



Understanding how women's groups improve maternal and newborn health in Makwanpur, Nepal: a qualitative study

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ABSTRACT

Women's groups, working through participatory learning and action, can improve maternal and newborn survival. We describe how they stimulated change in rural Nepal and the factors influencing their effectiveness. We collected data from 19 women's group members, 2 group facilitators, 16 health volunteers, 2 community leaders, 21 local men, and 23 women not attending the women's groups, through semi-structured interviews, group interviews, focus group discussions and unstructured observation of groups. Participants took photographs of their locality for discussion in focus groups using photoelicitation methods. Framework analysis procedures were used, and data fed back to respondents. When group members were compared with 11 184 women who had recently delivered, we found that they were of similar socioeconomic status, despite the context of poverty, and caste inequalities. Four mechanisms explain the women's group impact on health outcomes: the groups learned about health, developed confidence, disseminated information in their communities, and built community capacity to take action. Women's groups enable the development of a broader understanding of health problems, and build community capacity to bring health and development benefit.

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1. Introduction

In Asia, neonatal deaths account for three-quarters of infant mortality and more than half of under-five's deaths.¹ Nepal's neonatal mortality rate is among the highest in Asia, at 33 per 1000 live births. Most births (81%) occur at home, and both community interventions and health service improvements are necessary to increase child survival.² In 2004, we published the results of a cluster randomised controlled trial testing the effect of a participatory intervention with women's groups on neona-

tal mortality.³ We employed 12 local women, who were not health workers, to convene 111 women's groups covering a rural population of 80 000. Groups met monthly to discuss issues affecting maternal and newborn health, and completed a community action cycle of problem identification, planning and participatory evaluation.⁴ Group members usually lived near the meeting location, were married and attended regularly—despite the fact that groups were open to any woman. From 2001 to 2003, we observed a 30% reduction in neonatal mortality and a substantial reduction in maternal mortality compared with control areas. Women in intervention clusters were more likely to have antenatal care and hygienic practices, and there were smaller effects on institutional delivery and trained birth attendance (Table 1). Population surveillance continued from 2003 to 2008 and

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Table 1
Effectiveness of the women's group intervention on care behaviours.

	Intervention		Control		Adjusted odds ratio (95% CI)
	n	%	n	%	
Pregnancies	3190	%	3524	%	
Any antenatal care	1747	55	1051	30	2.82 (1.41–5.62)
Deliveries	2945		3270		
Institutional deliveries	201	7	66	2	3.55 (1.56–8.05)
Birth attended by government health provider	272	9	102	3	3.12 (1.62–6.03)
Used a boiled blade to cut the cord	1580	54	827	25	3.47 (1.39–8.69)
Attendant washed her hands	1988	68	1064	33	5.5 (2.40–12.6)

the intervention was introduced into control areas in 2005.

Randomised controlled trials are generally considered the most rigorous way to evaluate the efficacy of an intervention, but they cannot explain trial results or examine their external validity. Concurrent process evaluations, especially for complex interventions, may address these issues by offering information on social context, the content and implementation of the intervention, and the perceptions of different participants.⁵

The Makwanpur intervention was developed from a Bolivian project where women were not usually involved in decision making, and the cost of maternity care-seeking was high. Key features were an organisational commitment to a participatory learning and action approach (PLA), and the overall aim of women's empowerment.⁶ In Nepal, women met monthly, and a facilitator led them through a participatory action cycle.^{4,7} The intervention borrowed from the literature on participatory approaches to community development, and the ideas of Paulo Freire, who argued that sustainable social change is only possible if teachers and learners engage in a dialogue, exchanging ideas and experiences.^{8,9} In Nepal, it was hoped that exchange within communities would enable a critical awareness of environmental, economic and social constraints to health improvement and communities would be motivated to act to improve their situation. This is different from traditional health education interventions that focus on transmission and learning of technical 'messages'. The women's group participatory learning and action intervention is described in more detail elsewhere.⁴

Although participatory learning and action (PLA) methods are widely used in the development field, the Nepal Makwanpur study is the only published randomised controlled trial to provide evidence that PLA interventions improve health outcomes. We present a qualitative evaluation of how the intervention may have brought about health and non-health benefits. We considered community views of the group process, and the effect of the socio-political context on the implementation of the intervention and the community response.

