A BEHAVIOUR MAPPING MAT TOOL: FOR INCREASING MATERNAL AND NEWBORN HEALTH CARE SERVICES IN DISADVANTAGED COMMUNITY

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Abstract:

In Nepal, the utilization of maternal, newborn and child health (MNCH) care services exhibit big gaps between rich and poor, for instance poorest quintile is at 10.7% skill births attendant services while richest at 81.5%, despite the services being free of cost. Pregnant women's group (PWG) approach was initiated to address MNCH inequities prevailing in the disadvantaged community. The PWG is a socially cohesive peer support group of 8-15 pregnant women and postnatal mothers who meet monthly for participatory teaching and learning sessions on MNCH cares and semi-annual publicly group commitment meetings. At the meetings, husbands, mothers-in-law and father-in-law verbally commit to support their pregnant wives and daughters-in-law in presence of pregnant women. Local health staff also commits to provide those services.

The PWG approach fulfills WHO's three specific local factors that might be relevant to implementation of the women's group approach. There are role of men and other members of the community, visual methods and ethnic group mix. In the PWG approach, the pregnant women's husbands, mother-in- laws and father-in-laws are participated in a bi-annually publicly group commitments session. In the session, they commit to facilitate the pregnant women to get antenatal care, institutional delivery and postnatal care including newborn care. The PWG approach uses a visual method - a pictorial behavioural mapping mat for self- monitoring by pregnant women in the monthly health education session. The mat can be used easily even by an illiterate. The PWG has ethnic mixed group as this study have shown in total 81.8% respondents are from the so called disadvantage caste and remaining 18.2% from the so called upper caste.

The pregnant women group approach fulfills one consideration and three local factors of WHO's recommendation on women's group. It should be replicated in the disadvantaged community where maternal, newborn and child health (MNCH) care services coverage is low by considering following points: 1.Repeated monthly participatory teaching learning sessions on key MNCH care services messages directly to a pregnant woman; 2. Use of a behavioural mapping mat for self-monitoring by pregnant women; 3. Biannually publicly group commitments by husbands and in-laws; 4. Sharing the postnatal mothers' experiences. The PWG approach can be a strategy to reduce the high burdens of maternal and newborn morbidity and mortality in developing countries.

Key Words: Disadvantaged community, inequality health care service, maternal and newborn mortality, pregnant women's group, utilization of health care service, behavioral mapping mat tool.

BACKGROUND

The ward is the lowest development unit in Nepal. Government of Nepal, Ministry of Health and Population has provision that in each ward there is usually one Female Community Health Volunteer (FCHV) who facilitates the Mother's Group meeting in each month. In the Mother's Group meeting, the pregnant women and mothers of newborns are having limited participation and maternal and newborn health care messages are not being delivered to intended target i.e. pregnant women and postnatal mothers. A strategy to rejuvenate mother's groups - the creation of pregnant women's groups was started in 2003 in Bara district of Nepal by targeting sub-group for interventions (Plan Nepal 2003) [3].

