Community interventions with women’s groups to improve women’s and children’s health in India: a mixed-methods systematic review of effects, enablers and barriers

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ABSTRACT

Introduction India is home to over 6 million women’s groups, including self-help groups. There has been no evidence synthesis on whether and how such groups improve women’s and children’s health.

Methods We did a mixed-methods systematic review of quantitative and qualitative studies on women’s groups in India to examine effects on women and children’s health and to identify enablers and barriers to achieving outcomes. We searched 10 databases and included studies published in English from 2000 to 2019 measuring health knowledge, behaviours or outcomes. Our study population included adult women and children under 5 years. We appraised studies using standard risk of bias assessments. We compared intervention effects by level of community participation, scope of capability strengthening (individual, group or community), type of women’s group and social and behaviour change techniques employed. We synthesised quantitative and qualitative studies to identify barriers and enablers related to context, intervention design and implementation, and outcome characteristics.

Findings We screened 21 380 studies and included 99: 19 randomised controlled trial reports, 25 quasi-experimental study reports and 55 non-experimental studies (27 quantitative and 28 qualitative). Experimental studies provided moderate-quality evidence that health interventions with women’s groups can improve perinatal practices, neonatal survival, immunisation rates and women’s and children’s dietary diversity, and help control vector-borne diseases. Evidence of positive effects was strongest for community mobilisation interventions that built communities’ capabilities and went beyond sharing information. Key enablers were inclusion of vulnerable community members, outcomes that could be reasonably expected to change through community interventions and intensity proportionate to ambition. Barriers included limited time or focus on health, outcomes not relevant to group members and health system constraints.

Conclusion Interventions with women’s groups can improve women’s and children’s health in India. The most effective interventions go beyond using groups to disseminate health information and seek to build communities’ capabilities.

Key questions

What is already known?

► Women’s groups are widely engaged in health promotion to improve women and children’s health in India and other countries.

► There is little evidence on the effects of different kinds of women’s groups interventions on women’s and children’s health in India, which social and behaviour change strategies work best and for what, and barriers and enablers to effectiveness.

What are the new findings?

► Moderate-quality evidence for health interventions with women’s groups indicates positive effects on perinatal practices, neonatal survival, immunisation rates, women’s and children’s dietary diversity and the control of vector-borne diseases in India.

► We found no effects of interventions where groups tackled outcomes influenced by strong social and service-related constraints, such as violence against women, or women and children’s nutritional status.

► Effective women’s groups were open to other community members, inclusive of the most concerned and vulnerable, and had adequate intensity and facilitator capacity.

Trial registration number The review was registered with PROSPERO: CRD42019130633.

INTRODUCTION

Community interventions are key to achieving the Sustainable Development Goals for health, nutrition and gender equality.1,2 Interventions to improve women’s and children’s health can engage with groups to strengthen the capabilities of individuals, groups and communities to adopt beneficial health practices and shape the social determinants of health.3,4 Women’s
groups vary in size, membership and goals but typically hold regular meetings for financial savings or livelihoods promotion, health training and action, or a combination. Women’s groups can be ‘closed’, i.e., restricted to members who fulfil specific criteria, for example, those who make financial contributions, or ‘open’ to all women and other community members, in which case they are akin to community groups. Some community interventions use existing groups as a platform to share health information or seek to leverage group cohesion to improve members’ health. Others aim to improve population health through community mobilisation, defined as ‘a capacity building process through which community members, groups or organizations plan, carry out, and evaluate activities in a participatory and sustained basis to improve their health and other conditions’. The Government of India currently has two large-scale community engagement initiatives involving women’s groups. The National Rural Livelihoods Mission (NRLM) supports self-help groups (SHGs) engaged in savings, credit and livelihoods promotion. The NRLM has reached over 50 million households by 2020 and aims to reach 70 million by 2025. Capitalising on this coverage, the NRLM introduced health, sanitation and nutrition education into its SHG activities in 2017. The second government initiative, led by the National Health Mission, incentivises around 1 million community health volunteers called Accredited Social Health Activists (ASHA), to facilitate regular meetings with women’s groups. Meetings are open to all and offer health-related interventions and linkages to public health services.

Despite the extraordinary scale of women’s groups initiatives in India, there has been no review of their effects on women’s and children’s health or factors that can improve implementation. We aimed to: (1) review experimental studies that examined the effect of women’s groups interventions with or without a health component on women’s and children’s health in India, compared with either women’s groups without a health intervention or no exposure to a women’s group and (2) identify barriers and enablers related to contextual factors, intervention design and implementation, and outcome characteristics that explain these effects, through a synthesis of qualitative and quantitative studies.

METHODS
Design, inclusion and exclusion criteria
We conducted a mixed-methods systematic review and included:

a. Studies on women’s groups in India, published in English between 1 January 2000 and 31 December 2019.

b. Randomised controlled trials (RCTs); non-randomised studies of interventions—referred to here as quasi-experimental studies—with both strong and weaker designs, including studies using difference-in-difference approaches, interrupted time series, regression discontinuity, instrumental variable estimation and propensity score matching; and non-experimental quantitative and qualitative studies.

c. Studies of women’s groups that examined health knowledge, behaviours or outcomes, including general ill-health, Reproductive, Maternal, Newborn and Child Health (RMNCH), nutrition, sexual health and HIV, mental health, communicable and non-communicable disease and violence against women.

We excluded studies that were not conducted in India, reported no empirical data, did not focus on health outcomes or focused on groups where adult women were not primary members. Our study population included all women aged 18 years and above and children under 5 years.

Literature search and quality appraisal
Two researchers (AP and MM) searched PubMed, SCOPUS, POPLINE, PsycINFO, OpenGrey, Social Sciences Citation Index, International Bibliography of the Social Sciences, 3ie Database of Impact Evaluations, Global Health and Econlit. Online supplemental table 1 lists the search terms. MM and MS screened titles and abstracts, then consulted two expert advisors and four coauthors (AP, LG, NK and SD) to identify other relevant studies. After completing the first round in March 2019, we updated the search to include studies published between April and December 2019. Six researchers (AD, AP, MM, MS, RJS and SD) extracted data on study characteristics, interventions, effects, enablers and barriers and conducted quality appraisals using the Revised Cochrane Risk of Bias for randomised trials, the Risk of Bias in Non-randomised Studies of Interventions and an adapted version of the Critical Appraisal Skills Programme (CASP) for qualitative studies. The review refers to studies as high-quality, moderate-quality or low-quality evidence to reflect the Risk of Bias (RoB) assessment: high quality indicates low RoB; moderate quality indicates some concerns/moderate RoB; and low quality signals high, serious or critical RoB. Two coauthors (AP...
and SD) independently reviewed all data extracted, compared quality assessments and drafted the synthesis.

**Synthesis**

Our synthesis followed three steps. First, we tabulated the effects of women’s groups across health domains that emerged from experimental studies, irrespective of study quality: (1) RMNCH; (2) nutrition; (3) violence against women; (4) vector-borne diseases; (5) sexual health and HIV; (6) water, sanitation and hygiene; (7) mental health; (8) health expenditure; or (9) multiple domains. Studies were classified by primary outcome domain(s) for RCTs, or main health outcome(s) for quasi-experimental studies. We did not do a meta-analysis or subanalyses as study types and outcomes were highly heterogeneous.

Second, we used harvest plots to examine results of high-quality or moderate-quality experimental studies for domains with more than three studies (n=21), along three dimensions as described in box 1: level of community participation, scope of capability strengthening and underlying group type.20 Next, we identified social and behaviour change techniques employed in moderate-quality or high-quality studies of interventions with a health component (19/27 studies). We used a taxonomy developed by Kok et al to synthesise these in a heat map.21

The taxonomy categorises 14 types of techniques that broadly fall into two groups: those aimed at individual knowledge, capacity and skills (eg, using imagery and modelling behaviours) and those aimed at addressing social and environmental conditions (eg, mobilising social networks, participatory learning and action).21 We chose this taxonomy because it incorporated more group techniques than others.22

Finally, we developed a summary of enablers and barriers related to contextual factors, intervention design and implementation, and outcome characteristics. Examples of contextual factors were rural/urban geography or migration levels. Implementation factors included types of group facilitator, behaviour change approach and the functioning of the underlying group. Outcome characteristics referred to the specific aim of the intervention, its relevance and feasibility specific to women’s groups, such as whether pregnancy information would be relevant to older members of an SHG.

We described the results of all experimental studies after indicating their risk of bias. For all subsequent syntheses, however, we included only high-quality and moderate-quality experimental studies, along with qualitative studies and quantitative non-experimental studies that met basic criteria in the CASP checklist,19 that is, clearly reported methods and data pertinent to our research questions. We employed a results-based convergent synthesis approach:25 we integrated results from quantitative and qualitative analyses during a final synthesis using a thematic matrix and through iterative review and discussion with coauthors. We present results using the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols and Synthesis Without Meta-analysis guidelines.21 The review is registered with PROSPERO (CRD42019130633). The study was funded by the Bill and Melinda Gates Foundation, who had no role in data analysis, interpretation or writing.

**RESULTS**

We screened 21 380 studies and included 99 (figure 1). We found 19 RCT reports (17 unique trials and two sub-analyses), 25 quasi-experimental study reports (24 unique studies and one subanalysis) and 55 non-experimental studies (27 quantitative and 28 qualitative). Online supplemental figure 1 describes the geographical location of studies, by state. Online supplemental table 2
describes study settings, interventions and their characteristics, type of control, participant inclusion criteria, outcome measure(s), effect size and risk of bias assessment for all RCTs. Online supplemental table 3 describes all quasi-experimental studies. Online supplemental table 4 describes all non-experimental studies.

One-third (17/44) of experimental studies were at high, serious or critical risk of bias (4/19 RCTs and 13/25 quasi-experimental studies). Twenty-seven experimental studies reported on population-level outcomes, 15 reported outcomes only among group members and 2 studies reported outcomes for members and non-members separately. Over 85% of non-experimental studies (24/27 quantitative and 24/28 qualitative) were appraised as relevant and of good quality.

We present results related to our two objectives. First, we describe the effects of women’s groups interventions within health domains and also according to level of community participation, scope of capacity strengthening, type of group and the type of social and behaviour change techniques used. Second, we map enablers and barriers related to context, intervention design and implementation, and outcome characteristics.

**Intervention effects**

**Reproductive, maternal, newborn and child health**

Seventeen studies (five unique RCTs, nine unique quasi-experimental studies and three subanalyses) reported on interventions to improve RMNCH. Kumar *et al* did a moderate-quality RCT of a community-wide behaviour change intervention with group meetings and home visits to improve birth outcomes in one rural sub-district. They found a large reduction in neonatal mortality (adjusted risk ratio: 0.46, 95% CI 0.35 to 0.60) and improvements in maternal care-seeking behaviours. Two moderate-quality to high-quality RCTs and a moderate-quality quasi-experimental study tested community mobilisation through women’s groups practising participatory learning and action to identify and address problems in the perinatal period with support from the wider community. This approach, including one implemented by ASHAs in five districts, led to reductions in neonatal mortality of around 30% (aOR 0.68, 95% CI 0.59 to 0.78; aOR 0.69, 95% CI 0.53 to 0.89; aOR 0.69, 95% CI 0.57 to 0.85), with greater reductions among more marginalised families (aOR: 0.41, 95% CI 0.28 to 0.59). A moderate-quality trial of a similar perinatal intervention in Mumbai found no effects on neonatal mortality (aOR 1.42, 95% CI 0.99 to 2.04) or other birth outcomes. Seven quasi-experimental study reports, of which six were at serious or critical risk of bias, tested adding health information to SHGs in rural settings to improve behaviours in the perinatal period. They reported increases in knowledge of perinatal danger signs, selected essential newborn care and care-seeking practices among group members, but none measured birth outcomes.

Finally, two moderate-quality quasi-experimental studies focused on RMNCH beyond the perinatal period. One tested the impact of community-based women’s groups engaging in collective action based on identified needs in three rural districts, leading to improvements in child immunisation rates (diphtheria pertussis tetanus: coefficient ($\beta$): 0.088, SE: 0.037; measles $\beta$: 0.076, SE: 0.038; tuberculosis: 0.071, SE: 0.038). The other evaluated the effects of SHG membership with no health intervention in five districts and found no effects on assisted delivery, breastfeeding and child immunisation rates, knowledge of diarrhoea treatment or family planning.