2. Methods

2.1. Location

The trial involved 24 village development committee areas in Makwanpur district, covering a population of 170 000 living in 1600 square kilometres of hill and

plains.¹⁰ Details of the trial and the study population have been described previously.^{11–13} Data on group attendance and socioeconomic status were also obtained from 11 184 women who had recently given birth through the ongoing surveillance system described in the trial paper. The women's group intervention was implemented by Mother and Infant Research Activities (MIRA), a Nepalese non-governmental research organisation. We purposively sampled two areas that had women's groups. One area had a more active group and the other a less active group. We also chose an area without a group. The three study areas were relatively secure and less affected by the Maoist insurgency. They had differing topography and were several hours walk from a road or health facility.

2.2. Data collection methods

Data were collected in Nepali by two Nepalese researchers who had experience and training in qualitative research methods. In six weeks, researchers piloted topic guides, photoelicitation, and other methods, which informed planning of appropriate data collection methods with different groups. We piloted in areas where data were not collected. We conducted focus group discussions and group interviews with women's group members (2 groups, 19 participants), women who did not attend the group (4 groups, 23 participants), mothers-in-law (2 groups, 10 participants), men (3 groups, 21 participants), and community health volunteers (1 interview, 2 groups, 16 participants). Methods evolved to respond to the challenges of collecting data in a scattered population. We also interviewed women's group facilitators and community leaders in the qualitative study areas, and conducted observations of women's group meetings (Table 2). Photoelicitation was used to facilitate discussion in focus groups with women's groups, men, and women who did not attend groups.^{14–16} Piloting informed the selection of respondents to the photoelicitation method. Semi-structured interviews were completed with community leaders, community health workers and women's group facilitators. Discussions and interviews were usually around two hours in duration. Respondents were accessed by researchers making house-to-house visits. Data were tape recorded, transcribed and translated into English. Unstructured observations of group meetings were conducted and notes translated into English. We collected socioeconomic data from 11 184 women interviewed six weeks after the birth of their babies in the 24 village development committee areas of

Table 2
Study participants and sampling criteria.

Area	1 ward of VDC 1	1 ward of VDC 2	1 ward of VDC 3
Allocation	Intervention	Intervention	Control
Status of group	Active	Less active	No group
Topography	Plains	Hill	Hill
Method and sample	Community Health Volunteer SSI (1) Women's group members FGD (2 ^a) Women's group member observations (2) Men FGD (2 ^a) Village Health Worker SSI (2) Maternal and Child Health Worker SSI (2) Mothers-in-law FGD (2) Women not attending groups FGD (2 ^a) Women's group facilitator SSI (2) Community leader SSI (2)	Community Health Volunteer FGD (1)	Community Health Volunteer FGD (1) Group interviews with village women (2 ^a) Men FGD (1 ^a)

FGD: focus group discussion; SSI: semi-structured interview; VDC: Village Development Committee.

^a Focus group discussions conducted using photoelicitation methods.

the Makwanpur trial.³ The women were asked whether they had attended a MIRA women's group, and data were compared for group and non-group members. Data were entered and analysed in STATA 10 (Stata Corp., College Station, TX, USA).

2.3. Photoelicitation

We used photoelicitation in discussions to help respondents communicate their experiences. Photoelicitation has been utilised particularly in research with marginalised groups.^{17–24,25} A lack of 'verbal fluency' among marginalised populations can make photographs a good way to concretise issues to correspond more closely to the thinking of respondents. Focus group discussion participants were requested to take photographs with disposable cameras, which would be discussed with the group. Participants decided how the disposable cameras would be distributed and were taught how to use them. In these focus groups we distributed three cameras, each with 27 photographs. Participants were asked to take photographs of three subjects: health, MIRA (the intervention implementer), and the social environment. They were invited to take photographs of anything that was important to them, helped them describe something, or represented something they were unable to photograph. We collected cameras after one or two weeks and developed two copies of the photographs. Participants received the photographs and the negatives, and one copy was retained by researchers.

