10.1016/S0140-6736(12)62168-0)
- Ryman, T. K., Dietz, V., & Cairns, K. L. (2008). Too little but not too late: Results of a literature review to improve routine immunization programs in developing countries. *BMC Health Services Research*, 8(1). <https://doi.org/10.1186/1472-6963-8-134>
- Ryman, T. K., Trakroo, A., Wallace, A., Gupta, S. K., Wilkins, K., Mehta, P., & Dietz, V. (2011). Implementation and evaluation of the Reaching Every District (RED) strategy in Assam, India, 2005–2008. *Vaccine*, 29(14), 2555–2560. <https://doi.org/10.1016/j.vaccine.2011.01.061>
- Saeterdal, I., Lewin, S., Austvoll-Dahlgren, A., Glenton, C., & Munabi-Babigumira, S. (2014). Interventions aimed at communities to inform and/or educate about early childhood

vaccination. *Cochrane Database of Systematic Reviews*.
<https://doi.org/10.1002/14651858.CD010232.pub2>

Stuart, G. (2017). What is the Spectrum of Public Participation?. [Blog] *Sustaining Community*. Available at:
<https://sustainingcommunity.wordpress.com/2017/02/14/spectrum-of-public-participation/>

Uddin, M. J., Shamsuzzaman, M., Horng, L., Labrique, A., Vasudevan, L., Zeller, K., ... Alam, N. (2016). Use of mobile phones for improving vaccination coverage among children living in rural hard-to-reach areas and urban streets of Bangladesh. *Vaccine*, 34(2), 276–283. <https://doi.org/10.1016/j.vaccine.2015.11.024>

Unicef.org. (2018). *Immunization programme*. [online] Available at:
<https://www.unicef.org/immunization>

World Health Organisation(a) (2008). *Partnering with communities*. Training for mid-level managers. [online] Geneva, Switzerland: WHO Press. Retrieved from:
http://apps.who.int/iris/bitstream/handle/10665/70184/WHO_IVB_08.02_eng.pdf?sequence=2

World Health Organisation(b). (2015). *Immunization in Practice A practical guide for health staff 2015 update*. WHO Press: World Health Organisation. Retrieved from
http://apps.who.int/iris/bitstream/handle/10665/193412/9789241549097_eng.pdf;jsessionid=B4EA99CC1A619670416CAE789D68CAAC?sequence=1

World Health Organisation(c). (2017). *WHO community engagement framework for quality, people-centred and resilient health services*. Geneva: World Health Organisation. Retrieved from
<http://apps.who.int/iris/bitstream/handle/10665/259280/WHO-HIS-SDS-2017.15-eng.pdf?sequence=1>

World Health Organisation(d). (2017). *2017 Assessment Report of the Global Vaccine Action Plan Strategic Advisory Group of Experts on Immunization*. Geneva: World Health Organisation. Retrieved from
http://www.who.int/immunization/web_2017_sage_gvap_assessment_report_en.pdf?ua=1

Review authors

Lead review author: The lead author is the person who develops and co-ordinates the review team, discusses and assigns roles for individual members of the review team, liaises with the editorial base and takes responsibility for the on-going updates of the review.

Name: Monica Jain

Title: Senior Evaluation Specialist

Affiliation: International Initiative for Impact Evaluation (3ie)

Address: 202-203 Rectangle One, D-4, Saket District Centre

City, State, Province or County: New Delhi

Post code: 110017

Country: India

Phone: +91 11 4989 4457

Email: mjain@3ieimpact.org

Co-authors:

Name: Mark Engelbert

Title: Evaluation Specialist

Affiliation: 3ie

Address: 202-203 Rectangle One, D-4, Saket District Centre

City, State, Province or County: New Delhi

Post code: 110017

Country: India

Phone: +91 11 4989 4457

Email: mengelbert@3ieimpact.org

Name: Marie Gaarder

Title: Director of the Evaluation Office and Global Director for Innovation and Country Engagement

Affiliation: 3ie

Address: 202-203 Rectangle One, D-4, Saket District Centre

City, State, Province or County: New Delhi

Post code: 110017

Country: India

Phone: +91 11 4989 4457

Email: mgardeer@3ieimpact.org

Name: Avantika Bagai

Title: Research Assistant

Affiliation: 3ie

Address: 202-203 Rectangle One, D-4, Saket District Centre

City, State, Province or County: New Delhi

Post code: 110017

Country: India

Phone: +91 11 4989 4457

Email: abagai@3ieimpact.org

Name: John Eyers

Title: Information retrieval specialist

Affiliation: 3ie

Address: 202-203 Rectangle One, D-4, Saket District Centre

City, State, Province or County: New Delhi

Post code: 110017

Country: India

Phone: +91 11 4989 4457

Email: jeyers@3ieimpact.org

Roles and responsibilities

Dr Jain, Dr Engelbert and Ms Bagai have content knowledge in childhood immunisation programmes in low and middle income countries. Dr Jain and Dr Gaarder have statistical backgrounds and the statistical analysis will be led by Dr Jain. Dr Gaarder has prior experience conducting systematic reviews and cost-effectiveness analyses. Dr Engelbert and Ms Bagai have prior experience with screening and coding data from studies. Mr Evers has expertise in information retrieval and will be leading the design and execution of the search.

Funding

This work is supported by the International Initiative for Impact Evaluation (3ie).

Potential conflicts of interest

The International Initiative for Impact Evaluation (3ie) provides funding and technical assistance for seven ongoing impact evaluations of community engagement interventions for immunisation as a part of its immunisation evidence programme. This technical assistance includes, but is not limited to: reviewing study designs, analysis plans, and data collection instruments; advising research teams on how to improve study components and address challenges that arise during the course of the evaluation; and supporting grantees in engaging with stakeholders to promote uptake and use of evidence generated by the evaluations.

As members of 3ie staff, authors MJ, ME, MG, and AB have all had varying levels of involvement in reviewing proposals for these evaluations and providing research teams with technical assistance. These SR authors therefore have a vested interest in the success and prominence of these studies, which fall under the scope of the proposed SR. This presents a conflict of interest in that the authors may apply different standards to these studies when reviewing them for inclusion in the SR or deciding how much weight to give them in the analysis.

However, there are several procedural safeguards and transparency measures in place that mitigate the risk this COI imposes. First, all candidate studies, including those funded by 3ie, will undergo a rigorous multi-step screening process, including review at the title, abstract, and full-text levels. To qualify for inclusion in the SR, a study must be judged to meet the inclusion criteria by two independent screeners who have reviewed the full text of the study. The screening protocol will be made publicly available, as will the protocol for analysing included studies.

Moreover, the screening for this SR will be conducted by independent consultants who, while paid by 3ie, will not be 3ie staff and will not have provided technical assistance or interacted

with authors of 3ie-funded studies. Finally, the authors will, upon request, provide full records of each round of screening, detailing the studies that were excluded and included at the title, abstract, and full-text levels.

The authors have no financial interests in this area and have not published any prior reviews on the topic.

Preliminary timeframe

- Date you plan to submit a draft protocol: November 2018
- Date you plan to submit a draft review: April 2020