

To explore the feasibility of introduction and operational challenges of implementation of Kangaroo Mother Care (KMC) services in selected first level referral facilities of Kushtia, Bangladesh.



International Centre for Diarrhoeal Diseases Research, Bangladesh

Contents

1. Introduction	5
1.1 Objective	7
1.2 Conceptual framework.....	7
2. Methodology.....	8
2.1 Study design	8
2.2 Study site.....	8
2.3 Sample size and sampling	8
2.4 Data collection methods	10
2.5 Data collection tools	11
2.6 Ethical approval.....	11
3. Data analysis process	11
4. Findings/result	12
4.1 Knowledge & Perception about Pre-term.....	12
➤ Gestational Period:	12
➤ Perception about Pre-term:.....	13
➤ Determination of pre-term (symptoms):.....	13
➤ Source of knowledge of GsP or Pre-term:	13
➤ Complications of pre-term:.....	13
➤ Certification of pre-term:.....	14
➤ Local name of pre-term:	14
4.2 Perception about Pre-term Management & Care Seeking Behavior:.....	15
➤ Preterm management:.....	15
➤ Existing Practices:.....	16
Preterm management.....	16
Existing Practices.....	17
➤ Refer:.....	17
5. Knowledge and Perception about KMC	18
➤ Ever heard:	18
➤ Perception:.....	18
➤ Source of information:.....	18
6. Perceived Benefits of Practicing KMC	19
➤ Beneficial or not:.....	19
➤ Replace other methods:.....	20
7. Attitude regarding practicing KMC	20
➤ Positive:.....	20
➤ Negative:	21
8. Challenges & Barriers.....	21
8.1 Perceived barriers in community	21
➤ Barriers after discharging:.....	21
➤ Cultural:.....	22
➤ Economical	22
➤ Environmental:.....	22
➤ Monitoring at community.....	23
➤ Reaching hospital:.....	23

8.2 Perceived barriers in Facility	23
➤ Challenges during staying:	23
➤ Cultural:.....	24
➤ Environmental:.....	24
➤ HR:.....	24
➤ Other:.....	25
➤ External Supervision/Governance:	26
Reaction from staff:	27
9. SOWT analysis of Introducing facility based KMC.....	27
• Strengths.....	27
• Weakness	27
• Opportunity.....	28
• Threat.....	28
10. Recommendations:	28
➤ Additional HR	28
➤ Community awareness.....	28
11. Discussion:	29
References:	30

1. Introduction

Annually worldwide about 15 million children are born preterm (birth before 37 completed weeks of gestation) (Blencowe et al., 2012). Preterm births significantly contribute to a high rate of neonatal mortality and morbidity. Globally, 3.1 million babies die in their neonatal period (Liu et al., 2012) and preterm birth is the second largest direct cause of neonatal death, accounting for 28 percent neonatal death yearly (Liu et al., 2012). It can act as an indirect cause of neonatal mortality as there is high susceptibility of neonatal infection in low birth weight babies (Lawn, Wilczynska-Ketende & Cousens, 2006) and one out of four neonates die due to severe infections including sepsis and pneumonia (Lawn, Cousens, & Zupan, 2005). Amongst other demerits of preterm birth, increased risk of cerebral palsy, learning and visual disorders and chronic diseases in childhood are also included (Mwaniki et al. 2012).

Preterm births and the burden of deaths and DALYs associated with it are a major public health concern in low and middle income countries (LMICs) as more than 60 percent of all preterm babies are born in South Asia, South East Asia and Sub Saharan Africa. Staggering 99 percent children that die worldwide in their neonatal period reside in these areas (Lawn, Cousens, & Zupan, 2005).

Bangladesh being one of the developing countries in South East Asia; and was one of the 10 countries with highest number of preterm births in 2010 and the estimated rate was around 14 percent of all live births (Blencowe et al., 2012). According to Bangladesh Demographic Health Survey, around 11 percent of all neonatal deaths in Bangladesh are directly related to preterm births (NIPORT et al., 2011). Among the indirect causes, sepsis or other serious infection accounts for one fourth of all neonatal deaths in Bangladesh (NIPORT et al., 2011). These alarming statistics call for a focus on easy, cost-effective interventions.

Kangaroo Mother Care (KMC) is an effective, easy to use and less resource demanding intervention for managing prematurity (WHO, 2003). It is an alternative method to traditional incubator based care. KMC was invented and introduced by a Colombian pediatrician named Dr. Edgar Rey Sanabria in 1978 which has three main components including thermal care of the baby through un-interrupted skin to skin contact with the mother, support for exclusive breast feeding and early recognition and response to complications (Charpak et al., 2005). Many studies have shown the positive physiological and psychological effects of KMC on both mother and the baby. Positive physiological outcomes include temperature regulation and increased body temperature of the neonate (Anderson, 1991; Anderson et al., 2003 & Clonde-Agudelo et al., 2011). Repeated KMC sessions also promote weight gain and nutrition of the preterm baby as it increases both duration and uptake of breast feeding (Anderson, 1991; Anderson et al., 2003 & Clonde-Agudelo et al., 2011). Psychological benefits include establishing early bondage between mother and baby (Tessier et al., 1998). The constant care and attachment gives the mother a sense of fulfilment and satisfaction which helps in promoting a healthy environment for the baby's growth and maturation (Anderson, 1991; Feldman, Eidelman, Sirota & Weller, 2002). Additionally, it protects the baby from any hospital acquired nosocomial infection and alerts the mother in case of any abnormal temperature rise which is crucial in early detection of neonatal infection (Clonde-Agudelo et

al., 2011 & Lawn et al., 2010). Despite the beneficial effects of KMC, some barriers remain in continuation of KMC practices which includes discomfort and sleep disturbance of the mother or the person performing skin to skin care practice for a long time (Blomqvist et al., 2013). Again some seasonal barriers such as humid and hot weather, non-acceptability of the method due to cultural and religious factors act as an obstacle in continuation of KMC (Emdad et al., unpublished). But benefits of KMC; if understood properly can surpass few barriers that were encountered.

Due to multi-faceted benefits of facility based KMC, several initiatives has been taken to adopt it in a community setting which refers to KMC practices for newborns in the community for the whole time period of from birth to 40 weeks of gestational age (and Darmstadt, Black & Santosham, 2000; Bhutta, Darmstadt, Hasan & Haws 2005 and Worku & Kassie, 2005). Few studies have shown that the continuous community practice of KMC in low income settings can have many flaws and is not as effective as facility based KMC where monitoring by service providers is available. Some studies show that in community based KMC; hypothermia of both mother and the baby is common, which may lead to undesirable outcome in some cases (Darmstadt et al., 2006). Therefore; facility based KMC is definitely one of the best options to focus on while designing any relevant intervention aiming to prevent neonatal death.

In Bangladesh, KMC can prove to be an effective intervention in preventing neonatal deaths due to preterm births. But even after 35 long years of introduction, and many studies reporting the efficacy and effectiveness of it positive outcome; Bangladesh is yet to introduce and implement KMC practices at national level. No primary, secondary or even tertiary level health care facility has the proper institutional set-up or trained human resources to provide KMC services. There are only three private or non-governmental facilities that have introduced KMC in their facilities (LAMB Hospital in Dinajpur, Matlab Health Research Centre in Chandpur and Dhaka Shishu Hospital). LAMB hospital is situated in a northern Division of Bangladesh which started KMC service implementation in 1998 and KMC is practiced in the delivery wards, postnatal wards, emergency room and outpatient department. All beds are adjusted to facilitate KMC services and there are 80 staffs trained to provide KMC services. Matlab hospital in Chadpur District started KMC services in 2007 and it has 36 health workers trained in KMC. Dhaka Shishu Hospital; a specialized children's hospital situated in the capital of Bangladesh started KMC practices only last year with three beds in the neonatal ward. These three facilities and their small scale initiatives cannot reduce countrywide neonatal mortality.