**Nutrition**

Three RCTs and four quasi-experimental studies focused on nutrition. One high-quality RCT found that giving information about key practices for maternal and child nutrition to SHG members had a small effect on child dietary diversity (mean number of food groups
consumed) for the youngest child in the family (β: 0.286, SE: 0.118), but not the index child (β: 0.169, SE: 0.080), and no effects on maternal body mass index (β: −0.025, SE: 0.082).42 A high-quality trial of participatory learning and action with groups and home visits to improve child growth reported no improvement in child length-for-age (adjusted mean difference 0.11, 95% CI −0.01 to 0.23) or weight-for-age and weight-for-height z scores, despite increases in maternal and child dietary diversity.43 A third RCT found effects of SHGs with no risk of bias.44 Two moderate-quality quasi-experimental studies found that SHG membership with food or livelihood inputs improved energy (109 kcal/day, p≤0.05) and protein intake (5.84 g/day, p≤0.01) for participants in a state-wide programme.45 46 A third quasi-experimental study reported lower levels of underweight among the children of SHG members and higher protein intake for their households but was at serious risk of bias.47 Finally, a moderate-quality quasi-experimental study testing participatory learning and action with women’s groups combined with home visits and creches with meals for children under 3 years in five blocks found reductions in wasting, underweight and stunting (aOR: 0.73, 95% CI 0.55 to 0.97; aOR 0.60, 95% CI 0.47 to 0.75 and aOR 0.73, 95% CI 0.57 to 0.93, respectively).48

Violence against women
We identified two RCTs and two quasi-experimental studies on violence against women. Both moderate-quality RCTs evaluated interventions providing gender-transformative training sessions to SHGs.49 50 The first, a rural trial, found no improvements in attitudes to gender roles (aOR: 0.69, 95% CI 0.35 to 1.02) or levels of physical marital violence (aOR: 0.69, 95% CI 0.46 to 1.02) and an increase in emotional marital violence (aOR: 2.95, 95% CI 1.75 to 4.97) among members.49 The second, an urban RCT, found no effects on experience of physical or sexual violence (β: −0.006, SE: 0.022).49 Two quasi-experimental studies examined the effect of SHG membership with no violence-specific intervention: one, a moderate-quality study, found no effect on an index of violence (β: 0.092, SE: 0.074), while the other, a low-quality study, found a small reduction in a similar index (difference-in-difference estimate: −0.448, p=0.008).51 52

Vector-borne diseases
Two RCTs and one quasi-experimental study tested interventions to prevent vector-borne diseases. A moderate-quality RCT of an urban intervention to educate group members to control dengue found significant reductions in pupae per household and pupae per person indexes (difference in difference in % reduction from baseline: −14.7, p=0.01 and −0.35, p=0.02).53 A moderate-quality RCT of a rural community mobilisation intervention engaging group and community members for malaria control reported increases in the proportion of people sleeping under bed nets and receiving prompt diagnosis from a trained provider for a fever (aOR: 1.27, 95% CI 1.14 to 1.42 and aOR 1.45, 95% CI 1.09 to 1.94, respectively).54 Finally, one low-quality quasi-experimental study tested the effect of group-led health education and monitoring households to control lymphatic filariasis in two rural villages and found a significant reduction in the proportion of people reporting mosquito-borne diseases (intervention: 75.8%, control: 48.8%, p=0.05).55

Sexual health and HIV
All but one study that tested group interventions to improve sexual health and reduce sexually transmitted infection (STI)/HIV incidence (n=6) were conducted with female sex workers. One low-quality RCT reported improved HIV knowledge among rural SHG members exposed to a health education intervention (aOR for ‘ever heard of HIV’: 3.6, 95% CI 1.6 to 8.0).56 A low-quality RCT among urban sex workers tested introduction of a microenterprise intervention with ongoing health education to reduce the number of sex exchange partners and reported positive results (reduction in partners β: −1.8 (−2.9, 95% CI −2.9 to −0.8)).57 A moderate-quality quasi-experimental study that examined the effect of community mobilisation interventions with urban and rural sex workers reported reductions in gonorrhoea/chlamydia (aOR: 0.53, 95% CI 0.31 to 0.87), but not on HIV or syphilis (aOR: 1.07, 95% CI 0.54 to 2.14, aOR: 0.63, 95% CI 0.22 to 1.78, respectively), and improvements in condom use and HIV testing.58 Another moderate-quality quasi-experimental study evaluated a community mobilisation intervention and reported improved knowledge of STI/HIV (know at least one STI: aOR: 48.5, 95% CI 14.4 to 163) and an overall effect on summary measures of empowerment and health (parameter estimate 4.81 (SE: 0.34), p<0.001).59 A moderate-quality evaluation of community mobilisation and peer groups reported reductions in gonorrhoea and/or chlamydia (aOR: 0.60, 95% CI 0.47 to 0.78) but no change in syphilis (aOR: 0.74, 95% CI 0.58 to 0.94) or HIV infection (aOR: 0.89, 95% CI 0.74 to 1.07).60 Lastly, a low-quality quasi-experimental study reported positive effects of group training grounded in cognitive-behavioural therapy on adherence to antiretroviral therapy (intervention: 54%; control: 0%).61

Domains with less than three studies
We found less than three studies on: health expenditure,62 63 water and sanitation64 65 and mental health,66 as well as two studies that addressed multiple health domains.67 68 (detailed findings reported in online supplemental text).

Effects by level of community participation, scope of capability strengthening and group type
Figure 2 includes three harvest plots for the primary or main health outcomes in moderate-quality and high-quality experimental studies. We made separate plots to describe the relationship between intervention effects and levels of community participation, scope of capability strengthening and underlying group type, as defined in panel 1. We found
more studies with positive effects as the level of community participation increased from informing community members (n=2/7) or consulting them (n=1/2) to building a partnership (9/12). Similarly, we found more studies with positive effects when interventions aimed to increase community capabilities (n=7/9) rather than focusing only on building individual (n=1/2) or group capabilities (2/7). Lastly, we found more studies with positive effects through open or community-based groups (n=7/10) compared with SHGs (4/9).
Effects by type of social and behaviour change techniques employed

Figure 3 is a heat map of social and behaviour change techniques used in group interventions, using a taxonomy developed by Kok et al.21 It illustrates two findings. First, on average, interventions that succeeded in improving health outcomes25 28–30 40 53  used more social and behavioural change techniques (mean: 25.5, SD: 2.9) than those that did not succeed in improving health outcomes (mean: 19.2, SD: 6.9), with only a few exceptions.32 43 Second, successful interventions tended to use a combination of: (A) individual techniques aiming to increase knowledge and risk perception and (B) techniques to foster wider social and environmental change, including techniques to change social norms, and participatory problem posing and solving. Interventions that employed fewer, or mainly individual-level, techniques reported positive effects on self-reported behaviours but not on ‘harder’, objectively measured health outcomes (eg, mortality or anthropometry).27 42 In sum, using more and more diverse techniques mattered, especially to achieve changes in ‘hard’ outcomes.

Enablers and barriers in group-based interventions

Table 1 summarises enablers and barriers related to context, intervention design, implementation and outcome characteristics.

Context

Two commonly cited contextual barriers to success were the lack of adequate health services in rural areas and high levels of migration in urban areas.27 28 42 43 49 67 69 Several quantitative and qualitative studies cited the presence of pre-existing SHGs as a key contextual enabler to improving health. Many hypothesised that SHG membership itself could improve financial security and health behaviours, which in turn would improve health outcomes.70–73 However, our review identified no high-quality or moderate-quality experimental studies reporting effects of SHG-only interventions on hard health outcomes such as mortality or anthropometry and only limited effects on self-reported behaviours.41 45 51 63 66 Some researchers argued that the social cohesion of SHGs would make add-on health education interventions more effective.12 74–79 Yet several empirical studies identified barriers to integrating health interventions into SHGs: limited priority and time for health, exclusion of the most vulnerable and instability of the ‘platform’ due to group dissolution and irregular meetings.33 42 50 56 80–83 Finally, some studies argued that women’s groups could support health interventions through partnerships with government to monitor accountability as well as engage and mobilise communities, which appeared feasible in rural and urban settings.84–91

Figure 3  Heat map of social and behaviour change techniques used in interventions

| Techniques aimed at individual knowledge, capacity and skills | | Techniques aimed at social and environmental change |
|---|---|---|
| | Basic individual level methods | Increase knowledge | Awareness and risk perception | Change habit, automatic, impulsive behaviour | Change attitudes, beliefs and outcome expectation | Skills, Competency, Self-Efficacy | Social influence | Public stigma | Environmental conditions | Social norms | Social networks | Change communities | Total techniques (individual + social) |
| Reference | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 |
| Figure 3 Heat map of social and behaviour change techniques used in interventions

*As reported in high and moderate-quality studies that included a health intervention

Effects

Interventions above had effects on health outcomes

Number of techniques (range)

Intervention design and implementation

Groups that improved health outcomes did not aim to ‘nudge’ new behaviours.90 93 Rather, they built individual, group and also communities’ capabilities by encouraging participation, problem solving and locally relevant solutions to address direct and underlying determinants.
Health systems links.25 29 62 94 99 Recruiting existing community health workers emerged limited priority to health.56 68 82 Training local women or community mobilisers who worked across finance, livelihoods and health juggled multiple priorities and gave motivated, involved of health behaviour.40 94–98 Furthermore, the active involvement of community health workers provided a bridge to health systems.25 27 29 54 62 69 99 Motivated, trusted facilitators—local women hired with adequate training—enabled effective meetings, ensured inclusion of the most vulnerable and prioritised health.94 95 99 Interventions that recruited SHG members as facilitators noted challenges in leadership, communication and technical capacity.50 80 However, externally hired SHG community mobilisers who worked across finance, livelihoods and health juggled multiple priorities and gave limited priority to health.56 68 82 Training local women or recruiting existing community health workers emerged as the two most promising models to ensure quality facilitation that capitalised on local trust, knowledge and health systems links.25 29 54 62 94 99

Effective group interventions attained sufficient intervention intensity: meetings held at least monthly, ranging from 1 to 2 hours per meeting, and over 1 year or more.26 30 96 Others reported irregular participation due to migration or lack of priority, resulting in limited time to discuss health—sometimes as short as 10 min42—and inadequate intervention duration to improve health outcomes.32 42 62 80 Groups that improved population health outcomes, primarily open groups, attained sufficient coverage of concerned women, for example, pregnant women when groups were concerned with improving RMNCH.28 29 Open groups in rural areas reported that over 55% of targeted women attended meetings, whereas a similar intervention that did not achieve effects in urban areas reached only 8% of reproductive-aged women.28 29 32 Observational studies reported limited coverage of young mothers in SHGs100 101: specific to RMNCH interventions, only one in four mothers with children under 2 years were SHG members in three states.12 Stability of groups varied: 27% of original microfinance and health groups in rural Bihar dissolved over a 1-year study period34 and open groups in Mumbai had 30% annual population turnover.35 while rural, open groups and sex worker collectives sustained participation over longer intervention periods.59 95 Lastly, intergenerational participation in groups was noted as important to address culturally rooted practices or household dynamics where mothers-in-law and family play an important role, such as birthing practices or domestic violence.92 102

### Outcome characteristics

Women and community members participated in group activities when topics discussed were relevant to them, such as neonatal practices in high-mortality settings or condom use among sex workers.32 95 98 This was key to success: not enough women in urban Mumbai were interested in perinatal practices to sustain continued group participation, possibly because mortality rates were lower in this setting and improvements in birth outcomes depended on the quality of facility-based care, which required other mechanisms to influence.32 Government SHG members have a mean age of 38 years100 with typically two to four members who are pregnant or mothers of young children, making the success of RMNCH interventions entirely dependent on diffusion to non-SHG members.12 34 42 100 Inclusion of more outcomes to sustain interest among other members did not appear effective: interventions with more than two health domains had limited or no effects, plausibly due to lack of focus.62 67 Effective interventions addressed outcomes with mechanisms that were in women’s control or addressed supply-side factors. For example, neonatal survival

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**Table 1 Enablers and barriers**

| Thematic category | Enablers | Barriers |
|-------------------|----------|----------|
| **Contextual factors** | ▶ Presence of existing SHGs | ▶ Migration (rural and urban) |
|                    | ▶ Community willingness to develop groups | ▶ Poor supply of health services |
|                    | ▶ Partnerships with municipalities in urban areas | |
| **Intervention design and implementation** | ▶ Problem solving to identify feasible solutions that engage women | ▶ Giving health messages without women’s active participation |
|                    | ▶ Trusted, local female facilitator who leverages local practices and beliefs | ▶ Poor outreach to target women and influencers |
|                    | ▶ Inclusion of most vulnerable through active engagement | ▶ Group dissolution |
|                    | ▶ Sufficient coverage to improve population health | ▶ Irregular attendance |
|                    | ▶ Intergenerational participation, such as mothers-in-law and adolescents | ▶ Insufficient time spent on health, including duration and frequency |
| **Outcome characteristics** | ▶ Relevant to majority of group members and local community | ▶ Driven by intrahousehold dynamics and social norms |
|                    | ▶ Supply-independent mechanisms to achieve effects possible or intervention addresses supply | |
|                    | ▶ Limited, focused outcomes | |

SHGs, self-help groups.
improved through supply-independent mechanisms such as wrapping newborn infants, while child wasting, stunting and underweight only improved with direct food provision. Similarly, group-based gender sensitisation training was perhaps insufficient to address the patriarchal social norms that perpetuate violence against women. SHGs are widely viewed as a useful platform to improve health in India, but our synthesis suggests that adding a health education component to meetings is unlikely to change population-level outcomes without opening health interventions up to non-SHG members, using both individual-level and community-level social and behaviour change techniques, and addressing common barriers to intervention intensity, such as giving too little time to discussions about health. Our review does however suggest promise for SHGs as community mobilisation partners in broader population health interventions, as illustrated by effective interventions for vector-borne disease control. For group-focused interventions, health issues beyond RMNCH—such as non-communicable diseases and access to entitlements—may be more aligned with the age profile of SHG members.

### DISCUSSION

We have conducted the first mixed-methods systematic review of the effects, enablers and barriers to groups improving women’s and children’s health in India, a setting where groups are widely used for health promotion. Experimental studies provided moderate-quality evidence that health interventions with groups can improve perinatal care practices, neonatal survival, immunisation rates, women and children’s dietary diversity and the control of vector-borne diseases. There was stronger evidence for interventions that were relevant to group members, actively built communities’ capabilities, used social and behaviour change techniques and attained sufficient implementation intensity. These characteristics resonate with existing social and behaviour change theory. Our finding that groups need to be engaged through multiple behaviour change techniques beyond those used with individuals also concur with the proposals made in a recent framework for behaviour change through groups and a review of techniques employed in low-income and middle-income settings. Evidence of positive effects on maternal, newborn and child health outcomes among rural, open women’s groups engaged in community mobilisation aligns with findings from global systematic reviews. The lack of evidence of effects on violence against women and anthropometry underscores the limitation of group interventions when constrained by adverse, deeply rooted social norms or a limited supply of health and nutrition services. Like other systematic reviews, we found little evidence that SHGs can improve health outcomes on their own.

Evidence of potential effects on maternal, newborn and child health outcomes among rural, open women’s groups engaged in community mobilisation aligns with findings from global systematic reviews. The lack of evidence of effects on violence against women and anthropometry underscores the limitation of group interventions when constrained by adverse, deeply rooted social norms or a limited supply of health and nutrition services. Like other systematic reviews, we found little evidence that SHGs can improve health outcomes on their own.

In a separate article, we identified three ‘ideal types’ of group interventions to improve health: ‘classrooms’ that build individual capacities using the group as a platform for information dissemination; ‘clubs’ that intentionally build group capacity to address health among members; and ‘collectives’ that engage communities to socially build group capacity to address health among members. Our review has limitations. Many experimental studies included multiple secondary outcomes, but we limited our syntheses to primary or main reported outcomes, which may have led us to under-report effects for intermediate behaviours. We did not examine effects by population subgroups (eg, among the poorest), due to heterogeneity in outcomes and common lack of reporting by subgroup. Many studies did not provide sufficient detail on intervention design and processes, such as meeting frequency, facilitator characteristics or behaviour change approaches, and we did not contact authors for additional information. Furthermore, the Kok et al taxonomy was designed to guide intervention development rather than code techniques and thus contained some overlapping categories.

