BMC Women's Health

RESEARCH Open Access

Promoting gender equity in a home visits programme: a qualitative study in Northern Nigeria

Loubna Belaid[1*], Hadiza Mudi[2], Khalid Omer[3], Yagana Gidado[2], Umaira Ansari[4], Muhammad Rilwanu[5], Neil Andersson[3,4] and Anne Cockcroft[3,4]

Abstract

Background Gender inequities remain critical determinants influencing maternal health. Harmful gender norms and gender-based violence adversely affect maternal health. Gendered division of labour, lack of access to and control of resources, and limited women's decision-making autonomy impede women's access to maternal healthcare services. We undertook a cluster randomized controlled trial of universal home visits to pregnant women and their spouses in one local government area in Bauchi State, North-Eastern Nigeria. The trial demonstrated a significant improvement in maternal and child health outcomes and male knowledge, attitudes and behaviours. This paper qualitatively evaluates gender equity in the home visits programme.

Methods The research team explored participants' views about gender equity in the home visits programme. We conducted nine key informant interviews with policymakers and 14 gender and age-stratified focus group discussions with men and women from visited households, with women and men home visitors and supervisors, and with men and women community leaders. Analysis used an adapted conceptual framework exploring gender equity in mainstream health. A deductive thematic analysis of interviews and focus group reports looked for patterns and meanings.

Results All respondents considered the home visits programme to have a positive impact on gender equity, as they perceived gender equity. Visited women and men and home visitors reported increased male support for household chores, with men doing heavy work traditionally pre-assigned to women. Men increased their support for women's maternal health by paying for healthcare and providing nutritious food. Households and community members confirmed that women no longer needed their spouses' permission to use health services for their own healthcare. Households and home visitors reported an improvement in spousal communication. They perceived a significant reduction in domestic violence, which they attributed to the changing attitudes of both women and men due to the home visits. All stakeholder groups stressed the importance of engaging male spouses in the home visits programme.

Conclusion The home visits programme, as implemented, contributed to gender equity.

Keywords Gender equity, Universal home visits programme, Maternal health, Nigeria

*Correspondence:
Loubna Belaid
loubna.belaid@enap.ca

Full list of author information is available at the end of the article

Introduction

Maternal mortality remains a global health problem. Every day in 2020, almost 800 women died from preventable causes related to pregnancy and childbirth [1]. Nearly 95% of maternal deaths occur in economically limited resource settings [1]. Sub-Saharan Africa alone accounted for around 70% of maternal deaths [1].

Gender inequities are critical determinants influencing maternal health [2–5]. A 2021 study based on secondary analysis of country-level data from 54 African countries reported that gender inequities and the availability of skilled birth attendants were the most critical social determinants explaining variations in maternal mortality across Africa [6]. Harmful gender norms such as early marriage and pregnancy, genital mutilation, and gender-based violence adversely affect maternal health [7, 8]. Gendered division of labour, lack of access and control of resources, limited women's autonomy, and exclusion from decision-making impede women's access to maternal healthcare services [2, 9].

Since the 1990s, researchers have implemented interventions involving male partners to improve maternal and child health outcomes [10]. Systematic reviews reported positive impacts of these interventions in limited-economic resource settings [11–13]. Male involvement in these interventions was mainly focused on specific barriers, such as decision-making to use health services and male attendance at antenatal care visits [12, 13]. Other interventions emphasized men's role as gatekeepers for women's health or engaged them as one target group under a broader strategy to increase community involvement in maternal and child health [11]. While these interventions improved some health-seeking behaviours and increased maternal and child health services uptake, they failed to address household inequitable gender norms and dynamics [14].

Male engagement interventions shifted from tackling specific barriers to being gender-transformative [10]. "Gender transformative interventions actively examine and promote the transformation of harmful gender norms and seek to reduce inequalities between men and women to achieve desired outcomes" (p125) [3].

There is evidence of the effectiveness of gender-transformative interventions in improving reproductive health outcomes and reducing gender violence [3, 10, 15]. However, qualitative evidence of the perceived impact of these interventions and details of the type of activities being implemented remain limited, particularly in African settings [3, 4, 16]. This paper describes the methods and findings of a qualitative evaluation of gender equity in a home visits programme aiming to improve maternal and early child health.

Methods

Setting

Bauchi State in North-Eastern Nigeria has a population of around five million, extrapolating from the 2006 census. The population is predominately Muslim with Hausa ethnicity. Some 63% of women in Bauchi have no education, compared with 35% nationally. Polygyny and large family size are common. In Bauchi, the fertility rate is 7.2 children per woman [17].

