Health Brigade Members report

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Introduction

The Role of Health Brigade Members

In the pilot of the Maa Hub-spokes (HS) model, Health Brigade Members (HBMs) will be deployed to fulfil the role of a currently absent community health worker (CHW) population in Moulvibazar. They will access pregnant mothers in rural communities and provide regular antenatal care (ANC), maternal healthcare education, as well as postnatal care (PNC), in accordance with the WHO guidelines. In doing so, HBMs will have the opportunity to identify women with high-risk pregnancies, whom they will subsequently refer to the Maa clinic to be

reviewed by Maa's specialised doctors. In this way, HBMs are the pivotal 'spokes' of the Hub-spokes model, connecting the mothers to the Maa hub.

HBMs will be 5th-year medical students from Maa's five affiliate medical schools in Bangladesh, who are on their 3-month community medicine placements. The pregnant women will initially be identified by the women's groups and registered to the HS model via the MaaConnect app. The HBMs will then follow-up these pregnant women, and use the app during the ANC visits to record observations and monitor each pregnancy. The app allows the integration of different parts of the HS model as the observations recorded remotely by the HBMs can be picked up by the doctors in the clinic reviewing mothers who have been referred. This enables the delivery of an efficient service, tailored to the mother's needs.

The purpose of this report is to outline the evidence-base behind integrating HBMs into the HS model. It will explore and evaluate existing and previous community health worker initiatives implemented globally, identifying areas that Maa aims to adopt and improve.

Community Health Worker Initiatives in Maternal Health Services

CHW initiatives are one approach used by several low- and middle-income countries to improve access to care and coverage of vital maternal health services, particularly in rural regions, where access to health workers and systems are scarce. This role provides the essential link between the primary health care system and the communities they serve. Studies in rural communities of South Asia and Africa have conclusively indicated home visits by CHWs can improve the demand and use of ANC, delivery and PNC services, which can reduce maternal and neonatal mortality by 15-20 percent (Lassi and Bhutta, 2015; Glenton, 2013; Yonemoto, 2017). Likewise, Syed et al. (2006) reported CHWs are effective in identifying pregnancies and observing mothers through pregnancy to the postnatal period as

well as increasing awareness about maternal and newborn health practices/behaviours among mothers. This surge in evidence of the impact CHWs have on maternal health is no doubt promising and may potentially accelerate progress towards the achievement of the health-related Sustainable Development Goals (SDGs) in developing countries.

As mentioned above, several studies have found CHWs to improve maternal outcomes in developing countries. In Bangladesh, the well-established NGO BRAC, launched a community-based approach that provides a comprehensive package of essential services to mothers for the improvement of maternal, newborn and child health. The front and second line CHWs, Shasthya Shebika and Shasthya Kormis have made commendable progress in reducing maternal and neonatal mortality in urban slums and improving health-seeking behaviours in rural districts. In particular, through the 2007 BRAC Manoshi project in urban slums, the maternal mortality rate in Manoshi service areas had fallen by 56% to 130 per 100,000 live births in 2013 (BRAC, 2013). Also, the proportion of pregnant women receiving at least four ANC visits almost doubled from 27% to 52% between 2007 and 2011. The number of PNC visits substantially increased from 15% to 62% during this period.

The findings by BRAC demonstrate the significant impact CHWs can have. However, it is important to note that the slum population in Bangladesh generally have worse health conditions than the country as a whole, and the same results may not be observed in the Maa pilot study in Moulvibazar. Moreover, the key features of the Manoshi project that is attributable to BRAC's success involve delivery at birth huts in the slum community which were established by BRAC, and also involved preselection of referral facilities that could provide adequate emergency obstetric care (EMoc) to mothers. Thus, these results suggest that in order to have maximal impact on maternal health indicators, having a robust health system with good referral links is equally as important as delivering care through CHWs to the community. The

HS model incorporates clinics run by specialised doctors to provide care for high-risk mothers and will also collaborate with tertiary hospitals in the local area.

