Maa
Supporting Mothers.

JourneyMaa 2017 Report

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INTRODUCTION

Maternal mortality and morbidity remain significant challenges around the world, with wide variations across the developed and developing nations[1]. According to estimates by the World Health Organisation (WHO), 830 women die every day globally due to complications during pregnancy or childbirth, with 99% of these deaths occurring in developing countries[2,3]. However, pregnancy-related complications and deaths are not inevitable, given that a majority of these complications are preventable with simple and cost-effective maternity care during pregnancy, delivery, and the postnatal period[3].

Global efforts have been revamped to identify innovative strategies in improving the health and wellbeing of women and newborns. There has been some promising progress as a result of these efforts, made evident by the global maternal mortality rate (MMR) almost halving from 385 to 216 deaths per 100,000 live births between 1990 and 2015; this translates to a 2.3 per cent reduction rate[4]. Similar to many other developing countries, Bangladesh has made substantial improvements in maternal and newborn health over the past two decades during the Millennium Development Goals (MDG) era[5,6]. The MMR in Bangladesh declined significantly from a staggering 322 maternal deaths per 100,000 live births in 2001 to 194 by 2010[7]. Bangladesh's decline in MMR was indicative of the remarkable progress in improving access to and use of maternal health services during the antenatal, delivery, and postpartum periods, amongst other factors such as the decline in the fertility rate and improved infrastructure[6].

Despite this initial progress, MMR remained stagnant between 2010 and 2016, with the recorded 196 per 100,000 live births in 2016 being almost identical to 2010 levels.

Unfortunately, Bangladesh continues to have one of the highest maternal and neonatal mortality rates in the world[7-9]. In recognition of this burden, Bangladesh has adopted the Global Strategy and is committed to reaching the Sustainable Development Goals (SDG) targets. This involves reducing MMR to as low as 70 per 100,000 live births and the neonatal mortality rate to 12 per 1,000 live births by 2030 (from 28 per 1,000 live births in 2014)[7-10]. To achieve these ambitious SDG targets, Bangladesh will have to significantly accelerate the rate of reduction of maternal and newborn deaths from that which was observed during the MDG era.

The use of essential healthcare services including antenatal care (ANC), postnatal care (PNC), and facility-based delivery or delivery by a skilled birth attendant (SBA) has aided the reduction in maternal mortality and morbidity significantly[11-12]. To continue this progression, Bangladesh must promote skilled attendants at birth and ensure a continuum of care for both mothers and babies [13-14]. The current challenges to achieving this includes the shortage of health workers, poor performance of healthcare facilities, and disparities in coverage of interventions between urban and rural areas[15]. In addition, socio-cultural determinants such as socioeconomic status, social marginalisation and lack of decision-making powers contribute to many women not seeking maternal health services[15]. Finally, like many developing countries, transportation, social infrastructure and distance to health facilities are significant barriers towards accessing facility-based health services in Bangladesh.

The WHO guideline 'Recommendations on antenatal care for a positive pregnancy experience' (2016) recommends an antenatal care model with a minimum of eight contacts[16]. This

new model replaces the previous 'four visit focused ANC' model and recommends an additional three contacts in the final trimester, due to this period having the greatest antenatal risk for both the mother and the baby[16]. ANC from a trained provider offers opportunities to implement interventions to pregnant women, and the standard quality of ANC comprises of health promotion, screening and diagnosis, and disease prevention. Although the content of ANC can vary depending on national strategies, a core set of services is recommended by WHO: body weight and blood pressure measurements, urine testing, iron tablet supplementation, tetanus vaccination, and information about danger signs during pregnancy[16]. ANC visits not only reduce neonatal deaths and stillbirths but also provide an opportunity to promote and establish good health practices before childbirth and during the early neonatal period - the period with the highest risk[17]. ANC can influence care-seeking behaviours, and link women with pregnancy complications to appropriate health facilities, thus saving the lives of both the child and mother.

Additionally, through the use of ANC, high-risk pregnancies can be detected through routine measures and the risk of pregnancy-associated complications, intrauterine growth retardation, and the probability of low birth weights can be minimised. A study conducted between 1990 and 2013 across 69 low-income and middle-income countries investigated the impact of ANC offered to pregnant women on child health outcomes. The study found that at least one ANC visit significantly reduced the probability of neonatal and infant mortality, and also reduced the likelihood of the child being underweight and having stunted growth[18]. Attending eight or more ANC contacts can reduce perinatal deaths by up to 8 per 1,000 births in comparison to four visits[16].