Our recommendations were influenced by limitations in the evidence base. We found few evaluations from urban areas. One-third of experimental studies were at serious or critical risk of bias, largely because evaluations did not adequately address selection bias, missing data or failed to prespecify their main outcomes. Group-level findings that did not report population coverage limited our ability to examine the potential of such interventions to improve population health and equity. Only 13 experimental studies included process evaluations or qualitative findings, limiting the strength of our conclusions on enablers and barriers. Lastly, only 12 evaluations included cost data.

Box 2 summarises this review’s recommendations for future interventions with women’s groups in India. These have potential relevance for other countries that have community engagement programmes with women’s groups, including Bangladesh, Nepal, Thailand, Bolivia, Haiti, Ethiopia, Nigeria and South Africa. Future research should estimate population-level coverage of groups and effects, rather than focusing solely on group members. More robust evaluations are needed from urban contexts and for key areas including family planning, water, sanitation and hygiene, non-communicable disease and violence against women. Studies should aim to include objectively measured health outcomes.

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Desai S, et al. BMJ Global Health 2020;5:e003304. doi:10.1136/bmjgh-2020-003304
Box 2  Panel 2: Suggested principles for women’s groups interventions to improve health

- Interventions with women’s groups should focus on changing health outcomes that are supply- independent or concurrently address supply-side factors.
- Groups should either open up to those interested in the selected health outcomes, choose health outcomes aligned with members’ needs or allow members to decide which outcomes they wish to focus on.
- Community interventions with women’s groups should go beyond disseminating information and seek to build communities’ capabilities. Short modules to deliver health messages are rarely effective for outcomes that are determined by more than knowledge deficits.
- Women’s groups interventions should have sufficient intensity: most successful interventions have groups that meet at least monthly, for at least an hour focused on health and for an intervention duration proportionate to the complexity of the outcome(s) tackled.
- Group-based interventions should aim to involve the wider community through specific, intentional mechanisms (eg, community meetings or outreach) given that most groups will not attain sufficient population coverage and there is limited evidence of diffusion.
- Motivated and capable facilitators—local women with adequate training or support—are required for almost all social and behaviour change approaches.
- Community health workers should be engaged in women’s group interventions, either as facilitators or as participants, to facilitate links with the health system.

and measures to address social desirability bias with self-reported behaviours. Lastly, systematic reporting of behaviour change approach, group and intervention implementation processes and costs will help to inform policy and practice.21 117

CONCLUSION

Community interventions with women’s groups can improve women’s and children health in India if they engage with whole communities and with sufficient intensity. Our review suggests that using women’s groups only as a platform to disseminate health messages has limited rigorous evidence of effectiveness on population-level outcomes. There is more promise in community mobilisation approaches that seek to build communities’ capabilities. These should focus on changing health outcomes that are of interest to group members and are either supply independent or with a concurrent focus on supply-side factors, have sufficient intensity, population coverage and good facilitators, preferably connected to the health system.

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Domains with less than three studies

Two studies on health expenditure reported no effects: a high-quality RCT of a health education intervention with a community-based women’s group found no effects on women’s utilisation of health insurance (aRR: 1.03, 95% CI: 0.81-1.30)\(^{64}\) and a moderate-quality quasi-experimental rural study of SHG membership found no effects on health care expenses (intervention: USD 840 vs USD: 948 control, p=0.13).\(^{65}\) Two studies at high risk of bias found positive effects of supply-side inputs on water and sanitation with rural SHGs on water quality (geometric mean thermotoler and coliform count: (13.7 [95% CI: 9.9-18.8; vs 44.5; 95% CI: 33.7-58.8]; p=0.01)\(^{66}\) and toilet construction (intervention: 48% vs. 15% control).\(^{67}\) Of studies that targeted multiple health domains, a high-quality RCT of participatory women’s groups meetings combined with community resource centres and home visits in urban, informal settlements found improvements in unmet need for family planning, but not on child immunisation or wasting (aOR: 1.31, 95% CI: 1.11-1.53; aOR 1.30, 95%CI: 0.84, 2.01; aOR: 0.92 (95% CI: 0.75,1.12, respectively).\(^{69}\) A low-quality RCT reported no effects of a rural intervention to introduce participatory learning and action through SHGs on over 50 health outcomes.\(^{70}\) Lastly, two moderate-quality studies that measured effects on mental health found no improvement in health-related capability indicators from SHG membership\(^{68}\) or on overall maternal depression, except in the final year of a rural community mobilisation intervention with open groups (aOR: 0.74 95% CI: 0.40-1.37).\(^{30}\)

### Supplementary Table 1: Search terms

| Search domain | Query |
|---------------|-------|
| **1: Women**  | Woman OR Women OR Matern* OR Mother* |
| **2: Groups** | Group OR Groups OR Club OR Committee* OR Collectiv* OR Meeting* OR Participat* OR Organis* OR Organiz* OR microfinance OR saving OR credit OR insurance |
| **3: Health** | Health OR illness* OR disease OR disorder* OR infect* OR well-being OR morbidity* OR medical* OR medicine OR deliver* OR Hospital OR Hospitals OR Hospitalization OR Child OR Children OR family* OR neonat* OR mortality OR reproductive OR sexual OR HIV OR condom OR family?planning OR contracept* OR steril* OR mental OR depress* OR anxiety OR stress OR support OR emot* OR violen* OR psychosocial OR malaria OR tuberculosis OR diarrh* OR incidence OR respirator* OR util* OR service* OR exper* OR insur* OR financ* OR bednet OR water OR toilet* |
| **4: Nutrition** | Nutrition OR Micronutri* OR Macronutri* OR Body Mass Index OR Anthropometri* OR Arm circumferen* OR Stunt* OR Wast* OR Underweight OR Anemi* OR Hemoglobin OR Diet OR Dietary OR Food OR Feed* OR Calori* OR Grow* OR Breastfe* OR Complementar* OR Feed* OR Birth* OR weigh* OR Vitamin* |
| **5. Search string** | 1 and 2 and (3 or 4) and 5 and 6 |
Supplementary Table 2: Randomised controlled trials on the effects of women’s groups

| First author (year of publication) | Setting | Intervention | Group type | Scope of capacity building for health (individual, group, community or none) | Level of participation (informing, consultation or partnership) | Intervention duration | Control | Participants (n intervention, n control) | Level of outcome measurement (group only, members and non-members, population-level) | Primary outcome(s) | Effect size (95% CI) | Risk of bias
|-----------------------------------|---------|--------------|------------|--------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------|---------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------|---------------------|
| **Reproductive, maternal, newborn and child health** |
| Kumar (2008)*                     | Rural Uttar Pradesh | NGO-trained, salaried community volunteers facilitated 4 monthly newborn care stakeholder meetings, 3 monthly community meetings, 3 monthly folk song meetings, one monthly volunteers’ meeting and did two antenatal and two postnatal home visits to promote birth preparedness, essential newborn care and danger sign recognition. | Open | Community | Partnership | 16 months (2004-2005) | Usual care | Pregnant women in the study area identified through a retrospective survey of all women of reproductive age at baseline (2007) and then prospectively until 2010 (Int n infants=1581; Con n=1143) | Population | Neonatal mortality | Adjusted Risk Ratio [ARR]: 0.46 (0.35,0.60) | Some concerns |
| Kumar (2012)*                     | Rural Uttar Pradesh | As above | Open | Community | Partnership | As above | Usual care | Pregnant women in the study area identified through a retrospective survey of all women of reproductive age at baseline (2007) and then prospectively until 2010 (Int n) | Population | Maternal mortality | ARR: 0.44 (0.14-1.43) | Some concerns |
| Author(s)       | Location                  | Intervention                                                                 | Population                          | Outcomes                                                      | Odds Ratio (95% CI) |
|-----------------|---------------------------|-------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------|--------------------|
| Tripathy (2010)* | Rural Jharkhand and Odisha | NGO-trained, salaried local women facilitated monthly women’s groups meetings with a mix of newly formed groups and self-help groups opened up to non-members. Meetings followed a Participatory Learning and Action cycle in which group members identified and prioritised common perinatal problems, discussed and implemented strategies to address these, and evaluated their results. Groups organised two community meetings to elicit support for strategies. All clusters received Village Health Nutrition and Sanitation Committee (VHNSC) strengthening. | All women who gave birth during the study period and their infants, (Infants Int n= 9388; Con= 8819) | Neonatal mortality, maternal depression | AOR for neonatal mortality: 0.68, 95% CI: 0.59-0.78, moderate maternal depression AOR 0.74 (0.40-1.37) |
| Houweling (2013)* | Rural Jharkhand and Odisha | As above                                                                 | Less marginalized (Int n= 4384 Con n=4219) versus most marginalized mothers and infants (illiterate, very | Population          | Some concerns                                                              |
| Author | Location | Intervention Details | Group Type | Time Frame | Campaign | Population | Neonatal Mortality | AOR (95% CI) | Concerns |
|--------|----------|----------------------|------------|------------|----------|------------|-------------------|-------------|----------|
| Acharya (2015)* | Rural Uttar Pradesh | NGO-trained, incentivised ASHAs facilitated newly formed monthly mothers' group meetings using oral and pictorial participatory methods to promote birth preparedness, essential newborn care and danger sign recognition. They were supported by Village Health Sanitation and Nutrition Committees and mass 'mid' media campaigns. | Community-based women’s group | Three years (2007-2010) | District-level campaigns with advocacy, mass media and “mid-media” (e.g., local street theatre) | All women who gave birth during between 2007 and 2010 in the study clusters (Endline Int n=infants=5988; Con n=5897) | Population | Neonatal mortality | AOR: 0.98 (0.80,1.19) | Some concerns |
| More (2012)* | Mumbai, Maharashtra (informal settlements) | NGO-trained, salaried local women facilitated newly formed fortnightly women's groups meetings in informal settlements. Women improved their knowledge of local perinatal services, best practices and how to negotiate optimal care with family and | Open | Community Partnership | Three years (2006-2009) | Usual care | Women who gave birth in the study clusters and their infants (Infants, Int n=7656; Con n=7536) | Population | Stillbirth rate, Neonatal mortality rate | Stillbirth rate AOR: 0.66 (0.46,0.93), Neonatal Mortality AOR 1.42 (0.99-2.04) | Some concerns |
| Study | Location | Intervention Description | Data Collection | Follow-up Period | Outcome | Group 1 | Group 2 | Effect Estimate | Comparison |
|-------|----------|--------------------------|----------------|-----------------|---------|--------|--------|----------------|------------|
| Tripathy (2016)* | Rural Jharkhand and Odisha | NGO-trained, incentivised ASHAs facilitated monthly women's groups meetings with a mix of newly formed groups and self-help groups opened up to non-members in their own working areas. Meetings followed the Participatory Learning and Action cycle described above. All clusters also received Village Health Nutrition and Sanitation Committee (VHNSC) strengthening. | Open Community Partnership | Two years (2011-2012) | VHNSC strengthening only | All women who gave birth during the study period and their infants, (Infants Int n=9388; Cont=8819) | Population | Neonatal mortality | AOR 0.69 (0.53, 0.89) | Low |
| Nair (2017)* | Rural Jharkhand and Odisha | NGO-trained, salaried community health workers did monthly home visits in the third | Open Community Partnership | 30 months | VHNSC strengthening only | Pregnant women identified and recruited in the study clusters and their children | Population | Children's length-for-age z score at 18 months | Adjusted mean difference 0.11 (-0.01, 0.23) | Low |
| Study | Setting | Population | Intervention | Duration | Comparator | Outcome | Effect Size |
|-------|---------|------------|--------------|----------|------------|----------|-------------|
| Gupta (2019)* | Rural Bihar | Jeevika community mobilisers met with SHG members (women aged above 18 years who participate in microfinance activities) to deliver messages on maternal and child health, nutrition and WASH twice a month through videos on health and nutrition, as well as targeted home visits, peer group meetings, and community events. | SHG | Individual | Informing | 2.5 years (2016-2018) | Groups with no health and nutrition intervention | Women belonging to a household where at least one woman was a member of a Jeevika SHG and with at least one child aged 6–23 months (Endline households n=2119) | Group | Women’s BMI | Dietary diversity for children aged 6–23 months | Effect on mean BMI z score: B coefficient: -0.025 SE: (0.082) Reported dietary diversity of youngest child: B coefficient: 0.286 SE (0.118) Reported dietary diversity of index child: B coefficient: 0.169 SE (0.080) |
| Ojha (2019)* | Rural Bihar | NGO-supported women’s self-help groups (SHGs) involved in | SHG | None | Informing | 18 months | Usual care | All children < 5 years resident in study clusters (n= 2534 in total) | Population | Weight-for-height z score of children < 5 years | AOR: 0.46 (0.28, 0.74) |

(Infants Int n=1460; Cont n=1541)

Gupta (2019)*

Rural Bihar

Jeevika community mobilisers met with SHG members (women aged above 18 years who participate in microfinance activities) to deliver messages on maternal and child health, nutrition and WASH twice a month through videos on health and nutrition, as well as targeted home visits, peer group meetings, and community events.