In the focus group, participants were asked how they felt about taking photographs, any issues that arose, and if there was anything they wished to discuss that they were unable to photograph. Participants split into smaller groups, sorted the photographs into the three categories, and chose photographs for discussion. We also identified interesting photographs, or ones that necessitated description by participants. Discussions began with the participants' choice of topic.

Translated data from focus group discussions were imported into NVIVO (QSR International Pty Ltd, Victo-

ria 3108, Australia) and analysed using the framework method.²⁶ There was consensus in themes generated by an independent researcher and JM, and feedback of the thematic analysis to five groups of respondents informed data interpretation.

3. Results

The socioeconomic status and ethnicity of pregnant women who joined the groups was broadly similar to women who did not join the groups. Group members were slightly poorer in terms of assets, household construction, and access to a protected water supply, but had better education, reading skills, and land ownership (Table 3). Qualitative data were analysed to describe the context of the lives of women and their families in Makwanpur and to help explain the results of the trial. Four key mechanisms were identified: the groups learned, developed confidence, disseminated information within communities, and increased community capacity to take action.

3.1. The context of women's lives in Makwanpur

Table 4 provides verbatim evidence on several important contextual factors in women's lives: poverty, gender roles, the political conflict arising from the Maoist insurgency in Nepal (2004–2006), and the mistrust of local health services.

Most of the population were Buddhists of Tamang ethnicity, whose first language is Tamang. Many women had arranged marriages, and inter-caste marriages were rare. After marriage, women usually moved to their husband's homes, and mothers-in-law were major household decision makers. Families were mainly engaged in agriculture, but during less busy seasons, many men worked outside the home, doing manual labour in towns, the capital city, Kathmandu, or abroad. Women were engaged in cooking, making alcohol, cleaning, collecting water and fodder, looking after children and animals, and tending crops. Respondents expressed their desire to progress economically and to move to a more prosperous place, but

Table 3

Socioeconomic status of women's group members among pregnant women in the study area from 2001 to 2008.

	Women's group member [*]	
	No	Yes
Number of pregnant women (total 11 184)	8911 (79.7%)	2273 (20.3%)
Age at marriage (years): mean (SD)	17.4 (2.8)	17.1 (2.5)
Ethnicity	%	%
<i>Higher castes</i>		
Brahmin-Chhetri	14.3	16.0
<i>Tibeto-Burman castes</i>		
Tamang	68.1	63.0
Magar	3.8	5.3
<i>Others (including lower castes)</i>	13.8	15.7
Education		
<i>None</i>	65.0	61.7
<i>Primary</i>	20.3	21.5
<i>Secondary</i>	14.7	16.8
Literate	28.4	31.8
Women who had had a previous pregnancy	69.3	75.9
Number of people in household: mean (SD)	7.2 (3.3)	7.3 (3)
Total land owned** (acres): mean (SD)	1.4 (1.2)	1.5 (1.6)
Assets		
<i>Electricity</i>	46.3	45.7
<i>Radio</i>	64.0	50.0
<i>Television</i>	16.9	18.3
<i>Bicycle</i>	6.8	5.9
<i>Telephone</i>	3.1	4.7
Household construction materials		
<i>Cement and bricks, mud and bricks</i>	7.9	5.4
<i>Mud and stone</i>	58.2	63.8
<i>Planks, thatch or other</i>	33.9	30.8
Source of drinking water		
<i>Piped</i>	11.9	8.5
<i>Well, yard well, public well</i>	20.5	15.3
<i>River, other</i>	70.8	78.5
Main occupation in household		
<i>Agriculture</i>	92.7	94.0
<i>Waged labour</i>	4.1	3.0
<i>Government job</i>	1.6	1.5
<i>Small business</i>	1.6	1.5

* If a woman attended a group at least once she is recorded as a 'yes'.