The use of maternal healthcare services in Bangladesh remains pressingly low. Indeed, BMMS 2016 report that only 37% of pregnant women attend at least four ANC contacts, 47% of deliveries occur in health facilities, and 48% of women receive PNC from a medically trained provider within the first two days post-delivery[9]. The use of skilled professionals at healthcare facilities during pregnancy has increased over the past decade; three out of five mothers (57%) sought ANC from private healthcare facilities, and over a third (35%) sought ANC from public health facilities[8]. However, this has not had the anticipated impact in reducing maternal mortality, suggesting that improved health outcomes are not only dependent on increasing coverage of ANC visits, but also ensuring the content and quality of ANC in Bangladesh is well managed. Likewise, a large proportion of births (62%) still occur at home and only 37% births at a health facility[8]. Delivery in a hygienic environment in the presence of a skilled healthcare professional can reduce the risk of complications and infections, and thus reduce maternal and neonatal mortality. Given the low uptake of health services, especially during delivery, barriers to accessing a high standard of maternal healthcare and safe childbirth at health facilities have to be addressed.

Maternal education is both strongly associated with improving pregnancy outcomes and in determining a child's health status. Studies have found a close correlation between maternal education and child mortality; lower levels of maternal education were associated with a higher mortality[19-21]. Likewise, greater knowledge of maternal health and formal education has a positive impact on the utilisation of healthcare services[22]. This suggests that a lack of education not only leads to poor health status, but also impacts the decisions made with regards to accessing healthcare. Maternal education is key to making women aware of the wellbeing of

themselves and their family, including attitudes towards hygiene, being able to identify red-flag symptoms during pregnancy, and improving knowledge of the preventative and curative measures they can seek. This increases the willingness to seek healthcare services and empowers mothers to implement timely decisions regarding their child's health[23-26].

In Bangladesh, especially within rural villages, the education level of women is significantly low, and this has a consequential impact on maternal health knowledge and health seeking behaviours during pregnancy[25]. Research has shown that maternal education has a consistent, powerful and positive effect on mortality rates, child health, and survival, and is important in shifting negative attitudes related to appropriate health behaviours[23-25]. In this study, Maternal Aid Association (Maa) aims to first assess the current knowledge, attitudes, and health seeking behaviours of women (during their pregnancies) in two rural communities of Bangladesh. The study will then evaluate participant-filled questionnaires to determine the influence and effectiveness of Maa's evidence-based maternal health seminars.

METHOD

The study was carried out in August 2017 as part of Maa's flagship project, JourneyMaa. Maa set up a two-day mobile maternal health screening camp in the rural districts of Bhalaganj and Ramsiri in Bangladesh. The participants included pregnant women and mothers. At the maternal health camps, participants received free basic health checks carried out by the Maa Bangladesh team and UK JourneyMaa volunteers. These checks included many of WHO's ANC recommendations: measuring blood pressure, urine analysis and culture to specifically test for proteinuria and asymptomatic bacteriuria (ASB) respectively, and blood glucose testing for gestational diabetes. These simple tests served as opportunistic screening, with no reported data recorded. However, the results of the tests were then immediately followed up during a one-to-one check-up and consultation with a member of the Maa Bangladesh team in the camp. This was the main appeal of the health camps. Prescriptions for essential vitamins and medication were provided free of charge by Maa after the participants attended the maternal health education (MHE) seminar. The aim of the maternal health camps was to screen participants for red-flag symptoms that indicated an increased risk of pre-eclampsia, postpartum haemorrhage (PPH) and urinary tract infections (UTIs); as these are common complications of pregnancy that lead to maternal morbidity and mortality. Any participants identified with red-flag symptoms were referred directly to the nearest healthcare facility, with transport arranged by Maa.

The MHE seminars were the final activity of the maternal health camps delivered on JourneyMaa 2017, as part of Maa's preventative medicine approach. This component of the maternal health camps is the focus of this report.

Participants received evidence-based education seminars in maternal health from Maa Bangladesh team volunteers. The presentation for the seminars was created by a member of the Maa UK team, critiqued by Maa's professional academic advisor, and finally reviewed and edited by members of the Maa Bangladesh team to ensure it was relevant and culturally sensitive. The content was then translated to Bangla. These seminars were delivered to educate and enhance appropriate health seeking behaviours during pregnancy. To achieve this, the seminars explored both the expected physiological changes and the red flag symptoms during pregnancy and labour,

as well as methods to promote healthy pregnancy, child development, and PNC. The seminars also addressed common misconceptions associated with pregnancy and encouraged a positive view of maternal healthcare.

The MHE seminars were delivered in Bangla by a school teacher and a medical student from the Maa Bangladesh team to groups of 10 to 30 participants. This was in a classroom setting, using labelled picture posters to guide the presentation by visual learning, with each session lasting 20 to 30 minutes. A randomly selected sample of 83 participants were interviewed with an evaluation questionnaire (Appendix) immediately after the seminar to assess their individual pregnancy experiences, their engagement with healthcare facilities in Bangladesh and to measure the impact of Maa's MHE seminars. This questionnaire was designed by Maa UK's academics and innovations team (in English) and relied on UK JourneyMaa volunteers to verbally ask the questions (in Bangla) and record the participants' response in writing (in English) on the questionnaire sheet. Data from the questionnaires was then analysed and interpreted by Maa UK's academics and innovations team for this report. This study was carried out by Maa to understand maternal healthcare and health seeking behaviours among mothers in rural communities of Bangladesh, as well as identify their baseline and absence of knowledge in maternal health. This will thus allow Maa to develop and implement targeted long-term projects in these communities.