Antenatal care at home

Maternal mortality is the death of a woman while pregnant or within 42 days of termination of a pregnancy. The main causes of pregnancy-related deaths are haemorrhage (usually post-partum), sepsis, eclampsia, obstructed labour and complications of abortion. Research has shown that approximately 80 percent of maternal deaths worldwide could be averted if women had access to essential maternal health services. Millions of women who survive childbirth suffer from pregnancy-related injuries, infections and disabilities, often with lifelong consequences - much of which could be prevented through the provision of basic healthcare. (UNICEF, 2009)

ANC is an essential component of basic primary healthcare offered to mothers during pregnancy and provides a platform for important healthcare services, including screening, health promotion, detection and disease prevention. A key element of ANC involves identifying risk factors for, and signs of high-risk pregnancies, allowing for relevant interventions and referrals. A high-risk pregnancy is considered to be one that threatens the health of the mother or her foetus, and so requires close monitoring, and often demands specialised care from specially trained providers. The risk factors for high-risk pregnancies include having existing health conditions such as hypertension, diabetes or HIV; being overweight, obese or of older age; and having multiple births.

Testa et al. (2002), estimated that ANC alone can reduce maternal mortality by 20%, provided that the ANC is of good quality and the mothers frequently attend. The effectiveness of ANC is directly dependent on the content and quality of ANC and the availability of effective referrals in dealing with pregnancy complications. The World Health Organisation (WHO) recently

published a new series of recommendations in 2016 to improve the quality of ANC, reduce the risk of pregnancy-related complications, and provide women with a positive pregnancy experience. The full ANC now involves a recommended eight ANC visits and a core set of services including blood pressure, height and weight measurements; foetal measurements including ultrasound; tetanus toxoid vaccination; urine testing; iron tablet supplementation, and counselling on pregnancy-related complications and breastfeeding.

The use of skilled health workers during pregnancy in Bangladesh has moderately increased over the past decade, however, the utilisation of ANC services still remains critically low, especially amongst mothers in rural communities. The Bangladesh Maternal Mortality Survey (BMMS) conducted in 2016, reported 74% of pregnant women received at least one ANC visit from a medically trained provider, and 37% received the recommended four or more ANC visits during pregnancy, with the private sector being the most prominent source of ANC (60%). Whilst these findings demonstrate national progress in Bangladesh, this progress has been uneven. The Bangladesh Demographic and Health Survey conducted in 2014 found that in rural regions of Bangladesh only 59% of pregnant women received at least one ANC visit and a third received at least four or more ANC visits from medically trained personnel. This, therefore, highlights the need for targeting marginalised populations with better access and coverage of maternal health services.

Uptake of ANC can be encouraged by CHWs; in Ethiopia, the implementation of Health extension workers in 2003 increased ANC uptake from 27% to 43% between 2000 and 2011 (Lincetto et al. 2006). Similarly, the Lady health workers in Pakistan were able to strongly influence women's decision to seek ANC during their pregnancy (WHO, 2008). Moreover, Anwar et al (2008) found that mothers receiving at least one ANC visit at a health facility were strongly correlated with higher utilisation of PNC services, thus suggesting that prior contact with the healthcare system is indeed important and can have a subsequent impact on health-seeking behaviours after childbirth.

In rural Bangladesh, the factors limiting the uptake of ANC services are related to the availability, costs and distance of health care services; health beliefs; lack of maternal education, and demographic and socioeconomic factors. The HS model tackles these barriers to seeking ANC by training HBMs to directly access the community and provide ANC and PNC in the mother's homes, as well as by providing bespoke 1-to-1 maternal education to the care receivers. In this way, Maa will be able to target the marginalised rural communities and ensure full coverage of obstetric care in these regions.

The ANC provided by HBMs will involve carrying out investigations, such as measuring blood pressure, blood glucose, and urine analysis. These are screening tools for conditions predisposing mothers to complications during pregnancy. For example, high blood pressure can be indicative of pre-eclampsia, which as the pregnancy progresses, can result in eclampsia (seizures), a leading cause of maternal mortality. Therefore, any abnormal results picked up by the HBM will denote a high-risk pregnancy and trigger a referral to the specialised doctors in the Maa clinic, as mentioned previously. The Maa doctors at the clinic will closely monitor these high-risk pregnancies through routine checkups, prescribing medication and treating complications, as well as referring patients on to tertiary care centres where necessary.