The maternal mortality ratio in Nigeria is among the highest in the World, with 1047 maternal deaths per 100,000 live births in 2020 [18]. The Maternal Mortality Ratio is even higher in the Northeastern region [19]. Women in Bauchi have poor access to maternal healthcare services. Only 20% give birth in a health facility, and only 46% of women receive antenatal care from a trained health worker [17]. Less than 20% participate independently or jointly in household decisions. Over 50% of ever-married women have experienced emotional, physical, or sexual violence committed by their current or most recent husband or partner [17].

Home visits intervention

Between 2015 and 2020, we conducted a cluster randomized controlled trial of universal home visits to pregnant women and their spouses in eight wards (smallest administrative area) of Toro Local Government Area (LGA), Bauchi State, North-Eastern Nigeria [20].

Women home visitors visited all pregnant women every two months during their pregnancies and again after delivery, and men home visitors visited their husbands. Having women and men home visitors interact separately with the pregnant women and their male spouses followed faith-based cultural norms in Bauchi and was endorsed by religious leadership. The research team engaged with Muslim and Christian religious leaders and traditional leaders in each community, and these leaders supported the home visits programme.

The women's home visitors visited every pregnant woman every two months during the pregnancy, and the men's home visitors separately visited the male spouses of the pregnant women every two months. The women visitors visited every woman who gave birth within two months of the birth and again when the child was 12–18 months old.

The women and men visitors shared evidence about actionable risk factors for maternal and early child health from a recent survey in Bauchi State [21], separately from pregnant women and their spouses. The home visits significantly improved maternal and child health outcomes and male knowledge and attitudes [22–24]. Narratives of change helped to explore the experience of participants and possible mechanisms for the impact of the home visits [25].

The home visits programme deliberately aimed to increase men's engagement in promoting maternal and child health. The risk factors for maternal health discussed in the home visits with pregnant women and their spouses included strongly gendered issues: women continuing heavy work during pregnancy, domestic violence, lack of spousal communication, and lack of knowledge (including among men) of danger signs during pregnancy and childbirth [13]. The men's home visitors made specific arrangements to interact with the spouses of pregnant women; this often meant visiting in the evenings or at weekends when the men were home.

The programme recruited local women and men as home visitors, allowing them to earn an income and increase their social status. Women, in particular, reported earning an income as an important positive change in their lives from their involvement in the programme [26].

To support the sustainability of the home visits after the trial, the government agencies collaborating with the home visits programme at State, LGA and ward levels nominated women and men officers to work with the programme, including training to manage and monitor the home visits.

Focus group discussions and individual interviews

This qualitative study is based on focus group discussions and key informant interviews. The research team designed focus group discussions and individual interview guides (Appendix 1). The research team included female and male researchers from a Bauchi non-governmental organisation (NGO), representatives from the Bauchi State Primary Health Care Development Agency (BSPHCDA), and male and female international researchers with over ten years of experience in community-based research in Bauchi. Six people facilitated the focus groups and/or conducted key informant interviews: three men and three women. All but one were from Bauchi and affiliated with the local organisation implementing the home visits programme. Their qualifications ranged from a higher national diploma to a medical doctor. All had training and several years of experience facilitating Focus Group Discussions (FGD) and conducting KI key informant interviews. All of them were engaged in implementing the home visits programme and believed in its aims of improving maternal and child health by supporting households in taking action to reduce risk factors. They had no relationship with the participants before the study other than through their engagement in the home visits programme.

A technical working group from the research team drafted the instruments, and the project steering committee approved them. The team refined the guides using an iterative process. After each interview/focus group discussion, the team met to discuss how it went and refine questions to increase clarity if necessary. The guides covered how the visits addressed gender equity, perceptions of the programme, data monitoring about equitable coverage of the programme, capacity-building, challenges and opportunities in home visit implementation, and strengths and weaknesses of the programme. In this paper, we focus specifically on views about the gender equity aspects of the home visits programme.

Focus group discussions and individual interviews took place in August and September 2020.

The team used a purposive sampling strategy to recruit stakeholder participants [27]. The stakeholder groups were women and men from the households who received the home visits, community leaders involved in facilitating the programme in their communities, home visitors, supervisors of home visitors, and senior government officers.

The team liaised with the Toro Local Government Authority (LGA) coordinators and the ward focal persons to select stakeholders for the community focus groups. First, they selected three communities, one each from an urban, rural, and remote group of communities in the six wards. For each community, the team asked the ward focal person to invite women and their spouses who had received home visits during the project and were available and willing to spare time to participate. The focus group discussions took place in private and quiet spaces, often classrooms in primary schools.

Table 1 shows details of the focus groups and the number of participants in each group. Fourteen focus group discussions occurred in eight urban, six rural, and four rural-remote communities. They included ten gender and age-segregated groups of women (four) and men (six) from households that had received home visits, two groups of community leaders (male and female), and two groups of home visitors (male and female). The mean age was 49.3 years across the three older male groups, while the mean age across the three younger male groups was 27.7 years. The mean age was 39.7 years for the older women groups and 21.8 years for the younger women groups.