Reducing neonatal mortality in a more progressive fashion has been the renewed focus in Bangladesh. In July 2013, GOB announced its commitment to focus on reducing neonatal mortality under the banner of Committing to Child Survival: A Promise renewed (APR) (UNICEF, 2013). APR declaration includes four key interventions for new-borns to accelerate the reduction in neonatal mortality, these are- application of 7.1% Chlorohexidine on newborn umbilical cord; strengthening the union level facilities to ensure newborn sepsis management by trained providers; application of Antenatal Corticosteroid after identification

of threatened preterm labour and scaling up of Kangaroo Mother Care (KMC) for management of premature newborn (UNICEF, 2013).

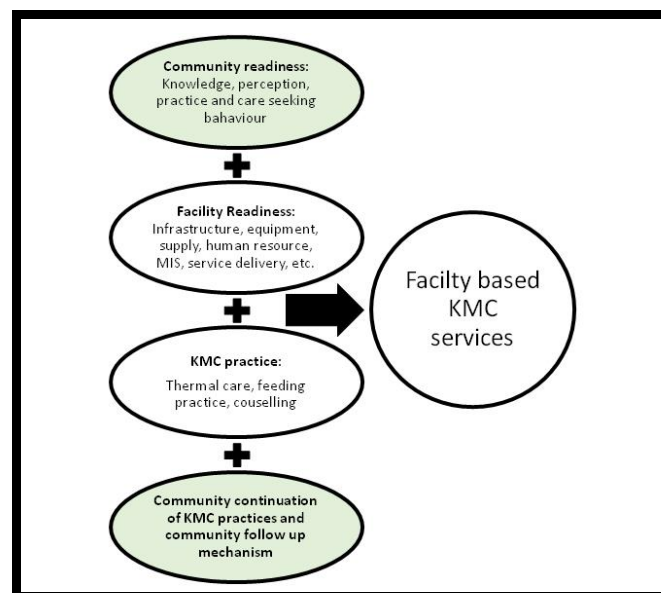
In alignment to that aim, Save the Children; an international non-governmental organization and Saving Newborn Lives (SNL) initiative proposed to establish a demonstration site in Kushtia district by implementing of a comprehensive newborn package within government health systems. SNL initiative will provide intellectual and technical support for promotion and implementation of KMC services in selected Upazila Health Complexes (UHCs) of Kushtia to develop an effective and sustainable model for national scale up.

The scope of introduction and smooth implementation of facility based KMC services under this initiative can be challenging due to shortage of skilled workforce, inadequate quality of care and unreliable supply chain in participating health facilities. Studies presented that the utilization of health care facilities for fewer than five illnesses is very low and even if the sick children eventually make their way to the government facilities, they receive poor management (Arifeen et al., 2005 & Hoque et al., 2012). The process of introduction of KMC services in a UHC requires rigorous process documentation and continuous evaluation.

1.1 Objective

The study was aimed to explore the knowledge, perception and existing practice regarding pre-term babies and its management in both community and facility. The research also tried to understand the readiness of different facilities for introducing facility based KMC in Bangladesh.

1.2 Conceptual framework



For understanding the baseline situation of the feasibility of introducing facility based KMC the research team considered four (04) major areas which are essential for the implementation of KMC at health facility. Community readiness was the first pillar for understanding; in this area the team tried to explore the knowledge of pre-term and its management, existing practice and care seeking behavior of the community. Secondly which

investigators tried to know about the facility readiness includes; infrastructure, equipment, human resource, MIS and service delivery pattern of different facilities. In the third and fourth domain researchers tried to explore the perceived barriers and suggestions of practicing KMC at facility level and its continuation to community including monitoring/ follow-up mechanism.

2. Methodology

2.1 Study design

We adopted both quantitative and qualitative methods to address the study objectives.

Regarding qualitative method, we adopted the following approach:

1. Qualitative exploration of existing practice of pre-term management both in facilities & community.

Regarding quantitative method, we adopted the following approaches:

1. Health Facility Assessment Surveys
2. Extraction of Data through Hospital Routine MIS, Project MIS and Review of Patient Records
3. Assessment of current situation of facility based KMC

2.2 Study site

This study was conducted in Kushtia district where SNL initiative is implementing a comprehensive neonatal intervention package. Kushtia is bounded on the north by Rajshahi, on the east by Pabna and Rajbari, on the south by Jhenaidah, Chuadanga and Meherpur, and on the west by Chuadanga, Meherpur and India. The population of Kushtia is 19, 86, 344 in 2011 (BBS 2011). The total area of the district is 1601 km² with a population density of 1207 people per km². There are 6 upazillas, 4 municipalities, 39 wards, 70 mahalas, 61 union parishads, 710 mouzas and 978 villages in this district. Several rivers are flowing through Kushtia district. (BBS 2012). As a part of Saving Newborn Lives Initiative, three Upazila Health Complexes (UHC) will be upgraded to provide facility based KMC services in the first phase of intervention. These three UHCs are Daulatpur UHC, Mirpur UHC and Kumarkhali UHC. A brief description of these UHCs is provided below.

2.3 Sample size and sampling

Assessment Tool	Facilities Assessed	Level of Facility
Service Provision Assessment (SPA)	Mirpur UHC	Primary
	Kumarkhali UHC	Primary
	Daulatpur UHC	Primary
KMC adapted Health Facility Assessment	Mirpur UHC	Primary
	Kumarkhali UHC	Primary
	Daulatpur UHC	Primary

Name of Upazila	Sex	Tool A	Tool B	Total Participants
		Education & Experience of Provider	Knowledge of Care Providers	
Mirpur	Male	1	1	2
	Female	8	9	17
Kumarkhali	Male	1	2	3
	Female	9	9	18
Daulatpur	Male	3	3	6
	Female	11	10	21
Total Participants		33	34	67

A team of four medical graduates collected the quantitative data from the selected health facilities (n=3). They used two health facility assessment tool for the data collection and resided in each of the facility for consecutive three day for through assessment. Along with the health facility assessment tool, they also collected additional data on the knowledge & skill as well as the education and experience level of the providers. This was done through structured interviews, and random selection of participants.

Table: 00; Sample Size

Name of Upazila	Sex	In-depth Interview (IDI)		Focus Group Discussion (FGD)		Total Participants
		Community	Facility	Community	Facility	
Daulatpur	Male	3	3	3	0	9
	Female	3	6	9	9	27
Kumarkhali	Male	4	2	22	0	28
	Female	10	3	10	8	31
Mirpur	Male	3	1	11	0	15
	Female	5	5	0	6	16
Total Participants		28	20	55	23	126

One anthropologist and four medical graduates were hired and trained for the study. The medical graduates collected quantitative data from selected facilities (N=03) by using various structured tools. On the other hand the trained anthropologist conducted in-depth interviews (IDI) and focus group discussions (FGD) with service providers (n=03) of different facilities. Beyond this group of service providers the junior anthropologist conducted IDIs and FGDs (n=06) at community level with the help of senior anthropologist. The respondents from community group included mothers, fathers and immediate family members of pre-term babies, community influential persons, recently delivered women and local service providers. IDIs were administered with mothers (n=10), fathers (n=04), immediate family members (n=09) of pre-term babies and local service providers (n=05). Participants were selected

purposively to ensure inclusion of participants from various ages and those of various economic situations. On the other hand the qualitative team interviewed 28 facility based health care providers. Among 28, 06 were at facility manager level (UH&FPO=03 & RMO= 03). Anthropologists also conducted in-depth interviews with nurses (n=10) and specialist doctors (n=04). After receiving approval from the respective authority data collection started. Data collection continued until thematic saturation was reached.

2.4 Data collection methods

The group of trained medical graduates went to three facilities and filled-up different forms to collect data from health facilities. The purpose of filling-up various tools was to understand the readiness of those facilities for introducing facility based KMC.

