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Evaluating a Community Maternal Health Programme: Lessons Learnt

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Abstract

Using the example of a community-based health promotion intervention, this paper explores the important triangle between health promotion theory, intervention design, and evaluation research. This paper first outlines the intervention and then the mixed-method evaluation.

In 2007, a non-governmental organisation (NGO) designed and implemented an intervention to improve the uptake of maternal health provision in rural Nepal. A community-based needs assessment preceded this novel health-promotion intervention that empowered women with information on the benefits of seeking care. The intervention had a flexible design and, at several points, the intervention's progress was assessed and, where necessary, changes were made. The intervention targeted women of childbearing age and people (e.g. mothers-in-law and husbands) who influence these women's ability to access health services. The intervention attempted to incorporate the diverse and changing needs of the local communities to make it more culturally appropriate (e.g. around traditions and beliefs linked to caste/ethnicity and socio-economic status) and to make the best of the existing resources whether these belong to the government or other NGOs. The research aimed to assess whether the planned health promotion activities improved maternal health service uptake.

Greater access to maternal care should result in fewer women suffering from complications during childbirth, especially when complications are detected earlier and dealt with by skilled birth attendants. One key assumption was that health promotion would help improve knowledge, attitudes, and beliefs towards seeking care, especially during pregnancy complications. The programme ran for six years with the final evaluation in 2012.

Keywords: *Health promotion, maternal health, antenatal, health access, South-Asia, Nepal, and low-income countries*

Introduction

In Low and Middle-Income Countries (LMICs), poor rural women are the least likely to receive adequate maternal health care, especially in sub-Saharan Africa and South Asia.^{1,2} Factors that prevent women from receiving or seeking care during pregnancy and childbirth include poverty, distance to health facilities, lack of information, inadequate services, and certain social and cultural practices.³ Women in LMICs have, on average, many more pregnancies than in high-income countries. A woman's lifetime risk of maternal death, i.e. the probability that a 15-year old woman will eventually die from a maternal cause, is 1 in 4,900 in high-income countries, versus 1 in 180 in low-income ones.⁴ However, between 1990 and 2010, maternal mortality, worldwide, dropped by almost 50%,⁴ owing to Safe Motherhood campaigns, with improved access to education, higher incomes, skilled birth attendants, antibiotics, and antiretroviral therapy, as well as decreased pregnancy rates as a result of family planning,^{4,5} and arguably, one-child policies in China.⁶ To continue to improve, maternal health barriers to quality maternal health services must be overcome at all levels in the health system.⁷

Most maternal deaths occur during labour and delivery; 99% of those deaths occur in LMICs.⁸ The latter statistic suggests that the need for skilled care during delivery should be emphasized to women during antenatal care (ANC). ANC offers an opportunity to encourage women to seek a delivery by skilled attendants and postnatal care. Finally, in many LMICs there are missed opportunities, which skilled care during pregnancy and childbirth can address alongside with simple cost-effective measures, such as better hygiene (e.g. hand-washing with soap), provision of iron and folic acid, use of sterile instruments or safe-birth kits, and administration of oxytocins.⁹

Nepal

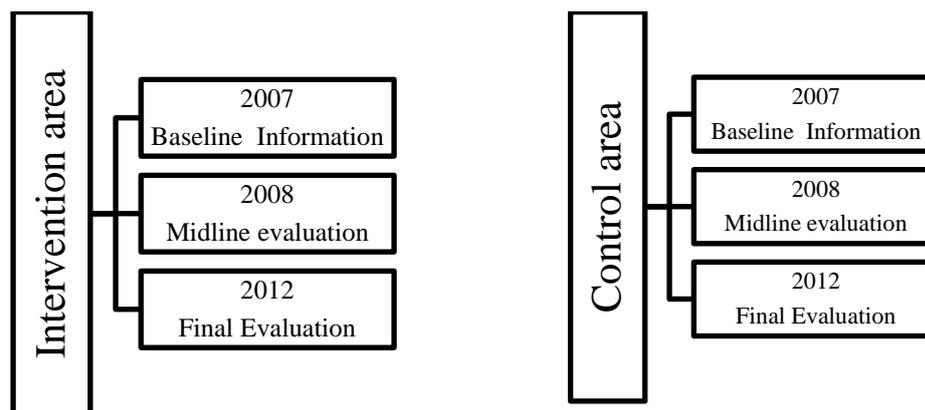
Nepal has areas of low uptake of maternal health services, where communities are influenced by traditional healers and religion.^{10,11} Home delivery remains the preferred option for many, but poor rural women are often not the main decision makers with regard to attending maternal health services.¹¹ Moreover, slow decision-making at home, when something goes wrong due to the lack of recognition of pregnancy complication, is also a problem.^{12,13} However, despite additional risk factors, such as long travel distances, lack and cost of transport, lack of capacity to treat serious complications at the closest facilities, and home delivery without a skilled birth attendant, the MMR in Nepal has been improving.^{14,15} Nepal had a MMR of 190/100,000 in 2013¹⁶ and a Gross National Income per capita (GNI) of US\$ 730 in 2015, making it one of the poorest countries in the world.¹⁷ On the other hand, in India, with double the GNI of US \$1,590, has a higher MMR (190/100,000). Afghanistan has a similar GNI (US\$ 630) to Nepal but, predictably, a higher MMR of 400 per 100,000.^{15,18} In addition, unemployment is high in Nepal, at 45%, and foreign aid makes up 3.4% of its economy.^{17,19} In brief, Nepal had major economic restraints even before the 2015 devastating earthquake.^{20,21}

Aim of Paper

This paper sets out the process of implementing a maternal health promotion intervention in Nepal. It starts by explaining ‘why’¹ a mixed-method evaluation of such a maternal health promotion programme (henceforth ‘the programme’) is most appropriate. The evaluation aimed to ‘measure what works’ in this health promotion exercise, i.e. determine what aspects of the programme in particular helped improve health access.

Intervention & Evaluation

The programme was run by a Non-Governmental Organisation (NGO) called Green Tara Nepal (GTN).^{11,22} It was based on the principles of empowerment, targeting women and mothers-in-law and husbands who influence their ability to access health services/money for delivery.^{22,23} The programme selected two villages (total population 9,000) with a similar socio-economic status; one acted as control and the other as the intervention community, in a study that ran from 2007 until 2012.²⁴ In the evaluation, the uptake of maternal care was selected as a proxy for programme impact, based on the literature review (Fig.1). Antenatal care (ANC), a skilled birth attendant (SBA) at delivery, and postnatal care (PNC) were selected as indicators to compare the GTN programme’s impact with similar interventions.

Figure 1: Green Tara Nepal Project: Intervention & Evaluation Timeline

Content of GTN Intervention

The aims of the programme were to: (a) understand why pregnant women do not access existing services; (b) identify and address socio-cultural issues/psychosocial barriers; and (c) meet the potential increase in demand by the concomitant strengthening of existing service provision.²⁵

Right from the outset, local stakeholders were involved in deciding which area of health promotion to focus on and in planning the community monitoring. The community-based process leads to greater empowerment, a sense of community ownership, and increases the change of the programme's longer-term sustainability.²⁵ GTN designed a community-based intervention,²⁶ based on formative research, which included a rapid assessment of local needs.²⁷⁻²⁸

This health promotion interventions quantitative evaluation employed a cross-sectional before-and-after-study with a control group (Fig. 1). After the baseline survey data analysis in 2007 (both control and intervention), GTN launched its intervention. GTN also used interviewing techniques to facilitate a process of collective analysis, learning, and the promotion of active participation of communities in the interventions. Its health promoters had received training in participatory techniques and their role was to strengthen groups and support them through an action research cycle (Figs 2 & 3). Participatory activities used picture cards that addressed prevention, treatment, and consultation for typical problems in mothers and babies. Role-play activities focused on the importance of family support, nutrition, contraception, ANC, iron/folic supplementation, danger signs of pregnancy, safe delivery, and postnatal care. An overview of the GTN programme is shown in Box 1.

Box 1: Overview of GTN programme (activities) on maternal health

- *Set up a group;*
- *Problem identification, individually or in groups;*
- *Priority setting;*
- *Introduce aim of group meeting;*
- *Discuss why mothers and newborn infants die and how the intervention will work in the community;*
- *Find out maternal and neonatal problems in the community and women's understanding of these issues;*
- *Share health promotion information on maternal and newborn health including:*
 1. *Role-play: As various family members and daily scenes that of some they face;*
 2. *Participation: Describing pictures of household chores, maternal care and danger signs recognition (bleeding, fever& feeling weak);*
 3. *Audio-visual methods: Flip chart, Safe Motherhood Nepal, uterus prolapse poster, video about being a 'good husband' and practical demonstrations (e.g. Oral Rehydration Solution);*
 4. *Religious festivals: drama enactment of maternal and child health activities;*
- *Identify and address barriers in uptake, to meet the local needs of the population. E.g. women who stopped attending the groups were visited and encouraged to re-join the activities;*
- *Monitor and evaluate GTN group attendance, household visits and costs.*

The health promotion intervention included one-to-one activities in groups as well as two mass events at religious festivals, such as *Tihar* (= Festival of Lights). Once trust was achieved, by building relationships through home visits or attending marriages and other ceremonies, the two GTN health promoters (auxiliary nurse-midwives) established and supported women's groups (recent mothers and mothers-in-law), plus several men's groups. They used donated mobile phones and phone credit to communicate with group participants and staff at the health facilities. At the midline in 2010, there were 37 groups (reaching over 1100 people), and the GTN staff had visited 134 households to support women who were "most in need". The latter consisted of those who could not attend groups and/or needed to be at home and care for their families. At the time of the final survey, in 2012, there were additionally 40 active groups, with 731 participants in total, and more than 100 household visits.

Furthermore, the programme supported the existing health system of sub-health posts by providing health communication training to Mother-Child Health Workers (MCHWs) and Female Community Health Volunteers (FCHVs), whilst local hospital staff and traditional healers were trained for basic neonatal care. The programme also provided stretchers to three health posts and undertook four mobile clinic visits each month to outlying areas of the community. Those who attended groups received a small gift of less than 10 Nepali rupees (US \$0.11). A baby blanket was given to new mothers on completion of four ANC visits, and safe

delivery kits were made available at a subsidised price and sold through the women's groups. During these activities, the programme aimed to increase the uptake of ANC, SBA at delivery, and PNC in rural Nepal (29).

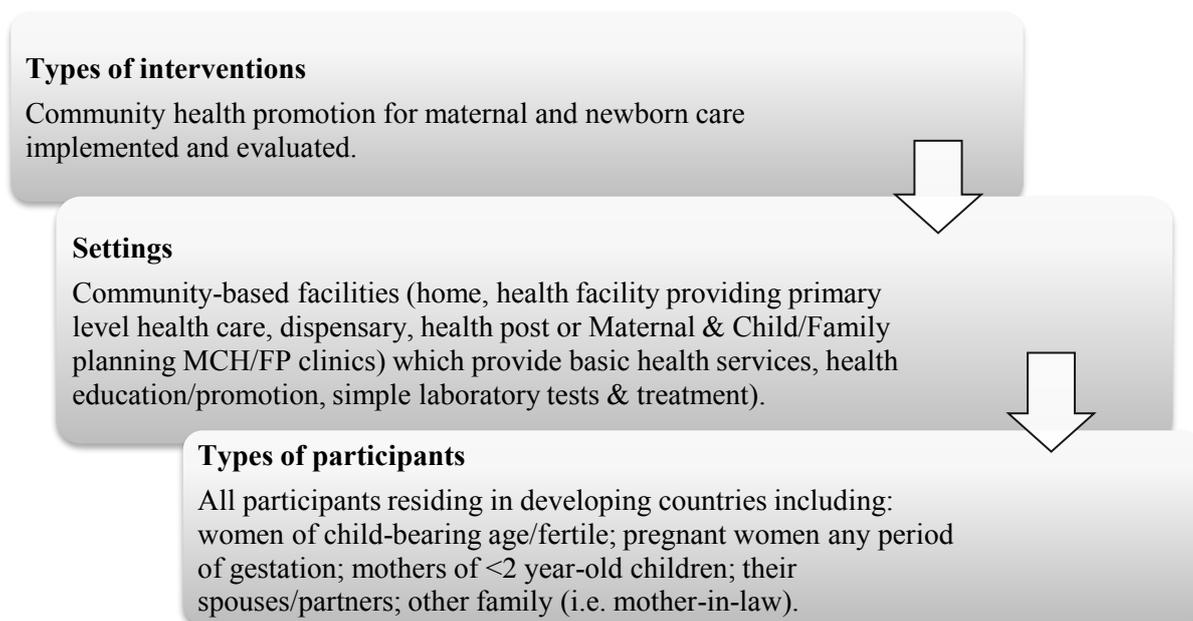
GTN's health promotion philosophy focuses on empowerment and community participation as its two essential elements, with a further emphasis on keeping the intervention low-cost, using, as much as possible, existing resources.²³ A health promotion planning cycle, based on the behaviour change theory, was used to shed light on the nature of the problem of low uptake of maternal health services. The behaviour change theory is useful in identifying the range of factors that the health promoter might seek to modify to address key determinants of that behaviour.³⁰ Providing women with knowledge about the benefits of ANC may result in more women seeking delivery with a skilled health care provider and/or PNC,²⁹ as the value of health promotion lies in empowering women to seek care when necessary. This is particularly important in low-income settings.^{23,31} Women groups using maternal health promotion can help facilitate this uptake.³²⁻³⁴ Some of the key elements of community-based health promotion include: behaviour change, flexibility, and a strong evidence base.³⁰

The Evaluation

Literature review guided this evaluation to find the key elements and methods of evaluation methods to assess the effect of community-based maternal-health-promotion interventions in LMICs. The review included studies from 1980 to 2007 (updated for this paper in 2016). The start date coincided with the introduction of the now common definition of health promotion.³⁵ The Safe Motherhood Initiative and the MDG (Millennium Development Goal) 5 brought clear strategies and specified interventions for the reduction of maternal morbidity and mortality. These consisted of good-quality maternal health services with skilled care for both routine and complicated cases, including emergency obstetric services for life-threatening complications, and a functioning referral system to ensure timely access to appropriate care.³⁶ However, developing and evaluating effective strategies through which such an approach can be implemented in low-resource settings remains a global challenge.

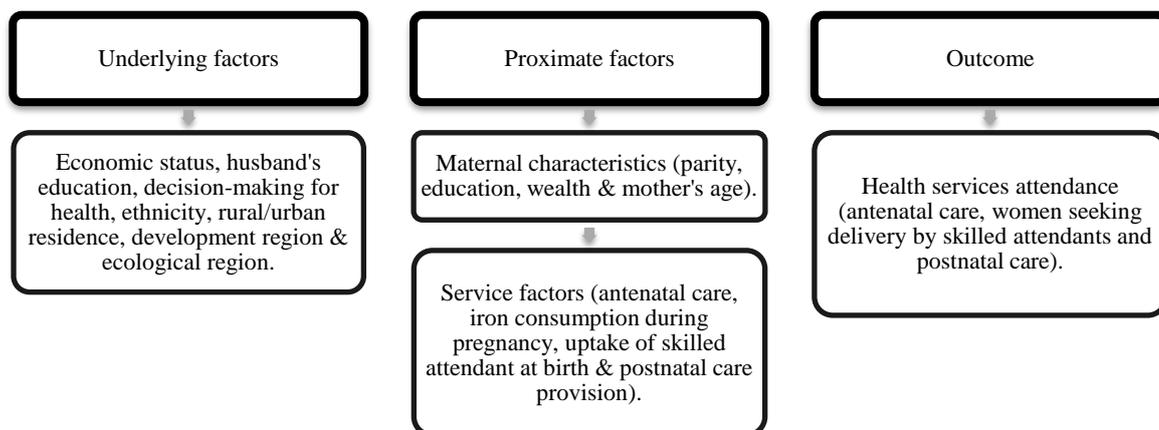
Our search strategy included the following terms: health promotion; community; rural population; developing countries; maternal health/welfare and evaluation (Fig. 2).