Two further focus groups covered supervisors from Toro LGA and the State level. Most of the supervisors at the LGA level were ward focal points (part-time government workers at this local level), while most of those at the State level were from the BSPHCDA.

Local facilitators (female and male) conducted the focus group discussions in the Hausa language. They are well-trained in qualitative research, have worked with the team on several projects, and understand the home visits programme well. A trained reporter took detailed notes during each meeting and sat with the facilitator after the meeting to produce a report in English. Facilitators did

Table 1 Distribution of FGDs and key informant interviews per stakeholder groups

Stakeholder groups	Number of Interviews and FGDs
Households who received the visits	4 female FGDs [three with younger age group (25 years or below) and 3 with older age group (above 25 years of age), 10 participants in each group, total 60 participants 6 male FGDs [three with younger age group (40 years or below) and 3 with older age group (above 40 years), 10 participants in each group, total 60 participants
Home visitors	1 male FGD (12 participants) 1 female FGD (12 participants)
Community leaders	1 male FGD (10 participants) 1 female FGD (9 participants)
Supervisors	2 FGDs (mixed group) (6 participants)
Local research team	1 FGD (mixed group) (9 participants)
Senior government officers	9 key informant interviews

Table 2 Adapted gender framework

Dimensions	Explanation
Division of labor	Division of labour within and beyond the household and everyday practices
Access to resources	Access to resources (education, information, skills, income, employment, services, benefits, time, space, social capital etc.)
Decision making	Rules and decision making (formal and informal)
Spousal communication	Discussion between husband and wife about pregnancy, childbirth, and early child health
Heavy work during pregnancy	Heavy work during pregnancy, especially in third trimester
Domestic violence during pregnancy	Physical violence during pregnancy, perpetrated by the spouse or other household member

not audio-record the focus groups. Detailed notes by well-trained field workers are an effective approach to reporting focus group discussions [28].

The local skilled research team conducted nine interviews with senior government officers associated with the home visits programme. The interview guide covered government health priorities, the government's role in designing and implementing the home visits programme, perceived equity in program coverage, data monitoring to support equity, capacity building, and gender equity. They telephoned to invite the officers to participate, and the interviews usually took place in their offices. The discussions were in English, and the interviewers took detailed notes and prepared a report after each interview.

One additional focus group included members of the local research team who implemented and managed the home visits programme. The discussion focused on their experience implementing the programme and their views on its perceived impact on gender equity. The first author (LB), external to the project, facilitated the discussion.

Only the researchers and the participants were present during the focus group discussions and the key informant interviews. The team encountered no participant refusals to join these discussions and interviews. We did not return the transcripts to the participants. Data saturation was achieved from the focus group discussions and key informant interviews. The interviews and focus groups ranged from one to two hours.

Analysis of focus group and interview reports and strategies for trustworthiness

The first author (a female of North African descent, external to the home visits project) and one female team member from Bauchi (HM), both experienced in qualitative research, conducted a deductive thematic analysis of the focus group and individual interview reports, following the steps proposed by Braun and Clarke [29]. They read all the texts, identified and clustered themes related to gender outcomes, and organized them into categories and subcategories to look for meanings and patterns.

In this paper, we understand gender as a multidimensional concept. It refers to "the characteristics of women, men, girls, and boys that are socially constructed. This includes norms, behaviours and roles associated with being a woman, man, girl or boy, as well as relationships with each other" [30]. We adapted a gender analysis framework [31], which captures gender dimensions and has been widely used in mainstream health [2, 32–35]. We used this framework to explore how the home visits programme affected gender norms and dynamics. It included the following items: (i) division of labour, (ii) access to resources, (iii) decision-making, and (iv) values (social norms, ideologies, beliefs). In this paper, values were not analysed as an independent category but throughout the other categories. The framework positions gender as power relations negotiated about resource access, division of labour, social norms and decision-making [2] (Table 2). Appendix 2 describes the

coding trees used to conduct the thematic analysis for each participant group (Appendix 2: coding trees).

In addition to these dimensions from the gender analysis framework, we explored in the focus group and interview reports views about lack of spousal communication, heavy work in pregnancy and gender violence during pregnancy. These factors were identified as actionable factors associated with maternal morbidity in a survey in Bauchi conducted before the co-design and implementation of the home visits programme [21].

Several strategies increased trustworthiness [36]. We used validated methods for data collection (individual interviews, focus group discussions) and analysis (deductive thematic analysis). We triangulated findings by data sources (community members, community leaders, home visitors, supervisors, and senior government officers). We did not do a member-checking exercise with the participants; however, we discussed the findings with government officers in Bauchi.