Anthropologists utilized both in-depth interviews (IDIs) and focus group discussions (FGDs) because each method offered separate scope for addressing research questions. IDIs are particularly useful for gaining a detailed understanding on any issue of an individual. Focus group discussion is considered to have particular advantages for eliciting thoughtful reactions to topics that are abstract, technical or new to participants (Ritchie and Lewis, 2003). FGDs therefore provided the study participants an opportunity to consider a new approach to newborn care with the benefit of hearing the reactions of other participants, allowing them to compare and express their opinions.

The team of medical graduates and anthropologists got extensive training and field piloting before collecting data. Qualitative data collection tools were updated after piloting for final data collection. The data collection team directly went to health facilities and collect data as per the study's need. Before going to a facility the field coordinator contacted with the respective facility manager via mobile phone to arrange the data collection environment. For community level data collection; anthropologists contacted with selected respondents via mobile phone and then went to those households for collecting data. IDIs averaged 45 min and took place in the participant's home or work place with strict privacy, while FGDs were held in a room within community health clinics or at respondent's house. FGDs lasted 90 min on an average. Interviewers explained the study's purpose and requested written (or thumbprint) informed consent from all participants.

During interviews and focus group discussions, interviewers used a field guide to facilitate discussion about pre-term, infant care practices and facility based KMC. Interviewers briefly presented the concept of KMC using photos before starting the remaining portion of the IDI or FGD eliciting feedback, concerns and suggestions from the participants regarding introducing facility based KMC.

Throughout the data collection process, anthropologists tried to identify existing care practices that may facilitate or conflict with facility based KMC, and participants were asked to provide their opinion on the role of these factors. Discussions were conducted in Bengali and audio recorded, while interviewers maintained field notes.

2.5 Data collection tools

For quantitative data collection we used Service Provision Assessment (SPA) tool and Health Facility Assessment (Adapted for KMC) tool. For qualitative portion we used open ended checklist, interview guideline and FGD guideline. While conducting in-depth interviews and FGDs we used a visual aid to help the community people understand various positions of KMC.

2.6 Ethical approval

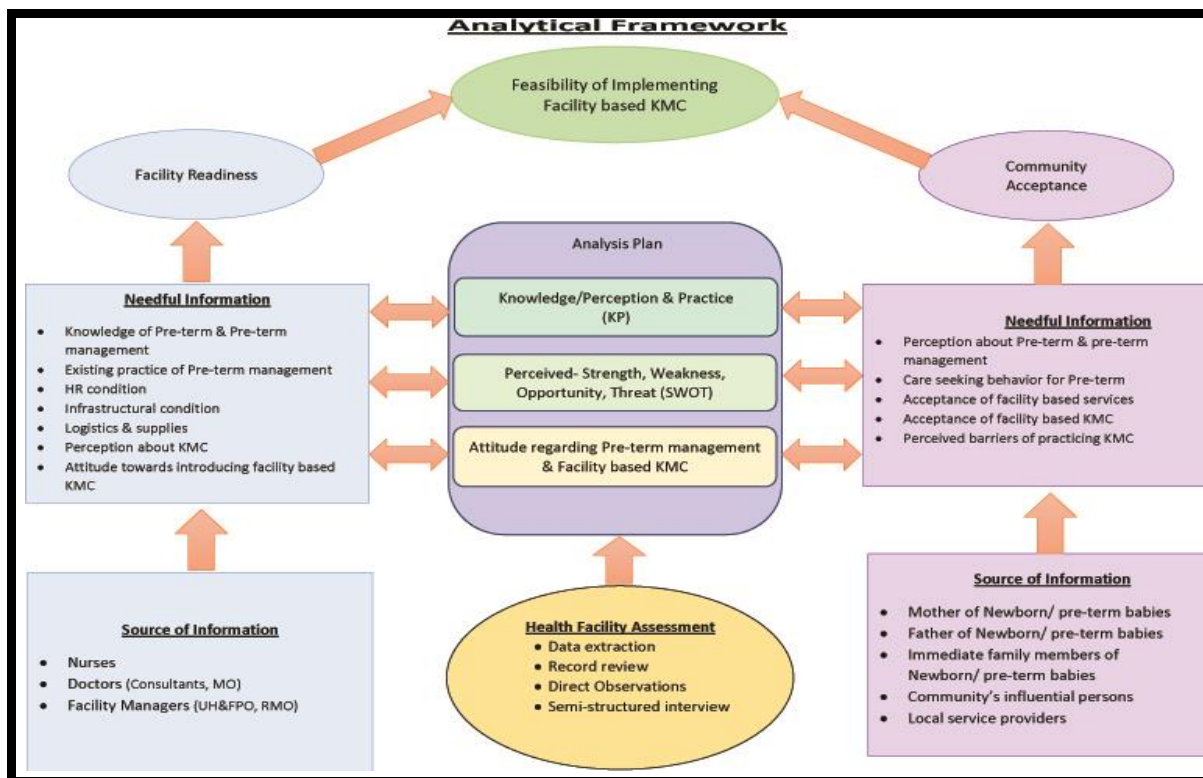
The study was approved by the icddr,b ethical Review Committee. Participants were engaged in the research process by providing written informed consent and they were free to withdraw their participation at any time during the study.

3. Data analysis process

Data collected through health facility assessment tools were cleaned and summarized as per indicators in an excel spreadsheet. Availability of the resources was compared among the facilities through color coding. The team of medical graduates was involved in the process of data collection were also involved in the data analysis process to avoid errors.

The team of investigators maintained methodological rigor from the very beginning of the study. They provided feedback to the junior data collection team continuously. The team of investigators went to field several times during data collection and provided instant support to the data collection team. Regarding qualitative portion, the senior anthropologist himself conducted 30% of the IDIs and FGDs so that the standard can be maintained. Besides data collection, senior anthropologist heard audio tapes of IDIS in field and provided feedback to the junior anthropologist after returning from field. Then he assessed the level of data saturation on particular topics before selecting participants for the following day. Interviewers then transcribed their audio recordings as soon as possible. The team of investigators checks transcripts randomly for the correctness of transcriptions.

The senior anthropologist prepared an A-priori code list which derived from the research questions of the study. After developing the A-priori code book it was shared with other investigators of the study for inter coder reliability checking and thus the code book developed primarily. Then once transcripts were available, investigators read those and add new emergent codes into the code book. After doing all these things finally senior anthropologist compiled the code book and finalizes it for analysis. Qualitative data was entered into the code books by junior anthropologist and by other investigators for ensuring the credibility.



We followed the thematic analysis approach for analyzing data in this study. Textual data indexed according to each theme was charted, and the larger investigator's team contributed to interpretation of findings based on discussion of the thematic areas. Finally, we analyzed the data of knowledge and perception about pre-term and pre-term management of both community and facility level service providers. After that we analyzed the data regarding existing practices and participants' perspectives on KMC were categorized as potential facilitators for facility based KMC, barriers to KMC, or neutral. We also performed an SWOT analysis and a positive & negative attitude analysis of both community participants and facility level service providers regarding introducing facility based KMC. The quantitative data from health facility assessment were analyzed quantitatively and presented for supporting the qualitative findings to understand the readiness of health facilities for introducing facility based KMC.

4. Findings/result

4.1 Knowledge & Perception about Pre-term

- **Gestational Period:** In community, 12 respondents out of 28 said that a fetus stay 10 months and 10 days in the mother's womb and another 12 respondents said that a fetus remains 9 months in the mother's womb. One local service provider said that fetus remains mother's womb at 40 weeks and another a fetus stays 37 weeks of a mother's womb. But it may change because it's natural sometimes depends on mother's physical conditions. One family member of Mirpur said, *"As far we know, it's better for a baby to stay in its mother's womb for 36 to 37 weeks"*.