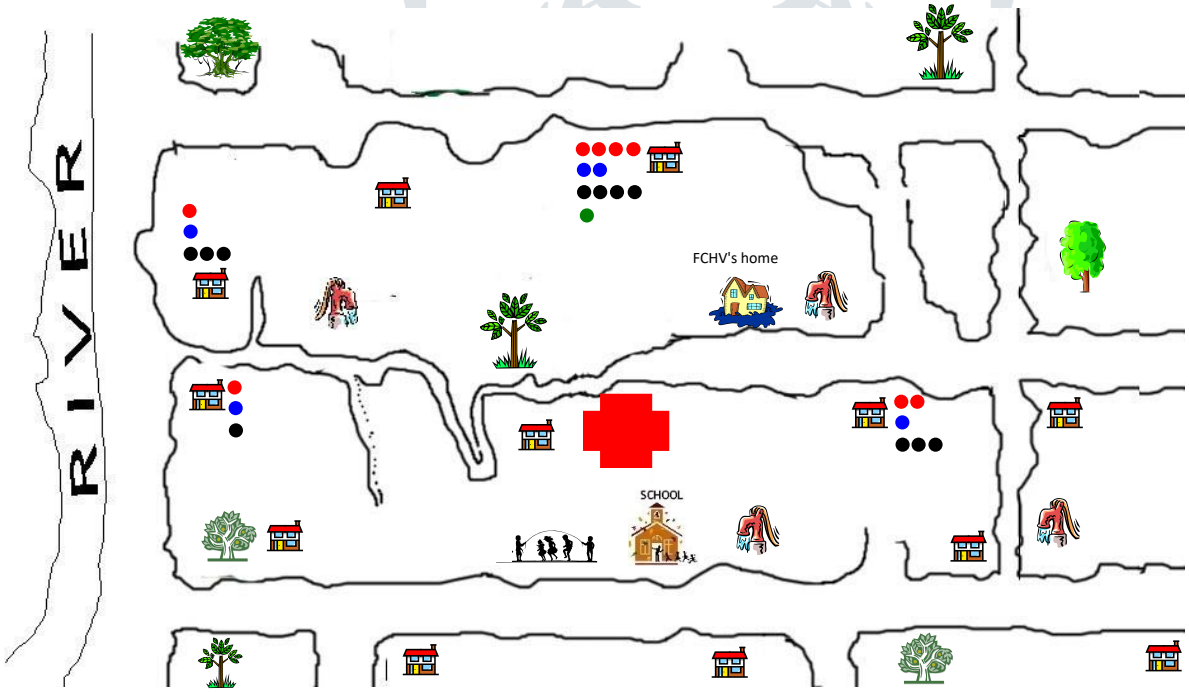
A pregnant women's group (PWG) is a socially cohesive peer support group of 8-15 pregnant women and postnatal mothers who live in the same ward and meet monthly. The integrated PWG approach helps pregnant women self-monitor their utilization of maternal and newborn health services, while positive peer pressure within the group acts as motivation for behavior change. The groups not only empower women to advocate to husbands and in-laws on the necessity of visiting health service providers but also put pressure on local health providers (health assistants, staff nurses, auxiliary nurse midwives, and auxiliary health workers from government health facilities) to ensure quality and timely health services are provided. The pregnant women and postnatal mothers self-monitor the utilization of antenatal and postnatal services along with birth preparedness plan and newborn birth registration. They monitor the utilization of services by using a social behavioural mapping mat in which they paste different colored marks "Tika".

Monthly health education sessions for pregnant women's groups:

This meeting is facilitated by Female Community Health Volunteers (FCHVs) and technical backstopping is provided by local health facility staff. These sessions include health education around pregnancy and birth, together with self-monitoring by pregnant women on their behaviour mapping of utilization of health services. The health education messages include use of antenatal care (ANC) services; birth preparedness plans (including money, blood, transport, use of skill birth attendants - SBAs); danger signs during pregnancy, at birth and after delivery, and for newborns; and newborn care. Jeewan Suraksha (Life Saving) Action Cards were developed by the government and are already used in all 77 districts of Nepal. The card is an A4 size pictorial card that is green on one side and red on the other. The green side has illustrations of optimal antenatal care, birth preparedness plans, post-natal care, and neonatal care; the red side has illustrations of danger signs during the pregnancy, at birth, after delivery, and for neonates. Each pregnant woman in the PWG is given a card to be hung on a wall at home as a reminder and brought to monthly meetings. Pregnant women are given iron and folic acid for prevention of anemia, and misoprostol for management of postpartum hemorrhage, during meetings and chlorhexidine 4% to apply on newborns' umbilicus is distributed to women at seven months of gestation, all supplied by the government.