ETHICS

Due ethical considerations were undertaken. The Principal and Vice Principal of Sylhet Women's Medical College and Hospital approved the project in the villages of Bhalaganj and Ramsiri.

RESULTS AND DISCUSSION

Pregnancy Screening

A total of 220 female participants attended the Maa mobile maternal health screening camps and all participants attended the MHE seminar. Of these attendants, 83 participants were randomly sampled to complete the questionnaire. The mean age of the study population was 24 years (standard deviation (SD = 5)), ranging from 18-35 years. 63% of the participants were above the age of 21. 96% of the randomly selected participants were pregnant and those currently not pregnant had been pregnant previously.

Over a third of participants (37%) had not engaged with a healthcare facility in the last year and the Maa health camp was their first visit to a health facility. Pregnancy screening at the Maa health camps revealed 71% of participants were previously pregnant. The total number of previous pregnancies reported within the study population was 118, and 72% of these pregnancies were reported to be successful with no complications or neonatal deaths. Over 22% of participants reported to have experienced complications during their previous pregnancies, with the most common complications being foetal malposition, convulsions, infections, and excessive bleeding - resulting in miscarriages and stillbirths.

The findings of the study revealed that 64% of the participants with a previous birth received at least one ANC visit during their pregnancy. However, only 5% of these participants received the WHO recommended eight or more ANC visits. Over a third (36%) of the participants did not receive any ANC visits, with the average participant receiving less than two. This number falls far short of the recommended minimum of eight ANC contacts, according to the WHO guidelines[16]. This number would also have failed

to meet the previous WHO recommendation of four ANC visits[16], as the vast majority of participants (82%) did not receive this. These findings indicate that these rural villages (Bhalaganj and Ramsiri) do not comply with the WHO recommended level of ANC visits in Bangladesh. It is worth mentioning here that the study asked participants about the details of their previous pregnancies, however, they were not asked to specify how long ago these pregnancies were. Maternal healthcare has developed in the past decade, pregnancy experiences may vary amongst participants depending on whether these pregnancies occurred before or after the MDG era.

Participants were asked about their pregnancy experiences, in particular, their most recent pregnancy. The most common health facility attended by participants were government hospitals (32%) and private clinics/hospitals (35%) (Figure 1). Moreover, 22% of participants did not visit a health facility during their most recent pregnancy. Reasons for not visiting health facilities were recorded, with 60% of participants reporting costs associated with accessing services to be a significant barrier and 10% reporting travel distances to available health facilities being a deterrent from accessing ANC. Of the participants who had visited a health facility during their pregnancy, 60% had travelled over 30 minutes to their chosen health facility. Other factors that deterred participants from seeking health services involved family influences, and in most cases participants stated their health to be well and thus felt a visit to a health facility was not required.

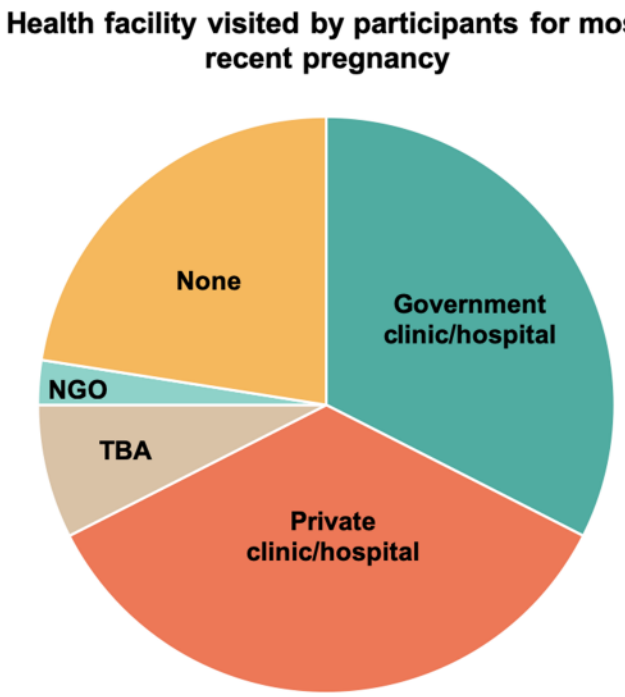

Figure 1. Health facilities visited by participants for most recent pregnancy.

Percentage of participants (n=81) visiting health facility: government clinic/hospital 32%, private clinic/hospital 35%, traditional birth attendant (TBA) 7%, not-profit government organisation (NGO) 2%, and no visits 22%.