- **Perception about Pre-term:** One respondent of community said that preterm baby is who born before full duration of remaining gestational period. Sometimes the pre-term babies born unexpectedly. Another respondent said that the baby's weight depends on the amount of nutrition intake of mother during pregnancy. After conceived, if one woman takes food as per need during her pregnancy, she will give birth of a term baby. But when baby be born before 9 months then they called locally 'OPUSTA' (malnutrition) that means malnourished. So in community, most of the respondents believe that pre-term babies are always having insufficiency of nutrition. One respondent said,

"A baby is ready to born when it can open eyes just after birth the age is not a fact to be a term baby".

One of the family members claims that the reason of delivering pre-term baby is cesarean section.

- **Determination of pre-term (symptoms):** One local service provider (LSP) said that first and foremost determination of pre-term new born baby is birth weight. One local service provider said,

"Usually a term baby should have a weight of 2.5 to 03 kilograms. If a baby born under this range then we can consider it as pre-term".

Other determinants are soft head skull, outlook of the baby, size of the baby and gestational age. But mothers and other family members said that they are not much concern about the determination of pre-term. But only think a pre-term born because God wants. Community people took it normal.

- **Source of knowledge of GsP or Pre-term:** In community, most of the respondents could recall the source of knowledge from where they heard about GsP and pre-term. Only 06 respondents said that they have experience and knowledge about GsP and pre-term. They achieved it from their self-experience and also by seeing other people. Two respondents said that they knew about pre-term and GsP from books but they could not remember the name of the book. One respondent said that he knew about GsP or pre-term from TV and another respondent said that he knew about GsP and pre-term from IMC training. One respondent said that he heard about GsP or pre-term from BRAC visitors.

- **Complications of pre-term:** Many of the respondents from community said that they saw that pre-term babies usually cannot suck breast milk like normal babies. Few said that pre-term babies cries less than the normal one. One respondent said,

"When my baby was born, villagers didn't believe that my baby would remain alive. But still now my baby is alive. His neck was not strong enough".

One LSP (Daulatpur) said that birth asphyxia is the most common complication of a pre-term baby. They also find other complications that are low temperature and LBW (Low Birth Weight). One respondent said that pre-term babies often suffer from cold and cough. Most of the participants responded about the difficulties of breastfeeding of pre-term babies.

- **Certification of pre-term:** In community 21 out of 28 respondents could say about the certification of pre-term new born baby. 08 respondents said that they certify pre-term new born baby from their self-experience. One respondent said,

“I know that the new born baby born after 8 months, I have calculation of my gestational period. So I knew that the actual time of my delivery”.

When they saw some symptoms; i. e. LBW (Low Birth Weight), very thin skin, nails don't reach at the end of the fingers and low temperature of the newly born then they decide the new born is pre-term. Finally, they heard the gestational age of the mother. Then they decide that the baby is pre-term. Sometimes midwife decide that this new born baby is pre-term. Seven respondents said that doctor helps to identify the pre-term baby. After the birth of a pre-term baby, doctor said that this baby is in danger, so be careful about taking care of the baby.

AT A GLANCE: Knowledge & Perception about Pre-term at the community level

Indicator	Community People (n)
Gestational Period	24
Perception about Pre-term	14
Determination of pre-term (symptoms)	5
Complications of pre-term	6
Certification of pre-term	21

Less=  Moderate=  High=  No data= 

- **Local name of pre-term:** In the community, 14 respondents out of 28 said that when a baby born at 7 months then villagers called him 'SATANSI', besides when a baby is born at 8 months then they called him 'ATANSI'. Sometimes they called such types of pre-term newly born baby is 'OPUSTA'. 'OPUSTA' means malnutrition.

Table 1: Frequency and Percentage distribution of service providers with the knowledge on Pre-term birth interviewed during baseline survey at Mirpur, Kumarkhali and Daulatpur Upazila of Kushtia District

Indicators	Mirpur (N=10)	Kumarkhali (N=11)	Daulatpur (N=13)
	n (%)	n (%)	n (%)
Defined Gestational Period appropriately			
Mentioned < 37 weeks	1(10)	2(18.18)	1(7.69)
Mentioned only 37 weeks	0	1(9.09)	4(30.77)
Mentioned >37 weeks	9(90)	7(63.63)	8(61.53)
Doesn't know	0	1(9.09)	0
Defined Preterm/Prematurity appropriately	1(10)	2(18.18)	2(15.38)
Source of knowledge on Prematurity			
Training	6(60)	6(54.54)	6(46.15)
Peer	1(10)	0	7(23.07)
Scientific paper/journal	0	1(9.09)	4(30.76)
Others	3(30)	5(45.45)	2(15.4)
Mentioned all types 3 types of preterm birth	0	2(18.18)	0

The baseline survey-2015 interviewed the service providers to gather information about their knowledge & perception on pre-term birth. Table 1 shows the percentage distribution among the respondents, who were able to define 'pre-term birth' and were familiar with the types of pre-term birth. Though majority of the service providers at all the three upazilas defined gestational period as more than 37 weeks, only 10%-18%(1-2) of the respondents were able to define Preterm appropriately. 18.2%(2) respondents in Kumarkhali Upazila were able to mention all the types of pre-term birth, whereas none in Mirpur and Daulatpur upazila were able to do so. Among the respondents, approx 60 %(6) in each facility stated that they knew about preterm from various trainings they received during their academic and profession life. 7 respondents at Daulatpur UHC stated, they gathered knowledge from their peer/ co-workers. Regarding the types of preterm births, only 2 respondents that also in Kumarkhali UHC were able to mention its all three types.

4.2 Perception about Pre-term Management & Care Seeking Behavior:

- **Preterm management:** In the community, the pre-term new born baby would alive or death, it is totally depend on their mother as well as their authors of the family. Because, when a pre-term new born baby is born, the baby is unstable to cope up the present environment. And also, the villagers haven't much academic or certified knowledge for how to take care and manage of pre-term new born baby. They follow the traditional means and believe for management of pre-term new born baby. Most of the respondents manage their pre-term new born baby by their self-experience. One respondent said,

“When a preterm baby born, we take him or her seriously; we follow some rules i.e.- have bathed after 7 days, covered by soft cloths, taken to close the mother’s chest and lap carefully”. (from FGD).

Another one respondent said,

“When a pre-term new born baby is born, we take him or her to traditional or folk healer for treatment, then they go to the village doctor and finally they would go to the hospital doctor”. They also go to the celestial messenger for pre-term management.

➤ **Existing Practices:** In the community, most of the usual practice is about taking care of newly born baby. 13 out of 28 respondents said that they have previous experience of taking care of their pre-term new born baby. One respondent said,

“When the baby was born, the baby was so much weak; he was able to suck breast milk. So, he needed support to suck breast milk for 8-9 times at every night. And then we take him to the hospital”.

Another respondent said that they provided lactogen-1 (supplementary food) and changes his dress regularly after a certain period. One respondent from Daulatpur said,

“My baby was born in winter & we used room heater to adjust room temperature. We also used blanket to cover the newly born pre-term baby because we didn’t want the baby to catch cold”.

Another three respondents said that they used sucker to remove mucus and got suggestion from local service providers to cover the baby with cotton. But villagers usually use light hot water to remove mucus and maintain body temperature by stimulating. Most of the respondents agreed that when a pre-term baby born then it should feed breast milk immediately. One LSP said that he gives treatment by herbal medicine. Local service providers said that they always try to refer pre-term babies to a facility. In the community, 7 respondents out of 11 respondents said that they went to the village doctor for seeking care for pre-term baby. Other 4 respondents went to the primary or secondary level facilities for seeking treatment. When a pre-term baby is born, the villagers at first go to the village doctor then they would like to go to upper level health facilities for getting better treatment. Besides, they also go to the traditional healers. Some of the respondents from community think that the reason of delivering pre-term baby is a possession by an evil spirit. So they like to go traditional healers and do exorcise of the pre-term baby. One LSP said,

“When these doctors fail to cure, they refer to traditional healer for spiritual healing or get amulet to be cured”.

But, when they do not get any output from this treatment then they go to the child specialties. When a preterm baby born, service providers at facility usually take care by covering with soft blanket and sometimes they use cotton for covering the preterm baby.