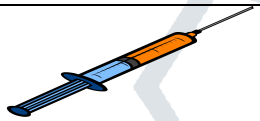
Behavioural mapping mat:

Women monitor their own needs for and utilization of health services using a behavioral mapping mat [See below sample] with stickers (Tika) and pictorial representations, a technique that does not require literacy. The mat contains a map of the village, showing the location of houses where pregnant women in the group live. Women place a different colored Tika (tiny adhesive stickers) next to their house for each pro-health activity they achieve, including ANC visits, iron tablet intake, postnatal care, tetanus vaccinations, birth preparedness plans, and money, transport, SBA contact number, three people for blood transfusion in case of postpartum hemorrhage, postnatal vitamin A, and birth registration of newborn along a time-line of their own pregnancy. These mats are inexpensive; with start-up costs of USD $3 per group and operational costs less than USD $1 per group per year for Tikas, glue sticks, and photocopying in 2014. Mapping creates healthy competition among pregnant women for positive behavior change and utilization of maternal and child health care services.



Figure#1: Behavioral mapping with information on health indicators

Table # 1: Legend of behavioral mapping mat tool

#	Tika Colour	Symbol	Indicator	#	Tika Colour	Symbol	Indicator
1	**RED (4 times) + (3 times)**		**Antenatal Check UP + Post Natal Check Up**	5	**PURPLE**		**Albendazole at 4th month of pregnancy**
2	**BLACK (6 months) + (2 months)**		**Iron and Folic Acid**	6	**GREEN**		**Vitamin A within 6 weeks of delivery**
3	**SKY BLUE (2 times)**		**Tetanus Toxoid (TT) vaccine**	7	**PARROT GREEN**		**Birth Registration within 35 days of delivery**
4	**YELLOW**		**Birth Preparedness Plan**				

The pregnant women's husbands and their mother in laws are also encouraged to participate. Female Community Health Volunteers (FCHVs) facilitate the meetings. Outreach workers from the local health facility are encouraged to participate and support the sessions technically. In some areas, group meetings are linked with outreach clinics operated by the outreach workers. After completion of the PWG meeting, the FCHVs distribute iron, folic acid, deworming tablets for pregnant mothers and condom and pills for postnatal mothers.

In the PWG process, group facilitators provide essential health information to pregnant women, as well as husbands and in-laws, related to pregnancy and birth. Information often includes how to make birth preparedness plans, how to recognize danger signs in pregnancy and in newborns, when and why to seek health care, how to properly care for newborns, and the importance of antenatal care, proper nutrition, iron and folic acid and deworming tablets, and tetanus vaccination.

Publicly group commitments meeting

Pregnant women group approach also includes the organization of semi-annual VDC (village development committee) level public commitment meetings. Every six months community meetings will be organized, attended by FCHVs, pregnant women and new mothers, their in-laws and husbands, and local health facility staff. At the meetings, husbands and mothers-in-law verbally commit to support their pregnant wives and daughters-in-law in front of the PWG members, FCHVs, and local health staff. These meetings take place twice a year in a VDC.

All attendees are encouraged to publicly commit to carry out recommended activities that lead to healthier outcomes for mothers and infants. For example, all the pregnant women commit to a minimum of four ANC check-ups, consume iron and folic acid tablets from the 4th month of pregnancy until six weeks after child delivery, two doses of tetanus vaccine, deworming tablet at 4th month of pregnancy, delivery at hospital or birthing center or by SBA, and the importance of hand-washing before touching newborns. Decision makers (mothers-in-law and husbands), health service providers, and FCHVs also commit to support pregnant women and mothers. For example, husbands and mothers-in-law commit to ensure that their wives and daughters-in-law have transportation to the nearest health facilities for ANC check-ups, and health workers commit to welcoming all women at centers and providing high quality services, as outlined in the government's maternal and newborn health program guidelines. Please see below flex chart in local language Nepali which is used for the public group commitments.