Postnatal Care at home

Equally, PNC is a fundamental component of maternal and neonatal healthcare. PNC provides the opportunity to assess and treat delivery complications, and to counsel mothers on care for themselves and their newborn child. A large proportion of maternal and neonatal deaths occur during the 24 hours following delivery, and compared with other maternal health services, coverage for PNC tends to be moderately poor and limited. (UNICEF, 2009) In low and middle-income countries, 37% and 51% of women received PNC within two days of childbirth, respectively (WHO, 2014). The WHO states the postnatal period begins immediately after birth and lasts up to six weeks after birth, and a mother and newborn should receive four PNC

contacts in total. The standard recommendations for the timing of PNC visits after delivery include; first visit within 24 hours, second visit after 3 days, third visit within 7-14 days, and fourth visit after 42 days. Additionally, low birth weight neonates should receive extra visits at days 14 and 28 post-birth. The HBMs will be responsible for scheduling and keeping track of both ANC and PNC check-ups that occur using the MaaConnect app.

PNC provides a preventative care practice and is designed to promote health; identify abnormal signs and treat accordingly,and provide an appropriate referral for specialised care. The core PNC competencies recommended by WHO includes: promotion of newborn care (breastfeeding and warmth); promotion of optimal care for mother (nutrition and family planning); promotion of care-seeking for mother and newborn; identification of danger signs in both mother and newborn with appropriate referral; support for breastfeeding, and care for low birth weight infants (feeding and skin-to-skin contact). In Bangladesh, local governments are aware of the importance of care during the postnatal period and thus have implemented community-based PNC initiatives provided by Family Welfare Assistants and Health Assistants to mothers. Nonetheless, despite these efforts, less than half (48%) of women received PNC by a skilled health professional within the first two days after giving birth (BMMS, 2016). An important challenge for Maa to address is educating mothers on the importance of PNC. Syed et al. (2008) found that mothers do not value PNC unless they themselves or their newborns experience complications.

Postnatal follow-up of mothers and their newborns can be provided by CHWs as home visits for PNC have been successful in countries with limited resources. A study in Zambia showed that when skilled attendants educated mothers on newborn health and were allowed to identify danger signs and subsequently take appropriate actions, the prevalence of newborn-associated health problems was reduced (Lawn et al. 2005). Delivery of home PNC for mother and newborn by CHWs can have a vast impact at a relatively low-cost, provided an adequate and functional referral system is in place. Similarly, several home-based PNC studies and pilots in Asia have demonstrated that CHWs can improve health behaviours, promote the use

of other services such as vaccination, and act as a point of contact for mothers should complications arise (Lawn et al, 2006; Bryce J, 2005; Edmond et al. 2006).

The HBMs will be trained to provide regular PNC in the homes of mothers according to the WHO guidelines; this allows Maa to provide a continuity of care to mothers in rural communities and further strengthen the link between primary health services and the community. Although in the pilot study the HS model is particularly focused on reducing maternal mortality in Moulvibazar, with the delivery of effective ANC and PNC by the HBMs to the community, Maa will potentially improve other maternal outcomes, as well as the neonatal mortality rate.

Community Health Worker Recruitment and Training

CHW programmes around the world differ in terms of the recruitment criteria, training and responsibilities of CHWs. Selection of CHWs varies between countries; a majority of programmes have strict educational requirements - generally, candidates must have an above-average education level, such as those in Pakistan and Egypt. For the LWH programme in Pakistan, women must have more than 8 years of education, preferably be married with children and be aged between 18-50 years old. Successful candidates are hired by a committee including a medical officer and a community member. In Egypt, Raedats are ideally young married women with few children who are recruited by community leaders (Magidson et al, 2015; Edward et al, 2015). However, in Afghanistan, both men or women who are well educated and aged over 18 are recruited, by NGO staff and elders in the community. Interestingly, these CHWs are expected to open a health post in their own homes, with the village approving this appointment (Perry et al; Najafizada et al. 2014).

A method deployed by many CHWs programmes for training involves formal classroom-based education and on-the-job training. The duration of training does vary: LHWs have 3 months pre-service training followed by one year of training in the field; Raedats undergo a 5-day

training course, whilst CHWs in Afghanistan attend three 3-week training modules. For Maa's pilot study, medical students will be trained over 3 days and be deployed as HBMs. In the future, Maa plans to train the local community as CHWs and thus will have to carefully consider the length of training and specific education requirements in order to become a HBM. CHWs have varying roles based on the programme and region they operate in. Some common roles involve treating childhood common illnesses, providing nutritional supplements e.g. Vitamin A, educating and promoting health messages. Maa can trust HBMs with similar responsibilities but will have to make sure the role is not too demanding and confusing; a common challenge among CHW programmes (Folz et al, 2018). For the pilot study, the primary responsibilities of HBMs will be to screen mothers for danger signs and promptly refer high-risk pregnancies to the Maa clinic.

The HBMs are the personalised interface to the Maa model, who will not only deliver care and spread maternal health messages, but will also be responsible for establishing meaningful relationships with mothers and gaining trust amongst the community. In this way, Maa hopes that the HBMs will be able to positively educate mothers and change the perceptions surrounding the utilisation of ANC and PNC. This message will be further reinforced by Maa's women's groups, who will act as a support network for mothers in the community. It is worth mentioning that introducing HBMs as external members to the community for this pilot study may make it difficult to forge strong relationships initially. One way Maa intends to minimise this is through having the women's groups advocating for HBMs at their meetings. As the women's groups will have already built trusting relationships with the community, this backing will enable the community to recognise that both services are complementary to each other, and will help with the acceptance of HBMs by the community.

Over time, Maa anticipates the HBMs will be able to shift negative attitudes towards facility-based delivery. Promisingly, Marcil et al. (2016) reported that since the inception of the BRAC Manoshi project, only 13% of women now give birth at home in urban slums. The number of facility-based births increased from 16% to 87% between 2007 to 2011 (Alam et al., 2011). In

addition, other developing countries have demonstrated the impact of CHWs regarding the importance of utilising skilled assistance during delivery. In 2005, the Mobile Obstetrics Medics (MOM) community project pilot in Burma reported an almost 10-fold increase in the percentage of mothers delivering in the presence of skilled professionals (Mullany et al., 2010). Similarly, in Kabul City, Afghanistan, the institutional delivery rates increased from 88% to 99% through the use of Community-based Educators (Akseer and Bhutta, 2016).

Collectively, CHW programmes deployed in low-income countries have proven to be successful, including in Bangladesh, where finite resources exist. This is indeed a promising prospect for Maa to acknowledge. However, several challenges have emerged from CHW programmes, minimising their impact in the community. These include high attrition rates, limited resource availability and poor links to a robust health system. An important factor contributing to high attrition rates is the lack of financial incentive, where CHWs either receive irregular or inadequate pay (WHO, 2007). High attrition rates amongst CHWs make community programmes unstable, challenging to manage, and expensive due to the continuous replacement and training of CHWs. This disrupts the relationships built between CHWs and the community, causing a loss of continuity (Haines et al., 2007), and subsequently leads to a loss of respect and trust for the programme by the community. Such continuity and respect are integral to the establishment of successful and effective community programmes (Rahman et al., 2010).

The advantages for Maa training medical students rather than individuals from the community for this pilot study include acceptance of HBMs by the community given their medical background and a shortened duration of training. Additionally, the medical students who will be carrying out the HBM role will be doing so within one of the rotations in their curriculum. This means the problems faced in previous CHW initiatives with regards to career progression and the need for financial incentives will not be an issue for this pilot programme. However, once the HS model becomes well established, the local community will be recruited and trained as HBMs, and thus frequent refresher training courses will be required to update new

skills, reinforce initial training, and ensure the effective practice of the skills gained (Crigler et al., 2011).

Conversely, the use of medical students to deliver community health interventions does deviate from the standard definition of a CHW which states CHWs should be “members of the communities where they work” and “selected by the communities”, and these groups are generally more aware of the health situation in their community (WHO, 2007). In most programmes, CHWs normally come from the community they serve; nonetheless, the profile of CHWs internationally can be very diverse. Furthermore, Maa will ensure that HBMs are aware of the health situation in the community, through attending the women's groups and liaising with the women's group facilitators. In this way, the HBMs, despite being external from the community, will be able to respond to local customs and norms and ensure full community acceptance and trust.

Medical Student Involvement in Community Health Worker Programmes

Global Brigades is a non-profit organisation that provides students and medical professionals from developed countries, (known as ‘brigades’) the opportunity to work alongside local communities in developing countries with the aim to improve health and economic development. The countries that have deployed Global Brigades include Ghana, Honduras, Nicaragua and Panama. The projects are designed to empower communities and fall under five main categories; economic development, community-owned banking, home sanitation infrastructure, in-home clean water and sustainable health systems.