AT A GLANCE: Knowledge & Perception about Pre-term Management at community level

Indicator	Community People
Preterm management	

Existing Practices	
--------------------	--

Less=  Moderate=  High=  No data= 

➤ **Refer:** In the community, they think refer means to take other facilities for the betterment of the new born pre-term baby. When facility provider cannot manage the pre-term baby then they refer to the secondary level facilities. One Local Service Provider said,

“When I feel the mother and pre-term baby becomes sick gradually, then I refer the baby to Upazila Health Complex”.

One respondent from Kumarkhali Upazila Health complex said,

“The ratio of receiving pre-term baby is very low. If anybody comes to our facility, I try to refer to district hospital because; no child specialist is available here.”

Table 2: Percentage and frequency distribution of service providers with the knowledge & perception on Pre-term birth management, interviewed during baseline survey at Mirpur, Kumarkhali and Daulatpur Upazila of Kushtia District

Indicators	Mirpur (N=10)	Kumarkhali (N=11)	Daulatpur (N=13)
	n (%)	n (%)	n (%)
Mentioned as Complications of preterm birth:			
Hypothermia	2(20)	7(63.63)	11(84.6)
Hypoglycemia	1(10)	3(27.27)	0
Sepsis	6(60)	5(45.45)	6(46.15)
Jaundice	2(20)	9(90.91)	5(38.46)
Respiratory distress	9(90)	7(63.63)	7(53.84)
PDA	0	0	0
IVH	1(10)	2(18.18)	0
NEC	0	2(18.18)	0
Others*	5(50)	2(18.18)	7(38.46)
Mentioned as basic management options:			
Need Special care (incubator based)	10(100)	9(90.90)	10(76.92)
KMC	0	1(9.09)	1(7.7)
Does not Know	0	0	2(15.4)
Received training on pre-term management	0	2(18.18)	1(7.7)
Training was provided by:			
GoB	0	2(18.18)	1(7.7)
Private	0	0	0
NGO	0	0	0
Others	0	0	0

*Others include- Birth Asphyxia, breast feeding, diarrhea, LBW, etc

The baseline survey-2015 interviewed the service providers to gather information about their knowledge & perception on pre-term birth. Table 2 displays the percentage and frequency distribution of complications as mentioned by the service providers. Besides, various pre-term management options stated by the respondents have been provided here. It can be noted that most of the respondents at various upazilas missed 'Hypoglycemia' and 'Low Birth weight' as a complication of pre-term birth. In terms of Basic Management for preterm births, nearly all considered SCANU as an option and only a few at Daulatpur Upazila 1(7.7%) respondent mentioned KMC as an alternative. It's also noticeable that only 2(18.18%) and 1(7.7%) of the respondents at Kumarkhali and Daulatpur Upazila respectively were trained in preterm management and the training was provided by Government of Bangladesh. It's worth mentioning that other than Government, no other organizations provided training on Basic management of pre-term birth.

5. Knowledge and Perception about KMC

➤ Ever heard:

In community, none of the respondents could say anything about KMC. They never even heard the word KMC. But in facilities, service providers said that they heard about KMC but not in details about the process. One respondent from a facility said,

"I heard about KMC in training. But it was very short discussion and nobody was interested about knowing the detail".

➤ Perception:

Health care providers of facility described few interesting perceptions about KMC. Like, one facility manager said.

"Kangaroo Mother Care is holding child on mother's chest like a kangaroo to maintain the proper body temperature of the preterm baby".

Few of the health care providers were able to say the full meaning of KMC. Most of the health care providers were agreed that the main reason of KMC is to maintain the temperature of preterm. But none of them could say anything about the types of KMC. They also told about skin to skin contact during practicing KMC. Only one nurse said that KMC is helpful for exclusive breast feeding.

➤ Source of information:

In facility respondents said that they heard about KMC from various sources. The sources of hearing about KMC are presented in the table below.

Table 3: Perception about KMC (facility)

Indicators	Mirpur (N=10)	Kumarkhali (N=11)	Daulatpur (N=13)
	n (%)	n (%)	n (%)
Heard about KMC/Defined KMC	3(30)	7(63.63)	9(69.2)
Source of knowledge on KMC			

Indicators	Mirpur (N=10)	Kumarkhali (N=11)	Daulatpur (N=13)
	n (%)	n (%)	n (%)
Training	1(10)	4(36.36)	3(23.1)
Peer	0	0	1(7.7)
Scientific paper/journal	0	1(9.09)	2(15.4)
Others	2(20)	3(27.27)	3(23.1)
Defined key components of KMC			
Skin to skin contact	2(20)	5(45.45)	2(15.4)
Frequent and exclusive breast feeding	0	1(9.09)	0
Early discharge from hospital	0	0	0
Does not Know	1(10)	2(18.18)	7(53.84)
Mentioned the types of KMC :			
Intermittent KMC	0	0	0
Continuous KMC	0	0	0
Does not Know	3(30)	7(63.63)	9(69.23)
Received training on KMC	0	1(9.09)	0
Training was provided by			
GoB	0	1(9.09)	0
Private	0	0	0
NGO	0	0	0
Others	0	0	0

During the baseline survey, service providers were also interviewed to gather information on their knowledge and perception about KMC. The findings have been presented in Table 3. It can be seen that 7 providers at Kumarkhali UHC and 9 providers at Daulatpur UHC were able to define KMC correctly, whereas in Mirpur UHC only 3 were able to do so.

Among the providers who knew about KMC, knowledge limitation was noticed, as 7(53.84%) and 2(18.18%) of the respondents at Daulatpur & Kumarkhali Upazila were unable to state the key components of KMC. Alarmingly none of the service providers were able to recall the types of KMC. During the baseline assessment, it was found that only one of all the service providers interviewed received training on KMC. The provider was trained from Government, as no other organizations are currently providing training on KMC.

6. Perceived Benefits of Practicing KMC

After describing about KMC & showing pictures of different positions of KMC, both community people and service providers of facilities were much excited about this. They assumed some benefits of KMC for preterm.

➤ Beneficial or not:

Most of the community participants said that KMC will be very much helpful managing preterm babies at community level. They agreed with the point that KMC may help

proper breastfeeding to a baby. Many of them mentioned that as baby will be in touch of its mother, father or other family members, so it will develop the mental bonding among them. Most of the community participants said that if KMC is implemented at their nearest facility, it will reduce their time and save money for care seeking of pre-term babies. One respondent said,

“Now, for this kind of situation we have to go to Rajshahi medical college hospital which is around 200 km from our home. We face residential problem there and also have to spend lots of money in various purposes. But if we get this facility near our area then it will be very much helpful for the poor”.

In facility, all of the respondents said that KMC will be very much helpful for preterm management. They said that it will reduce preterm mortality rate by reducing delay of care seeking. It can also help to minimize the risk of getting infected from incubator. Most of the health care providers agreed that KMC may foster exclusive breastfeeding to children. They said that it will reduce the hazard of maintaining the temperature of incubators. One nurse said,

“Now we are using incubators to manage a preterm baby which is expensive. But KMC is a free of cost method and will help poor. Poor people usually can't bear the expenses of incubator.”

Respondents from facilities also said that KMC can give them more time to look after other patients. Their perception is; KMC will not require extensive monitoring and supervision.

➤ **Replace other methods:**

In community, people were not sure about the replacement of other methods by KMC as they are not familiar with most of the methods. But in facility, 13 out of 20 respondents directly agreed that KMC can replace other methods. From FGD we get the same opinion. 04 health care providers said that it is not possible to replace other methods completely by KMC. One of them said,

“I think it can work parallel to other existing methods. Incubator is not only about maintaining temperature, it has many other functions which cannot be done by KMC”.

But the person couldn't describe other functions of incubator. One facility manager was confused whether KMC can bring the same benefit like the machine.