The maternal assessments conducted at the Maa health camps included blood pressure monitoring, which identified 7% of participants as hypertensive. This is an important intervention as hypertension predisposes pregnant women to pre-eclampsia - a leading cause of maternal death[18]. General health screening revealed that nearly half of participants (49%) experienced back problems. Urine dipstick testing for nitrites, an indication of a UTI, was also carried out at the health camps and antibiotic treatment was provided where required. However, the number of these interventions made during the health camps was not recorded. In the future, collecting data from these interventions will allow further assessments and monitoring of participants that

attend the camps. Furthermore, adapting the interventions provided at the Maa health camp based on the participant's trimester of pregnancy will provide a visit more tailored to the participants' needs[16].

The participants who reported attending any ANC check-up during their most recent pregnancy were questioned on what these check-ups entailed (Figure 2). 73% of participants received a physical examination, whilst 33% received both a physical and gynaecological examination. Almost half of these participants (43%) received an ultrasound, and over a fifth (22%) had physical and gynaecological examinations, as well as an ultrasound conducted. In addition, nutritional supplements were supplied to nearly a third of participants (32%). Previous studies have demonstrated that as well as the number of ANC visits, the components involved in the ANC visits are equally important, as this greatly influences the effectiveness and utilisation of ANC services[27,28]. Our study indicates that 68% of participants received at least two of the available health services, and fewer participants received at least three (46%) or four (30%) services. Although our study was not designed to assess the availability and contents of ANC services in rural Bangladesh, it is promising that participants in these rural villages are seeking ANC services. However, greater improvement is required in the delivery of ANC and the compliance of ANC contents with the WHO recommendations. In the future, when asking participants about the services they received during ANC visits, it would also be worth including the core set of services recommended by WHO: blood pressure, weight measurements and urine testing. This, in turn, will allow the assessment of compliance to WHO recommendations and the quality of ANC received in the country.

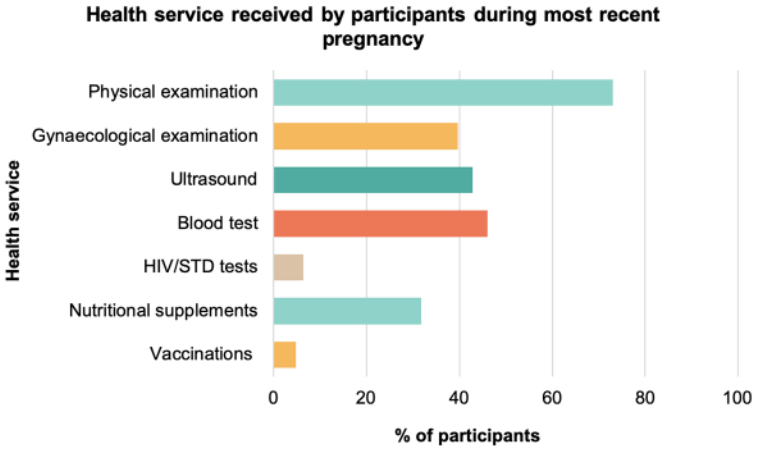

Figure 2. Health service received by participants during most recent pregnancy.

Percentage of participants (n=63) receiving health service: physical examination 73%, gynaecological examination 40%, ultrasound 43%, blood test 46%, HIV/STD tests 6%, nutritional supplements 32% and vaccinations 5%.

At the health camp, participants were asked about the healthcare professional present during delivery for their most recent birth (Figure 3). 42% were attended to by a doctor, and 25% had either a nurse or midwife present during delivery. Skilled birth attendants (SBA) were present for 14% of participants at the time of delivery. 22% of participants had more than one medically trained provider present, of which 92% received delivery care from both a doctor and nurse, and 23% were attended to by a doctor, nurse, and a midwife. Interestingly, from the studied population, in those that had been previously pregnant, 95% of participants had at least one of their deliveries with the assistance of a medically trained provider (doctor, nurse, midwife or skilled birth attendant), either at home or at a health facility. The remaining 5% were attended by an unskilled assistant, predominantly a family member. These findings suggest that although women in these rural villages are not adequately seeking ANC during pregnancy, they are seeking

assistance during the delivery stage. Therefore, women in these areas of Bangladesh appear to be aware of the complications and risks during delivery and of the importance of having a medically trained provider present for safe delivery, be it at home or a health facility. Furthermore, these results are consistent with reports indicating medically assisted births are increasing; the percentage of births attended by medically trained personnel rose from 27% in BMMS 2010 to 50% in BMMS 20168. However, given that our study was conducted on a small scale, we acknowledge these findings are not representative of the whole population of Bangladesh.

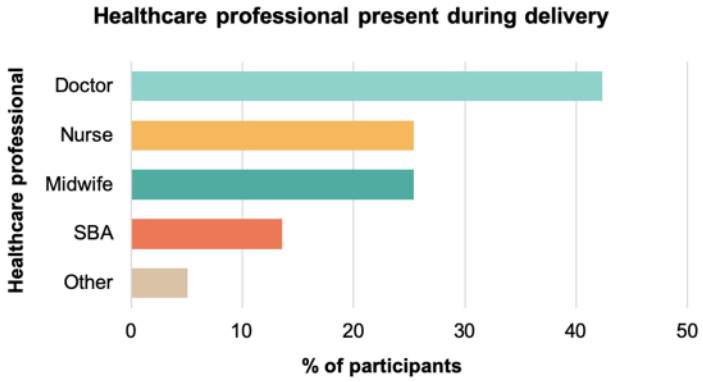

Figure 3. Healthcare professional present during delivery.