Figure 2: Flow chart of literature search



The findings of the literature review are summarised here: first, short-term effects of any health promotion programme must be assessed before any long-term benefits can be measured. Therefore, planning for evaluation is an essential part of programme design and development.³⁷ The planning GTN evaluation incorporated a mixed-methods approach using qualitative and quantitative methods.³⁸ This was because Impact evaluations, such as this, often have a main question around attribution: isolating the effect of the programme from other factors and potential selection bias, that particularly use quantitative techniques, such as regression analysis.³⁹ The qualitative techniques address the question ‘why’ the intervention may have worked. Therefore, a mixed-methods study was designed comprising methodologies that complemented each other: (a) a quantitative survey to evaluate the intervention and (b) a qualitative interview study to assess the perceived effects.⁴¹

The literature review identified four interacting stages needed in complex intervention: from development, to feasibility, implementation, and evaluation of effectiveness.⁴² The GTN evaluation (Fig. 3) was based on a framework adapted from Dharmalingam and colleagues, incorporating causal underlying factors (maternal socio-demographic characteristics, such as family’s economic status, husband’s education, residence, decision-making), and proximate factors (maternal characteristics such as body mass index, service use, birth interval, smoking, type of cooking fuel).⁴³ The conceptual framework was adapted to explore the link between socio-demographic and maternal health service factors including maternal health services uptake.

Figure 3: Conceptual framework to evaluate GTN Programme

In order to measure maternal health progress, Demographic Health Surveys^{12,13} include factors such as: number of ANC visits, their timing (whether it was within the “crucial” first trimester), a minimum of four ANC visits, components of ANC (iron tablets), place of delivery, skilled assistance during delivery, postnatal care and decision-maker in accessing health care. Similar outcomes were used to evaluate the GTN intervention.⁴⁴ Moreover, the baseline (2007), midline (2010), and final (2012) GTN surveys were not based on random opportunistic sampling; they were methodologically much stronger as they were based on total sampling.⁴⁵ The data collectors covered nearly all eligible women in the community through house-to-house surveys, where we had very few refusals for participation.

The aim of the evaluation was to see how well the intervention was working and to capture a broader, positive, spillover effect of the intervention on the local population. The latter means that women surveyed were not necessarily the ones who received the intervention yet may have benefited and these benefits are represented in the outcomes.⁴⁶ We surveyed all eligible women in four villages in order to ensure total coverage. The significance of change in socio-economic and health uptake indicators between the two areas at the baseline was determined for each outcome and compared with the control area (significance level $p \leq 0.05$). When the changes at the baseline were significant, a statistical test (regression) was applied to determine if this increase was significant between the two areas, post-intervention implementation.

In the qualitative part of the study, in-depth interviews and focus groups were conducted with participants who were purposely chosen to include: (a) women with a recent pregnancy (or had a child under age 2), (b) their mothers-in-law, (c) husbands, and (d)

healthcare attendants in the area. Participants were recruited through a network of health centers and women's groups.⁴⁷ All focus groups were run with the aid of a Nepali translator and all qualitative data were analysed by two researchers using a thematic approach.⁴⁸ Furthermore, ethical considerations are important in evaluation research, (40) so ethical approval was sought from the Nepal Health Research Council and relevant local authorities.²³

Discussion: Lessons Learnt

Currently, 50% of the women in LMICs receive inadequate ANC.⁴⁹ This theory-based study presents a solid theoretical foundation for a well-designed intervention and a rigorous systematic evaluation. This paper offers a rationale for evaluating interventions in maternal health in LMICs. The latter is important in addressing the continuum of care; a Cochrane review found that women in LMICs receiving few (4–6) antenatal visits had an increased risk of perinatal mortality and stillbirth.⁵⁰ The antenatal period presents an important opportunity for identifying danger signs, symptoms, and potential risks of labour and delivery; for example, during the antenatal period measuring women's blood pressure can identify women at risk of pre-eclampsia, and treatment can prevent eclamptic convulsions.⁵¹ Access to ANC and medicines can also prevent death from hypertensive disorders. Furthermore, death due to sepsis can be averted by screening for prenatal maternal infection and sexually transmitted infections (STIs) during antenatal visits, and with hygienic infection control measures provided by SBA.⁹ Furthermore, targeting anaemia during ANC and offering tetanus immunisation can be life-saving for both mother and child;⁵¹ and it is also an opportunity for education and counselling pregnant women.⁵²

There are substantial financial and opportunity costs to women attending ANC.⁵³ Yet, women who present for one ANC visit are more likely to attend additional visits.⁵⁴ The added value of ANC is that it increases the likelihood of a woman seeking delivery with a skilled health care provider and ensures access to emergency obstetric care when needed.^{29,55} Most deaths occur during labour and delivery, hence, there is a need for skilled care during delivery, which should be emphasised to women during ANC.⁵² Whilst, women who had four ANC visits were, on average, 3.3 times more likely to give birth in a health facility. There is a strong positive correlation between at least one visit and having a skilled birth attendant at delivery. The WHO guidelines also advise PNC within the first 24 hours, especially in the first week.¹⁶

While levels of provision and attendance of ANC have increased in many parts of the world during the past decade, in LMICs only 46% of pregnant women attend any ANC at all, and just over a third have the recommended four ANC visits.⁵⁶ It, therefore, remains a high priority to empower women to attend comprehensive ANC. Whilst 66% of the women attend ANC in the first trimester in Latin American, the Caribbean, in the Middle East, and in North Africa, the figure for Asia is nearly half of that rate, especially parts of South Asia. In Nepal, for example, 38% reported attending one visit and only 9% reported four or more visits.⁵⁷

Globally, the majority of maternal deaths occur in LMICs and, of those, most take place at home.⁴ Maternal health uptake can be used as a progress indicator in low-income countries such as Nepal. However, a lack of understanding of local beliefs and practices can hinder the development of appropriate maternity interventions. To continue progress in MDG5, now replaced by the Sustainable Development Goals of improving maternal health and the decline of MMR⁵⁸, there is a need for health promotion. The GTN health-promotion programme is part of the maternal mortality commonly cited framework - the so-called *three-delays* model.⁵⁹ These “delays” are applicable to non-attenders of ANC and during labour and birth, where adequate treatment, if provided, can mean averting pregnancy-related mortality.⁶⁰

One analytical framework for the Asian context, addresses the lack of female autonomy and the lack of social support or social capital, social exclusion, and marginalisation.³⁵ They propose that in order to implement interventions, like the GTN intervention, there is a need to address many barriers to health services at both the supply and demand side. While the demand-side concentrates on the ability to use health services at the individual, household, or community level, the supply-side determinants are those that are inherent to the health system and hinder service uptake by individuals, households, or the community. Both have to be addressed concurrently, as GTN did, while aiming to provide both preventive and curative health services in maternal health to target maternal morbidities and mortalities.⁶³ On the supply-side, one has to increase the health service uptake by the poor through an increase in service delivery capacity and by addressing the four dimensions of access barriers (access, availability, affordability, and acceptability).^{7,61,64}

Our first lesson was that health programmes and their evaluations need to be tailored for the needs of the community, i.e. the one-size fits-all approach is not suitable. A second lesson was that local stakeholders should be involved from the start in the needs assessment, to increase chances of empowerment, community ownership, and sustainability in the long-

term. The latter uses interpersonal relationships between interventionists (health promoters) and the community first and foremost, to build trust. Thirdly, collaboration with the existing public health system is vital. Fourthly, one needs effective teaching-learning materials in appropriate formats (see Box 1).

The fifth lesson in terms of measuring impact, is that maternal health uptake can be an indicator in a quantitative evaluation; while understanding local beliefs and practices can be determined with qualitative techniques. More generally, to determine socio-cultural appropriate interventions, formative implementation and mixed-methods evaluation research are needed in health promotion. Furthermore, at the outset, the stakeholders' diverse expectations of the purpose of an evaluation should be addressed. Evaluation outcomes need to match the programme's objectives: i.e., have you achieved what you set out to achieve? Therefore, it is important to have a deeper insight into the rationale/motivation underpinning the statistics/numbers: "why and how and not only the how much".

In conclusion, mixed-method evaluation can contribute to new knowledge on effectiveness of care-seeking behaviour in maternal health in LMICs. The findings can assist relevant national evaluation bodies in producing health promotion evaluation curricula for training the of all health staff, particularly those working in rural areas, in maternal health to improve maternal and newborn health.



Figure 2: *Women's group meeting in rural Nepal, (c) Sheetal Sharma 2013*



Figure 3: *Typical GTN women's group meeting, (c) Sheetal Sharma 2013*

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