7. Attitude regarding practicing KMC

➤ **Positive:**

Both community people and facility health care providers are very much interested about implementing KMC. They were interested because of KMC's no cost management system. In community 15 out of 20 respondents were very much positive

about implementing KMC in facility. They were positive because they will get service at their door step. Another thing community people said that the preterm baby will be under family member's supervision which is safer than hospital. One mother said, ***"I had to go to private hospital for my baby and had to pay a lot which we couldn't manage our own. On the other hand during staying at hospital I was not permitted to see my baby in incubator. But I think KMC will give me the opportunity of caring my baby myself which is more comfortable for me and my baby as well"***.

Respondents from facilities said that it's possible to implement KMC service at their facilities if facility manager is motivated enough. They were also confident that it can be also continued at community level. Health care providers said that KMC is not the only of mother; other family members can contribute in the process. So they think it will not be a great deal to implement KMC in their locality.

➤ **Negative:**

Neither community people not facility based health care providers were negative towards implementing KMC. But they raised some concerns like; one mother said, ***"It will not be hard to do KMC but the issue is everyone is busy at home. So sometimes the baby may need of other family members. But it's not sure whether other family members will be interested to help the baby or not"***.

Managers and health care providers said that if enough is available then it will not be a great deal to implement KMC.

8. Challenges & Barriers

8.1 Perceived barriers in community

➤ **Barriers after discharging:**

In the community, now-a-days most of the family is nuclear. So, lack of man power is a boundless barrier to provide KMC as per need of a preterm newborn baby. They said that providing KMC is time consuming though it is cost effective preterm caring and rearing method. So mother of a newborn may have to face a hazardous situation in the family for his mother-in-law and other family member's jealousy. Sometimes the mother of preterm baby may not participate with family chore or other important role of the family. They also said that providing KMC depends on baby's mother's educational status or common sense that means what to do in that situation. Some respondents said that when a mother gives birth to twin babies, at that time they may not provide KMC properly. So they may need help of other family members (i.e- father, mother-in-law and sister of the husband).

Facility providers said that mother of a newborn is busy with verities of family work in the family. So they may not provide KMC properly at house hold level. According to an SSN, women are persecuted by others family member in the village. When mother of preterm baby will try to provide KMC most of the time of the day, the oppression

may be increased in family. She would think that if she provides KMC to preterm newborn baby for fulltime then her family work will be troubled. As a result, she may be reluctant to provide KMC as per need. So, during counseling to the mother of preterm newborn baby, this issue must be discussed with the mother and family members carefully. They said that KMC was not practiced before. So, they family members may not want to understand easily. Most of the workers of the facilities prefer to provide KMC in hospital than home.

➤ **Cultural:**

Until in the villager's understand the benefit of KMC, they may not accept it seriously. Besides, one respondent said that if a preterm newborn died during the period of practicing KMC, weather will claim KMC as the reason of death. Parents use much more technological equipment and follow supportive suggestion. They said that KMC is such type supportive suggestion. So they use to conventional or primitive method for taking care of the premature newborn baby. As a result they may not want to accept KMC. Usually women are not use to carry baby in this position. So they have to face major problem for continuing KMC.

One respondent in facility said that most of the preterm newborn baby's mothers do not want to stay in the facility. Usually they become hectic for going home. So service providers should give proper counseling when they admitted in the facility.

➤ **Economical**

One respondent said,

“In the community most of the family lives on hand to mouth. Both husband and wife works in the field in an alternatively or husband involves with growing paddy in the field and wife involves with family chores or other income generating works”.

But problem is here; in that case when a pregnant woman gives birth to preterm newborn baby in a family, they don't have much time to provide KMC.

In the facility, the authority provides pregnancy related nursing who have DSF card and EOC card. DSF card and EOC card provides government of Bangladesh who are not capable to seek better treatment. So obviously they are not economically solvent. In most case both husband and wife involves with income generating activity. They may not have enough time to provide KMC.

➤ **Environmental:**

21 respondents out of 57 respondents said that the major problem will be to provide KMC is summer. Because of sweating, both baby and mother may feel discomfort. Preterm newborn baby may become sick for absorbing sweat. There is a chance of attacked by pneumonia of the baby.

➤ **Monitoring at community**

One respondent (SSN) said that it will be a difficult to monitor for carrying out KMC at community. Because is new issue for hospital staff, they may not know how to monitor KMC.

➤ **Reaching hospital:**

Most the respondents from community said about the delaying in reaching hospital in due time. The reason they said that sometimes traditional birth attendants don't like to refer until the mother and baby's condition go beyond their control. In many cases, community people are fright of hospital staff, i.e. Nurse, doctor. Low economical status may one of the most barriers for going to hospital for seeking care. Lack of consciousness of family members sometimes hinder the process of decision making. In facility, service providers said that in most of the cases family members of preterm babies come to hospital at the eleventh hour. At that situation it may be difficult to introduce KMC to those babies.

8.2 Perceived barriers in Facility

➤ **Challenges during staying:**

In the community, 5 respondents out of 57 respondents said that most of their spouses are busy with family work. So they may not stay in hospital for long time. They may be willing to go back home quickly. Another one respondent said that the accommodations of the hospital are not comfortable enough. She said, ***"Usually 7-10 patients stay in one ward. I will not be comfortable in that situation because many men often come into the ward. In such a situation, the mother of a preterm newborn baby may feel ashamed practicing KMC in the ward"***.

Another respondent said that doctor or nurse may not provide counseling properly.

In the facility, around half of total respondents said that lack of man power is an enormous problem in government health facilities. They also mentioned that government health facility is a busy place for doctor and nurse. They told KMC is totally unknown to general people. 12 respondents said that, people of surrounding communities may not be willing stay in the facility for necessary time required for KMC. Another two respondents said that they will be disturbed by the patient's relative or unexpected strangers to release babies earlier. One nurse said, ***"Family members of newborn babies always want to go home as early as possible. So I am not sure whether they will be agreed to stay at hospital for one or two weeks"***.

She also said that after delivery of a preterm baby, parents become busy to take better treatment. So they may like to go to the district level hospitals. They may not depend on the local facility provider. Two facility providers said that the mentality of the health providers may not be helpful to the patient. Without proper awareness, KMC

will be treated as a funny method. It also may be occurred hygiene problem mentioned by one service provider.

➤ **Cultural:**

In the community, one respondent said that KMC is an unknown preterm method to them. That's why; villagers may feel uneasy to continue this new practice. They think that KMC is an indoor practice treatment, but if mother of a preterm newborn baby provide KMC out of the door then they may face problem. Because in the customary religious fact is *Pordha* (hidden) and KMC treatment follow skin to skin contract. So mother can feel unveiled. They think this fact will be a great challenge to implement KMC treatment in community. Another respondent said that in bangali culture women are very modest. So they may not think of providing any care with clothing.

Few facility providers said that firstly mother or guardian of a preterm newborn baby may feel uneasy to provide KMC, because it is totally unknown to the villagers. Senior members of the family may disagree to provide KMC because of its different position. One service provider said,

“Mother in laws may say that if they didn't need this type of practice to rare their babies than why now it's so much necessary?”

Another respondent said that people will think that KMC treatment is not useful to them and also they do not know the success story of KMC treatment. So information gap will be a major problem.

➤ **Environmental:**

Some of the respondents said that warm weather conditions may not be appropriate for practicing KMC. They think, if KMC is practiced in warm conditions then preterm babies will be caught by pneumonia or other cold related diseases.

➤ **HR:**

Most the healthcare providers at facility said that shortage of man power is a major problem of government health facilities.