** Total land is the sum of dry and wet land. It was originally measured in khatta (the Nepali unit of measurement for area) and then converted into acres.

opportunities for this were limited because land prices were low and terrain prone to landslides or floods. Access to water was also a problem and some households did not own their own land.

Many respondents, particularly women, felt that there was some positive social change in their communities, which was often linked to interactions with trustworthy non-governmental organisations (including MIRA). All types of respondents felt that discrimination against girls was decreasing, and there was increasing pluralism in health care seeking behaviour. Yet gender roles were still highly segregated, and there were reports of domestic violence against women. Some felt that the illegal practice of polygamy was oppressive and prevented women's development. Social problems like gambling and alcoholism were often the catalyst for domestic violence or retribution attacks by Maoists. Although the study areas were relatively secure, the insurgency made some respondents

fearful to move around at night and gather in groups. National strikes and army patrols sometimes restricted access to health services.

Ethnicity and caste were important elements of the social context. There was some evidence of discrimination on the basis of ethnicity, yet it was not explicitly discussed. Respondents felt that homogeneity of ethnicity was a hindrance to social and economic development. When communities are ethnically mixed, more ideas are discussed and villagers become more motivated to work for change.

Mistrust of local government health services was ubiquitous and all respondents expressed their dissatisfaction. There was a lack of trust in the quality and appropriateness of the medicine provided, doubt in the skills of health personnel, and suspicion about misuse of funds. Community members also felt they were often not treated well when visiting local health facilities. Respondents preferred

Table 4

The context of women's lives in Makwanpur.

Contextual factor	Evidence	Respondent and method
Poverty	'Even to have a meal twice a day is difficult, we have no time to rest, even in the house.'	Men, FGD
	'I don't have good farm land, which is necessary to survive. This place is full of sorrow.'	Mother in law, FGD
Gender roles	'Who gives money for our household work? No-one sees our work.'	Women's group member, FGD
Social change	'Right now there is no discrimination, there was a lot of discrimination before' . . . 'We didn't have the chance to study before because of discrimination.'	Women's group member, FGD
Social change associated with NGOs	'Organisations help. . . it is good in comparison with before.'	Health worker, SSI
Violence and insurgency	'He often beat his wife because he was drunk.'	Health worker, SSI
	'The Maoists found out . . . and in revenge they . . . punished him by breaking his hands and legs.'	Health worker, SSI
Ethnicity and caste	'Where there are a mix of castes, people understand properly'	Facilitator, SSI
	'If Bhote and Chepang (marginalised groups) had come, then I would have asked them to clean the cattle dung.'	Health volunteer, FGD
Mistrust of local health services	'Date expired medicine are provided which make the patient more sick'	Women not attending group, FGD
	'I think doctors give medicine by guessing'	Men, FGD
	'If we have money we go to the medical shop or we go to (the district centre)'	Women not attending group, FGD
Increased knowledge of identity of health volunteers	'We only found out who the FCHV and TBA were after the meetings started.'	Women's group member, FGD
Pluralism	'The patient is shown to the shaman for treatment, and if they do not recover, then they are taken down to the medical (shop)'	Men, FGD

FGD: focus group discussion; SSI: semi-structured interview; FCHV: Female Community Health Volunteer; TBA: Traditional Birth attendant.

traditional healers, private practitioners, and pharmacies. No respondent photographed a government health service provider, but many photographed other types of provider. Health workers were aware of community dissatisfaction, yet felt unable to address their concerns and provide services that were perceived as giving value for money. There was some evidence that communities with women's groups became more aware of the identity of the local female health volunteer, and health volunteers participated actively in around 75% of groups, but overall, there was little evidence that health services improved as a result of the intervention.