Percentage of participants (n=59) with healthcare professional present during delivery: doctor 42%, nurse 25%, midwife 25%, skilled birth attendant (SBA) 14%, other 5%.

Participants who had previously sought ANC were asked about their level of satisfaction with the care provided by healthcare staff during these visits. 34% of participants reported being very satisfied; 53% satisfied; 2% neither satisfied nor dissatisfied, and 6% dissatisfied with the level of care received from the healthcare professionals and staff. Patient satisfaction plays a critical influence on health seeking behaviours, and the patients' decisions to access care - a satisfactory experience is more likely to increase the utilisation of services in the future[30]. In general, the study population was satisfied with the care they received during their ANC visits, and so lack of patient satisfaction is unlikely to be one of the main barriers for mothers in rural Bangladesh in seeking maternal health services.

Maa MHE seminar

The MHE seminar programme was introduced to positively influence practices and health seeking behaviours throughout and after pregnancy. Evidence suggests that women from all settings appreciate ANC advice (including dietary and nutritional), especially when delivered in an 'unhurried and supportive way[16]. Baseline pregnancy knowledge, practices, and behaviours of participants was recorded using questionnaires after the MHE seminar, and further questioning was also carried out afterwards to evaluate the information retained and influence of the MHE seminar. In this study, a positive impact of the MHE programme was determined by a shift in attitudes towards adopting appropriate health practices and behaviours, as a direct result of attending the seminars (Figure 4).

Currently, the most common misconceptions around pregnancy are that extreme food restriction allows easy delivery and prevents fetal abnormalities, and that exercise during pregnancy is detrimental to the baby[31]. To assess if the study population held these misconceptions, they were asked how likely they were to increase their food intake during their pregnancy. Prior to attending the education seminar, 51% of participants would increase their food intake during this time, and after the seminar, 82% would - a 31% increase. There was also an 18% increase in the likelihood of women exercising during their pregnancy, with

66% likely to have exercised prior to attending the seminar, and 84% after the seminar. A Cochrane review of trials conducted between 1975 and 2013 across many countries, including Bangladesh, studied the effects of nutritional education on pregnancy outcomes and found that antenatal dietary education could reduce the probability of having a low-birth-weight-neonate[32]. Furthermore, healthy eating and dietary interventions were found to reduce the risk of gestational diabetes mellitus[16].

Participants were educated on the importance of good hygiene practices. The baseline knowledge of hygiene was found to be relatively high - 94% of participants would follow good hygiene practices such as washing their hands and handling food safely. A small increase of 4% was reported in participants (overall 98%) increasing their likelihood to follow hygienic practices. The baseline knowledge of the randomly selected participants is consistent with previous findings from the 2014 National Hygiene Baseline Survey demonstrating the knowledge of key hygiene messages amongst individuals in Bangladesh to be moderately high[33].

Seeking appropriate health facilities is crucial to improving pregnancy outcomes. Initially, 69% of participants said they would have contact with a healthcare service during pregnancy, and after attending the seminar, 89% said they would. There was an almost 20% increase in participants' likelihood to seek health check-ups as a result of attending the seminar, with 76% and 95% likely to seek ANC before and after the seminars, respectively. These findings demonstrate that the MHE seminar has been successful in shifting the attitudes of participants towards positive health practices and encouraging pregnant women to seek assistance from medically trained professionals. In doing so, it supports Bangladesh's endeavours in complying with the WHO ANC guidelines.

Raising awareness of the pregnancy red flag symptoms and signs of disease was an important area for Maa to address. To ensure the best possible pregnancy outcomes, it is critical for women to be aware of these symptoms, and know what to do and when to seek care from an appropriate healthcare provider. Based on their previous knowledge, 65% of participants were aware of the signs/symptoms of disease during pregnancy. This figure increased to 95% as a result of the MHE seminar - a 30% increase. Previously, 76% of participants would have sought assistance from a healthcare professional if they had experienced these symptoms, and after the seminar, this increased to 95% of participants. These findings thus demonstrate the impact of maternal health education, proving that it is not only a powerful tool in developing health seeking behaviours, but in potentially improving maternal health outcomes.

Early childhood is important for physical growth and forms the foundation of future wellbeing. Monitoring child growth helps to identify those at risk of growth faltering, including stunted growth. Malnutrition and stunted growth are prevalent in developing countries such as Bangladesh and contribute to childhood morbidity and mortality[34]. Therefore, the MHE seminar provided participants with information on early growth patterns and highlighted the importance of monitoring healthy child development. Prior to the seminar, 59% of participants reported that they would monitor their child's growth. After receiving education at the seminar, a 34% increase (to 93%) in participants' likelihood to monitor growth was observed. Additionally, participants were asked about their willingness to play with their child and were also educated on the benefits of this activity. Evidence has shown that parental interaction with children supports and stimulates children's cognitive development, and can impact them in their future, both educationally and

socio-economically[35,36]. As a result of the seminar, there was a 19% increase in participants' likelihood to play with their child, from 78% to 95%. Therefore, Maa's MHE programme has been able to successfully educate and positively influence behaviours post-birth among the randomly selected participants.