The Global Brigades programme in Honduras has been strongly focused on tackling the shortage of health workers, particularly in rural areas. Volunteers for this programme are recruited and trained to take care of the needs of their local community; this includes treatment of chronic illnesses such as diabetes and mental illnesses, as well as delivering first aid, CPR,

prenatal care, and palliative care. Alike to the Maa HBMs programme, medical students are involved in the delivery of care.

However, these brigades are utilised for a short duration (7-12 days) to initiate the programme and provide training to locally recruited CHWs who continue to deliver care to the community all year round. Therefore, the main difference between this programme and the HBMs model is that the brigades are recruited from abroad, whereas the HBMs are Bangladeshi citizens. In addition, the brigade members provide care for a short period of time, relying on the volunteer CHWs to continue care to the community for the remainder of the year, utilising the community workforce. In contrast, for this initial pilot study, the Maa HBMs are the sole CHWs who will provide continuous and sustainable care to the community. As the project becomes more established within the community, local women will be recruited as CHWs, taking over this role, with medical students being supplementary to the model.

Kangovi et al. (2018) evaluated the community elective rotation for third and fourth year medical students at the Perelman School of Medicine, Pennsylvania, Philadelphia. Students were involved in a two to four week rotation, working as apprentices to CHWs. The purpose of the rotation was to build medical students' community engagement skills, cultural humility and understanding of the social determinants of health. The CHWs themselves were hired to deliver the IMPaCT (Individualized Management for Patient-Centered Targets) CHWs intervention annually to 2,000 high-risk patients living in deprived regions of Philadelphia who were not privately insured, were at high risk of poor health outcomes, and had been admitted to hospital. Medical students supported CHWs in their roles, which were to provide patients with coaching and advocacy so they could achieve health goals, as well as equipping patients with the tools to navigate and address socioeconomic determinants of health such as food insecurity, housing instability and lack of social support.

The formal evaluation of the study was not designed to measure the effects of the rotation on the medical students or patient outcomes, as the focus of the study was the interaction

between the students and the CHWs, rather than the students and the patients. In-depth semi-structured interviews were used to evaluate the experiences of the medical students and CHWs. They found that the students struggled at first with the social distance between themselves and the CHWs, but this was overcome by weekly discussions to create a dialogue between groups of students and CHWs - facilitated by faculty members with expertise in diversity and cultural humility. In the pilot study, HBMs will be supervised by both the specialised doctors at the Maa clinic and their academic supervisors from university, and not CHWs, which eliminates the issue of a social distance between the students and their supervisors. However, there is still likely to be a social gap between the students and the mothers they visit in the community. Therefore, it will be important for Maa to train the HBMs to be respectful and empathetic, so to enable them to build rapport with the mothers.

In the study, the planning group developing the rotation made a point of making the rotation elective, as opposed to mandatory, as this ensured students already interested in community work were selected. This decision was made after recognising that recruiting students with a lack of interest could negatively impact the trusting relationships that had been built between CHWs and patients. This planning group included authors of the study and representatives of both the CHWs and students. This group met regularly to share lessons and make adjustments. This allowed for all involved to contribute and aid in improving the project. The apprentices were supervised by CHWs, and the number of students enrolled was limited by the number of CHWs available to precept. The CHWs evaluated students on the basis of their communication skills, advocacy, and knowledge of health care resources for low-income individuals – ensuring students were learning and developing whilst on the rotation. All of the above points will be taken into account when designing the HBM programme, to ensure medical students are provided with sufficient support and supervision, and that the purpose of the Maa elective rotation is not only to deliver care to pregnant mothers but is a means for the medical students to learn, through routine evaluation of their performance.

Conclusion

As part of Maa's robust, comprehensive primary care model approach, the HBMs are a critical component in strengthening the connection between the community and health facilities/providers, in rural settings. The HS model will address the equity gap in maternal health services and provide better access to health services. Global CHW programmes have proven to be successful in improving maternal outcomes, especially in resource-poor settings. Through bringing education and maternal health services to homes in the community, Maa HBMs will be able to establish trust and stable relationships with mothers, facilitating access to health services and providing a continuity of care. In this way, Maa will be able to reduce maternal and neonatal mortality and improve the health and well-being of the community it serves.

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