RESULT

Finding of Focus Group Discussion (FGD) with FCHVs: The FGD with Female Community Health Volunteers (FCHVs) was conducted at randomly selected two villages namely Churiayamai and Fakhel. The question was "How does the PWG behavioural mapping mat increase the utilization of maternal and new-born services?" The following are the general and specific to behavioural mapping mat findings of the FGD:

General Findings of FGD:

- Almost all FGD members had said that pregnant women group remained the most common group in community level so all pregnant women used to participate;
- Pregnant women group meeting empowered the pregnant women;
- All the pregnant women shared that they were supported by their husbands and mother-in-law to participate in the PWG and mother group meeting. Most of the mother-in-law also helped to cook rice so daughter-in-law can attend the meetings;
- In Churiayamai VDC, all the targets of maternal health were reached to 90% in the ward where there is PWG, but the targets were only 50% in the wards where there is no PWG;
- In Fakhel VDC, no one had delivered at health facility before three years back. At the time of FGD, all child birth (around 50/60 delivery per year) were at health facilities;
- In the PWG meeting, there are sharing of experiences of pregnancy and delivery by postnatal mothers so new pregnant women get the real experiences so they will motivate to use maternal and newborn health care services;
- Pregnant women know the information of government incentives like transportation cost (NRs 500 in Terai and 1,000 in Hill) if delivered at health institutes. They also get 400 rupees for four antenatal check-ups (ANC) if they did ANC as of government protocol that is at 4 months, 6 months, 8 months and 9 months of gestational period;
- Regular Mother's Group meeting followed by PWG meeting will sustain the PWG approach; and
- If the local health facilities remind the PWG meeting, so the FCHVs will encourage conducting the PWG meetings.

FGD Findings Related to Behavioural Mapping Mat: Participants highlighted the importance of the PWG behavior mapping mat by saying that the PWG mat helped to visually inform the service utilizations of antenatal checkup, taking iron and folic acid tablet and taking tetanus toxoid vaccine for the illiterate women. PWG mat also used to create peer pressure - more Tika (a colored round and small sticker which usually Nepali women use in their forehead for beauty) in the house mark of pregnant women in the mat reflects more services she had already taken. They also added that PWG programme made pregnant women proactive for health service utilization and increased curiosity among pregnant women. The FGD further findings are mentioned below:

- The mat helps visually the illiterate women how many times she has undergone antenatal check-up, how long she is taking iron and folic acid tablet, how many times she took tetanus toxoid vaccine etc.
- Active participation of the pregnant women in the PWG meeting like self-sticking of the 'Tika' for the indicators of service utilized like ANC check-up and birth preparedness plan etc. so they remember the services they need to undertake more compared to only a FCHV teaches them.
- Because of behavioural mapping, the pregnant women can't lie as they have to paste 'Tika' in the mat as of the indicators. If FCHV just tell a pregnant woman, they might just say 'yes' she is taking iron tablet. But when she has to paste a black 'Tika', she will be very conscious that she is not taking the iron tablets so she will not paste the 'Tika'.
- 'Saying and doing is different' (Bhanai ra garai ma pharak chha). The 'Tika' program – pasting the 'Tika' by pregnant women themselves helps to remember the care and services which they need to take.
- More Tika at the house mark of a pregnant woman in the mat reflects more services she has already taken. If some pregnant women have few Tika, they self-encourage getting more services and having more Tika in their house mark in the behavioural mapping mat.
- The pregnant women have a peer pressure to utilization of health services and healthy competition among them. If one pregnant woman paste a green 'Tika' for a birth preparedness plan, another pregnant woman is motivated that she should also need to paste the green 'Tika' by doing the birth preparedness plan.
- The PWG behavioural mat increase pregnant women curiosity – one pregnant woman attend the PWG meeting, other pregnant women are interested to see what she is doing and they are interested to do so.
- PWG meeting helps a FCHV to take the information with the behavioural map from pregnant women.
- The behavioural mapping mat shows use of services by Tika and pictorial legend so it helps to internalize (dimagma paschha) the use of services by the pregnant women.

DISCUSSION

Prost A. et al.2013 (Lancet 2013; 381: 1736–46) showed a 55% reduction in maternal mortality (0·45, 0·17—0·73) and a 33% reduction in neonatal mortality (0·67, 0·59—0·74), a subgroup analysis of the four studies (India, Bangladesh, Nepal and Malawi) in which at least 30% of pregnant women participated in groups [1]. The intervention was cost effective by WHO standards and could save an estimated 283 000 newborn infants and 41 100 mothers per year if implemented in rural areas of 74 Countdown countries. Maskey M K et al. 2011 mentioned that the pregnant women group (PWG) study demonstrated with high precision that PWG members have reduced risk (about 50% less) of dying during pregnancy, childbirth and puerperium as compared to the non-PWG members [9]. Their children also have similar lower risk of dying during perinatal and infancy periods. The finding of the 50% reduction of maternal mortality in PWG study in Nepal is almost same reduction (55%) in maternal mortality in the four countries meta-analysis where pregnant women are at least 30% in the women group. But in case of neonatal mortality reduction, there is 50% in the PWG study and 33% in the four countries meta-analysis [10].

The WHO's (2014) recommendation on community mobilization through facilitated participatory learning and action cycles with women's groups for maternal and newborn health has mentioned that the c**onsiderations to be taken into account for implementation of women's group is as follow:** There is some evidence that the intervention might be more successful **where more than 30% of pregnant women participate,** however the evidence at present is not definitive [15]. Thus this consideration is fulfilled by pregnant women's group approach where there are more than 90% pregnant women in the group. The WHO's (2014) recommendation has also mentioned **the specific local factors that might be relevant to implementation of the women's group** are as follows:

1. Implementation should consider the role of men and other members of the community (e.g. religious groups, mothers-in-law) and how and when they participate in the process.
2. The design of the process used with groups should be adapted according to the groups in question, e.g. accounting for levels of literacy/numeracy, preferences for oral versus visual methods, etc.
3. Ethnic group mix, religion, caste and other social categories affecting group dynamics need to be considered in developing the approach (e.g. how and where groups are formed).

The pregnant women group (PWG) approach fulfills above three WHO's specific local factors that might be relevant to implementation of the women's group. In the PWG approach, the pregnant women's husbands, mother-in-laws and father-in-laws are participated in a bi-annually publicly group commitments session. In the session, they commit to facilitate the pregnant women to get antenatal care, institutional delivery and postnatal care including newborn care. The PWG approach uses a visual method - a pictorial behavioural mapping mat for self-monitoring by pregnant women in the monthly health education session. The mat can be used easily by an illiterate. The PWG has ethnic mixed group as PWG study showed in total 81.8% respondents were from the so called disadvantage caste and remaining 18.2% from the so called upper caste.

CONCLUSIONS

The pregnant women group approach fulfills considerations and local factors of WHO's recommendation on women's group. It should be replicated in the disadvantaged community where maternal, newborn and child health (MNCH) care services coverage is low. The following points are recommended

- Repeated monthly participatory teaching learning on key maternal, newborn and child health (MNCH) care services messages (like danger signs during the pregnancy, at birth and after birth, and danger signs for newborn) directly to a Pregnant Women's Group (PWG);
- Pregnant women self-monitoring of the utilization of the MNCH care services by using a behavioural mapping mat during the monthly PWG meeting;
- Biannually publicly group commitments by husbands and mothers-in-law to support their pregnant wives and daughters-in-law for the utilization MNCH care services in front of the PWG members, FCHVs, and local health staff;
- The commitments by the local health facility staff to provide those MNCH services in the same biannually publicly group commitment meeting of husbands and mother in laws;
- Sharing the postnatal mothers' experiences and lesson learned in the pregnant women's group's meeting by postnatal mothers; and
- Scaling up the pregnant women's group approach in disadvantage community where the coverage of MNCH care services is low.
- Further study on the pregnant women's group approach at a larger scale.