Table 4: Human Resource status at Mirpur, Kumarkhali and Daulatpur UHC during baseline study

Categories of care providers	Mirpur		Kumarkhali		Daulatpur	
	Existing post	KMC trained	Existing post	KMC trained	Existing post	KMC trained
Generalist Medical Doctors	11	0	5	0	6	0
Specialist Medical Doctors	10	0	4	0	5	0
Senior Staff Nurse	16	0	10	0	15	0
Assistant Nurse	1	0	1	0	0	0

HR status of all the three upazilas revealed that there is sufficient Manpower for the implementation of KMC. Mirpur UHC has the highest number of professionals amongst the three upazilas assessed and Kumarkhali UHC the lowest. There are more than 10 nurses at each facility, who will be the key persons to be dealt with in order to implement KMC. Hence recruitment of new staff wont be necessary. But its also notable that, none of the Physicians or Nurses have been provided with KMC training yet, which is a key element the stakeholders should consider.

➤ **Other:**

- Lack of equipment of the facility for the treatment.
- Lack of counseling of patient relative.
- Taking help from health worker for implementation
- They think absence of doctors and nurses is a great problem for the patient.

Table 5: General Amenities condition at the three upazilas of Kushtia during baseline study.

	Mirpur	Kumarkhali	Daulatpur
Separate Space for KMC room establishment			
24hours power supply			
Source of drinking water (24 hours)			
Communication (land-line, emergency mobile, internet)			
Ambulance			

Available= Not Available=

All the three upazila health complexes are govt. funded institutions hence their physical structures are similar. Table 5 illustrates that is no separate space allotted for KMC purposes in any of the UHCs assessed during baseline. There is 24 hours provision of water, electricity and ambulance services for the patients at each of the facility. The Health Complexes are also facilitated with land-line, mobile as well as internet for maintaining communications at both community and administrative level.

Table 6: Status of various equipments and logistics related to newborn care at the three upazilas of Kushtia District during baseline study.

	Mirpur	Kumarkhali	Daulatpur
Types of Warmers to prevent hypothermia			
Ventilators	Not Available	Not Available	Not Available
Incubators	Not Available	Available	Not Available
Radiant warmers	Not Available	Not Available	Not Available
Warm blanket	Not Available	Not Available	Not Available
Warm cribs/cots	Not Available	Not Available	Not Available
Ordinary cribs in a heated room	Not Available	Not Available	Not Available
Ordinary cribs in a non-heated room	Not Available	Not Available	Not Available
Room heater/warmer	Not Available	Not Available	Not Available
Local cloth	Not Available	Not Available	Not Available
Special triangle & blouse	Not Available	Not Available	Not Available
KEM kangaroo bag	Not Available	Not Available	Not Available
Special Bed Provision			
Assigned KMC beds	Not Available	Not Available	Not Available
Low/Medium low beds	Not Available	Not Available	Not Available
Weighing scale			
Baby weighing machine (Digital)	Not Available	Not Available	Not Available
Baby weighing machine (Manual)	Available	Available	Not Available

Available=  Not Available= 

During the Baseline assessment, no equipments or logistics for newborn care were available at the UHCs such as ventilators, incubators, warmers etc. An exception is Kumarkhali UHC, where an incubator was found but is not used. Manual Baby weighing machines were found at Mirpur and Kumarkhali UHCs, but none of the health facilities had provisions for dedicated beds for Kangaroo Mother Care (KMC).

➤ **External Supervision/Governance:**

	Mirpur	Kumarkhali	Daulatpur
	#	#	#
Routine Facility Management meetings take place	Available	Available	Available
Are official records Maintained	Available	Available	Available
Management meeting with community participation at least once every 6 months	Available	Available	Not Available
Regular quality assurance activities with observed documentation of quality assurance activity	Available	Available	Not Available
Routine Supervision from Central Level	Available	Available	Available
Routine Supervision from District Level	Available	Available	Available

During Baseline Assessment, it was founded that, all the UHCs were routinely supervised from the central and district level. Quality Assurance activities and management meetings were held half yearly, with exception to Daulatpur UHC.

Reaction from staff:

Health care providers of facilities were interested about KMC. But they were a bit confused about the practical situation of introducing KMC in the existing set up. Nurses are not use to provide KMC but after some days later they will be interested to provide KMC. They think if there is sufficient man power to provide services for pregnant women, then can be successful to provide services.

9. SOWT analysis of Introducing facility based KMC

We conducted a health facility assessment exercise in three (03) public health facilities of Kushtia district where KMC has not been introduced at the time of assessment. These facilities were selected ensuring representation of all proposed area of implementing KMC service. We focused into 03 different areas of interest for SWOT analysis-

1. Care Seeking Behavior for facility based KMC
2. Facility Staying, KMC Practicing & Family Member's Support
3. Community Continuation & Monitoring

Regarding strengths and weakness; we have tried to explore the human resources (HR) condition, existing infrastructure and supply of logistics at facilities. And for community portion we only consider the acceptance of new intervention.

For opportunity and threats; we tried to explore the perception of facility managers, health care providers and community people as well. We considered support to Facility and community for opportunity analysis. For threats we tried to explore Facility resistance, insufficient HR and community resistance. Additionally we tried to understand other influencing factors.

• **Strengths**

In all of the selected facilities, the service providers showed interest and support to implement KMC. The managers of health facilities showed interest about KMC and were willing to provide support in the introduction and implementation of KMC services at their facilities. Direct service providers also acknowledged the importance of providing quality care to preterm and LBW babies and committed their support to introduce KMC as a part of routine practice. Facility managers were willing to renovate wards for introducing KMC at their facilities.

• **Weakness**

The technical knowledge of the service providers on KMC at facilities was inadequate. Two facility managers highlighted the lack of availability of space at these facilities to introduce

KMC. The health facilities are already overburdened with workload and do not have additional workforce to carry out the additional responsibilities. Health facilities do not have specialists in obstetrics and pediatrics to lead the KMC service.

- **Opportunity**

The manager and services providers shared their motivation and interest in introducing KMC as a low cost intervention in comparison to incubator care. They also acknowledged that KMC practice would ensure breast feeding and psychological bonding of mother and child.

- **Threat**

The service providers and managers of the facilities reported cultural barriers to be a challenge to implement KMC in community. The respondents also mentioned that the humid climate of Bangladesh may contribute to the unwillingness of mothers to practice KMC for a long duration.

10. Recommendations:

➤ **Additional HR**

- If possible, may increase skilled man power of the facility.
- Increase space of the ward which allocated for the KMC treatment.
- Must be maintained the follow up the ward all time.
- Need to train up the facility providers about KMC.
- Need to detail orientation about the KMC.
- Need to a special skilled nurse for taking care of KMC unite in every facility that follows up the patient all time.
- Need clear and specific guide line for providing KMC of facility staff.
- Need to child specialist and oxygen on demand of the KMC patient.
- Need to two nurses for 50 beds facility for KMC treatment.
- Should be remaining good understanding and interest about KMC of the facility providers.

➤ **Community awareness**

Community:

- Have to raise awareness of the villagers.
- Have to raise awareness within family member or authorities of the family.
- Have to improve understanding about KMC of the patient and relatives of the patient.
- Provide information about KMC to socially recognized important villagers (i.e.- village leader, imam).

Facility:

- Provide counseling to patient and her guardian/relatives
- KMC is amazing treatment that makes to understand to the preterm newborn baby's family and their relatives.
- Need to be aware of the community people by counseling.
- Train up the facility providers.
- Have to give motivation
- Campaign and counseling with the family member
- Have to increase awareness about the benefit of KMC
- Have to deliver successful story of KMC to the villagers.

- When pregnant women come to the facility for checkup, at that time facility provider suggest her for KMC if needed.
- Have to show the picture about KMC that means what is KMC, how it done, why it have to do, who is perfect for practicing KMC and what is the inclusion criteria of KMC.

11. Discussion:

In this we will present comparative & argumentative writing on introducing facility based KMC. Investigators will interpret findings from their experience here. The main points will be as below-

- Knowledge & perception of pre-term of service providers and community people with actual definition and other related articles.
- Pre-term management and care seeking behavior of facility and community.
- SWOT of introducing facility based KMC. But will be interpreted by investigators.
- Attitude regarding introducing facility based KMC with interpretation.