SHG Individual Informing 2.5 years (2016-2018) Groups with no health and nutrition intervention Women belonging to a household where at least one woman was a member of a Jeevika SHG and with at least one child aged 6–23 months (Endline households n=2119) Group Women’s BMI Dietary diversity for children aged 6–23 months Effect on mean BMI z score: B coefficient: -0.025 SE: (0.082) Reported dietary diversity of youngest child: B coefficient: 0.286 SE (0.118) Reported dietary diversity of index child: B coefficient: 0.169 SE (0.080) Low

Ojha (2019)*

Rural Bihar

NGO-supported women’s self-help groups (SHGs) involved in | SHG | None | Informing | 18 months | Usual care | All children < 5 years resident in study clusters (n= 2534 in total) | Population | Weight-for-height z score of children < 5 years | AOR: 0.46 (0.28, 0.74) |

High

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savings and credit activities through four weekly SHG meetings and after six months, loans from the NGO for emergencies (e.g. access to health services) and general purpose (e.g. investment and consumption purposes).

| Violence against women |
|-----------------------|
| **Jojeebhoy (2017)** |
| Rural Bihar |
| Peer facilitators met fortnightly with SHGs supported by the Women Development Corporation (WDC), and monthly with husbands of SHG members. The intervention included gender transformative group learning sessions with SHG members and similar sessions with husbands; activities to link SHG members with livelihood training opportunities; and community mobilisation at the village level by SHG members and their husbands to change gender norms and attitudes. |
| SHG | Group | Informing | 15 months (2014-2015) | Groups with usual care | Married women in SHGs aged 18-49 years residing in the study areas Endline: Arm I (n=567) Arm II (n=531 members) n=1053 non-members Arm III (n=588 members) (n=1025 non-members) | Members and non-members | Attitudes relating to gender roles among SHG members | Index of gender role attitudes AOR: 0.69 (0.35, 1.02) | Violence: Emotional AOR: 2.95 (1.75, 4.97) Physical AOR: 0.69 (0.46, 1.02) Sexual AOR: 1.23 (0.64, 2.36) | Some concerns |
| **Holden (2016)** |
| Urban Madhya Pradesh |
| Trained facilitators delivered |
| SHG | Group | Informing | 15 months (2013-2014) | Usual care | SHG members (Endline n=1751) and Members and non-members | Women: Experience of physical or | Women’s experience of physical or | Some concerns |

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## Vector-borne diseases

| Study | Setting | SHG | Group | Consultation | Year | Usual care | Households in study areas | Population | Mosquito pupal indices in house and per person | Difference in reduction, between two arms | Some concerns |
|-------|---------|-----|-------|-------------|------|------------|--------------------------|-----------|-----------------------------------------------|------------------------------------------|----------|
| Arunachalam (2012)* | Per-urban Tamil Nadu | SHG | Group | Consultation | c.10 months (2009-2010) | Usual care | Households in study areas (Int households n=1000 Con=1000) | Population | Mosquito pupal indices in house and per person | Difference in reduction, between two arms | Some concerns |
| Das (2014)* | Rural | Two | SHG | Community | Partnership | c.12-15 | Group with | All individual | Population | Unclear, but | - Total % | Some |
| Odisha interventions tested. In Arm 1, NGO field workers visited ASHAs at least twice a month to share information about the transmission, diagnosis and treatment of malaria; hands-on support for performing and interpreting rapid diagnostic tests; administration of the correct dosage of ACT and follow-up to ensure compliance; management of malaria surveillance records; orientation on community mobilisation and health centre engagement. Community mobilisation focused on increasing consistent use of insecticide treated bed nets provided to the community free of cost by government, and timely care-seeking for febrile illnesses from the ASHA. Messages were disseminated to local governance bodies, social organizations, women, men, |
|---|---|---|---|---|
| months | usual case management by ASHA, with no other support | recent fever cases within each village in study areas, n= 768 (Arm 1); n=781 (Arm 2); n=755 (Arm 3, Control) | possibly: (1) % HH who used at least one LLIN 2) % HH who had fever tested for p. falciparum in 24 hours | population slept under bed net last night: Arm B (community mobilisation) vs Control: 1.274 (1.143, 1.419) |
| (2010-2011) | | | | - Fever diagnosis <24 hours Total pop, B vs control: 1.01 [0.74,1.38] - Prompt diagnosis by trained provider: B vs control: 1.45 [1.086,1.937] |
youth, school and religious groups were chosen through posters, leaflets, cinema shows and street plays. SHGs were assigned 10-15 homes each in every village to monitor bed net use at night. Arm 2 included community mobilisation alone, without training for ASHA.

**Sexual health and HIV**

| Sherman (2010)† | Pen-urban Tamil Nadu | Health educators offered sex workers eight hours of HIV prevention education through didactic methods and interactive activities twice weekly, plus 100 hours of tailoring training taught by master tailors. | Special population group | Individual | Informing | Five weeks | HIV prevention education only | Sex workers aged over 18 years (Int n=58 Con = 48) | Group | Mean n of sex exchange partners | Int mean: 3.1 [2] Con mean: 5.1 [3] p <.0001 | High |
| | | | | | | | | | | | | |
| Spielberg (2013)† | Rural West Bengal | An NGO trained local self-help promoting institutions to deliver learning games for Girls and other non-formal education on health, livelihoods, and family finance to SHGs of poor women and adolescent girls during their regular savings and | Special population group | Group | Informing | Three years (2006-2009) | Usual care | Women SHG members who attended the first session (Int n=471, Con n=409), and their daughters or daughters in law (Int n= 897, Con n= 450) | Group | % who ever heard of HIV | AOR: 3.6 (1.6, 8.9) | High |
loan meetings. Health education included information on diarrhoea, hygiene, and HIV to SHG members and their daughters or daughters in law, and to SHGs with adolescent girls only.

### Health expenditure

| Health expenditure | Desai (2017)* | Peri-urban Gujarat | NGO-trained health workers provided preventive care group health education to women on hysterectomy, diarrhoea, fever/malaria and sanitation using films, interactive discussions and games. | Community-based women’s group | Individual | Consultation | 18 months (2010-2011) | Regular SEWA community health worker services | For primary outcome: all women who had made an insurance claim in the study clusters; for secondary outcomes: insured and uninsured women in study clusters at baseline and follow-up surveys. Participants were 3340 insured women residents, point, Int n=1436 person–years; Con n=1227 person–years. | Population | Insurance claims rate for 3 conditions (malaria, hysterectomy and diarrhoea) | ARR: 1.03; 95% CI: 0.81, 1.30 | Low |

### Multiple outcome domains

| Multiple outcome domains | More (2017)* | Mumbai, Community | Open | Community | Partnership | Three years | No Centre | Ever-married | Population | Met need for | Met need for |Low |
| Maharashtra (informal settlements) | Resource Centres were created and employed full-time, salaried community organisers who made home visits, organised group meetings, provided services, day care for malnourished children, did community events and liaised with existing systems. | (2011-2014) | women aged 15-49 years residing in study clusters and any children under five years | family planning, full immunisation for children, childhood wasting | family planning, AOR 1.31, (1.11, 1.53). Full immunisation for children: AOR 1.30, (0.84, 2.01). Childhood wasting: AOR 0.92, (0.75, 1.12) |
|-----------------------------------|-------------------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| Subramanyam (2017)*                | Rural Bihar                                                                                                                                                   | SHG          | Community Consultation 12 months (2015-2016) Usual care Household heads and women of reproductive age, pregnant women and their husbands, community mobilisers and Anganwadi workers (AWW) in study areas: at endline, n=3340 households, n=1612 women, n=282 community mobilisers n=233 Anganwadi workers | Population 59 outcomes related to health, nutrition, violence and social capital – no primary outcome specified | The authors found no evidence of effects on health, nutrition, WASH and violence. |

* Cluster randomised controlled trial  † Individual randomised controlled trial  ‡ Risk of bias assessment based on Cochrane ROB 18
**Supplementary Table 3: Quasi-experimental studies on the effects of interventions with women’s groups**

| First author (year of publication) | Setting | Intervention | Group type | Scope of capacity building | Level of participation | Intervention duration | Control | Study design | Participants (n intervention, n control) | Main outcomes | Popul ation or group-level measurement | Effects (95% CI or SE) | Risk of bias |
|-----------------------------------|---------|--------------|------------|---------------------------|-----------------------|----------------------|---------|-------------|------------------------------------------|---------------|----------------------------------------|-------------------|------------|
| Reproductive, maternal, newborn and child health | | | | | | | | | | | | | |
| Roy (2013) | Rural Jharkhand and Odisha | The Participatory Learning and Action cycle tested in Tripathy (2010), implemented in the previous RCT’s control areas | Open | Community | Partnership | Three years (2009-2011) | No control for implementation in control areas | Non-randomised, controlled | All women who gave birth during the study period and their infants. (Infants n=39,918) | Neonatal mortality | Population | AOR: 0.69 (0.57–0.83) | Serious | Moderate |
| Saggurti (2018) | Rural Bihar | Community health facilitators did eight weekly cycles of participatory communication (banners, stories, picture cards or songs with messages) with existing women’s self-help groups using different thematic modules on antenatal and postnatal care, maternal and child nutrition, routine immunisation, family planning, personal hygiene and use of toilet. | SHG | Individual | Informing | 12 months (2013-2014) | SHGs with no health intervention, no matching | Non-randomised, controlled | Group members who had a birth in the past 12 months (Endline Int women n=718; con = 217) | Maternal, neonatal and child health knowledge and practices | Group | Adjusted Difference In Difference [ADID]: 4+ antenatal care visits: -0.4 (-6.2, 5.5); Consumption of IFA tablets/syrup for 100+ days: 4.9 (-1.1, 10.8); Institutional delivery: 8.8 (0.1, 17.8); visit by a health worker within 2 days after delivery: -4.6 (-13.6, 4.4); Skin-to-skin care for newborn infants: 17.0 (-0.5, 34.1); Delayed infant bathing for 3+ days: 19.2 (3.8, 34.6); Timely initiation of breastfeeding: 20.5 (5.7, 35.3); Exclusive breastfeeding: 26.7 (9.4, 44.1); Fed solid/semi-solid food: 4.7 (-5.3, 14.6); Age appropriate immunization: 9.1 (1.0, 19.6); Use of modern contraception methods: 9.3 (1.3, 17.2) | Serious |
| Saha (2015) Rural Gujarat and Karnataka | Facilitators from two NGOs (Self Employed Women’s Association, or SEWA and Shri Kshetra Dharamstala Rural Development Project (SKDRDP). SEWA included health insurance and primary health care delivered through stationary and mobile health camps, health education and training, the production and marketing of traditional medicines. SKDRDP included health education in routine credit group meetings, home visits by a village health worker, the promotion of low latrines, and insurance with health cover. |
| Commu- | Individual | Consultation | One year (2012-2013) | Group | Non-randomised, controlled | Women of reproductive age with a child younger than two years (Women, Int = 219; Con = 253) | Institutional delivery: Feeding a newborn infant colostrum: Having a toilet at home: Diarrhoea among children |
| ty-based women’s group | | | | | | |
| Prennushi (2014) Rural Andhra Pradesh | Government-employed community resource persons formed SHGs. Government gave SHGs seed funds and links to banks to expand access to low-cost credit and training in social and economic skills. Government also set up federations of SHGs in villages, blocks, and districts. |
| SHG | None | Informing | Four years (2004-2008) | Usual care | Propensity score matching with panel survey | 4,250 households | Assisted delivery Breastfeeding Immunization Knowledge of diarrheal disease Knowledge of FP methods |
| | | | | | | Assisted delivery Breastfeeding Immunization Knowledge of diarrheal disease Knowledge of FP methods |
| Hazra (2019) Rural Uttar Pradesh | Swasthya Sakhi, SHG members, were trained as volunteer peer educators. They conducted monthly meetings with SHGs where she disseminated maternal and child health |
| SHG | Group | Informing | 24 months (2015-2017) | SHGs with no intervention, block-level matching | Non-randomised, controlled | Eligible women from SHG household were currently married, 15-49 years and had given birth in the 12 months | 1. Reproductive and maternal health practices: At least four ANC visits; its, at least three |
| | | | | | | |

- **Moderate**
- **Serious**
- **None significant at 0.05 level**
| Janssens (2011)* | Rural Madhya Pradesh | The Mahila Samakhya programme set up women’s groups in villages. Programmed facilitators women to join the groups and improve their daily lives through collective action, without prescribing the | Community |
| Community-based women’s group |
| 5-10 years (data collection in 2003) | Village(s) with no Mahila Samakhya groups |
| Regressional discontinuity using a single cross-sectional survey | Women who were participants in MS (n=718) and non-participants (n=714) women in control villages (n=559) |
| Childhood immunization rates |
| Probit: Programme participant versus non-participant (adjusted) |
| Program village DPT 0.195 0.114*; Measles: 0.324 0.103* |

Information on preventive and care-seeking perinatal care practices and family planning. Community outreach activities including home visits, community meetings using of audio visual aids such as health videos.

Prior to the survey, Intervention: n=2165; Control: n=2085

ANC check-ups, consumption of 100 or more iron folic acid (IFA) tablets, institutional delivery, PNC check-up within first seven days of delivery, and current use of any contraceptive method.

2. Newborn care practices
   Clean cord-care to prevent cord infection, skin-to-skin care to keep the newborn warm, timely initiation of breastfeeding, and exclusive breastfeeding.