REFERENCES

[1] Audrey Prost, Tim Colbourn, Nadine Seward and et al (2013), Women's groups practising participatory learning and action to improve maternal and newborn health in low-resource settings: a systematic review and meta-analysis.*Lancet 2013*; **381**: 1736–46

[2] Azad K, Barnett S, Banrjee B, et al. (2010), Effect of scaling women's group on birth outcomes in three rural districts in Bangladesh: a cluster-randomised controlled trail. *Lancet* 2010; 375:1193-202

[3] Baral, KP. (2006), Concept and approach of pregnant women's group: An approach to increase coverage of maternal health services in rural Nepal, Kathmandu: Nepal. 2006.

[4] Colbourn T, Nambiar B, Bondo A, et al. Effects of quality improvement in health facilities and community mobilization through women's groups on maternal, neonatal and perinatal mortality in three districts of Malawi: MaiKhanda, a cluster randomised controlled effectiveness trial. Oxford Jounals, International Health 2013-08-29. Accessed on June 12, 2016 http://inthealth.oxfordjournals.org/content/early/2013/06/26/inthealth.iht011.full

[5] Dipty Nawal, TV Sekhar, Srinivas Goli,(2013)' Decomposing the socioeconomic inequality in utilisation of maternal health-care services in selected Asian and sub-Saharan African countries. *Lancet 2013*; **381**: special issue, S97.

[6] Fottrell E, Azad K, Kuddus A, Younes L, Shaha S, Nahar T. (2013)The eff ect of increased coverage of participatory women's groups on neonatal mortality in Bangladesh: a cluster-randomised trial. JAMA Pediatric 2013 Sep; 167(9):816-25.

[7] Lewycka S, Mwansambo C, Rosato M, et al.(2013), Eff ect of women's groups and volunteer peer counselling on rates of mortality,morbidity, and health behaviours in mothers and children in rural Malawi (MaiMwana): a factorial, cluster randomised controlled trial. *Lancet 2013*; **381**: 1721–35.
http://www.who.int/woman_child_accountability/ierg/reports/30a_Womens_groups_metaanalysis.pdf)

[8] Manandhar DS, Osrin D, Shrestha BP, et al.(2004). members of the MIRA Makwanpur trial team. Effect of a participatory intervention with womens groups on birth outcomes in Nepal: cluster randomized controlled trial. *Lancet 2004*; **364**: 970–79.

[9] Maskey M.K, Baral K.P., Shah R, Shrestha BD, Janet L. & Kenneth J. R. (2011). Field test results of the motherhood method to measure maternal mortality. *Indian J Med Res 133*, January 2011, pp 64-69

[10] Maskey M.K, Baral K.P., Shrestha BD and et. al. (2008), Pregnant Women's Group Impact Study, Summary Report of Impact Assessment of Pregnant Women Group Strategy, Plan Nepal, Child Survival Project, Bara District, Nepal (2001-2006). Accessed on http://pdf.usaid.gov/pdf_docs/Pdaci677.pdf at page 41.

[11] Ministry of Health and Poplulation (MOHP) [Nepal], New Era, and ICF International INC. (2012). *Nepal Demographic Health Survey 2011*. Kathamndu, Nepal:Ministry of Health and Population, New ERA, and ICF International, Calvarton, Maryland.

[12] More NS, Bapat U, Das S, et al. Community mobilization in Mumbai slums to improve perinatal care and outcomes: a cluster randomized controlled trial. *PLoS Med* 2012; 9: e1001257.

[13] Shrestha B.D. Pregnant Women's Groups and the Impact on Newborn's Mortalities in Bara District, Nepal. Nepal Public Health Association (NEPHA) Newsletter, Volume #1 , Issue # 2, Pg 8, November 2009

[14] Tripathy P, Nair N, Barnett S, et al. Effect of participatory intervention with women's groups on birth outcomes and maternal depression in Jharkhand and Orissa, Inida: a cluster-randomised controlled trail. Lancet 2010; 375: 1182-92

[15] WHO 2014, WHO recommendation on community mobilization through facilitated participatory learning and action cycles with women's groups for maternal and newborn health, Geneva.