To increase transferability, we describe the stakeholders and the study context. The researchers examined their biases, assumptions, beliefs, and suppositions that might affect their interpretation of findings to increase conformability. Some local research team members were involved in the home visit programmes. The team explained to the participants that the study's objective is to understand their views on the home visit programmes and improve them if necessary. In reporting the study, we followed the 32-item COREQ checklist for reporting qualitative research (appendix 3).

Results

We present the results according to the adapted conceptual framework. The results between the stakeholder groups converged.

Perceived gender equity effects of the programme

Policymakers appreciated that the programme engaged men and women and targeted husbands and wives in the home visits. They felt this created equitable maternal and child health awareness and maintained a gender-sensitive approach. By targeting husbands and wives, maternal health is no longer seen as a woman's problem but rather a family issue in which husbands have a role to play. Previous maternal and child health programmes engaged only women leaving behind husbands. *"Previously, the focus has been more on women alone, with a misunderstanding that health is a women's issue (male, policymaker #9).*

Division of labour: men's participation in household work

Visited men and women and home visitors and supervisors believed the home visits led to more male support in household work. Groups described a cultural shift in gender division of labour. They described men doing heavy work traditionally pre-assigned to women, such as fetching and carrying water, collecting firewood, farming, and carrying harvest products. They noted that men had begun to participate in sweeping the house, washing clothes, and bathing children. *"Yes, it provides changes; we even support them in sweeping, washing, and fetching water. Men do that due to the knowledge they receive from the home visitors. (FGD#10, male youth, rural community).*

In a particular community, participants raised a change in gender norms. In this community, male children used to not go to the market. With the home visits, male children go with their pregnant mothers to the market. This has changed the socialization of boys. *" There is one of the settlements where male children are traditionally not sent to the market because they would be fathers of their households in the future. But with these home visits, this traditional belief has been abandoned. Male children are now supporting their pregnant mothers with heavy work and are being sent to the market" (FGD#4, male home visitor).*

Groups reported that men were more involved in women's healthcare. They go with their wives to the health facility for antenatal care and monitor the pregnancy's progress. "*It helped us; some husbands are now escorting their pregnant wives to the clinic following the home visits interaction. We closely monitor the progress of the pregnancy with our wives and jointly take action (FGD#10, male youth, rural community).*

Female groups explained that women also got support from their co-wives and family during pregnancy. *"Husbands and family members are really assisting women with heavy work during pregnancy"* (FGD#6, female, rural/remote).

Access to resources: men increase financial support and assist women's businesses

Groups considered men more willing to provide for their families after the visits. They paid medical bills and provided nutritious food. In Bauchi, gender norms are influenced by the Islamic faith, in which men are required to be the financial providers for their families. The home visits programme did not attempt to change this gender norm.

"The husbands, being the decision makers and financial providers, now give the women money to take care of their health needs and the health needs of their children". (FGD#8, young women, urban community)

Some groups pointed out that women who generate their own income sometimes pay medical bills, and their spouses reimburse them. Since the home visits, the husbands have been more willing to pay the medical bills. *"Some of the women pay-out (med-bill) and later the*

husband pays them back when they get[money]" (FGD# 10, young male, rural community).

Home visit supervisors noted that the home visits led husbands to support their wives in their businesses: *"The husbands have started empowering women financially by giving them money to start a business* "(*FGD#2 supervisors).*

Women's participation in decision-making

Groups suggested that the home visits had increased women's role as decision-makers for their own and their children's health. They confirmed that, since the home visits, women do not need their spouses' permission to use health services for themselves and their children.

They emphasized the importance of letting their spouses use health services early to prevent complications. *"Husbands are now allowing pregnant women to visit the health facility for antenatal care. This was not the case before (FGD#7, female, adult, urban community).*

On the other hand, participants in some focus groups considered it important that the programme engaged men and their wives equally because men are the decision-makers in their households. They did not envisage a change in the role of women in decision-making. *"Both men and women were involved; involving men is the biggest strength of the home visits program because men are the main decision-makers in their homes, so no one is left out." (FGD#2, supervisors).*

Spousal communication

After the home visits, groups highlighted improved spousal communication. Women could speak and express their needs freely, and they felt more confident. Men improved their capacity to listen to their spouses.

"The men are very supportive of their wives. They take time to listen to their problems and proffer solutions to the best of their ability" (FGD#5, female, youth, rural community).

"Women are more confident to talk to their spouses about pregnancy and child health issues. The home visits have enabled women and their husbands to make an informed decision on the best time to get pregnant or space their children" (FGD#5, female, youth, rural community).