3. Childhood immunization rates

   | Probit: Programme participant versus non-participant (adjusted) |
   | Program village DPT 0.195 0.114*; Measles: 0.324 0.103* |

4. Other outcomes

   Pregnancy
   1.9 [−0.9, 4.8]
   Institutional delivery - 0.7 [−3.7, 2.3]
   Postnatal check-up within a week of delivery 4.6 [1.0, 8.2]
   Current use of any contraceptive method 11.2 [7.0, 15.4]
   Clean cord care (0–5 months) 7.4 [2.3, 12.4]
   Skin-to-skin care (0–5 months) 3.7 [−1.6, 9.0]
   Timely initiation of breastfeeding (0–5 months) 5.8 [0.1, 11.5]
   Exclusive breastfeeding (0–5 months) 1.8 [−11.1, 7.4]
activities that a group have to engage in but assisting women in identifying their own needs and solutions. Groups took up literacy trainings, set up savings and credit groups and informal primary schools for girls. Almost all groups sought to improve their knowledge of health and hygiene through regular visits from a facilitator and health trainings for the groups. Groups conducted their own immunisation campaigns within villages as one of their collective actions.

| Madhivan an (2013) | Rural Karnataka | SCIL (Saving Children and Improving Lives) delivered integrated antenatal care and HIV testing services to rural villages using mobile medical clinics. In a more intensive arm (SCIL+), a cash transfer was given to local women’s SHGs for assisting in mobilizing attendance at the mobile medical clinics. The entire group earned cash that could then be loaned to members. | SHG Group Informing 12 months (2011-2012) Provisi on of the mobile clinic service without the cash transfer to SHGs Non-randomised controlled, no adjustments for potential confounders Pregnant women aged 18 years or more and residing in a study village for more than six months. SCIL: 418 pregnancies; SCIL+: 512 p’regnancies Proportion of total pregnancie s in these villages for which women received ANC and HIV testing HIV prevalence TB: 0.224 0.131* |
| Mozumdar (2018) | Rural Uttar Pradesh | NGO-established SHGs to provide information on healthy maternal and newborn practices by engaging SHG members in discussions on HBMNC (home based individual informing) 4 months | SHG Individual Informing Households with SHG member in areas without Non-randomised controlled Households with at least one SHG member and at least one married woman Knowledge of maternal and newborn care Group DiD results on knowledge (%): Importance of ANC, 10.7* At least 4 ANC check-ups 1.3 2 TT injections required, 15.0* |
maternal and newborn care) topics for one or two meetings per month. SHG members were encouraged to share information on maternal and newborn caregiving with others.

| Saggurti (2019a) | Rural Bihar | Two modules on newborn health practices and was delivered across 1–2 months in all the groups. Information included immediate postnatal behaviors and breastfeeding practices. Information repeated in the month of implementation (in 3/4 other meetings) and in year 2 but not 3. | SHG | Individual | Informing | 2–3 months per module (over three years) |Govt-nurtured SHGs with no health intervention, no matching | Married SHGs women aged 18-49 with child <6 months age | Clean cord care; initiation of skin to skin care; timely initiation of breastfeeding; exclusive breastfeeding on day 1; delayed bathing | Group | Intervention vs Control:  
Clean cord care: 1.9 (1.5–2.3)  
Initiation of skin-to-skin care: 1.8 (1.5–2.3)  
Timely initiation of breastfeeding: 1.3 (1.0–1.7)  
Exclusive breastfeeding on day 1: 1.9 (1.4–2.6)  
Delayed bathing: 2.3 (1.8–2.9) | Serious |

Minimum 100 IFA tablets need to be consumed, 17.4*  
First PNC check-up for mother within 24 h, 12.7*  
Number of danger signs during pregnancy, Mean (SD) 1.1*  
First PNC check-up for child within 24 h, 10.5  
Number of at least 3 PNC check-ups within 7 days, 4.3  
Number of danger sign of newborn, Mean (SD) 1.1*  
Early BF 6.4  
Nothing should be applied on cord, 15.2*  
Keep cord clean and dry, 13.9  
Delayed bath greater than 48 h, 5.9  
Heard of KMC, 30.8*  
Correct method of KMC, 21.4*  
Return of fertility after 6 weeks 6.5

Endline (n=470)  
Mean (SD)

| Variable | Description | Sample Size | Mean | SD | P-value |
|----------|-------------|-------------|------|----|---------|
| First PNC check-up for mother within 24 h | 12.7* | 10.5 | 4.3 | 1.1* | 6.4 |
| Saggurti (2019b) | Rural Bihar | Eight weekly cycles of participatory behavior communication using different thematic modules on maternal, neonatal, child health and promoting collectivization processes facilitated by community health facilitators or sahelis. The intervention was delivered by sahelis, active women with some literacy and mobility who could learn and deliver health messages. | SHG | Individual | Informing | 8 weeks | Group with no intervention, no matching | Non-randomised, controlled | N of eligible women interviewed were: 2407 (in 2013), and 2970 (in 2016) | Groups interviewed Control: 174, 347, Intervention: 535 1115 | (1) whether in the past six months, respondent negotiated with staff of health care provider in order to help a fellow community member (self-advocacy with health care providers), (2) whether in the past six months, respondent negotiated with frontline health workers in villages in order to help a fellow community member (self-advocacy with local frontline workers), and (3) how confident are you in going to a government health center to get reproductive health services | Group | Did (%) | Group-based questions | Collective interaction with health facility 15.5 (10.3-20.8), p<0.001 | Collective agency to negotiate with health centre 1.1 (-3.4-5.7), p=0.626 | Collective agency to negotiate with anganwadi worker 4.8 (-4.9-14.4), p=0.334 | Individual questions | Self-advocacy with health care providers 4.8 (1.8-7.8), p=0.002 | Self-advocacy with local frontline workers 1.9 (-2.2-5.9), p=0.371 | Self-confidence in accessing health services 20.3 (12.0-28.7), p<0.001 | Treated fairly by: Accredited Social Health Activists (ASHAs) 1.6 (-3.1-6.3), p=0.512 | Anganwadi Workers (AWWs) 3.6 (-1.7-8.8), p=0.184 | Auxiliary Nurse Midwives (ANMs) 1.8 (-2.8-6.4), p=0.438 | Women reported that ASHA from health system Treat with respect 3.1 (0.2-6.1), p=0.035 | Direct to appropriate health providers 6.2 (1.6-10.8), p=0.009 | Respond quickly to emergency situations 9.7 (3.0-16.5), p=0.005 | Serious |
| Nutrition | Gope* (2019) Rural Jharkhand and Odisha | Two interventions were tested: either NGO-trained and salaried facilitators facilitating a cycle of monthly Participatory Learning and Action meetings focusing on maternal and child health and nutrition home visits to children identified as undernourished using MUAC or Anganwadi records plus creches for children aged 6 months to 3 years; | Open | Community | Partnership | Three years (2012-2015) | Usual care | Non-randomised, controlled | All mothers residing in the study areas who have children aged <36 months (Intervention a n=1256, Intervention b n=1177, Con trol n=1130) | % of children under three years who are wasted | Population | Arm a: PLA group + home visits: AOR: 0.66 (0.51, 0.88) | Arm b: PLA groups + creches: AOR: 0.73 (0.55, 0.97) | Moderate |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| De (2011) |
|-----------|
| **Rural West Bengal** |
| Self-help groups with microfinance promoted by the government or through NGO linkages with Govt SHGs for at least 1 year or for 8 years. |
| SHG |
| None |
| Informing |
| 1-8 years |
| Three control s: 1. Male borrowers 2. Female and male borrowers in SHG for at least 1 year 3. Non-SHG members who wanted to join SHGs |
| Cross-sectional survey with propensity score matching |
| Households with female and male borrowers from SHGs int n=120 Con group 1 n=40 Con group 2 n=90 Con group 3 n=120 |
| Weight-for-age z score among children <15 years |
| Household protein intake |

| Deininger (2012) |
|-----------|
| **Rural Andhra Pradesh** |
| The Society for the Elimination of Rural Poverty (SERP), established by the government of AP, trained facilitators and established federations of SHGs at village, block, district, and eventually state levels, with a focus on including the poorest. |
| SHG |
| None |
| Informing |
| 5 years (2001-2006) |
| Households with members who have participated in SHGs for 2.5 years |
| Non-randomised, controlled using propensity score matching |
| Participant HH involved with SHGs for at least 3 years (n=438); less than 3 years (n=234) HH that did not participate in SHGs in treatment villages (n=892) and HH in control villages (n=241) |
| Consumption (food and non-food items in past 30 days and lumpy items in past year) energy intake (Kcal/per day) asset accumulation (consumer durables, productive |
| Z score/weight for age: coefficient for intervention 0.250, p=0.13 (control 1&2) Z score/weight for age: 0.228, p=0.254 (control 1,2,3) |
| Protein intake: 0.364, p=0.384 (control 1&2) Protein intake: 0.494, p=0.213 (control 1&2) |

**Supplemental material**

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| Deininger (2013) | Rural Andhra Pradesh | The Indira Kranti Pratham (IKP) was implemented in 2 phases, DPIP - District Poverty Initiatives project; RPRP - Rural poverty Reduction Project:  
1) the program establishes federations of SHGs at village mandal (block), district, and eventually state levels  
2) to reach out to the poor. | SHG | None | Informing | 3 years (survey conducted in 2004) | Households in the RPRP areas | Cross-sectional survey with propensity score matching | Int: Households in DPIP areas N=1964; Con: Households in RPRP areas N=3789 | Female empowerment; nutritional intake; per capita income, consumption and assets. | Population | Gain in intervention arm, 2001 vs. 2004  
Energy intake p.c. (kcal/day), 109, p<0.05  
Protein intake p.c. (g/day), 5.84 p<0.01 | Moderate |
|----------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------|------|-------|----------|------------------|-------------------------------------------|-------------------------------|-------------------------------------------------|---------|-------------------------------------------------|------------------|
| Violence against women | Yaron (2018) Rural Bihar, Uttar Pradesh and Madhya Pradesh | As in Ojha et al (2019) | SHG | None | Informing | 18 months | Women in areas with no SHGs | Panel survey with propensity score matching | SHG members in intervention areas and matched adult women in control areas  
Intervention (n= 740) Control (n=308) | Index of domestic violence | Population | DID: Index of domestic violence mean score: --  
0.448  
p=0.008 | Serious |
| Prillaman (2017) Rural Madhya Pradesh | Self-help groups supported by the NGO Pradan for c.15 years | SHG | None | Consultation | c.15 years | Women in areas with no SHGs | Geographical regression discontinuity design | Women who were part of Pradan SHGs and women in control areas (n=2152 across both areas) | Intimate partner violence | Group | No effects on IPV: -  
0.092 (0.074) index of violence | Moderate |
| Sexual health and HIV | Beattie (2014) Urban Karnataka | Drop-in centres that provided presumptive treatment for Gonorrhea and Chlamydia and meeting place for FSWs to share experiences and gain a sense of solidarity. The program worked to support and develop critical thinking among | Special population group | Community | Partnership | 7 years of intervention (2004-2011) evaluated in last three years (2008-2011) | Regression analysis comparing groups with different levels of FSW not exposed to community mobilization activities | FSWs who sold sex at home, brothels and phone-based in the project area with low, medium medium (attended non-governmental organization meeting or | HIV and STI prevalence; HIV risk behaviours; and collective and individual power among FSWs | Population | Adjusted analyses:  
1st: No/Lo vs Med;  
2nd: No/Lo vs High (All AOR)  
Visited STI clinic in past 6 months:  
12.2 (7.88, 18.94)  
24.5 (15.3,39.3)  
HIV-1 infection  
1.26 (0.63,2.52) | Moderate |
the FSW community, providing a forum where FSWs could discuss difficulties and reflect on how they could work together to address the challenges they faced through collective action. FSWs formed community-based institutions including peer groups and collectives.

1.07 (0.54,1.4)
Reactive syphilis
1.29 (0.47,3.55)
0.63 (0.22,1.78)
HSV-2
0.93 (0.44,1.93)
0.49 (0.23,1.02)
Chlamydia
0.76 (0.45,1.27)
0.64 (0.37,1.09)
Gonorrhoea
0.95 (0.41,2.22)
0.39 (0.13,1.19)
Ever taken HIV test
8.15 (4.78,13.88); 25.13 (13.07,48.34)

Bhattacharjee (2013) Female Sex Workers joined community based mobilization activities including peer groups focusing on building individual capabilities to foster positive perception of self, enhance self-confidence and agency among individual FSWs and promote collective

| Rural and urban Karnataka | Female Sex Workers joined community based mobilization activities including peer groups focusing on building individual capabilities to foster positive perception of self, enhance self-confidence and agency among individual FSWs and promote collective |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Special population group | Community | Partnership | Five years (2005-2010) | Usual care | Propensity score matching using 3 surveys | Sex workers taking part in Behavioural tracking survey (BTS) and Integrated Biological and behavioural assessment (IBBA) BTS: Int n=1330 Con n=409 | Condom use with regular partner at last sex; Consistent condom use with all partner/client; Experience of violence | Populaton | All AOR: | Gonorrhoea and/or Chlamydia AOR: 0.60 (0.47, 0.78) Syphilis 0.74 (0.58, 0.94) Condom use with regular partner at last sex: 1.25 (0.93, 1.68) | Moderate |
identity to address their immediate needs. It also aimed to create an enabling environment by sensitizing a range of stakeholders in and beyond the community level to address factors in the macro-level social environment that creates structural barriers to empowerment among FSWs.

| Shankar (2019) | Urban Maharat htra | A group-based workshop over the course of 8 days, with sessions running 3.5 h/day. Individuals engaged in an introspective examination of aspects of their lives, using a cognitive reframing process, with counselling during and after the workshop. | Individual | Informing | 8 days | Sex workers who did not participate in the workshop | Individually non-randomised controlled | Sex workers who participated in full training and one year follow-up (n=58) and controls (n=43) | Adherence to HIV meds | Alcohol/tobacco use | General health status | Desire to leave sex work | Left sex work | Group | Increased adherence to HIV meds: 54% vs 0% | Decreased adherence to HIV meds: 4% vs 20% | Improvement in addiction to alcohol/tobacco: 9% vs 12% | Improvement in health status: 52% vs 14% | Stated desire to leave sex work: 47% vs 47% | Stated desire to leave and left sex work: 34% vs 2% | Left sex work: 24% vs 2% | Serious |
| Swendeman (2009) | Peri-urban Sonagachi Health Intervention Project activities primarily aim | Special population group | Community Partnership | 16 months | Control: STD clinics Non-randomised | Sex workers in treatment (n=110) and STD/HIV knowledge score | Population | Parameter estimates and standard errors (SE) from random- |
| West Bengal | to impact HIV/STD-related knowledge and skills, in addition to providing treatment and condoms. The programme also diffused rights-based messages to motivate change, building social support and community solidarity, mobilizing political participation to build social capital to enhance advocacy, and diffusing new norms for savings and alternative income enabled by a micro-finance service. | (2000-2001) | estabished, and provison of peer educat | control (n=110) recruited at baseline | effects linear regression: intercept, 6.7, SE 0.35 Know at least one STD 48.5 (14.4, 163) Condoms prevent STDs 23.22 (7.69, 70.3) Condoms prevent AIDS 23.3 (11.2, 48.1) At risk for STDs 6.5 (3.28, 12.9) Important condom decision-maker 24.7 (11.0, 55.6) Can refuse client 9.5 (4.82, 19.0)

| Water, Sanitation and Hygiene | Representatives from a private company gave presentations to SHG members about sources and risks of contaminated drinking water and methods to effectively treat their water at home, with a demonstration of their company’s water filter. After the SHG could take out a loan to buy a filter. | SHG Group Informing 18 months (2009-2010) | Femal memers of an SHG that offered loans for filters but who had not purcha | Case-control study. A case was defined as a female SHG member whose household had acquired a filter. | Of the 67230 members who received the program, 9.8% bought the filter. The geometric mean TTC count was 13.7 (95%CI: 9.9–18.8) among adopters, and 44.5 (95%CI: 33.7–58.8) among non-adopters (p<0.01).

| Freeman (2012) Rural and peri-urban Andhra Pradesh | Of the 67230 members who received the program, 9.8% bought the filter. The geometric mean TTC count was 13.7 (95%CI: 9.9–18.8) among adopters, and 44.5 (95%CI: 33.7–58.8) among non-adopters (p<0.01). | SHG Group Informing 18 months (2009-2010) | Femal memers of an SHG that offered loans for filters but who had not purcha | Case-control study. A case was defined as a female SHG member whose household had acquired a filter. | Of the 67230 members who received the program, 9.8% bought the filter. The geometric mean TTC count was 13.7 (95%CI: 9.9–18.8) among adopters, and 44.5 (95%CI: 33.7–58.8) among non-adopters (p<0.01).

| Khush (2009) Rural Tamil Nadu | 12 independent community-level programs that employed similar implementation strategies and were initiated at different town points over 3.5 years, e.g. providing | SHG Group Informing 3.5 years (2003-2007) | Contro | Non- randommi sedcontr oll ed | All households in study villages with a child under five years Control (n=456) and Intervention (n=444) | Of the 67230 members who received the program, 9.8% bought the filter. The geometric mean TTC count was 13.7 (95%CI: 9.9–18.8) among adopters, and 44.5 (95%CI: 33.7–58.8) among non-adopters (p<0.01). | 13 | BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance on the information supplied which is provided on this supplemental material which has been supplied by the author(s) BMJ Global Health doi: 10.1136/bmjgh-2020-003304:e003304. 5 2020;BMJ Global Health, et al. Desai S
households with toilets, taps, renovating handpumps and hygiene education campaigns in the community and schools, repair of school water facilities and a micro-credit scheme to take loans from SHGs to construct sanitation infrastructure.

12% of intervention households had a new private tap vs. 8% of control households.

### Vector-borne diseases

| Nandha (2012) | Rural Tamil Nadu | Health education in schools by a social scientist and teachers. Students educated community members at fortnightly intervals on elimination of breeding sites of mosquitoes SHGs were trained in environmental management methods for mosquito control, who in turn educated their members in monthly meetings and visited households to ensure prevention of mosquito breeding. | SHG | Community | Informing | 12 months (2009-2010) | A single village comparable to intervention village in relation to geographic conditions, filarial prevalence, population structure and economic status. | Non-randomised controlled | All household members in the study villages | The proportion of respondent(s) who provided at least one correct answer to each question of the knowledge test | Populations: Breeding sites (I:83.9%; C:48.8%, p<0.05); Mosquito-borne diseases (I:75.8; C:48.8, <0.05); preventive measures (I:83.9; C:48.8, p<0.05); transmission by mosquito bite (I:93.5; C:73.2, p<0.05).

Intervention area: fewer mosquito breeding sites <0.05; better use of personal protection methods (<0.05), better waste water management use (p<0.05) and were more likely to clean surrounding daily (P<0.05), and reduced per man-hour density of mosquitoes.

### Health expenditure

| Joshi (2016) | Rural Odisha | The Odisha Rural Livelihood Project (TRIPIT) formed SHGs, Gram Panchayat Level Federations (GPLFs) and provided community Investment Funds to improve | SHG | None | Informing | 36 months (2011-2013) | Contro l Gram Panchayats where the program had not | Non-randomised controlled | Int (n=1152) HH Control (n=1189 HH) | HH expenditure on healthcare | Populations: Expenses per capita: healthcare (annual)-Treatment- $839.6 vs control- $948, p value=0.126 | Serious

5 2020; BMJ Global Health, et al. Desai S
| Mental health | Anand (2019) Rural Uttar Pradesh | Mahila Vikas Pariyojana SHGs with regular meetings focused on the collection of these savings. Regular monthly meetings provide an opportunity to take part in financial and educational activities and build mutual support. SHG members sometimes share maternal and neonatal health-related information by themselves or after training by specialists. | SHG | None | Informing | Not reported | No group | Cross-sectional survey with propensity score matching | 5433 members and non-members | 15 capability indicators | Group | No changes in capabilities more directly related to health: (1) health limits activities; (2) lost sleep because of worry (mental health). | Moderate |

* Outcomes are primary unless specified. †Risk of Bias assessed using ROBINS-1 (Sterne 2016)
### Supplementary Table 4: Non-Experimental (Quantitative and Qualitative) Studies

| First author (year of publication) | Title                                                                 | Setting                      | Objective                                                                 | Data collection methods                     | Group type | Key findings                                                                 |
|-------------------------------------|-----------------------------------------------------------------------|------------------------------|----------------------------------------------------------------------------|----------------------------------------------|------------|-------------------------------------------------------------------------------|
| Acharya (2014)                      | Knowledge on health and nutrition among self-help groups affects the nutritional status | Odisha                      | To assess the nutritional status of SHG members in tribal areas of Odisha, and whether joining a Self Help Group (SHG) improved nutrition and health knowledge | Cross-sectional quantitative survey          | SHG        | Low education, scanty income, deficient savings, and meagre assets are barriers to attaining health and improving nutritional status amongst SHG women |
| Agarwal (2008)                      | Strengthening functional community provider linkages: Lessons from the Indore urban health programme | Madhya Pradesh | To describe an Urban Health Programme which aimed to increase coverage of services and adoption of key health behaviours related to neonatal survival, diarrhoea control, and other child health priorities by improving the capacities of local stakeholders and slum-based groups in health behaviour promotion | Cross-sectional quantitative survey          | Open       | An urban health programme integrating demand-supply and ward coordination enhanced utilization of services among slum communities and helped improve immunization coverage and other maternal and child health indicators, in a potentially replicable approach |
| Alcock (2009)                       | Community-based health programmes: role perceptions and experiences of female peer facilitators in Mumbai's urban slums | Urban Maharashtra (Mumbai) | To explore the role perceptions and experiences of facilitators of peer-led health interventions as change agents in a community setting | Qualitative - focus group discussions, semi-structured interviews and observation s | Open       | Peer-led health programmes need to account for the nature of relationships between peer workers and groups, role perceptions of peer leaders and perceptions and expectations of intervention recipients. Conceptual frameworks to describe the relationship between peer facilitators and groups should be based on empirical (street-level) evidence as well as theory. Programmes need to emphasise rapport-building, communication and negotiation skills for peer educators, and consider how recruitment, training and supervision of peer workers can enhance their credibility in the community. |
| Aruldas (2017)                      | Care-seeking behaviours for maternal and newborn illnesses among self-help group households in Uttar Pradesh, India | Rural Uttar Pradesh | To understand the processes of recognition and care-seeking for maternal and newborn illnesses; the sequences of actions for care-seeking when families experience maternal and newborn illnesses; and how health interventions using SHG platforms influence care-seeking for mothers and newborns' illnesses | Qualitative interviews focused on illness narratives | SHG        | Deep-rooted cultural beliefs and rituals guided care-seeking behaviour. When the onset of illness was during pregnancy, care was sought from health facilities. As the step of care for maternal illness, SHG households went to government facilities, and non-SHG households used home-based care. Home-based care was the first step of care for newborn illnesses for both SHG and non-SHG households; however, SHG households were prompt in seeking care outside of home, and non-SHG households delayed seeking care until symptoms were perceived to be severe. |
| Author     | Title                                                                 | Location | Objective                                                                 | Method | Implementor   | Findings                                                                                                                                                                                                                   |
|------------|----------------------------------------------------------------------|----------|---------------------------------------------------------------------------|--------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Avula (2019)| The Jeevika Multisectoral Convergence Pilot in Bihar - A Process Evaluation Report | Bihar    | To understand implementation platforms, training and awareness of roles, implementation processes, exposure of SHG households to key messages, and utilization of an intervention with JEEVikA groups in Bihar | Mixed-methods process evaluation | SHG | At the mid-point of this JEEVikA intervention, key intervention platforms for the behaviour change communication were, to a large extent, in place and functional. The staff’s knowledge of the aim of the pilot, and of their specific roles and responsibilities and intersections of roles with one another was good. The Behaviour Change Communication (BCC) content was largely accurate and comprehensive, covering much of the material in the ASHA training manuals and providing many of the same messages. New cadres of Community Nutrition Resource Persons (CNRP’s) and the Health Sub Committee (HSC) were being trained began working, which will ease the burden on the Community Mobilisers (CMs) and Cluster Coordinators (CCs). In about 65 percent of the SHG meetings observed as part of the process evaluation, health and nutrition topics were discussed. The topics of discussion were dietary diversity, pregnancy and newborn care, breastfeeding, and complementary feeding, and these correspond to the topics on which the CMs received training most recently. |
| Barman (2016)| How is perceived community cohesion and membership in community groups associated with children’s dietary adequacy in disadvantaged communities? A case of the Indian Sundarbans | West Bengal | To examine the association between community cohesion and child nutrition | Quantitative cross-sectional survey | SHG, CBWG | With each increase in the perceived community cohesion score (scale 0-9), a child was 1.31 times more likely to have minimum acceptable diet (95% CI 1.14, 1.50). The odds of minimum acceptable diet were also higher among children whose mothers had primary education (2.09, 95% CI 1.03, 2.94). |
| Baruah (2007)| Assessment of public-private-NGO partnerships: Water and sanitation services in slums | Gujarat  | To explore opportunities and constraints faced by non-governmental organizations (NGOs) collaborating with public- and private-sector organizations on developing and delivering housing, water and sanitation programs for low-income urban families living in slums | Qualitative case study – secondary reports, focus group discussions, observation and interviews | Open | Through their participation in Community-based Organizations (CBOs), women have become much more vocal about their problems and have acquired the skills and confidence to interact with municipal authorities. Instances were also recorded of women from upgraded slums giving information and guidance to women from other slums to join the project. SEWA’s stature as a development organization of national and international repute played a large part in enabling The Gujarat Mahila Housing SEWA Trust (MHT) to negotiate a pivotal role for itself during interactions with the other partners. Development of infrastructure and the provision of basic amenities have a positive influence not only on health, education and income, but also the social lives and sense of confidence of slum residents. |
| Bhaird (2012)| The Complexity of Community Engagement: developing staff-community relationships in participatory child education and women’s rights intervention in Kolkata slums | West Bengal | To examine how sociocultural factors influenced relationship building between NGO staff and community members, and how this mediated community participation in a child education and women’s rights intervention in Kolkata | Qualitative interviews and focus group discussions | CBWG | The more participatory and community-led an intervention, the less predictable it becomes. In this context, community-based women’s groups became very powerful, often using violence as a problem-solving mechanism, thereby disrupting the social fabric of the community. The flexibility needed to gain community acceptance and manage unanticipated events relies on trusting relationships between both communities and staff, and also between staff and donors. |
| Author(s) (Year) | Region | Description | Methodology | Type/Method | Impact |
|-----------------|--------|-------------|-------------|-------------|--------|
| Blanchard (2013) | Community mobilization, empowerment and HIV prevention among female sex workers in South India | Karnataka and Maharashtra | To test the associations between exposure to community mobilisation, empowerment, and health-related outcomes (condom use, violence and service use) among sex workers in Karnataka and Maharashtra | Quantitative cross-sectional survey | SPG Engagement with HIV programs and community mobilization activities was associated with different domains of empowerment. Power within (a measure of self-esteem and confidence) and power with (a measure of collective identity and solidarity) were positively associated with more program contact (p < 0.01 and p < 0.001 respectively). These measures of empowerment were also associated with outcomes of “personal transformation” in terms of self-efficacy for condom and health service use (p < 0.001). Collective empowerment (power with others) was most strongly associated with “social transformation” variables including higher autonomy and reduced violence and coercion, particularly in districts with programs of longer duration (p < 0.05). Condom use with clients was associated with power with others (p < 0.001), while power within was associated with more condom use with regular partners (p < 0.01) and higher service utilization (p < 0.05). |
| Blankenship (2008) | Power, community mobilization, and condom use practices among FSW in AP, India | Andhra Pradesh | To analyse the association between power and condom use practices among female sex worker (FSW); to analyse extent to which exposure to a local community mobilization intervention affects these associations | Quantitative cross-sectional survey | SPG Control over both the type of sex (adjusted odds ratio (AOR) 1.70, 95% confidence interval (CI) 1.29–2.34) and the amount charged (AOR 1.56, 95% CI 1.12–2.16), and economic dependence (AOR 0.54, 95% CI 0.35–0.83) are associated with consistent condom use as is programme exposure (AOR 2.09, 95% CI 1.48–2.94). The interaction between programme exposure and collective agency was also significant. Among respondents who reported both programme exposure and high levels of collective agency, the odds ratio of consistent condom use was 2.5 times that of other FSW. |
| Blankenship (2014) | Challenging the stigmatization of female sex workers through a community-led structural intervention: learning from a case study of a female sex worker intervention in Andhra Pradesh, India | Andhra Pradesh | To contribute to the growing set of case studies analysing the implementation of Community-led structural interventions (CLSIs) to promote HIV prevention among FSW | Qualitative – ethnograph y with formal and informal interviews | SPG The CLSI, through its participation in the government-sponsored AIDS education program raised awareness of Community-led structural interventions (CLSIs) among FSW and mobilised them. The CLSI also organized an alternative public rally, outside of but parallel to the government program, where they reframed FSW not as the carriers of HIV but as public health workers combating it. CLSIs for HIV prevention among FSW are implemented in a context of inequality that constrains their actions, but they can still employ strategies that have the potential to transform that context. |
| Chakravarty (2012) | Health care and women’s empowerment: the role of SHGs | Jharkhand | To estimate the level of health care services provided by the SHGs and the awareness and satisfaction level of their members | Qualitative – interviews and focus group discussions | SHG SHGs can play a role in creating awareness of health issues through group meetings with women, by holding specific capacity-building trainings on health issues and facilitating exposure to important up-to-date medical information. A substantial influence on women’s health and empowerment can only be achieved when these activities are taken up with a view to improving the public provision of health care facilities and accessibility. |
| Chandrashekhar (2019) | Cost and cost-effectiveness of health behaviour change interventions implemented with self-help groups in Bihar, India | Bihar | To assess the cost effectiveness in terms of cost per neonatal death averted and life year saved resulting from phase 1 of the Parivartan program | Decision modelling and cost-effectiveness analysis | SHG The cost of forming an SHG group in Bihar was US$254 and that of reaching a woman within the group was US$19. The unit cost for delivering health interventions through the Parivartan program was US$148 per group and US$11 per woman reached. During an 18 month period, Parivartan program reached around 17,120 SHGs and an estimated 20,544 pregnant women resulting in an estimated prevention of 23 neonatal deaths at a cost of US$3,825 per life year saved. |
| Study (Year) | Title | Location | Methods | Group | Context |
|-------------|-------|----------|---------|-------|---------|
| Dongre (2007) | A comparison of HIV/AIDS awareness between self-help group leaders and other women in the villages of Primary Health Centre, Anji | Maharashtra | To examine levels of HIV knowledge among SHG leaders vs. other women in villages served by one primary health centre | Quantitative cross-sectional survey | SHG |
| Dongre (2009) | A Community Based Approach to Improve Health Care Seeking for Newborn Danger Signs in Rural Wardha, India | Maharashtra | To examine the effect of health education and community mobilization intervention on health care seeking of families with sick newborns and explore reasons for changes amongst mothers | Cross-sectional | SPG |
| Euser (2012) | Pragati: an empowerment programme for female sex workers in Bangalore, India | Karnataka | To describe the effects of a broad empowerment programme among female sex workers (FSWs) in Bangalore, India, which seeks to develop the capacities of these women to address the issues that threaten their lives and livelihoods | Quantitative process evaluation with implementation, coverage and cost data | SPG |
| Feldman (2015) | Women’s Political Participation and Health: A Health Capability Study in Rural India | Uttar Pradesh | To use a health capability framework with four domains (agency—participation, autonomy, self-efficacy, and health systems) to understand dimensions of health agency and illuminate how local political economies affect health | Qualitative – semi-structured interviews, focus group discussions | Open |
| Feruglio (2018) | The challenges of institutionalizing community-level social accountability mechanisms for health and nutrition: a qualitative study in Odisha, India | Odisha | To examine how community accountability mechanisms have sought to strengthen community-level nutrition and health services (Integrated Child Development Services and National Rural Health Mission) when institutionalised at scale | Qualitative – in-depth interviews and focus group discussions | CBWG + SHG |
| Gailits (2019) | Women’s freedom of movement and participation in psychosocial support groups: qualitative study in northern India | Uttarakhand | To examine the factors influencing women’s participation in psychosocial support groups, within an approach where community members work together to collectively strengthen their community’s mental health | Qualitative – key informant interviews and focus group discussions | SPG |

The leaders of SHGs had better levels of education and awareness about HIV/AIDS than other women in the village. Considering the significant high level of awareness regarding HIV/AIDS, the leaders of women’s self-help groups could act as potential resource persons for the delivery of health education to other women.

There was a significant improvement in mothers’ knowledge regarding newborn danger signs. About half of mothers got information from Community-led interventions for Child Survival (CLICS) and (female community health worker). The monitoring over three years period showed encouraging trend in level of awareness among pregnant women. After three years, the proportion of mothers giving no treatment/home remedy for newborn danger signs declined significantly. However, there was significant increase in mothers’ healthcare-seeking from private health care providers for sick newborns.

Between 2005 and 2010, the number of women who received help from a crisis response team increased, more women participated in alcohol de-addiction programmes, and the number of saving accounts and distributed microfinance loans was expanded. Furthermore, condom use increased over time, and more FSWs were treated for STIs. In contrast, the number of Sexually Transmitted Infections (STIs) and the STI incidence rate increased over time.

Better understanding of cultural norms surrounding autonomy, the local infrastructure and health systems and male and female perceptions of political participation and self-efficacy are needed to improve women’s health agency. For a community based participatory health intervention to improve health capabilities effectively, explicit strategies focussed on health agency should be as central as health indicators.

The degree of effectiveness of different groups in strengthening accountability varied depending on their ability to offer meaningful avenues for participation of their members and empower women for autonomous action. In most of the mechanisms, community participation is very weak, with committees largely controlled by the frontline workers who are supposed to be held to account. However, SHGs showed real levels of autonomy and collective power. Despite not having an explicit accountability role, these groups were nonetheless effective in advocating for better service delivery and the broader needs of their members to a level not seen in institutional committees.

Mental health access and gender inequality are inseparable in the context of Northern India, and women’s mental health cannot be addressed without first addressing underlying gender relations that prevent participation in support groups. Community-based mental health programs are an effective tool and can be used to strengthen communities collectively; however, attention towards the gender constraints that restrict women’s freedom of movement and their ability to access care is required.
### George (2018)

**Can community action improve equity for maternal health and how does it do so? Research findings from Gujarat, India**

*Gujarat*

To examine the equity effects of community action for maternal health led by Non-Government Organizations (NGOs) on facility deliveries.

**Mixed methods – qualitative data using project documents and interviews and quantitative data on self-reported use of services**

The study found substantial increases in receipt of information of entitlements and utilization of antenatal and delivery care, and a switch from private facilities to public ones among the most vulnerable. Implementation required: a) alignment among NGO organizational missions; b) participatory development of project tools; c) repeated capacity building and; d) government interest in improving utilization and recognition of NGO contributions.

### Gopalan (2007)

**Microfinance and its contributions to health care access: a study of self-help groups (SHGs) in Kerala**

*Kerala*

To understand the role played by self-help groups in Kerala vis-à-vis health

**Qualitative – individual interviews**

In order to obviate the difficulties (like inability to repay the loans regularly) experienced by the extremely poor members of microfinance institutions, it is necessary to make the terms and conditions of savings and borrowings more poor-friendly than they are at present. Setting up of a welfare fund at the SHG level to address emergency medical needs is essential. SHG members are often willing to participate if their contributions are supplemented by a government subsidy. Inter-sectoral coordination, by keeping microfinance mechanism as the pivot or by incorporating microfinance mechanism can ensure an easy, appropriate, affordable and effective service delivery at the doorstep.

### Gopalan (2015)

**Leveraging Community-Based Financing for Women’s Nonmaternal Health Care: Experiences of Rural Indian Women**

*Odisha*

To explore the potential of community-based financing for nonmaternal health care through a demand-side qualitative assessment among rural Indian women

**Qualitative – focus group discussions**

Community-based financing provided financial access and risk protection for women’s non-maternal health care, though not adequately. Schemes covering outpatient care (or mild illnesses) provided relatively more financial access. The major determinants of their restricted financial access were limited sum assured, noncomprehensive coverage of services, exclusion of elderly women, and the low priority they households gave to non-maternal health care. Community-based financing requires relevant structural changes along with demand-side behavioural modifications to ensure optimal attention to women’s nonmaternal health care.

### Gupta (2009)

**Impact of a Health Education Intervention Program Regarding Breast Self-Examination by Women in a Semi-Urban Area of Madhya Pradesh, India**

*Madhya Pradesh*

To determine the awareness and practice regarding Breast Self-Examination (BSE) in women; to assess the impact of health education on awareness and practice of BSE; to identify other factors affecting on the awareness and practices of BSE

**Quantitative pre-post uncontrolled intervention study**

The study found significant improvement in knowledge regarding all aspects of BSE of the intervention group. After the intervention program, 590 (59%) women had good knowledge and among them 90.7% practiced BSE compared to 0% at pre-test. An overall increase in the awareness of BSE practice (43% to 53%) was observed in the study group after intervention.
| Reference       | Title                                                                 | Location       | Methods                                                                 | SHG       | Outcomes                                                                                                                                                                                                 |
|-----------------|-----------------------------------------------------------------------|----------------|-------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gupta (2015)    | Empowerment and engagement of SHGs against RTI/STI in                 | Karnataka      | Quantitative intervention study, (no baseline variables) and qualitative focus group discussions | SHG       | The intervention was effective in improving women’s awareness about RTI/STIs, correct knowledge about white discharge, capability to identify the symptoms of RTI/STI and health-seeking behaviour of the respondents. There was no observed change in prevalence of RTI/STIs. |
| Hamal (2018)    | How does social accountability contribute to better maternal health outcomes? A qualitative study on perceived changes with government and civil society actors in Gujarat, India | Gujarat        | Qualitative - in-depth interviews and focus group discussions           | CBWG      | Social accountability mechanisms influenced structural determinants (governance, policy, health beliefs, women’s status) and intermediary determinants (social capital, maternal healthcare behaviour and availability, accessibility) and quality of health service delivery system. These further positively influenced the increased use of maternal health services. The social accountability mechanisms, through the process of information, dialogue and negotiation, particularly empowered women to make collective demands of the health system and brought about changed perceptions of women among actors in the system. It improved relations between women and the health system in terms of trust and collaboration, and generated appropriate responses from the health system to meeting women’s groups demands. |
| Hunt (2001)     | Pathways to empowerment? Reflections on microfinance and transformation in gender relations in South Asia | Bihar (and Bangladesh) | Qualitative – interviews                                                | SHG       | Microfinance must be re-assessed in the light of evidence that the poorest families and the poorest women are not able to access credit. A range of microfinance packages is required to meet the needs of both the poor and the poorest. Development agencies need to acknowledge that microfinance does not directly or automatically lead to women’s empowerment and gender transformation. More reflection and documentation is needed on pathways to empowerment, and on programme strategies that assist women to take greater control of decision-making and life choices. |
| Jejeebhoy (2018)| Preventing violence against women and girls in Bihar: challenges for implementation and evaluation | Bihar          | Mixed methods process evaluation                                         | SHG       | Contextual challenges to the intervention success included lack of leadership skills of those delivering the intervention and the gap between expected responsibilities and activities of government platforms and reality. Implementation challenges were encountered in reaching men and boys, younger women and the community at large and ensuring their regular attendance; and in maintaining the fidelity of the intervention activities. Evidence-supported dialogue on these challenges and how best to anticipate and address them is essential. |
| Kadiyala (2016)| Adapting Agriculture Platforms for Nutrition: A Case Study of a Participatory, Video-Based Agricultural Extension Platform in India | Odisha         | Qualitative – in-depth interviews, structured observation, knowledge tests and questionnaires | SHG       | Nutrition intervention were well-received by rural communities and viewed as complimentary to existing frontline health services. However, compared to agriculture, nutrition content required more time, creativity, and technical support to develop and deliver. Experimentation with promoted nutrition behavioural was high but sharing of information from the videos with non-viewers was limited. There is a need for collaboration with existing health services; continued technical support for implementing partners; engagement with local cultural norms and beliefs; empowerment of women’s group members to champion nutrition; and enhancement of message diffusion mechanisms to reach pregnant women and mothers of young children at scale. |
viability of promoting nutrition-specific actions through the platform, including acceptance and trial of promoted behaviours and diffusion of key messages; and to assess synergies with government health and nutrition services.

**Kaur (2017)**
Evaluation of a women group led health communication program in Haryana, India

Haryana

To describe the functionality and reach of Sakshar Mahila Smooh (SMS) as well as Auxiliary Nurse Midwives (ANM) and rural women's perceptions of the SMS

Cross-sectional

Out of 2009 villages, 1732 (86%) had functional SMSs. In three years, Most ANMs opined that SMSs are better health communicators. SMS members were aware about their roles and responsibilities. The majority of village women reported that SMS carry out useful health education activities. The characteristics of SMS members were similar, but program performance was better in districts where health managers were proactive in program planning and monitoring.

**Kermode (2008)**
Some peace of mind: assessing a pilot intervention to promote mental health among widows of injecting drug users in north-east India

Manipur and Nagaland

To learn about women's perspectives on mental health and well-being and the links between mental health and HIV; to assess changes in the women's quality of life and mental health during the course of the intervention; to assess changes in engagement in HIV risk behaviours; to describe the process and outcome of the intervention from the perspective of the women.

Mixed methods process evaluation – questionnaire survey and focus group discussions

Widows of injecting drug-users, organized into participatory action groups showed significant improvements in quality of life, mental health and experience of somatic symptoms, and the women told stories reflecting a range of significant changes. A participatory approach to mental health promotion can have a positive impact on the lives of vulnerable women and has the potential to contribute to HIV prevention.

**Kethineni (2016)**
Combating Violence against Women in India: Nari Adalats and Gender-Based Justice, Women & Criminal Justice

Karnataka

To examine the effectiveness of Nari Adalats as an alternative avenue for women seeking justice; To identify the role of Mahila Samakhyas in empowering rural and disadvantaged women in India

Qualitative – interviews

Nari Adalats (women's courts) exercise broad authority to investigate and address a wide range of domestic violence cases in India. The Mahila Samakhya (women's federation) serves as an advocacy group and provides shelter, legal assistance, and social help as well as education for victims of domestic violence. The Mahila Samakhya is committed to empowering women who cannot find justice through formal governmental means.