References:

- Anderson, G. C. (1991). Current knowledge about skin-to-skin (kangaroo) care for preterm infants. *Journal of perinatology: official journal of the California Perinatal Association*, 11(3), 216-226.
- Anderson, G. C., Moore, E., Hepworth, J., & Bergman, N. (2003). Early skin-to-skin contact for mothers and their healthy newborn infants. The Cochrane Library.
- Arifeen, S. E., Bryce, J., Gouws, E., Baqui, A. H., Black, R. E., Hoque, D. M. E. & Siddique, A. (2005). Quality of care for under-fives in first-level health facilities in one district of Bangladesh. *Bulletin of the World Health Organization*, 83(4), 260-267.
- BBS (Bangladesh Bureau of Statistics). (2012). Population and Housing Census 2011, Socio-Economic and Demographic Report. National Series - Volume 4. Dhaka: Ministry of Planning, Statistics and Informatics Division. http://www.bbs.gov.bd/WebTestApplication/userfiles/Image/BBS/Socio_Economic.pdf.
- Bergh, A.-M., Manu, R., Davy, K., Van Rooyen, E., Quansah Asare, G., Awoonor Williams, J.K., et al. (2012). Translating research findings into practice – the implementation of kangaroo mother care in Ghana. *Implementation Science* 2012, 7:75.
- Bergh, A.-M., Rogers-Bloch, Q., Pratomo, H., Uhudiyah, U., Sidi, I. P. S., Rustina, Y., et al. (2012). Progress in the Implementation of Kangaroo Mother Care in 10 Hospitals in Indonesia. *J Trop Pediatr*, 58(5), 402-405.
- Bergh, A.-M., Rogers-Bloch, Q., Pratomo, H., Uhudiyah, U., Sidi, I. P. S., Rustina, Y., et al. (2012). Progress in the Implementation of Kangaroo Mother Care in 10 Hospitals in Indonesia. *J Trop Pediatr*, 58(5), 402-405.
- Belizán, M., Bergh, A.-M., Cilliers, C., Pattinson, R.C, Voce, A, for the Synergy Group. (2011). Stages of change: A qualitative study on the implementation of a perinatal audit programme in South Africa. *BMC Health Serv Res* 11: 243 (Published: 30 September 2011).
- Bergh, A.-M., Van Rooyen, E., & Pattinson, R. C. (2008). Scaling up kangaroo mother care in South Africa: 'on-site' versus 'off-site' educational facilitation. *Hum Resour Health*, 6, 13.
- Bergh, A.-M., Van Rooyen, E., Lawn, J., Zimba, E., Ligowe, R., & Ciundu, G. (2007). Retrospective evaluation of Kangaroo Mother Care practices in Malawian hospitals. Pretoria, South Africa: MRC Unit for Maternal and Infant Health Care Strategies and University of Pretoria, Save the Children.
- Bergh, A.-M., Arsallo, I., Malan, A. F., Patrick, M., Pattinson, R. C., & Phillips, N. (2005). Measuring implementation progress in kangaroo mother care. *Acta Paediatr*, 94(8), 1102-1108.
- Bergh, A.-M., Arsallo, I., Malan, A. F., Patrick, M., Pattinson, R. C., & Phillips, N. (2005). Measuring implementation progress in kangaroo mother care. *Acta Paediatr*, 94(8), 1102-1108.
- Bergh, A.-M., Van Rooyen, E., & Pattinson, R. C. (2008). Scaling up kangaroo mother care in South Africa: 'on-site' versus 'off-site' educational facilitation. *Hum Resour Health*, 6, 13.
- Blencowe, H., Cousens, S., Oestergaard, M. Z., Chou, D., Moller, A. B., Narwal, R., & Lawn, J. E. (2012). National, regional, and worldwide estimates of preterm birth rates in

- the year 2010 with time trends since 1990 for selected countries: a systematic analysis and implications. *The Lancet*, 379(9832), 2162-2172.
- Blomqvist, Y. T., Frölund, L., Rubertsson, C., & Nyqvist, K. H. (2013). Provision of Kangaroo Mother Care: Supportive factors and barriers perceived by parents. *Scandinavian journal of caring sciences*, 27(2), 345-353.
- Charpak, N., Gabriel Ruiz, J., Zupan, J., Cattaneo, A., Figueroa, Z., Tessier, R. & Worku, B. (2005). Kangaroo mother care: 25 years after. *Acta Paediatrica*, 94(5), 514-522.
- Conde-Agudelo, A., Belizán, J. M., & Diaz-Rossello, J. (2011). Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. *Cochrane Database Syst Rev*, 3.
- Darmstadt, G. L., Bhutta, Z. A., Cousens, S., Adam, T., Walker, N., & de Bernis, L. (2005). Evidence-based, cost-effective interventions: how many newborn babies can we save? *The Lancet*, 365(9463), 977-988.
- Feldman, R., Eidelman, A. I., Sirota, L., & Weller, A. (2002). Comparison of skin-to-skin (kangaroo) and traditional care: parenting outcomes and preterm infant development. *Pediatrics*, 110(1), 16-26.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field methods*, 18(1), 59-82.
- Hoque, D. M., Rahman, M., Billah, S. M., Savic, M., Karim, A. R., Chowdhury, E. K. & El Arifeen, S. (2012). An assessment of the quality of care for children in eighteen randomly selected district and sub-district hospitals in Bangladesh. *BMC pediatrics*, 12(1), 197.
- Kerber, K., Williams, A., Masha, R., & Mado, S. (2011). Review of Kangaroo Mother Care implementation in PRRINN-MNCH states. Kano, Nigeria: PRRINN-MNCH and Save the Children.
- Lawn, J. E., Cousens, S., & Zupan, J. (2005). 4 million neonatal deaths: when? Where? Why? *The Lancet*, 365(9462), 891-900.
- Lawn, J. E., Mwansa-Kambafwile, J., Horta, B. L., Barros, F. C., & Cousens, S. (2010). 'Kangaroo mother care' to prevent neonatal deaths due to preterm birth complications. *International journal of epidemiology*, 39(suppl 1), i144-i154.
- Lawn, J. E., Wilczynska-Ketende, K., & Cousens, S. N. (2006). Estimating the causes of 4 million neonatal deaths in the year 2000. *International journal of epidemiology*, 35(3), 706-718.
- Liu, L., Johnson, H. L., Cousens, S., Perin, J., Scott, S., Lawn, J. E., & Black, R. E. (2012). Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. *The Lancet*, 379 (9832), 2151-2161.
- Morse, J. M. (1994). Designing funded qualitative research.
- Mwaniki, M. K., Atieno, M., Lawn, J. E., & Newton, C. R. (2012). Long-term neurodevelopmental outcomes after intrauterine and neonatal insults: a systematic review. *The Lancet*, 379(9814), 445-452.
- NIPORT (National Institute of Population Research and Training), Mitra and Associates, & ICF International. (2013). Bangladesh Demographic and Health Survey 2011. Dhaka, Bangladesh and Calverton, Maryland, USA: NIPORT, Mitra and Associates, and ICF International. <http://www.measuredhs.com/pubs/pdf/FR265/FR265.pdf>.
- Pattinson, R. C., Arsalo, I., Bergh, A. M., Malan, A. F., Patrick, M., & Phillips, N. (2005). Implementation of kangaroo mother care: a randomized trial of two outreach strategies. *Acta Paediatr*, 94(7), 924-927.

- Ritchie, J., Lewis, J., 2003. *Qualitative Research Practice: a Guide for Social Science Students and Researchers*. Sage Publications, London.
- Tessier, R., Cristo, M., Velez, S., Girón, M., de Calume, Z. F., Ruiz-Palález, J. G. & Charpak, N. (1998). Kangaroo mother care and the bonding hypothesis. *Pediatrics*, 102(2), e17-e17. 7
- UNICEF. (2013). *Committing to Child Survival: A Promise Renewed. Progress Report 2013*. New York: UNICEF.
- World Health Organization. (2003). *Kangaroo mother care: a practical guide*.