During the seminar, participants were informed of the importance of their partners' support during and after pregnancy. After the seminar, 88% of participants said they would be likely to request their partners' help, a modest 9% increase in this practice compared to attitudes before attending the seminar. The support of partners is fundamental in improving maternal health seeking behaviours, and studies globally have highlighted the importance of spousal support in preventing postpartum depression and improving nutritional behaviours amongst pregnant mothers[37-39]. The positive impact of involving partners in pregnancies highlights the need for also educating partners on maternal health; a population Maa intends to target with future MHE seminars.

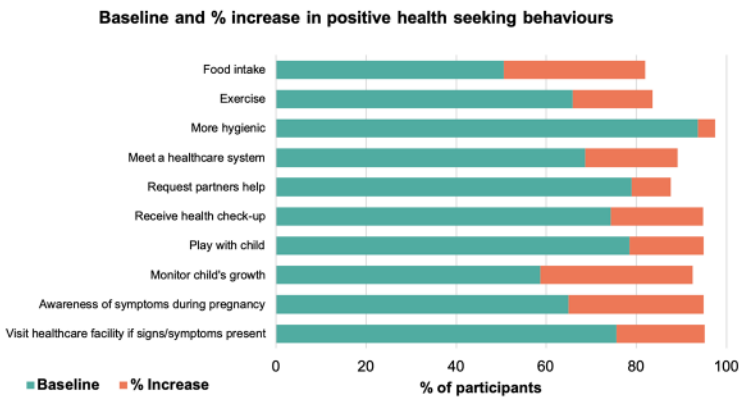

Figure 4. Baseline and % increase in positive health seeking behaviours during and after pregnancy.

Percentage of participants; Baseline knowledge (blue): increase food intake 51% (n=83), increase exercise 66% (n=79), more hygienic 94% (n=79), meet a healthcare system 69% (n=82), request partners help 79% (n=81), receive health check-up 74% (n=78), play with child 78% (n=79), monitor child's growth 59% (n=80), awareness of symptoms during pregnancy 65% (n=80), and visit healthcare facility if signs/symptoms present 76% (n=82). Percentage increase (orange) of positive health seeking behaviours after educational seminar: increase food intake 31%, increase exercise 18%, more hygienic 4%, meet a healthcare system 20%, request partners help 9%, receive health check-up 21%, play with child 16%, monitor child's growth 34%, awareness of symptoms during pregnancy 30%, and visit health care facility if signs/symptoms present 20%.

LIMITATIONS

On the evaluation of the questionnaires, it was found that the grading system used in the questions could be improved to ease answering and make the data collected robust. In addition, due to the language barrier between the participants and the enquirer (JourneyMaa volunteer), several inconsistencies were identified in participant responses, and thus excluded in the report findings. Maa can address this in the future by transliterating the evaluation questionnaires in Bangla. This will not only improve accuracy in participant responses and prevent confusion between both participants and enquirers, but will also make mothers more comfortable in discussing and conversing sensitive topics about their pregnancy experiences in their native language.

Moreover, findings from the pregnancy screening indicated the need to be more specific when

questioning previous pregnancy experiences. This could involve exploring each participants' pregnancies in turn and/or their most recent pregnancy prior to their current one. Questions regarding ANC, labour, and delivery need to be clear and specific, particularly when asking whether participants access healthcare facilities and have a health professional present. A final key limitation in this study was that for logistical reasons, participants were asked about their baseline knowledge after the MHE seminar had been conducted. To eliminate bias and reduce the pressure on the participant for the desired answer, Maa has to ensure participants baseline knowledge is assessed prior to the delivery of the seminar. This will no doubt allow Maa to accurately compare baseline and new knowledge and determine the effectiveness of the MHE seminar to mothers in these rural communities.

CONCLUSION

This study provides insight into the health seeking behaviours of pregnant women in Bangladesh. During pregnancy screening, the lack of ANC visits among the population was most concerning. The results showed that not enough mothers were recieving ANC checks during their pregnancy, be that just 1 check-up, let alone the WHO recommended 8 check-ups. In fact, for many women, Maa's mobile maternal health camp was their first visit to a health care facility for their current pregnancy. This demonstrates the importance of JourneyMaa and encourages Maa to adopt a complete ANC check-up approach to their maternal health camps since some mothers are relying on Maa alone to fulfil this service. This is something Maa will aim to recreate in future JourneyMaa's as well as their tri-monthly health camps. Interestingly, whilst ANC uptake was generally minimal, the data suggests that women in this area understood and acted upon the importance of having a medically trained provider present for a safe delivery in their previous pregnancies. However, this is not a reliable conclusion due to questions on this topic being asked in a non-specific manner.