**Krishnan (2012)**
An Intergenerational Women’s Empowerment Intervention to Mitigate Domestic Violence: Results of a Pilot Study in Bengaluru, India

Karnataka

To present findings on intervention feasibility, acceptability and safety from a pilot study of 20 Daughter-in-Law - Mother-in-Law (DIL-MIL) dyads in urban low income communities in Bengaluru

Qualitative – focus group discussions and in-depth interviews

A family-based approach to violence prevention is highly promising. With increased awareness and knowledge of gender inequities, violence, and health, enhanced relationship skills, and peer support, intergenerational relationships can be safely mobilized to mitigate domestic violence.
| Kumar (2007) | Health inequity and women’s self-help groups in India: The role of caste and class | Bihar | To review the scope and limitations of SHGs in improving women’s health using the example of Bihar, India, and in particular to assess the extent to which SHGs can be involved in attaining better health for women and children by exploring the role of caste and class in access to health services | Qualitative – field surveys, interviews, focus group discussions and case studies | SHG | Caste imposes serious limitations on the extent to which SHGs can be used in improving women’s health. Women’s health is very much dependent on existing gender relations, and their interaction with income, education and general standards of living. SHG programmes are functioning in a vacuum without addressing these contextual issues, severely constrained in being able to have a significant effect on women’s health. Decentralisation and local accessibility of public health facilities is a pressing requirement to advance the health of poor and marginalised women. |
| Kumar (2009) | Participation in Self-help Group Activities and Its Impacts: Evidence from South India | Tamil Nadu | To compare household income and expenditure among households with women SHG members and households with women who do not belong to SHGs | Quantitative cross-sectional survey | SHG | SHGs generate substantial income and have significance in the household. The quantity and quality of food consumed, the health of household members and children’s education improve. Institution building contributes greatly towards improving household welfare. |
| Kumar (2015) | Enculturating science: Community-centric design of behaviour change interactions for accelerating health impact | Uttar Pradesh | To describe a systems approach for community-centric design of interactions, highlighting key principles for achieving intrinsically motivated, sustained change in social norms and family health behaviours, elucidated with progressive theories from a range of disciplines. | Qualitative – case study | Open | Behaviour change can be achieved when biomedical and traditional socio-cognitive systems are understood to co-develop solutions to address a health issue. This requires recognition of the fact that one is not dealing with individuals, but community systems that were designed over generations keeping in mind a certain worldview and a common social purpose. In order to design scientifically guided effective interactions, it is important to understand the causal mechanisms and underlying system that govern these behaviours. |
| Kumar (2019) | Social networks, mobility, and political participation: The potential for women’s self-help groups to improve access and use of public entitlement schemes in India | Madhya Pradesh, Odisha, Chhattisgarh, Jharkhand and West Bengal | To examine the potential for women’s SHGs to improve access to and use of public entitlement schemes | Quantitative cross-sectional survey | SHG | SHG members are more politically engaged and more likely to know of certain public entitlements than non-members. They are significantly more likely to access a greater number of public entitlement schemes. SHG members have wider social networks and greater mobility as compared to non-members. SHGs can enforce accountability amongst public entities and demand what is rightfully theirs. SHGs themselves cannot be expected to increase knowledge in absence of an external agency. |
| Long (2013) | Determinants of better health: a cross-sectional assessment of positive deviants among women in West Bengal | West Bengal | To identify factors associated with positive health outcomes among women with primary education or less (positive deviants) | Quantitative cross-sectional survey | SHG | Positive deviants in this context are shown to be women who are able to earn an income, who have access to information through media sources, and who, despite little schooling, have marginally higher levels of formal education that lead to improved health outcomes. |
| Author(s)          | Title                                                                 | Location          | Objective                                                                                                                                      | Methodology                                                                                       | SHG Participation                                                                                     |
|--------------------|----------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Mohindra (2008)    | Can microcredit help improve the health of poor women? Some findings from a cross-sectional study in Kerala, India | Kerala            | To examine associations between female participation in SHGs, and women's health in Kerala                                                   | Quantitative cross-sectional survey                                                                  | SHG participated in the study, compared to non-participants living in a household without a SHG member, who had living in a household with a SHG member, the odds of facing exclusion were significantly lower among early joiners, women who were members for more than 2 years (OR = 0.58, CI = 0.41–0.80), late joiners, members for 2 years (OR = 0.52, CI = 0.30–0.93; OR = 0.32, CI = 0.14–0.71). No associations were found between SHG participation and self-assessed health or exposure to health risks. The relationship between SHG participation and decision-making was unclear. |
| Morrison (2019)    | Exploring the equity impact of a maternal and newborn health intervention: a qualitative study of participatory women’s groups in rural South Asia and Africa | Jharkhand and Odisha | To understand the mechanisms that led to the equitable impact of the Participatory Learning and Action (PLA) approach across socioeconomic strata in 4 sites in India, Nepal, Bangladesh and Malawi | Qualitative open-ended focus group discussion, interviews, key informant interviews                  | Participatory learning and action led to increased knowledge, confidence to act, and acceptability of recommended practices. The equitable behavioural effects were facilitated by the accessibility, relevance, and engaging format of the intervention across socioeconomic groups, and by reaching-out to parts of the population usually not accessed. A participatory approach improved health behaviours across socioeconomic strata in rural communities, around issues for which there was a knowledge deficit and where simple changes could be made at home. |
| Panda (2015)       | Mobilizing community-based health insurance to enhance awareness & prevention of airborne, vector-borne & waterborne diseases in rural India | UP and Bihar       | To evaluate the effect of a health education program -- campaigns with SHGs -- on airborne, vector borne and waterborne disease                        | Quantitative uncontrolled pre-post intervention study                                               | SHG members had higher awareness scores (0.47), compared to non-members (OR = 0.52, CI = 0.30–0.93; OR = 0.32, CI = 0.14–0.71). No associations were found between SHG participation and decision-making agency was unclear. |
| Prabhakaran (2016) | Impact of Community-led Total Sanitation on Women’s Health in Urban Slums: A Case Study from Kalyani Municipality | West Bengal        | To understand the impact of improved sanitation and specifically of the Community-led total sanitation (CLTS) process on women’s physical health in terms of reduction in disease burden; and the social and psychological wellbeing of women in selected slums of Kalyani; to understand the impact of the CLTS process on aspects of women’s empowerment and its effect on women’s wellbeing and overall health in selected Open Defaecation Free (ODF) slums of Kalyani; to understand the external environmental factors that have played a key role in improving sanitation in | Qualitative focus group discussions, personal interviews, key informant interviews                  | Political will, commitment from local institutional actors, the ability to mobilise resources and capacity to work with the community are all needed to achieve long-term change with CLTS. Institutional actors such as politicians, administrators, health workers, engineers and contractors can play in achieving successful outcomes, as direct implementers of the programme or as providers of infrastructure, but as facilitators supporting the community to design and implement its own initiatives. The community has to take ownership and accept accountability for their sanitation and hygiene behaviour and practices. Collective community demand and action in activating and strengthening formal health delivery systems and integrating health programmes into sanitation initiatives. |
| Study | Nature of Activities | Location | Methodology | Outcome |
|-------|----------------------|----------|-------------|---------|
| Raghavendra (2014) | Nature of activities organised by self-help groups formed by two non-governmental organisations for the integrated development of the members and the community | Karnataka | Qualitative – focus group discussions, observations | SHG carried out 31 different types of activities, indicating that the women could do a wide range of activities if they were organised and trained. SHGs are an appropriate forum for rural women to expose themselves to mainstream economic sphere and become economically independent as well as participate in decision making process in their respective families. |
| Rajendran (2010) | Role of community empowerment in the elimination of lymphatic filariasis in south India | Tamil Nadu | Cohort and focus group discussions | After four rounds of mass drug administration (MDA), there was a significant decline in the filarial infection variables. The microfilaraemia and antigenaemia declined by 59% and 67% respectively. The transmission indices lowered by 89% and 94% (in resting and landing catch of mosquitoes respectively). The decline in these variables, with a drug consumption rate of >80% was achieved due to the effective Information Education Communication (IEC) campaigns prior to each MDA. After 4 MDAs almost 97% of the respondents were aware of lymphatic filariasis. SHGs and school students were observed to be aware of lymphatic filariasis elimination. |
| Hao (2011) | Community-Based Mental Health Intervention for Underprivileged Women in Rural India: An Experiential Report | Karnataka | Qualitative – focus group discussions | Women in the mental health intervention group reported reduction in psychological distress and bodily aches and pains. The majority reported that the quality of their sleep had improved with regular practice of relaxation and that sharing their problems in the group had helped them to unburden. The social support extended by the members to each other, made them feel that they were not alone and could face any life situation. Adding the mental health intervention to the ongoing economic activity made a positive difference in the lives of the women. Addressing mental health concerns within the mental health intervention to the ongoing economic activity made a positive difference in the lives of the women. Addressing mental health concerns within the mental health intervention to the ongoing economic activity made a positive difference in the lives of the women. |
| Rath (2010) | Explaining the impact of a women’s group led community mobilisation intervention on maternal and newborn health outcomes: the Ekjut trial process evaluation | Jharkhand and Odisha | Mixed-methods process evaluation | Participatory interventions with community groups can influence maternal and child health outcomes if key intervention characteristics are preserved and tailored to local contexts. Scaling-up such interventions requires a detailed understanding of the way in which context affects the acceptability and delivery of the intervention; planned but flexible replication of key content and implementation features; strong support for participatory methods from implementing agencies. |
| Reshmi (2019) | Context for layering women’s nutrition interventions on a large scale poverty alleviation program: Evidence from three eastern Indian states | Bihar, Chhattisgarh, Odisha | Qualitative cross-sectional survey | BMI indicated at least 45% mothers were undernourished irrespective of their enrolment in SHGs. Higher proportion of SHG members (77%-87%) belonged to food insecure households than non-members (66%-83%). Current use of family planning (FP) methods was excuratingly low (8.2%-32.4%) in all states but positively skewed towards SHG members. |
| Authors     | Title                                                                                     | Region                          | Aim                                                                 | Methodology                                                                                     | Findings                                                                                           |
|-------------|-------------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Ruducha (2019) | Measuring coordination between women’s self-help groups and local health systems in rural India: a social network analysis | Uttar Pradesh                   | To assess how health services coordination and emergency referral networks between SHGs and local health systems, along with other key stakeholders, changed over the course of a 2-year learning phase of the project using social network analysis (SNA) | Quantitative uncontrolled pre-post intervention study with cross-sectional surveys              | The health services coordination and emergency referral networks increased in density and the number of connections between respondents as measured by average degree centrality have increased, along with more diversity of interaction between groups. The network expanded relationships at the village and block levels, reflecting the rise of bridging social capital. The accredited social health activist, a village health worker, occupied the central position in the network, and her role expanded to sharing information and coordinating services with the SHG members. |
| Saggurti (2013) | Community collectivization and its association with consistent condom use and STI treatment-seeking behaviours among female sex workers and high-risk men who have sex with men/ transgenders in Andhra Pradesh, India | Andhra Pradesh                  | To examine community collectivisation among FSWs (female sex workers) and HR-MSM (high risk Men who have sex with men), and measure its association with select outcome indicators | Quantitative cross-sectional survey                                                              | High levels of collective efficacy (adjusted OR: 1.3, 95% CI: 1.11.7) and collective action (adjusted OR:1.3, 95% CI: 1.11.8) were associated with consistent condom use (CCU) with regular clients among FSWs. Among HR-MSM, participation in a public event (adjusted OR: 2.7, 95% CI: 2.03.6) and collective efficacy (adjusted OR: 1.9, 95% CI: 1.52.3) were correlated with condom use with paying partners. |
| Saha (2013)    | The effect of Self-Help Groups on access to maternal health services: evidence from rural India | All India                       | To assess the impact of the presence of SHGs on maternal health service uptake | Secondary analysis of a quantitative cross-sectional survey (District-Level Household Survey)   | Respondents from villages with a SHG had a 19% increased odds (OR: 1.19, CI: 1.13–1.24) of delivering in a health facility, increased knowledge of (OR: 1.48, CI 1.39 – 1.57) and utilization of family planning products and services (OR: 1.19, CI 1.11 – 1.27). These results were significant after controlling for individual and village-level heterogeneities. |
| Sanyal (2015)  | Recasting Culture to Undo Gender: A Sociological Analysis of Jeevika in Rural Bihar, India | Bihar                           | To understand how Jeevika induced large scale cultural change in Bihar | Qualitative interviews, focus group discussions, non-participant observation, structured interviews | Jeevika created new “cultural configurations” by giving economically and socially disadvantaged women access to a well-defined network of people and new systems of knowledge, which changed women’s habitus and broke down normative restrictions constitutive of the symbolic boundary of gender. |
| Sethi (2017)   | Partnering with women collectives for delivering essential women’s nutrition interventions in tribal areas of eastern India: a scoping study | Odisha, Jharkhand and Chhattisgarh | To examine the feasibility of engaging women collectives in delivering a package of women’s nutrition messages/services as a funded stakeholder in three tribal-dominated districts | Mixed methods – secondary of quantitative data, interviews and focus group discussions           | Limited targeting of pre-pregnancy period, delays in first trimester registration of pregnant women, and low micronutrient supplementation supply and awareness issues impact women’s nutrition, SHGs with organisational readiness for receiving and managing grants for income generation and community development activities varied from 41% to 94%. |
| Author (Year) | Title | Location | Objectives | Methodology | Findings |
|--------------|-------|----------|------------|-------------|----------|
| Sinha (2006) | Self-help groups in India: a study of the light and shades | Andhra Pradesh, Karnataka, Odisha, Rajasthan | To examine the efficiency of SHGs in their financial transactions; their sustainability; the extent to which they are able to take social action; who benefits from these actions; who drops out and why | Qualitative – semi-structured interviews, transect walks, informal interviews, focus group discussions | Understanding the effectiveness of SHGs – whether in terms of financial or social empowerment - requires greater clarity of vision and objectives and a systematic approach to building capacity and providing guidance. There is a need to define objectives for creating SHGs based on the needs of its members, as well as understanding the impact of social networks and local politics. Additionally, there is a need to deliberate on the extent and length of support provided to SHGs as well as dealing with members dropping out or SHGs becoming defunct. |
| Sinha (2017) | Economic evaluation of participatory learning and action with women’s groups facilitated by Accredited Social Health Activists to improve birth outcomes in rural eastern India | Jharkhand and Odisha | To assess the cost-effectiveness of a PLA intervention facilitated by ASHAs to improve neonatal outcomes | Used cluster RCT data (Tripathy 2016) and cost data collected | The incremental cost of the intervention was USD 83 per averted disability-adjusted life years (DALY) (USD 99 inclusive of VHSNC strengthening costs), and the incremental cost per newborn death averted was USD 2545 (USD 3046 inclusive of Village Health, Sanitation and Nutrition Committee (VHSNC) strengthening costs). The intervention was highly cost-effective according to WHO threshold, as the cost per life year saved or DALY averted was less than India’s Gross Domestic Product (GDP) per capita. The robustness of the findings to assumptions was tested using a series of one-way sensitivity analyses. The sensitivity analysis does not change the conclusion that the intervention is highly cost-effective. |
| Swamy (2013) | Women Financing and Household Economics | Karnataka | To assess whether women's financing through groups improves food security (through measuring food expenditure) and standard of living, especially of women and vulnerable caste groups | Quantitative uncontrolled pre-post intervention study with cross-sectional surveys | Access to finance through groups has significant impacts on poor families' food security and non-food expenses. The study has evidenced significant outreach of impact of women financing in terms of physical as well as qualitative factors on the socially weaker sections of the society such as Women, Scheduled Castes /Scheduled Tribes and Other Backward Classes category of the poor. |
| Van Rompay (2008) | Empowering the people: Development of an HIV peer education model for low literacy rural communities in India | Tamil Nadu | To describe a HIV peer education model to educate and empower low-literacy communities in a rural district | Mixed-methods process evaluation with pre- and post-test surveys and focus group discussions | Using established networks (such as community-based organizations already working on empowerment of women) and training women’s SHG leaders and barbers as peer educators was an effective and culturally appropriate way to disseminate comprehensive information on HIV/AIDS to low-literacy communities. Similar models for reaching and empowering vulnerable populations should be expanded to other rural areas. |
Supplementary Figure 1: Location of included studies, by state

All STUDIES (N=99)

EXPERIMENTAL STUDIES (N=44)