Figure 1a-e illustrates aspects of local women's lives photographed by respondents.

3.2. Mechanisms by which women's groups may affect health outcomes

3.2.1. Learning about health

Participants explained that the intervention had enabled learning by women's group members: 'This group is very good, I can hear new things, I can meet with friends. . . we have learned lots of things after joining the group' (women's group member, FGD). The women's groups were felt to be a source of support, and a place for learning and sharing knowledge: 'I wish to learn, that is why I come (to the group). Otherwise, we didn't know before that we could get medicine from the health post' (women's group member,

FGD). Group facilitators also felt they had learned and personally developed: 'We have got the chance to learn, as do group members. Before, I only knew that I should be clean, but I didn't know that the baby should also be clean. At that time I was unaware. Anyway, for this third baby, because of the training provided (by MIRA), I did whatever I have learnt. I think I have also changed' (facilitator, interview). Many respondents believed that persons who travelled beyond the immediate village were more likely to have new and different knowledge, and this knowledge should be shared with others: '(Women) should come out of the house and learn things. Whatever we know, we should tell others. We need to share with each other.' (community leader, interview).

3.2.2. Confidence

The confidence of group members developed through their involvement with the intervention, and reticence decreased: 'I liked their interaction very much. . . one or two women were speaking openly. . . while going to the meeting, I have seen an improvement in women's consciousness' (community leader, interview). The lessening of laaj, a sense of embarrassment or shame, was mentioned repeatedly: 'They were eager to know about things and they were not hesitating to discuss their problems. Those women, who didn't want to talk about their problems before, were interacting with each other' (community leader, interview). A facilitator commented: 'The women of this village didn't talk



Figure 1. The context of women's lives photographed by respondents.

a. Collection of fodder for livestock; b. Collection of water; c. Shaman performing healing ceremony; d. Woman digging; e. A woman giving birth with a traditional birth attendant.

about pregnancy because they felt embarrassed. They carried heavy loads and bleeding occurred... Now, they meet with us and ask us for help when this happens. They ask without feeling shy' (facilitator, interview). Group discussion and implementation of strategies to address maternal and newborn health problems helped develop confidence, (an example being the management of money through maternal and child health funds): 'Before (we went to the group), we couldn't understand and we couldn't speak prop-

erly. Now... if we go to meetings then we can manage things properly' (women's group member, FGD). There was also some evidence that group members challenged household norms, for example when a local girl became pregnant to a boy of another caste, out of wedlock, the group were concerned about how she was being treated: 'They were intercaste, the (mother of the boy) didn't want to let her into the family, and wanted her to abort the baby... all the group members decided to go into her house... now (the girl)

says that the (mother) doesn't scold her' (facilitator, interview).

3.2.3. Spreading information about good practice

Increased knowledge, confidence and encouragement from facilitators stimulated group members to disseminate information about maternal and neonatal health to other women: 'If the baby doesn't suck milk, or breathe, or cry it should be taken to the hospital immediately. We

tell (women) everything. Now we are giving training to others' (women's group member, FGD). A health worker also reported increased knowledge about cleanliness at birth: 'Group members have made villagers understand that dirty things affect them. They have even told the villagers to keep the bedding clean before delivery' (health worker, interview).

During interactions with friends and neighbours, women's group members discussed what they had learned in the group: 'We disseminated information to everyone



Figure 2. Women's group activities and strategies.

a. Women's group meeting (photograph by Suresh Tamang); b. Picture card game (photograph by Tom Kelly); c. Stretcher scheme (photograph by Tom Kelly); d. Women making clean home delivery kits (photograph by Tom Kelly).

through the women's group, like tetanus, or whatever the programme is. The group members spread to their neighbours. . . it is spread out to the community through the group' (facilitator, interview). An example is the dissemination of information about immunisation: 'Now, women's group members give suggestions about immunisation and health. Maybe because of this the numbers of patients have increased. I am very grateful to the women's group members for that' (health worker, interview). Community meetings organised by groups and facilitators also increased awareness about maternal and newborn health: 'They ask "what did you do in the meeting, what did you learn by going to the meeting?" We conducted a ward meeting to make other people understand' (women's group member, FGD).

Groups initiated several strategies to address health problems, including stretcher schemes, revolving funds for obstetric or newborn emergencies, the making and distribution of clean home delivery kits, and the use of picture card games to discuss the causes, prevention and treatment of maternal and newborn problems (Figure 2a–d). Community planning and implementation of strategies to address prioritised problems also enabled dissemination of information. For example, whilst selling clean home delivery kits made by the group, members told families how to maintain cleanliness at birth: 'I give them suggestions, saying "if the delivery kit is used then you won't get caught by diseases"' (women's group member, FGD).

3.2.4. Community capacity

Planning and implementation of strategies enabled groups to mobilise community resources and strengthen social networks. Whilst making stretchers, groups approached forest user groups for resources; and whilst gathering money for their fund, they asked other villagers and community groups to contribute: 'The women's group came to ask for money in our meeting on 29th as they didn't have enough money' (women not attending group, FGD). Engagement appears to have strengthened community capacity to address problems, and increased awareness of maternal and neonatal health issues.

Families were concerned about the affordability of care: 'Maybe I thought that it is expensive (to go to the district hospital)' (women's group member, FGD). The women's group funds also addressed concerns about costs incurred reaching and receiving services.²⁷ Health care providers and medicine shop owners sometimes gave treatment on credit, and had difficulty recovering this money: '(Medicine shop owner) gives medicine on credit to those who don't have money' (community leader, interview). Resources that villagers could access for their health care needs were scarce, and donations were usually sought from friends, neighbours and money lenders. The women's group fund was considered beneficial because it saved time in emergency situations, was locally available, and did not require dependence on others: 'If the money is kept in the fund, the money is available immediately when it is needed. We don't need to ask other (people)' (men, FGD). The fund enabled families to take decisions independently, without begging from others: 'By bowing down. . . we need to take a gift to the zamindar's (landlord's) house. . . instead of doing that if we

save money in the fund then we can take out whenever we need' (women's group member, FGD).

Many respondents talked about their lack of proximity to a road or public transport: 'There are problems of transport in (this place), and because of this, the people from (far away) who come for a check-up say, "we will pay money" so you keep expensive medicine there too' (women's group member, FGD). Transporting patients was a problem: 'if the family member becomes sick and they need to take (to hospital) then they need to search for the man to carry, they need to ask for help from the brothers of the village' (women's group member, FGD). Some women's groups managed or bought new stretchers which was seen as a good way to overcome transport difficulties: 'If there is stretcher then it is easy to carry. How can we take the postpartum mother by walking?' (women's group member, FGD). The group and facilitator discussed ways to make them more available to women and villagers: 'We have planned to make another two (stretchers). . . one can be used by the people of the higher cluster of houses and one for the people of this cluster' (women's group member, FGD).

The availability of clean home delivery kits made by the groups was a positive incentive to use: '(Pregnant women) are getting (kits) at their home so they say it's good' (women's group member, FGD). Clean home delivery kits were cheap and convenient: 'Before, the thread was cut from many dresses (laughing), no-one ever kept the plastic on the floor. . . now everything is available in one place. Because it is available people feel good. They feel it is cheap' (facilitator, interview). Local production was valued and the kits were easy to re-supply: '(The kit) is good. It will be good for the future. They (women) don't need to ask others. We need to be strong and stand on our own two feet' (community leader, interview). Health volunteers felt that demand for the kits had been created by the women's groups: 'Now in the village people come to ask whether we have delivery kits or not. They didn't know before but now they come to ask (for kits). . . some of them go to the market if we don't have (them)' (health volunteer, FGD).

4. Discussion

Women in Makwanpur, Nepal, were living in a challenging context of poverty, but were experiencing social change. Women's groups helped them to learn about maternal and newborn health, and to develop their confidence. Groups enabled dissemination of information across communities and built local capacity to take action for better health. Women joining the groups were socioeconomically broadly representative of their communities; groups did not selectively mobilise elite groups or the better-off.

This study had limitations. Due to security concerns, we could not sample areas that were more remote. Respondents may have sought to please the researcher, and may have over-reported expected or socially acceptable behaviours and feelings, thus giving an overly positive projection of the intervention. Stakeholders may also have responded positively to continue receiving the benefits of employment or a further development programme from MIRA. We assured respondents that MIRA could not access

the raw data, and used an independent consultant to facilitate discussions, to try to minimise this bias. The themes presented here were triangulated by different types of respondents, and were largely undisputed during feedback. Cultural and language differences were addressed by using Nepali research assistants, transcribing the data in Nepali before translation, using a foreign social scientist with good spoken Nepali and personal experience of living in the district for six years, and consulting with the research assistant or translator for clarification when necessary. Both intervention and control areas were experiencing social change over this period and therefore the collection of baseline and longitudinal qualitative data in intervention and control areas would have strengthened the validity of our findings.

The women's group intervention enabled learning among group participants, and in the wider community. Although the intervention was not designed to be a knowledge transfer project, and facilitators were not trained health workers, communities indicated that learning was a strong catalyst for change. The trial baseline study showed some existing knowledge about appropriate care behaviours in the study area, and interactions with group members, facilitators and health workers therefore probably reinforced and increased confidence in existing knowledge.^{11,12,28} A literature review on women's support groups also suggests that increased support and development of confidence through women's group networks can help sustain good health behaviours.²⁹

The way that women learnt, especially through the picture card discussions, stimulated group members to disseminate information about maternal and neonatal health to other women informally. Community planning and implementation of strategies to address high priority problems also enabled dissemination of information through mobilisation of community resources and social networks. For example, resources were collected for revolving funds and clean delivery kits, which focused the community on maternal and newborn health, and increased community capacity to address problems. PLA approaches propose that a collective critical consciousness and *owned* knowledge develops through participation, which enables individuals and communities to become empowered to work towards social change.^{30,31} Our findings support Freire's theories of learning and empowerment through building a critical consciousness.⁹ Other authors have suggested that involvement with community based organisations and increased social networks empowers communities, and leads to better health outcomes.^{32–36} The group process may produce broader understanding of health problems, long-lasting empowerment and development benefit for local communities. The progression through learning, gathering information, gaining self-confidence, developing skills, organising to take action, and taking action, is more empowering than simply receiving messages. Empowered community-based organisations are thought to be the essential link between empowered individuals and effective political action. This dynamic continuum progresses through individual empowerment, small group participation, community organisation and partnership to political action.³⁷ The intervention encouraged mobilisation of resources, and groups have linked with their

communities to promote newborn and maternal health. Increased access to social networks may have built capacity of communities to work together in addressing problems.

It is of note that there was little evidence of engagement with health services and broader power structures (or improved perceptions of health services), as a result of the intervention. Improvements in newborn survival seem most likely to be related to changes in behaviour within the household and perhaps also in informal as well as formal care-seeking. Planning and implementation of strategies only led to a limited interaction with health service providers. There was some evidence that the intervention helped to revitalise community health volunteers, who often attended the group meetings. Community links with health services may have improved, for example, by sharing information about the availability of services, knowing the identity of health volunteers, and health workers attributing increased service use to the intervention.

The intervention could also be criticised because women's groups did not appear to engage with broader political and social power structures to address social inequality at a higher level. The primary health care movement was also often criticised for achieving small-scale successes, but failing to tackle fundamental national power differentials.³⁸ Yet the political context of the intervention, during an insurgency, was a severe constraint to broader political action. This trial was conducted during a time of civil unrest when there had been dissolution of local and national democratic structures. In a more stable political context, groups might stimulate interaction with power structures.^{39–41}

Women's groups offer a sustainable and scalable approach to improve child survival. For scale-up, the management of interventions must be effective. The implementing organisation was clearly important in the success of the intervention: the trial team were committed to taking a participatory approach, gained the confidence of communities, disseminated knowledge about maternal and neonatal health, and were perceived as knowledgeable, trustworthy, respected individuals by communities. Communities in intervention areas were also positive and responsive to NGOs, which may have affected the receipt of and response to the intervention. The intervention was feasible and acceptable as maternal and neonatal health was perceived to be the domain of women, and community groups were an accepted way to gain knowledge, personally develop, and help the community progress.

Neonatal mortality rates have fallen slowly but steadily in Nepal, despite the insurgency, but health facilities still struggle to provide basic delivery care services and most women still deliver at home, attended by family or neighbours.² Skilled birth attendants and community empowerment have been identified as priorities to improve maternal and neonatal survival.⁴² A key policy research question for the future is how to link community empowerment with increased utilisation of institutional births. There is some evidence that the sensitisation of communities through groups has led to greater awareness of the need to seek delivery care when necessary. Globally, there has been a movement to research the effectiveness

of community based participatory interventions for newborn and maternal survival.^{43–45} It is important to provide detailed description of community interventions, as this term has been used to describe quite different approaches. Reporting and consideration of context, 'dose' of interventions, and mechanisms by which the intervention is assumed to work are also important to enable explanation of results and demonstrate external validity.^{5,46} Research in rural Bangladesh suggests that group effects on neonatal mortality may be non-significant if the ratio of women's groups to population is not optimum, and the numbers of pregnant women attending groups is lower.^{45,48} The conduct of mixed methods integral process evaluations can help to explain the results of outcome evaluations, and ongoing trials in Malawi, India and Nepal have been collecting process data for this purpose. Data should be collected in both intervention and control areas, and future process evaluations may benefit from specifically researching the empowerment of women and communities, and exploring how, and if, social networks are developed. Collecting longitudinal data over many years would also enable examination of changes over time and the sustainability of change

5. Conclusion

The women's group intervention had a significant impact on neonatal mortality, and we have presented evidence that the effect occurred through learning about maternal and newborn health, building the confidence of group members and interaction with communities whilst developing strategies to address problems. Our findings support calls for the integration of process evaluations in randomised controlled trials.⁴⁷ Process evaluation can help to explore trial results, consider the effect of the sociopolitical context, and develop hypotheses about why interventions are successful or unsuccessful. Further work is needed to explore the impact of women's groups in different settings (e.g. urban vs rural, rural Africa compared with Asia), other potential benefits such as empowerment, and mental and sexual health, the constraints and success factors for groups, and to elucidate how a women's group approach can be taken to scale.

Authors' contributions: All the authors contributed to the design of the study and criticised drafts of the paper; JM was responsible for the conception and overall supervision of the qualitative data collection; DSM, KT and his team managed the trial; JM, RN and BB managed the qualitative data collection, data entry and analysis; AS, DO and NP analysed the group socioeconomic status; DO, SH and AC were technical advisers to the study; AC, DO and DM helped design the original trial protocol; AC and JM wrote the first draft of the paper and were responsible for subsequent collation of inputs and redrafting. All authors read and approved the final manuscript. JM and AC are guarantors of the paper.

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Conflicts of interest: None declared.

Ethical approval: The trial and process research was approved by the Nepal Health Research Council and the ethics committee of the Institute of Child health and Great Ormond Street Hospital for Children, and was done in collaboration with the Ministry of Health, Nepal. Participation in the study was voluntary, and verbal consent to participate was obtained (as most respondents were illiterate). Data were anonymous and quotes are presented without attribution to respondents. Participants in the photoelicitation exercise were asked to seek permission from subjects before taking their picture. We took verbal consent to see the photographs, keep a copy, and show them in public fora. We assured participants that there would be no direct financial gain from their photographs.

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