This study also establishes a useful baseline assessment of the knowledge, practices and health seeking behaviours of pregnant women in rural Bangladesh. Although the study was small-scale, findings from the evaluation of the questionnaires demonstrate maternal health education can positively influence practices and health seeking behaviours, which is critical in improving maternal health outcomes in rural Bangladesh. The Maa MHE seminar was particularly successful in addressing common misconceptions surrounding pregnancy, and in raising awareness of red flag symptoms during pregnancy and labour and the subsequent need to seek help from a health professional. The seminar was also successful in educating women on behaviours that will support their child's health and development.

Areas of improvement for future studies have been identified and Maa aims to implement these changes and conduct this study annually at the maternal health camps, ideally with a larger sample of participants too. This continuity will allow Maa to identify and address the current barriers to, and deficiencies in maternal healthcare in rural Bangladesh. Through JourneyMaa, Maa is able to deliver necessary maternal healthcare and maternal education, and also provide the opportunity to conduct relevant research into the current climate of maternal healthcare in Bangladesh. Together, these work to improve pregnancy outcomes in rural Bangladesh, and contribute towards achieving Maa's ultimate goal: using evidence-based methods to revolutionise maternal healthcare in resource-poor settings.

ABBREVIATIONS

ANC	Antenatal care
ASB	Asymptomatic bacteriuria
BMMS	Bangladesh Maternal Mortality Survey
Maa	Maternal Aid Association
MDG	Millennium Development Goal
MHE	Maternal health education
MMR	Maternal mortality rate
PNC	Postnatal care
PPH	Postpartum haemorrhage
SBA	Skilled birth attendant
SDG	Sustainable Development Goal
UTI	Urinary tract infection
WHO	World Health Organisation

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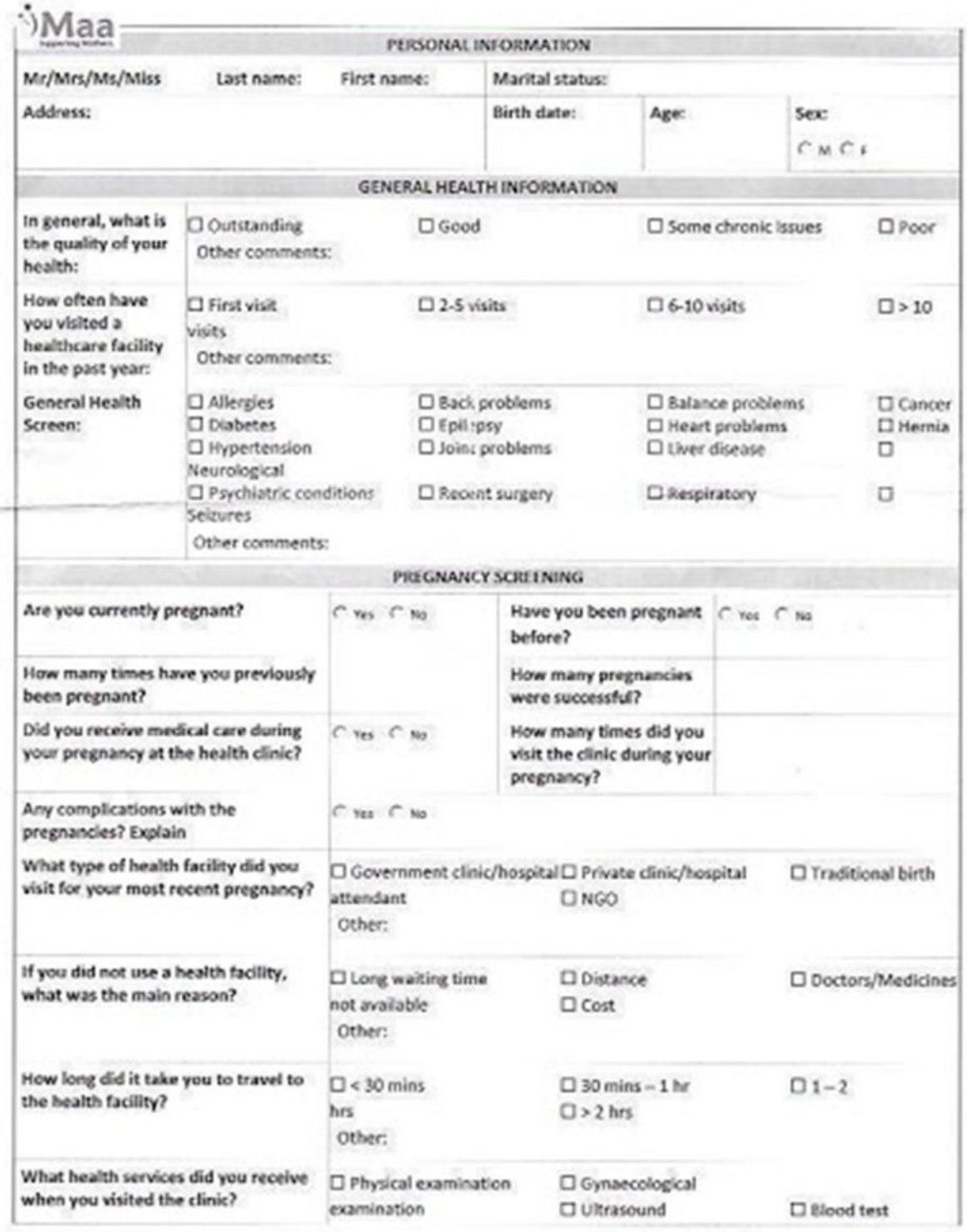
APPENDIX