Domestic violence during pregnancy

With no exception, all the groups perceived a significant reduction in domestic violence. Some male groups proposed average rates from 80 to 90% of domestic violence reduction in their communities. Some male groups labelled domestic violence as "an old-fashioned" way to do. Domestic violence is considered now as something shameful. They all attributed the reduction in domestic violence to the changing attitudes of both women and men due to the programme.

Many male groups felt that the programme made men more mature, taking their responsibilities more seriously toward their spouses and children. *"Now men have stopped all kinds of "I don't care" attitudes by providing basic needs to the house. They are now taking care of all their responsibilities. If you recall, before the home visits, a person who was always beating his wives was recognized as a warrior who did not tolerate the wrongs of women, but now it is considered taboo in this community. The attitude of men in the community has been changed as the members are no longer allowing anybody to do so [beat his wife] and go free" (FGD#12, male, youth, urban community).*

Supervisors and visitors' groups pointed out that the videos visitors showed during the home visits stimulated positive auto-reflections of men on their attitudes towards their spouses: "The videos have helped men *realize their mistakes and change their attitudes. For instance, some men [in households] gave examples of themselves doing exactly what the man in the domestic violence video does to his wife. They said that the video portrays exactly what is happening in their homes and the communities" (FGD#2 supervisors).*

The programme had a positive ripple effect on co-wives' relationships and the community. Women-visited groups attribute this change to the home visits. *"There is no more fighting among co-wives and family members, and there are no more fights between neighbours. There is a great improvement in the people's tolerance level in our community" (FGD#8, visited female urban group).*

Discussion

The Bauchi programme's impact on gender outcomes went beyond expectations. It has been transformative in several ways. The programme addressed key gender issues. In particular, focus groups of stakeholders stressed how the visits increased spousal communication, consistent with the growing evidence of the value of engaging men in maternal and child health. A 2018 systematic review found that interventions involving men increased couples' communication about sexually transmitted diseases, family planning, and children's health [11]. A cluster randomized controlled trial evaluating the effectiveness of a gender-transformative intervention on intimate partner violence and HIV prevention reported an increase in spousal communication on sexual health in Ethiopia [37]. The intervention consisted of 14 participatory and skills-building sessions led by same-sex facilitators to assist participants in identifying and transforming power imbalances within their relationships and building skills for healthy, nonviolent, and equitable relationships [37].

The home visits programme reduced heavy work during pregnancy, which confirms findings from several

studies. A participatory community-based intervention in rural Andhra Pradesh observed increases in the proportion of men supporting their partners by completing housework during pregnancy. Compared with the baseline, significantly more women at the end-point reported reducing housework while pregnant (54% at baseline vs. 76% at the end-point) [38]. A 2018 cluster randomized controlled trial assessing the impact of a transformative gender intervention on promoting maternal and child health in Rwanda reported higher levels of men's participation in childcare and household tasks (washing clothes, cooking, cleaning). A 2020 cluster randomized controlled trial evaluating a participatory, gender-transformative intimate partner violence and HIV prevention intervention improved household task-sharing in Ethiopia [37].

The Bauchi home visits contributed to reducing domestic violence, as previously reported as a quantitative finding [22] and supported by the conclusions of this qualitative study. This is in line with other recent reports. A 2023 systematic review of interventions based on social and psychological empowerment approaches reported a reduction in gender-based violence against women and girls in Sub-Saharan Africa [15]. The cluster randomized controlled trial in Rwanda found that women in the intervention group reported less past-year physical and sexual intimate partner violence [10].

The Bauchi home visits programme helped women have a say in decision-making regarding health issues, confirming findings from other studies. A qualitative study in rural Burkina Faso found free obstetric care meant women no longer needed to negotiate for money to pay for obstetric care, reducing delays in access to care. However, women did not report an increase in decision making about contraceptive use [39]. A study in Northern Uganda reported similar findings. While the intervention improved health-seeking behaviours, women still lacked control over financial and fertility decisions [40]. In these studies, the programmes did not address gender dynamics around finance or contraception; they did not involve male partners. The Bauchi home visits programme did not specifically intend to increase women's decision-making power but rather to create a culturally safe environment for joint decisions and ultimately empower both spouses to tackle actionable risk factors for maternal and child health. This focus on joint decision-making is similar to that in the intervention in Rwanda, where the authors reported that "joint decision-making through skills-based activities and by creating spaces for couple communication, the intervention successfully targeted underlying, unequal gendered power dynamics" (p14) [10].

The participatory approach underlying the programme contributed to the positive changes reported. During the visits, home visitors discussed local risk factors, asking women and men in the households what could be done and what was being done in the home to reduce the risk factors rather than suggesting pre-determined actions. Home visits probably increased critical consciousness, an essential mechanism to target reproductive health outcomes successfully [4].

Gender norms also matter in delivering programmes. In the home visits programme, male home visitors perceived their involvement as a good way to engage spouses, and policymakers saw the recruitment of both women and men home visitors as increasing the programme's acceptability, which aligns with the literature. A formative study on maternal nutrition in Burkina Faso reported that women preferred to receive visits from a female community health worker [41]. In Tanzania, a study assessed gender differentials in a home visits programme in maternal and child health and reported that men were more comfortable discussing sexual and reproductive concerns with male rather than female community health workers. Women were likely to disclose pregnancies earlier to female community health workers. Respondents also reported that having female and male community health workers helped address gender issues in community health workers' acceptance [42]. Male community health workers were seen to be critical in reaching out to husbands [42]. An intervention in Rwanda paired female and male community health workers to make household visits to men and women in the community, motivated by cultural norms and concerns for women's safety when travelling between communities [43].

Limitations

Translation from Hausa to English likely lost some nuances of meaning in the focus group discussion reports. We did not audio record the focus group discussions or interviews. We do not consider this is necessarily a limitation. We agree with Rutakumwa et al. [28] that notes from well-trained and experienced reporters can be at least as good as audio recording in capturing the key contents and contexts of focus group discussions and key informant interviews. In Bauchi, the research team carefully trained focus group facilitators and reporters. The role of the reporter is at least as important as that of the facilitator. After each focus group, the facilitator and reporter sat together to finalize the fair report of the session.

Using a deductive thematic analysis may constrain researchers from searching only for preconceived categories or themes, potentially overlooking important emergent patterns or nuances in the data. We acknowledge this limitation. This study examined how the home visits programme influenced gender norms and dynamics in Bauchi. We used a framework as a guideline to ensure

we captured the key gender dimensions in mainstream health. The framework selected has been used in many studies focusing on maternal and child health in settings similar to that in Bauchi [2, 32–34]. We recognize that our findings are context-specific and may not be transferable to other settings.

Conclusions

The qualitative evidence in this study suggests that the Bauchi home visits programme has been gender transformative. It addressed key gendered issues such as spousal communication and heavy work during pregnancy. The programme fostered critical examination of the harmful practice of gendered domestic violence and promoted more equitable gender norms related to the division of labour and, perhaps, to decision-making. The participatory approach underlying the programme increased critical consciousness, an essential mechanism to successfully target maternal health outcomes.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12905-024-03293-8.

Supplementary Material 1

Supplementary Material 2

Supplementary Material 3

Acknowledgements
We thank the fieldworkers who collected the data and the women and men who generously shared their views on the programme.

Author contributions
AC and NA designed the home visits programme and the cluster randomized controlled trial. AC, NA, YG, HM, MR, KO and UA and implemented the home visits programme. LB, AC, KO, YG, UA, and HM designed the qualitative evaluation study. LB and AC drafted the manuscript. KO, UA, YG, and HM collected the data and supervised the community focus group discussions. HM, KO, YG and UA contributed to reporting the data. LB, HM, and AC analyzed the qualitative data. LB, NA, AC, KO, YG, UA, HM, and MR participated in intellectual content analysis. All authors read and approved the final manuscript.

Funding
The study was funded by the Réseau en Recherche de la Santé des populations of Québec (RRSPQ) under the programme : Soutien à des initiatives structurantes (IS) en santé mondiale conduites par des stagiaires postdoctoraux. The funding body had no role in the study's design, the collection, analysis, and interpretation of data, or in writing the manuscript. We thank the Canadian Institutes of Health Research for supporting the costs of the article processing charge.

Data availability
The data sets are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
The Bauchi State Ministry of Health gave ethical approval for the study (NREC/12/05/2013/2017/21). The McGill University Faculty of Medicine IRB gave ethical approval (A09-B60-17B). The participants gave oral informed consent. Both ethical committees approved the use of oral informed consent, agreeing that the study was minimal risk and recognizing the low adult literacy in the study area.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Author details
[1]École Nationale d'Administration Publique, Montreal, Canada
[2]Federation of Muslim Women's Associations of Nigeria (FOMWAN), Bauchi, Nigeria
[3]Community Information for Empowerment and Transparency-PRAM, Department of Family Medicine, McGill University, Montreal, Canada
[4]Centro de Investigácion de Enfermedades Tropicales, Universidad Autónoma de Guerrero, Acapulco, Guerrero, Mexico
[5]Bauchi State Primary Health Care Development Agency, Bauchi, Nigeria

Received: 25 August 2023 / Accepted: 6 August 2024
Published online: 24 August 2024

References

1. WHO. Maternal Mortality WHO. 2023.
2. Morgan R, Tetui M, Muhumuza Kananura R, Ekirapa-Kiracho E, George AS. Gender dynamics affecting maternal health and health care access and use in Uganda. Health Policy Plann. 2017;32(suppl5):v13–21.
3. Kraft JM, Wilkins KG, Morales GJ, Widyono M, Middlestadt SE. An Evidence Review of Gender-Integrated Interventions in Reproductive and maternal-child health. J Health Communication. 2014;19(sup1):122–41.
4. Levy JK, Darmstadt GL, Ashby C, Quandt M, Halsey E, Nagar A, et al. Characteristics of successful programmes targeting gender inequality and restrictive gender norms for the health and wellbeing of children, adolescents, and young adults: a systematic review. Lancet Global Health. 2020;8(2):e225–36.
5. Taukobong HFG, Kincaid MM, Levy JK, Bloom SS, Platt JL, Henry SK, et al. Does addressing gender inequalities and empowering women and girls improve health and development programme outcomes? Health Policy Plann. 2016;31(10):1492–514.
6. Sanni Y, Seun Stephen A, Sunday AA. Disparities in pregnancy-related deaths: spatial and bayesian network analyses of maternal mortality ratio in 54 African countries. BMJ Global Health. 2021;6(2):e004233.
7. Yaya S, Odusina EK, Bishwajit G. Prevalence of child marriage and its impact on fertility outcomes in 34 sub-saharan African countries. BMC Int Health Hum Rights. 2019;19(1):33.
8. Raj A, Boehmer U. Girl child marriage and its association with national rates of HIV, maternal health, and infant mortality across 97 countries. Violence against Women. 2013;19(4):536–51.
9. Hay K, McDougal L, Percival V, Henry S, Klugman J, Wurie H, et al. Disrupting gender norms in health systems: making the case for change. Lancet. 2019;393(10190):2535–49.
10. Doyle K, Levtov RG, Barker G, Bastian GG, Bingenheimer JB, Kazimbaya S, et al. Gender-transformative bandebereho couples' intervention to promote male engagement in reproductive and maternal health and violence prevention in Rwanda: findings from a randomized controlled trial. PLoS ONE. 2018;13(4):e0192756.
11. Tokhi M, Comrie-Thomson L, Davis J, Portela A, Chersich M, Luchters S. Involving men to improve maternal and newborn health: a systematic review of the effectiveness of interventions. PLoS ONE. 2018;13(1):e0191620.
12. Suandi D, Williams P, Bhattacharya S. Does involving male partners in antenatal care improve healthcare utilisation? Systematic review and meta-analysis of the published literature from low- and middle-income countries. Int Health. 2020;12:484–98.
13. Yargawa J, Leonardi-Bee J. Male involvement and maternal health outcomes: systematic review and meta-analysis. J Epidemiol Commun Health. 2015;69(6):604–12.
14. Comrie-Thomson L, Tokhi M, Ampt F, Portela A, Chersich M, Khanna R, et al. Challenging gender inequity through male involvement in maternal and newborn health: critical assessment of an emerging evidence base. Cult Health Sex. 2015;17(Suppl 2sup2):S177–89.

15. Keith T, Hyslop F, Richmond R. A systematic review of interventions to reduce gender-based violence among women and girls in Sub-saharan Africa. Trauma Violence Abuse. 2023;24(3):1443–64.
16. Gram L, Fitchett A, Ashraf A, Daruwalla N, Osrin D. Promoting women's and children's health through community groups in low-income and middle-income countries: a mixed-methods systematic review of mechanisms, enablers and barriers. BMJ Global Health. 2019;4(6):1–17.
17. National Population Commission. Nigeria Demographic and Health Survey 2018, Key Indicators Report Abuja, Nigeria, Rockville, Maryland, USA; 2018.
18. WHO. Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division. Geneva World Health Organization; 2023.
19. Kabo I, Otolorin E, Williams E, Orobaton N, Abdullahi H, Sadauki H, et al. Monitoring maternal and newborn health outcomes in Bauchi State, Nigeria: an evaluation of a standards-based quality improvement intervention. Int J Qual Health Care. 2016;28(5):566–72.
20. Cockcroft A, Omer K, Gidado Y, Gamawa AI, Andersson N. Impact of universal home visits on maternal and infant outcomes in Bauchi state, Nigeria: protocol of a cluster randomized controlled trial. BMC Health Serv Res. 2018;18(1):510.
21. Andersson N, Omer K, Caldwell D, Dambam MM, Maikudi AY, Effiong B, et al. Male responsibility and maternal morbidity: a cross-sectional study in two Nigerian states. BMC Health Serv Res. 2011;11(2):S7.
22. Cockcroft A, Omer K, Gidado Y, Baba MC, Aziz A, Ansari U, et al. The impact of universal home visits with pregnant women and their spouses on maternal outcomes: a cluster randomised controlled trial in Bauchi State, Nigeria. BMJ Global Health. 2019;4(1):e001172–e.
23. Omer K, Joga A, Dutse U, Hasan K, Aziz A, Ansari U, et al. Impact of universal home visits on child health in Bauchi State, Nigeria: a stepped wedge cluster randomised controlled trial. BMC Health Serv Res. 2021;21(1):1085.
24. Cockcroft A, Omer K, Gidado Y, Baba M, Aziz A, Ansari U et al. Universal home visits improve male knowledge and attitudes about maternal and child health in Bauchi State, Nigeria: secondary outcome analysis of a stepped wedge cluster randomised controlled trial. J Global Health. 2022;12.
25. Belaid L, Ansari U, Omer K, Gidado Y, Baba MC, Daniel LE, et al. I had to change my attitude: narratives of most significant change explore the experience of universal home visits to pregnant women and their spouses in Bauchi State, Nigeria. Archives Public Health. 2021;79(1):202.
26. Belaid L, Ansari U, Omer K, Gidado Y, Chadi Baba M, Ezekiel Daniel L, et al. I had to change my attitude: narratives of change explore the experience of universal home visits to pregnant women and their spouses in Bauchi State, Nigeria. BMC Archives of Public Health (under review); 2021.
27. Robinson OC. Sampling in interview-based qualitative research: a theoretical and practical guide. Qualitative Res Psychol. 2014;11(1):25–41.
28. Rutakumwa R, Mugisha JO, Bernays S, Kabunga E, Tumwekwase G, Mbonye M, et al. Conducting in-depth interviews with and without voice recorders: a comparative analysis. Qualitative Res. 2020;20(5):565–81.
29. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3.
30. WHO. Gender and health. Geneva: WHO
31. Morgan R, George A, Ssali S, Hawkins K, Molyneux S, Theobald S. How to do (or not to do)… gender analysis in health systems research. Health Policy Plann. 2016;31(8):1069–78.
32. Kalindi AM, Houle B, Smyth BM, Chisumpa VH. Gender inequities in women's access to maternal health care utilisation in Zambia: a qualitative analysis. BMC Pregnancy Childbirth. 2023;23(1):755.
33. Garrison-Desany HM, Wilson E, Munos M, Sawadogo-Lewis T, Maïga A, Ako O, et al. The role of gender power relations on women's health outcomes: evidence from a maternal health coverage survey in Simiyu region, Tanzania. BMC Public Health. 2021;21(1):909.
34. Alhaffar M, Hamid A, Douedari Y, Howard N. 'We are trying to live in a normal way, but nothing is normal about us anymore: a qualitative study of women's lived experiences of healthcare in opposition-controlled areas of Syria. BMJ Glob Health. 2022;7(7).
35. Udenigwe O, Okonofua FE, Ntoimo LFC, Yaya S. Understanding gender dynamics in mHealth interventions can enhance the sustainability of benefits of digital technology for maternal healthcare in rural Nigeria. Front Glob Womens Health. 2022;3:1002970.
36. Morse MJ. Critical analysis of strategies for determining rigor in qualitative inquiry. Qual Health Res. 2015;25(9):1212–22.
37. Sharma V, Leight J, Verani F, Tewolde S, Deyessa N. Effectiveness of a culturally appropriate intervention to prevent intimate partner violence and HIV transmission among men, women, and couples in rural Ethiopia: findings from a cluster-randomized controlled trial. PLoS Med. 2020;17(8):e1003274.
38. Sinha D. Empowering communities to make pregnancy safer: an intervention in rural Andhra Pradesh. New Delhi:: Population Council; 2008.
39. Samb OM, Ridde V. The impact of free healthcare on women's capability: a qualitative study in rural Burkina Faso. Soc Sci Med. 2018;197:9–16.
40. Belaid L, Ochola E, Bayo P, Alii GW, Ogwang M, Greco D, et al. Exploring the impact of a community participatory intervention on women's capability: a qualitative study in Gulu Northern Uganda. BMC Womens Health. 2021;21(1):28.
41. Isler J, Sawadogo NH, Harling G, Bärnighausen T, Adam M, Sié A, et al. If he sees it with his own eyes, he will understand': how gender informed the content and delivery of a maternal nutrition intervention in Burkina Faso. Health Policy Plan. 2020;35(5):536–45.
42. Feldhaus I, Silverman M, LeFevre AE, Mpembeni R, Mosha I, Chitama D, et al. Equally able, but unequally accepted: gender differentials and experiences of community health volunteers promoting maternal, newborn, and child health in Morogoro Region, Tanzania. Int J Equity Health. 2015;14(1):70.
43. USAID. Developing and strengthening community health worker programs at scale: a reference guide for program managers and policy makers. USA Maternal and Child Health Integrated Program. MCHIP) United States Agency for International Development; 2013.

Publisher's Note