The screening and evaluation questionnaire used by JourneyMaa UK volunteers to ask participants questions after the MHE seminar.



Maa

PERSONAL INFORMATION

Mr/Mrs/Ms/Miss	Last name: First name:	Marital status:		
Address:		Birth date:	Age:	Sex: ☐ M ☐ F

GENERAL HEALTH INFORMATION

In general, what is the quality of your health:	☐ Outstanding	☐ Good	☐ Some chronic issues	☐ Poor
	Other comments:			
How often have you visited a healthcare facility in the past year:	☐ First visit	☐ 2-5 visits	☐ 6-10 visits	☐ > 10
	visits			
	Other comments:			
General Health Screen:	☐ Allergies	☐ Back problems	☐ Balance problems	☐ Cancer
	☐ Diabetes	☐ Epilepsy	☐ Heart problems	☐ Hernia
	☐ Hypertension	☐ Joint problems	☐ Liver disease	☐
	Neurological			
	☐ Psychiatric conditions	☐ Recent surgery	☐ Respiratory	☐
	Seizures			
	Other comments:			

PREGNANCY SCREENING

Are you currently pregnant?	☐ Yes ☐ No	Have you been pregnant before?	☐ Yes ☐ No
How many times have you previously been pregnant?		How many pregnancies were successful?	
Did you receive medical care during your pregnancy at the health clinic?	☐ Yes ☐ No	How many times did you visit the clinic during your pregnancy?	
Any complications with the pregnancies? Explain	☐ Yes ☐ No		
What type of health facility did you visit for your most recent pregnancy?	☐ Government clinic/hospital attendant	☐ Private clinic/hospital ☐ NGO	☐ Traditional birth
	Other:		
If you did not use a health facility, what was the main reason?	☐ Long waiting time not available	☐ Distance ☐ Cost	☐ Doctors/Medicines
	Other:		
How long did it take you to travel to the health facility?	☐ < 30 mins hrs	☐ 30 mins – 1 hr ☐ > 2 hrs	☐ 1 – 2
	Other:		
What health services did you receive when you visited the clinic?	☐ Physical examination examination	☐ Gynaecological ☐ Ultrasound	☐ Blood test

APPENDIX

	☐ HIV/STD tests ☐ Nutritional supplements ☐ Any vaccinations Other:		
During delivery, what healthcare staff were you attended by?	☐ Doctor ☐ Nurse ☐ Midwife ☐ SBA Other:		
How happy were you with the care you received from the healthcare staff?	☐ Very satisfied ☐ Satisfied ☐ Neither satisfied or dissatisfied ☐ Dissatisfied Other:		

EVALUATION SUMMARY

	BEFORE		AFTER	
How likely are you to increase your food intake for pregnancies?	☐ Yes, a lot more ☐ Yes, a little more ☐ Not a lot ☐ No		☐ Yes, a lot more ☐ Yes, a little more ☐ Not a lot ☐ No	
How likely are you to give up smoking?	☐ Yes, a lot more ☐ Yes, a little more ☐ Not a lot ☐ No		☐ Yes, a lot more ☐ Yes, a little more ☐ Not a lot ☐ No	
How likely are you to exercise during pregnancy?	☐ Yes, a lot more ☐ Yes, a little more ☐ Not a lot ☐ No		☐ Yes, a lot more ☐ Yes, a little more ☐ Not a lot ☐ No	
How likely are you to be more hygienic (wash hands, clean food) now?	☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely		☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely	
How likely are you to meet the healthcare system for a pregnancy?	☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely		☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely	
How likely are you to request your partners help?	☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely		☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely	
How likely are you to receive health check-ups?	☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely		☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely	
How willing are you to spend time each day playing with your child?	☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely		☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely	
How likely are you to monitor your child's growth (height/weight)?	☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely		☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely	
How aware are of the signs/symptoms of any diseases during pregnancy?	☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely		☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely	
How likely are you to contact/visit healthcare staff if you become aware of these signs/symptoms?	☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely		☐ Very likely ☐ Likely ☐ Neither likely or unlikely ☐ Unlikely	

CONSENT

The above information is true to the best of my knowledge. By agreeing to complete this form I authorize MAA to release any information required for further research.

Signed: