AN ASSESSMENT OF KANGAROO MOTHER CARE PILOT INTERVENTIONS IN PAKISTAN

Final Draft of Report

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- Health Care Providers
- Lady Health Workers
- Project Implementation Team
- Mothers and family members of the newborn received KMC at the pilot sites

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LIST OF ABBREVIATIONS

BEmONC	Basic Emergency Obstetric and Newborn Care
CEmONC	Comprehensive Emergency Obstetric and Newborn Care
CMW	Community Midwives
DHO	District Health Officer
FGDs	Focus Group Discussions
HF	Health Facility
HFA	Health Facility Assessment
HCP	Health Care Provider
IDIs	In-depth Interviews
LBW	Low Birth Weight
KMC	Kangaroo Mother Care
LHS	Lady Health Supervisor
LHV	Lady Health Visitors
LHW	Lady Health Workers
MNCH	Maternal Newborn and Child Health
RS	Right Start
SASMI	Syed Abdullah Shah Medical Institute

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BACKGROUND:

Pre-term birth is a birth that occurs before 37 weeks of gestation. Globally, it is a leading cause of perinatal and neonatal mortality and morbidity[1]; and is a single most important determinant of adverse infant outcomes- survival and quality of life[2]. The pre-term and LBW babies (birth weight less than 2500 gms) are vulnerable to complications due to impaired respiration, difficulty in feeding, poor body temperature regulation and high risk of infection.

In Pakistan, preterm birth rate and babies born with LBW are high. The country has one of the highest neonatal mortality rates in the world i.e. 42 per 1000 live birth, with approximately 251,000 annual newborn deaths[3]. Approximately, 860,000 babies are born too soon each year and 91,048 children under five die due to direct preterm complications[4] [5].

KMC is care of preterm infants carried skin-to-skin with the mother or any other care giver. The KMC care involves:

KMC is considered as equivalent to conventional care (incubators), in terms of safety and thermal protection.

- early, continuous and prolonged skin-to-skin contact between a mother and her newborn
- frequent and exclusive breastfeeding
- temperature monitoring
- Early discharge and follow up from hospital.

It is a powerful, easy-to-use method to promote the health and well-being of infants born preterm as well as full-term[6]. The clinical efficacy and health benefits of KMC have been demonstrated in multiple settings. Mortality analysis from a Cochrane review [7](11 RCTs) and a meta-analysis (16 studies) found a 33 % and 23 % reduction in mortality at latest follow-up when comparing KMC to conventional neonatal care[8]. A recent Cochrane review reported that KMC was statistically significant in reducing the risk of mortality at discharge or at 40 to 41 weeks' postmenstrual age by 40% compared with conventional care (RR 0.60, 95% CI

1 http://www.who.int/mediacentre/factsheets/fs178/en/
2 WHO Recommendations on Interventions to Improve Preterm Birth Outcomes. Geneva: World Health Organization; 2015. 1, Background. Available from: https://www.ncbi.nlm.nih.gov/books/NBK321162/
3 https://data.unicef.org/country/pak/
4 World Health Organization's Global Health Observatory 2018
5 https://www.who.int/maternal_child_adolescent/documents/9241590351/en/
6 Kangaroo mother care, a practical guide: Department of Reproductive Health and Research World Health Organization Geneva. 2003
7 Moore, E. R., et al., (2012). Early skin-to-skin contact for mothers and their healthy newborn infants. The Cochrane database of systematic reviews, 5(5), CD003519.
8 Boundy, E. O., et al., (2016). Kangaroo Mother Care and Neonatal Outcomes: A Meta-analysis. Pediatrics, 137(1).

[0.39 to 0.92], p=0.021; I^2=0%; 8 studies/1736 infants)[9]. The study reported that compared with conventional neonatal care, KMC was found to reduce severe infection/sepsis, nosocomial infection/sepsis, hypothermia, severe illness, and lower respiratory tract disease. Moreover, KMC increased weight, length, and head circumference gain, breastfeeding at discharge or at 40 to 41 weeks' postmenstrual age and at one to three months' follow-up, mother satisfaction with method of infant care, some measures of maternal-infant attachment, and home environment.Based on strong evidence, KMC is recommended for the routine care of newborns weighing 2000 gram or less at birth, to be initiated in health-care facilities as soon as the newborns are clinically stable. KMC is recommended as close to as on continuous[10] basis, i.e 20 or more hours skin to skin contact of mother and newborn weighing 2000 grams or less at birth. Intermittent KMC , is recommended for newborns weighing 2000 grams or less at birth, if continuous KMC is not possible. The KMC is provided alternative to radiant warmer and incubator.

In LBW t newborns (< 2000 g) who are clinically stable, KMC reduces mortality, and if widely applied, could reduce deaths in preterm newborn. KMC is an effective way to meet baby's needs for warmth, breastfeeding, protection from infection, stimulation, safety and love.

Evidence of the effectiveness and safety of KMC is available only for preterm infants without medical problems, the so-called stabilized newborn. Research and experience show that:

- KMC is at least equivalent to conventional care (incubators), in terms of safety and thermal protection, if measured by mortality.
- KMC, by facilitating breastfeeding, offers noticeable advantages in cases of severe morbidity.
- KMC contributes to the humanization of neonatal care and to better bonding between mother and baby in both low and high-income countries.[11]
- KMC is, in this respect, a modern method of care in any setting, even where expensive technology and adequate care are available.

[9] Conde-Agudelo A, Díaz-Rossello JL. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. Cochrane Database of Systematic Reviews 2016, Issue 8. Art. No.: CD002771. DOI: 10.1002/14651858.CD002771.pub4

[10] World Health Organization (2015) WHO recommendation on intermittent Kangaroo mother care for preterm neonates, if continuous Kangaroo mother care is not possible. The WHO Reproductive Health Library; Geneva: World Health Organization.

[11] Anupam Sachdeva; A K Dutta; et al. (2012) Advances in Pediatrics. Brothers Medical Publishers.

- KMC has never been assessed in the home setting.

The key features of KMC services are:

- early, continuous and prolonged skin-to-skin contact between the mother/care giver and the baby;
- exclusive breastfeeding and should receive regular outpatient follow up
- it is initiated in hospital and can be continued at home;
- mothers and infants at home require adequate support and follow-up

RIGHT START-KangarooSUPPORTED KMC PILOT INTERVENTION:

Since 2016, the Right Start (RS) project of Nutrition International (NI) has been supporting health and nutrition related activities for pregnant women and children in seven districts of Sindh, Punjab and Khyber Pakhtunkhwa provinces of Pakistan. The aim of RS project was to improve Maternal, Newborn and Child Health (MNCH), Infant Young Child Nutrition (IYCN) and adolescent nutrition practices in Pakistan. The key beneficiaries included women of reproductive age, pregnant and lactating mothers, newborns, infants and young children, adolescents' girls, and general community.

Under RS, KMC was piloted in three intervention districts of Punjab, Sindh and Khyber Pakhtunkhwa provinces to improve preterm and low birth weight (LBW) newborns outcomes. The KMC pilot was implemented in a 24/7 public health care facility (one in each district) with maternal and pediatric care units in collaboration with Department of Health (DOH).

The primary objective of the pilot intervention was to prepare and equip the selected three health facilities to provide high impact, evidence-based intervention- KMC for preterm and LBW newborn.

The key activities of RS-KMC pilot support were:

KMC Pilot Intervention

- Technical support in establishing the KMC ward at selected HF
- Competency- based training of HCPs-both at the health facility and community level
- Necessary equipment and supplies for the provision of KMC
- KMC kits
- Record keeping

1. Four days competency- based training of selected health care providers (HCPs) from the health facility selected for KMC pilot from three districts
2. A full day orientation of community health workers-Lady Health Workers in LHW covered areas and through Community Health Workers in uncovered areas of LHW in district Lodharan only. The orientation included brainstorming session followed by technical presentation and practical demonstration on KMC, follow up and referrals mechanism from community. Later the LHWs visited the KMC ward at the health and interacted with mother and HCPs.
3. Establishment of a KMC ward in a 24/7 public health facility through advocacy with the provincial and district health authorities
4. Provision of equipment and supplies for establishment of KMC ward, this includes
    a. KMC kit for mothers with essential items (a list of KMC kit items is provided in annexure x).
5. The admitted 'small babies' with LBW received essential newborn care including KMC. Mothers and care givers were counselled and guided on how to provide KMC (technique) to their babies during hospital stay , after discharge from the hospital and at home care
6. Coordination with DOH /District Health Authority (DHA) in Punjab for the provision of an enabling environment for the hospital and health facility's management to provide quality KMC care to small babies and to establish continuum-of-care to sustain the benefits even after the mothers and newborns are discharged from the hospital.

The KMC pilot was implemented in close partnership and collaboration with LHW and MNCH program, DOH in KP, Sindh and Integrated RMNCH/ DHA in Punjab.

The RS, KMC pilot intervention was implemented during 2018-2019.

THE ASSESSMENT STUDY:

The assessment study of KMC pilot was aimed to assess and document implementation of KMC pilot , supported by the MNCH program of NI in three provinces of Pakistan. The assessment study was aimed to document:

1. KMC practices in the health facility (HF) and follow-up at the household level.
2. key achievements and challenges of the KMC pilot
3. the response of the health facilities and health system (community, health facility, district and provincial level)

Finally, the assessment study was expected to make realistic recommendations for sustainability and scale-up of the KMC in three selected provinces of Pakistan.

OBJECTIVES OF THE ASSESSMENT STUDY:

The four objectives of the assessment study were:

Objective 1: To document project implementation strategy including project implementation approach, its achievements, barriers, boosters and learning experience across the continuum of care (community to facility and facility to community)

Objective 2: Synthesize relevant available data, including analysis of the data extracted from project documents - to be presented in the form of tables, charts, graphs as relevant

Objective 3: To assess current enabling environment and impeding factors for KMC for sustainability in three KMC intervention health facilities and scale up at district and provincial level.

Objective 4: To develop a role matrix through a consultative process at each district/provincial level where NI and DOH and their partners can work together to strengthen and sustain this component for ISG.

STUDY METHODS

A thorough literature review was conducted to achieve objective No. 1 and 2. The recently published KMC research papers, systematic review, meta-analysis and Cochrane review on the effectiveness and implementation challenges was conducted to establish the contextual background of the study. Further a thorough desk review of the available KMC pilot project resources including project reports: KMC implementation strategy, approach, activities and training materials, achievements and reported challenges was done. Additionally, KMC service delivery data of the intervention sites (HF) was reviewed and analyzed to triangulate the findings[12].

Study Design:

To achieve objective 3 and 4, both quantitative and qualitative research methods were used.

Quantitative research methods and tools:

A health facility assessment (HFA) checklist was adopted from Healthy Newborn Network (HNN) and the KMC tool, from Maternal and Child Surviving (MCSP) Kangaroo Mother Care guide and used to assess the readiness of the facility -availability and functionality of physical infrastructure, human resource, supplies and equipment to continue and sustain KMC services beyond the KMC pilot project life. The HFA checklist contained indicators and criteria for the assessment on a) Physical setting of KMC b) KMC services are established in the facility c) Provider prepare mother and baby for KMC d) The provider ensures that the baby is fed correctly e) Baby receiving KMC is monitored correctly by the provider f) Infection prevention and control g) The mother and her family are supported h) The baby is discharged from the facility according to guidelines: after discharge, i) The baby receives regular follow ups j) KMC Re-admission criteria k) Discontinuation of babies from KMC l) KMC services are accepted to the community m) monitoring and evaluation

Health Care Providers' (HCPs) knowledge assessment checklist was adopted from training manual "care of small babies" of American Academy of Pediatrics (AAP). The checklist contained 30 questions for facility based service providers. The selected items from the

[12] Nigel G. Fielding. Triangulation and Mixed Methods Designs: Data Integration with New Research Technologies. 6(2): 124-136. https://doi.org/10.1177/1558689812437101

checklist were used to assess knowledge of LHWs of the intervention sites, mainly on counselling parents and care givers of the infants on KMC.

A brief knowledge tool was used for beneficiaries (mothers/care takers of LBW and small babies) who received KMC at the KMC pilot intervention sites. The purpose was to capture their learning experience across the continuum of care (community to facility and facility to community) on KMC.

Qualitative research methods:

In-depth Interviews (IDIs) and Focus group Discussion (FGDs)

Study Participants:

District Health Managers: District Health Officer, District Coordinator of LHWs program, MNCH program districts focal person.

Health care providers at intervention site/health facilities: Doctors, Pediatrician, Gynecologist, Lady Health Visitors (LHVs) and Nurses who were trained and are working at KMC intervention sites.

Community based health worker: LHWs and Lady Health Supervisors (LHS) who were attached to and are working in the catchment area of KMC intervention sites and received orientation session on KMC

Beneficiaries: Mothers and family members/care givers' of pre-term and LBW babies received care in the past three months at the KMC intervention sites.

Project implementation team: KMC project implementation team members, both at provincial and district level.

Inclusion criteria:

For quantitative survey, all those HCP (Doctors, nurses, midwives, LHV, LHWs and CMWs) who were selected, received orientation training and providing KMC services at the KMC pilot sites; and all mothers' who have had a live pre-term or LBW baby and the child is still alive and received KMC intervention at the KMC pilot sites.

For qualitative information, those district health managers involved in the implementation of KMC pilot intervention in the districts, HCPs, LHWs and mothers' who received KMC interventions and KMC project implementation staff were selected and interviewed.

Exclusion criteria:

Those women who eligible otherwise but were seriously ill (too ill to attend FGD session) at the time of the KMC assessment study. Also eligible study participants who refuse to participate in the study.

Study Site:

The assessment study was carried out in the following three KMC pilot intervention sites in the selected districts of Pakistan

1. District Health Quarter Hospital, District Lodhran, Punjab
2. Syed Abdullah Shah Medical Institute Sehwan, District Jamshoro, Sindh
3. Kalu Khan Hospital, District Swabi, KP

Sampling frame:

The KMC intervention pilot project data and hospital records were used to identify potential study participants including mothers of pre-term and LBW babies and their family members. The research team with the support of project implementation team approached hospital administration to access the patient record and to identify HCPs trained and involved in the management of pre-term and LBW babies and beneficiaries.

Similarly, RS project documents such as training attendance and supervisory records were used to select HCPs for the interviews at the KMC interventions pilot sites.

Sampling technique:

For quantitative survey, all trained HCPs were approached to be interviewed. Due to polio campaign and other logistic challenges during data collection available LHWs who received KMC orientation were interviewed for the survey.

Similarly, purposive sampling technique was used for the qualitative data collection, based on convenience and availability of the eligible study participants

Study Duration:

February 15, 2020 to March 15, 2020

Study Procedures:

Project Team and training:

A team of eight members was hired for KMC pilot intervention assessment study: Research Associate and for each province/district a team of two members to collect the data.

The data collectors were public health professionals and had experience in both data quantitative and qualitative data collection and data entry of quantitative data.

A one day training session was organized to train the research team on various aspects of the study including objectives, methods, study participants' selection and approach, qualitative interview techniques and skills to ensure rigour and quality and data handling and checking.

Translation of study tools and ethical approval:

The details of data collection tools are provided in the earlier section. The draft study tools were reviewed and finalized in consultation with technical team of NI. The English version of the tools of beneficiaries and LHWs and consent forms were translated into Urdu (local language) for a better understanding of the study participants. An initial pre-test was conducted prior to finalization of data collection tools. The rest of the study tools were used in English language. The list of quantitative and qualitative study tools, purpose are provided in the table 1 below:

Table 1: Study Instruments/tools

S. No	*Quantitative study tool*	*Purpose*	*Participants*
1	Health Facility Assessment Checklist [1]	To assess the readiness (physical infrastructure, human resource, supplies and equipment) of the facility	
2	Knowledge Attitude and Practices (KAP) of facility based Health Care providers (HCPs) [2]	To assess KMC knowledge and skills (counselling and technical) of facility- based HCP	Facility based HCPs those who were trained on KMC
3	Knowledge Questionnaire for LHWs	To assess KMC knowledge of LHWs in counseling mothers of pre-term babies	Selected LHWs those were received orientation on KMC
4	Knowledge and Practices of mother and care givers	To assess knowledge of mother and care takers facility to community.	Mothers and care givers (of LBW and preterm babies who received KMC services/intervention during the implementation of KMC pilot intervention
5	Focus Group Discussion (FGDs) guide for mothers and care givers	to capture their learning experience across the continuum of care (community to facility and facility to community).	Mothers and care givers (of LBW and preterm babies who received KMC services/intervention during the implementation of KMC pilot intervention
	Focus Group Discussion (FGDs) guide for LHWs	To assess KMC knowledge of LHWs in counseling	Trained LHWs

		mothers of pre-term babies	
6	In-depth Interviews (IDIs) with District Health Managers	To assess their ownership and commitment towards KMC implementation and continuity	Provincial and district health managers and KMC trained health care providers
7	In-depth Interviews (IDIs) guide for health care providers	To assess HCP experience towards KMC	Trained HCPs
8.	In-depth Interview (IDIs) with Project Implementation team	To assess challenges and experience of project team in KMC implementation	Project Implementation Team

Ethical approval:

The technical proposal and study tools including consent forms were submitted to Institutional Review Board of Shaheed Zulfiqar Ali Bhutto Institute of Science and Technology (SZABIST), Karachi for ethical approval. Data collection was initiated on a formal approval from the Departmental Ethical Review Committee. The IRB approval and consent forms are annexed as A.

Data Collection:

Before commencement of data collection, a formal administrative permission was sought from district health authorities of three districts. The letters are annexed as B

The data collection in all three districts was done simultaneously. All interviews with DHOs and district coordinators LHW and MNCH Program were conducted by consultant while the rest by the data collectors.

The data collection got delayed about a week due to national polio campaign in the districts on which all LHWs were engaged. During FGDs mothers were asked about family member who assisted them most in KMC. The data collection from HCP, LHWs and rest of the study participants went as per planned. Due to non-availability of proper addresses of mothers/newborn in the hospital records/KMC registers, it was challenging to trace mothers and care givers at their homes during the limited time period of data collection. Hence a few quantitative and qualitative interviews and FGDs with mothers were conducted at three sites. Due to same reason, FGDs with mothers and care takers could not be conducted at Jamshoro and Swabi districts. The data collection team decided to conduct IDIs with three mothers who

gave consent and were traced by the team. s. However the qualitative data collected through IDIs and FGDswere from all three sites yielded saturation[13] (no further themes or information arises from the data/discussion), hence no further data was collected

Data quality, management and analyses

The survey forms and data was collected on hard copies and checked on completeness on daily basis. The IDIs and FGDs were audio-recorded after taking the permission from the study participants. From the audio-recordings and field notes, the data collectors transcribed each of the completed IDIs and FGDs immediately after an interview. The team translated the whole transcript from local language into English. Thus, all the transcriptions was translated into English for analyses. Each translated version of the transcript was checked for accuracy, completeness and quality by the consultant. Once the relevant activities (transcription and translation, checking accuracy and quality of transcripts) was done, all these audio recordings was be kept secured under lock and key in a safe closet/cabinet with all other study related confidential documents.

The English translated transcripts was used for thematic analysis of information collected through the FGDs and IDIs. Data collected from this study was analyzed by using Nvivo software. The monitoring and hospital data was analyzed using SPSS software and Microsoft excel and to prepare tables and graphs for PowerPoint presentation.

The data of the study was analyzed using principles of SWOT analyses. SWOT analysis using SWOT diagrams or matrices is a key part of any business planning or analysis[14].

[13] Creswell, John (2008). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage.
[14] https://www.smartdraw.com/swot-analysis/

FINDINGS:

The following table 2 present district wide number of interviews conducted at the three KMC pilot interventions sites

Table 2: Number of Assessment checklist filled and interviews conducted

S. No	Quantitative Data	Jamshoro	Lodhran	Swabi
1.	Health Facility Assessment (HFA) checklist	1	1	1
2.	KAP of facility based HCPs	6	3	4
3.	Knowledge assessment of LHWs	13	25	12
4.	Knowledge and Practices of mother and care givers	0	7	13
5.	FGDs with mothers and care givers	0 (3 IDIs with mothers)	1 with mother and 1 with fathers	0
6.	FGDs with LHWs	1	2	1
7.	IDIs with District health managers	03 (DHO, DC/LHW and MNCH)	02 (DHO, Deputy DHO)	01 (DHO)
8.	IDIs with HCPs	3	3	4
9.	IDIs with Project Implementation team of NI	1	1	2

Health Facility Assessment

This section salient findings of health facility assessment of each KMC pilot site: 1) Syed Abdullah Shah Medical Institute (SASMI), Sehwan, District Jamshoro, 2) District Headquarter Hospital, District Lodhran and 3) Kalu Khan Hospital, District Swabi. The findings are grouped under headings of strengths and weaknesses/gaps for each KMC pilot site.

Syed Abdullah Shah Institute of Medical Sciences (SASIMS), Sehwan, District Jamshoro

Strengths:

- The SASIMS, Sehwan is a 24/7 hospital offers delivery and newborn care services. The facility conducts more than 500 deliveries per month, an appropriate facility for KMC ward. The implementation of KMC pilot intervention started since February 2018 and a

KMC practice at a Health Facility require Health personnel, a supportive environment &Missing info here

separate space was designated in the gyne unit/ward of the hospital, for KMC ward in the month of April 2018.

- Overall, the SASIMS has strong support from provincial health department due to its political background. In addition, SASIMS is receiving support due to its deliverance under a competent and dedicated leadership (Director SASIMS).
- The HFA checklist data showed that all essential equipment and supplies required for delivery and newborn care services were available in the hospital.
- Almost all essential medicines and drugs required for delivery and newborn care were available in the hospital.
- The sites has a erected board at the entrance with "Kangaroo Mother Care (KMC) ward"
- Job aids and KMC posters were present and need to be displayed in HFs outside the KMC ward as well
- The KMC ward was equipped and had all necessary supplies.
- The KMC kit has been provided to mothers (donated by RS project). The KMC kit include 16 items including mother's dress and newborn binder.
- Skilled health care providers (HCPs) were available for delivery and newborn care services, total 48 HCPs in the hospital (18 doctor and 30 nurses), 20 are providing delivery and postnatal care services.
- 06 HCPs of SASIMS received training on KMC techniques, under RS project.

Weaknesses/ gaps in KMC ward

- There was shortage of trained HCPs to manage the KMC ward round the clock. The delivery and OPD case load was very high in the hospital and with limited staff trained on KMC it is challenging for the staff to look-after KMC ward, effectively.
- It has been observed that
    - KMC protocols and standards are not been followed as per global and national guidelines, for example continuous KMC (a mother can hold her baby in KMC position for more than 20 hours in day) was not practiced at the KMC ward. The mothers only providing intermittent KMC for some reasons.
    - The KMC ward was admitting babies who were delivered by C-section only. The babies who were born by NVD were not been admitted in KMC ward. Further the

ward admitting LBW babies with 2-2.5 Kg birth weight only. The newborn below 2 kg birth weight and preterm babies are not been admitted in the KMC ward.

- There was no clear plans at the facility for the capacity building of HCPS on KMC. Only 06 HCPs received training on KMC in February 2018 by RS project and since than no proper training or refresher training arranged for them.
- There is lack of communication between gyne and Pediatrics ward. The KMC ward is a part of gyne ward/unit of the hospital. The team of gyne ward found mainly responsible for KMC ward whereas the pediatric department have no link with the KMC ward and they had limited knowledge about the ongoing KMC pilot intervention in the hospital.
- The records were not clearly showing KMC guidelines and protocols for admission, treatment protocols, counselling, breast feeding, thermal care, discharge criteria, follow up care
- The KMC posters and job aids were not displayed in the hospital.
- The most important item, newborn binder, an essential supply to hold and secure baby in KMC position was not appropriate to be used by mothers.
- There was lack of coordination between hospital staff and community health workers (LHWs). There was lack of clarity about the role of LHWs in KMC intervention. Hence the referral mechanism was lacking from community to hospital level. This has been verified from the hospital data source that LHWs has not referred a single case of pre-term or LBW baby from community, since the implementation of the KMC Pilot intervention.
- There was no supportive supervision and monitoring mechanism/system in place to check and maintain the quality of KMC care by the hospital.
- KMC ward register/record showed that out of total 249, not a single follow up visit was made by admitted/ discharged babies. This could be due to several reasons such as hospital have no proper follow up mechanism for discharged babies, mothers were not counselled effectively or family members were not sensitized to make follow up visit.
- Average duration of stay of a mother in the hospital, normal vaginal delivery (NVD), assisted vaginal delivery and after Caesarean section (C-section) was 1, 2, and 3 days, respectively.

District Headquarter (DHQ) Hospital, District Lodhran

Strengths:

- This is a secondary health care hospital managed by Department of Health (DOH) Punjab. It is a 24/7 hospital offers delivery and newborn care services and conducts on average 350 deliveries /month. The hospital provides Basic (BEmONC) and Comprehensive Emergency Obstetrics and Newborn (CEmONC) services.
- The implementation of KMC pilot intervention started since August 2018. The KMC ward is established in gyne department/unit of the hospital in December 2019.

KMC ward, Lodhran

The DHQ has 18 beds in nursery and 03 beds in KMC ward for newborn. Initially, the KMC ward established in Pediatric ward in August 2018. However, revamped in June 2019 due to several reason and challenges in operationalization of KMC ward. The KMC re-located in a room close to labour room in gyne ward so managed by the limited available HCPs.

- The HFA checklist data showed that most of essential medicines and drugs required for delivery and newborn care were available in the hospital. However a few essential equipment were missing.
- All available HCPs (n=05) were trained and providing KMC services to pre-term and LBW babies in KMC ward. HCPs found dedicated and committed to continue KMC services. They are working with full dedication.
- The sites has a erected board at the entrance with “Kangaroo Mother Care (KMC) ward”
- Job aids and KMC posters were present and need to be displayed in HFs outside the KMC ward as well
- The KMC trainers on KMC provided training to 335 staff of health department, including MOs, paramedics and outreach staff) were oriented on the KMC referral and follow-up mechanism.
- medical officers and paramedics on KMC during project life.
- The KMC ward receiving referrals from two BHUs Haveli Naseer Khan and Khanwah Ghunwan. The records showed that two pre-term babies were referred to KMC ward.

- Recently, DHQ Lodhran has made arrangements for food supply to their patients under EHSAS program and mothers inKMC ward will also get benefit from this initiative of the facility.

Weaknesses/ gaps

Some additional points specific to DHQ Lodhran:

- There was shortage of essential equipment such as incubators, phototherapy machine, ARI Timer, pulse oximeter, and towel/cloth in the hospital.
- Kitchen and gas connection were not available in the hospital.
- Overall, there was a shortage of trained and skilled HCPs in the hospital for delivery and newborn care services. There were only 02 doctor, 02 nurse, and 01 paramedical staff available in the gyne ward to run a 24/7 facility and KMC ward.
- KMC protocols and standards are not been followed as per global and national guidelines.
- KMC guidelines, job aids such as admission and discharge criteria, dangers signs, feeding charts, etc were not available in the KMC ward.
- KMC supervision checklist, referral forms, daily score sheet, and records of follow up visits were not available.
- In KMC ward, there was no follow up mechanism in place regarding discharge newborn. The staff shared that there is mobile network issue in the hospital.
- KMC has not been discussed monthly progress review meetings of the hospital.

Kalu Khan Hospital, District Swabi

Strengths:

- This was a category-D[15] hospital managed by Department of Health, KPK. The facility has recently converted category C to provide delivery and newborn care services on 24/7.
- Delivery rate of the facility is less than 500 deliveries /month and the hospital provides Basic Emergency Obstetrics and Newborn Care (BEmONC) and Comprehensive Emergency Obstetrics and Newborn Care (CEmONC) services.

[15] Category D hospital is a hospital which is 10 bed and run on 6/12 hourly basis.

- Most of the essential supplies and equipment required for delivery and newborn care were available.
- Most essential medicines and drugs required for delivery and newborn care are available in the hospital.
- There are 05 HCPs for delivery and newborn care are available in the hospital (02 doctor, 03 nurse). Only one staff is working per shift for delivery and newborn care. The same staff look after KMC ward in the facility. HCPs found dedicated and committed to continue KMC services. They are working with full dedication.
- The ward was well-maintained.
- KMC ward has been established in a spacious room in gyne ward of the facility.
- KMC ward has two bed, equipped with essential equipment and supplies such as room thermo-meter, incubator, baby cart, auto clave, oxygen machine and bath room etc.
- The sites has a erected board at the entrance with "Kangaroo Mother Care (KMC) ward"
- Job aids and KMC posters were present and need to be displayed in HFs outside the KMC ward as well.
- The KMC ward is providing KMC intervention to preterm and LBW babies.

"KMC initiative should be replicated in all the big hospitals of Swabi. In big hospitals KMC can work more effectively due to high case load and there are sufficient human resource available to provide services. On the other hand, in small health facilities, the issue of shortage of HR and essential medicine, makes it difficult to provide continuous services. Despite of these challenges, we have successfully implemented KMC interventions and will continue despite of our resource challenges". DHO Swabi

Weaknesses/ gaps

Some additional points specific to Kalu Khan Hospital, Swabi:

- Some essential equipment such as ARI Timer and Pulse Oximeter were not available in the hospital.
- Intensive Care Unit, Kitchen area, and gas connection is not available in the hospital.
- Overall, shortage medicines in the facility.
- Shortage of HR such as doctors and paramedical staff to enhance service utilization in this facility especially with regards to KMC.

Newborn received KMC services at KMC ward:

The following table 3 present total number of deliveries and live births conducted during last year at the KMC pilot intervention hospitals in three districts of Pakistan. The table shows that not all pre-term and LBW have received KMC services. Out of total newborn eligible (pre-term+ LBW) to receive KMC, only 42% in SASIMS Sehwan, 23% in DHQ Lodhran and 43% in Kalu Khan Hospital, Swabi received KMC services, respectively.

Table 3: KMC provided to Pre-term and Low Birth Weight babies (2018-2019)

Name of the KMC Pilot health facilities	District	Number of deliveries	Number of Live births	Low Birth Weight Babies (a)	Pre-term/ premature (b)	Number of newborns eligible for KMC (a+b)	Number (%) of newborn received KMC
SASMI, Sehwan	Jamshoro	9541	9525	272	314	586	249 (42%)
DHQ	Lodhran	5420	5401	158	201	359	86 (23%)
Kalu Khan Hospital	Swabi	840	820	44	41	85	37 (43%)

Healthcare Providers (HCPs)

In general, all three KMC pilot sites reported HCPs shortage even on sanctioned posts. Further, the number of HCPs available versus trained on KMC was also found low. Therefore availability of HCPs in KMC ward on 24/7 basis was found challenging.

The information regarding HCPs trained on KMC at all three sites was not readily available at the pilot intervention sites. The project records reported that total 06 HCPs were trained in SASIMS, Sehwan; 07 in DHQ Lodhran and 0 06 in Kalu Khan Hospital, Swabi by RS project as trainers in a TOT conducted in Lahore during February 2018.

Knowledge of Facility Based-Healthcare Providers (HCPs) on KMC

Total 13 trained HCPs were interviewed to assess their knowledge on KMC. Table 4 shows percent knowledge score of Facility based HCPs about KMC.

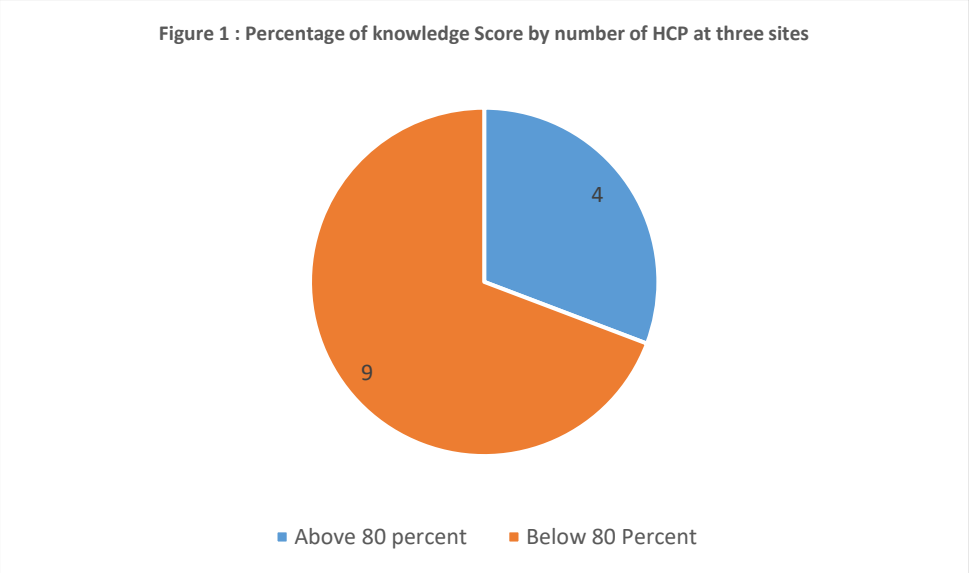
Table 4: Knowledge score (%) of Facility based HCPs at KMC pilot intervention sites

Place of Posting	Designation	Total attempts (questions)	Correct Answers	Score (%)
Syed Abdullah Shah Medical Institute (SASIMS), Sehwan, Jamshoro	Staff Nurse	30	16	53
	Pediatrician	30	24	80
	Medical Officer	30	21	70
	Staff Nurse	30	19	63
	Gynecologist	30	19	63
	Clinical Instructor	30	19	65

DHQ Hospital Lodhran	Pediatrician	30	29	96
	Nurse	30	29	96
	Gynecologist	30	29	96
Kalu Khan Hospital Swabi	Pediatrician	30	20	66
	LHV	30	07	23
	Nurse	30	07	23
	Gynecologist	30	22	73

The maximum and minimum knowledge score of HCPs was 29 (96%) and 07 (23%), respectively. There were only four HCPs out of thirteen who scored 80 percent and above while rest of the 09 HCPs scored below 80 percent scores on KMC knowledge checklist.

Surprisingly, the knowledge scores of all three HCPs of Lodhran was highest compared to scores of HCPs of other two sites and they scored same marks irrespective of their designation. At the other two sites, knowledge score of pediatrician and gynecologist were better compared to staff nurse and Lady Health Visitors (LHVs).



Overall knowledge of HCPs on KMC was found good in all three KMC pilot intervention sites. The HCPs of SASIMS, Sehwan explained KMC practice by mother and benefits of KMC correctly. They also seemed well trained and skilled in counseling mothers on KMC practices. Similarly, HCPs of Lodhran explained delayed cord clamp practices, immediate and exclusive breast feeding and thermal care for the care of newborn. HCPs of Lodhran explained that they usually shift pre-term and LBW babies to KMC ward. As the facility do not have incubators and radiant warmers, they counsel mother on KMC. According to them they counsel mother on advantages of KMC to the pre-mature and LBW babies such as it prevent babies from hypothermia and newborn under KMC recover within 2-5 days, if they feed well, their temperature is maintained. Likewise, the HCPs of Kalu Khan Hospital, Swabi had good knowledge on KMC. According to HCPs, on average, 4-5 babies per month born either pre-term or LBW. The HCPs explained correctly various aspects of KMC such as Kangaroo position, early, exclusive and optimum breast feeding. The HCPs felt that KMC is an easy way for mothers to take care of their babies and mothers can practice KMC easily both at the health facility and at home.

Motivation and ownership for KMC services:

Majority of the trained HCPs by RS project in 2018 are still working on the KMC pilot sites and their motivation and ownership towards KMC continuation and sustainability was found high at all three sites. The In-depth interview findings revealed that HCPs had positive attitude towards KMC services. Most of the HCPs explicitly mentioned activities under KMC pilot intervention at their HFs. The HCPs mentioned that pre-term and LBW recover quickly with KMC within 4-6 days. They mentioned that breastfeeding intervals and exclusive breast feeding practices play important role in building immunity among such newborn. Some of the HCPs were of the opinion that KMC is effective even for newborns with complications.

Knowledge of Lady Health Workers (LHWs) on KMC

Total 50 LHWs were assessed on knowledge regarding KMC. The figure X shows their knowledge score (%) overall and district wide. Interestingly, knowledge of LHWs of district

Lodhran found highest compared to LHWs of other two districts. Almost all LHWs of district Lodhran score 80 and above on KMC knowledge assessment checklist.

Figure 2: Percentage of knowledge Score by number of LHWs, Lodhran district

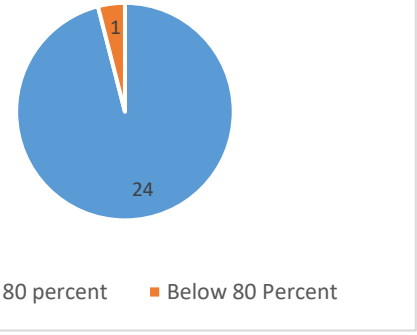


Figure 3: Percentage of knowledge Score by number of LHWs, Swabi district

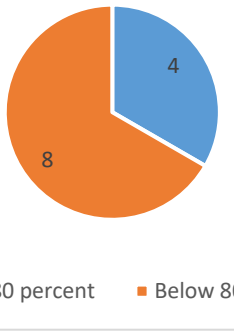
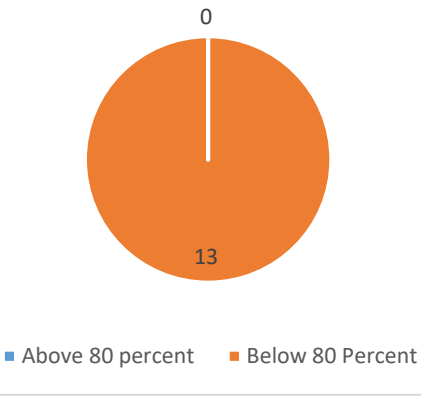
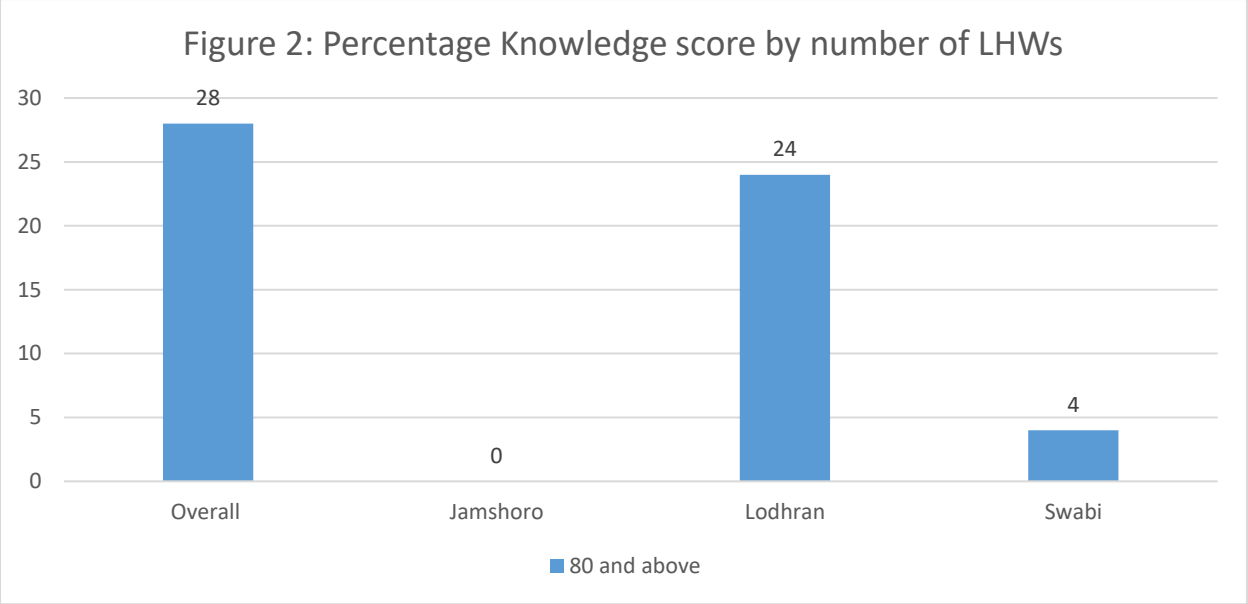


Figure 4: Percentage of knowledge Score by number of LHWs,Sehwan district





The findings of FGDs with LHWs at all three sites revealed that almost all LHWs had adequate knowledge on importance of KMC, practices of hand washing, KMC position, various features of KMC, wearing KMC dress and handling of the child. They attended a full day orientation on KMC in 2018 and refresher in 2019 and had a training manual on KMC. According to them during their routine house to house visit to a LBW baby, they provide counseling to the mothers and their families about the importance of KMC, correct positioning of baby and benefits of KMC. However they informed that since ever they receive KMC training no pre-term or LBW baby reported in their catchment area. Hence they did not refer any infant from community to health facility. The records also showed no referral from LHWs to KMC pilot site during the implementation period.

Almost all LHWs expressed that the follow up of KMC is important and should be done regularly, however they themselves did not followed any child discharged from the KMC ward /facility to community and their practices seemed low in this regard.

In-hospital KMC services and Practices

A clear KMC policy and guideline was not available at the KMC ward and pilot intervention site. The guidelines on admission criteria in KMC ward, for example, HCPs mentioned that they offer KMC services to all newborn delivered at the KMC pilot intervention sites however the hospital records did not reflect such practices (please refer table X in the report). In addition, the stay and care in the KMC ward, discharge criteria and follow-up at the KMC ward and HF was not explicitly mentioned.

> "The mother had undergone C-section so I had prepared the grandmother of the baby to provide KMC. The grandmother practiced KMC for 12 days and after that the mother continued it " LHW, Lodhran

The HCPs and Project implementation team also mentioned that they included all live births for KMC intervention and not just pre-term or LBW babies. However KMC registers only recorded babies admitted in the KMC ward, those who were either pre-term or LBW.

We give KMC to all newborn…..mothers and care givers are explained KMC…after cleaning we support mother to initiate breast feeding immediately after birth even before the cord cut. HCP, Swabi

The length of the stay in KMC ward also varied from few hours to 4-5 days. A HCP mentioned that they keep babies for 24 hours and discourage long stay. KMC ward register also showed that babies got discharged within 24 hours and even when they have not improved their weight.

Type of KMC

The KMC pilot intervention activities mentioned by HCPs both the facility based and LHWs seemed to be more focused on intermittent KMC and very few were recognizing the difference between continuous and intermittent KMC.

If mothers go to bathroom or they have to take meals, the KMC staff keep the babies in incubators, HCP, Kalu Khan Hospital, Swabi

Documentation

At all three KMC wards maintain information about infants receiving KMC services manually in a register. HCPs record KMC daily under KMC daily support charts. The critical information

such as time of initiation of KMC, type of KMC given, length of daily and overall duration of skin-to-skin contact, Breast feeding, Growth, thermal control and metabolism etc. was not properly maintained. At all three sites no specialized documentation was observed except reporting tools provided by hospital administration. The recorded information such as contact information of the mothers found incomplete[16].

Discharge Criteria:

KMC ward records showed that pre-term/LBW babies were discharged from few hours to three days may because of various reasons. The FGDs study participants though explained the discharge criteria but it seemed it was not clear how to handle different situations at the time of discharge and document it.

Our objective is to increase the weight of newborns to 3 Kg or above. When they recover, we send them home, a facility based HCP, Swabi

A gap in appropriate counseling to mother and families and inadequate community sensitization regarding LBW infants and KMC reflected when it was mentioned that mothers did not stay in hospital for long after delivery and insisted on going home and, may because the hospital did not provide food for the mothers. Most mothers cited money or financial cost and inconvenience to stay in the hospital as reason for not staying in hospital for KMC.

Follow **up**

The records of all three KMC pilot sites showed that no follow up was made by the mothers after got discharged from the KMC ward.

HCPs informed that most mothers do not come for follow up visits. They further mentioned that when they (mothers) come for their health problems, they usually come unaccompanied with their babies.

We do advise them to come for follow-up of their babies but some mothers listen to us but majority do not, HCP SASIMS, Sehwan

HCPs provide counseling on KMC and provide KMC kit to the mothers which helped them to practice KMC not just in KMC ward but also at their homes, after discharged. HCPs informed

[16] Interviews with beneficiaries could not be conducted as per plan due to several reasons such as contact information was incomplete in the hospital records/KMC ward registers.

that they counsel mothers on how to maintain body temperature, breastfeeding practice, and keep baby warm, danger signs and follow up visits.

We discharge mothers with advice to continue practicing KMC at homes. HCP, Kalu Khan Hospital, Swabi

LHWs mentioned that although the families practiced KMC at home but they still feel reluctant to visit hospitals.

As per norms, they don't take their newborns to the hospitals as they can catch evil eye….so they prefer to remain at homes, LHW, Lodhran

Some mothers mentioned physical distance, poor road and transportation reasons for not visiting health facility for follow up visits of their babies.

It is difficult for us to visit a health facility as after 2pm no doctor available at the OPD of a health facility, what is the use to go far away with all that difficulties and no benefit. FGD mother participant

Linkages and Referral Mechanism

There was lack of referral mechanism in place to make referrals from facility to facility and from/to facility to community, except for KMC ward, DHQ Lodhran where referrals from BHUs are entertained. Further, there was lack of coordination between gyne and pediatric wards within all three KMC pilot intervention site. Further linkages between facility based HCPs and LHWs were not fully functional.

Counseling of mothers is difficult sometimes. Sometime hospital staff is not much cooperative and the behaviour of the HCPs is not encouraging. When the LHWs refer cases to HCPs, within facility, it is difficult for mothers to reached to HCP even when we give them referral slips, LHW Jamshoro

It has been noted that in case of complications KMC ward staff refer the admitted babies to a referral hospital.

There were no proper referral slips available to refer the baby. In KMC ward Lodhran, it was observed that referral was made on a white paper with hand written details. In KMC ward, Swabi, it was also observed that the OPD slips was used to make a referral of mother and newborn. Although they mentioned that they provide ambulance service to the referred

case however they make no further communication with regards to referred case and follow up.

Referral of KMC should go direct from community to the KMC ward. There should not be any other channel. There should be separate slip for KMC Ward. These slips should be available with LHWs. A LHW Lodhran

KMC client should be taken on priority. Referred clients should also be given priority. They should be checked on priority basis. Otherwise, community gets dissatisfied. Parents do want to spend too much time. LHW, Jamshoro

Communication and IEC materials

The providers themselves mentioned to improve upon communication. They emphasized to raise awareness on KMC among general population and just not for mothers of pre-term and LBW babies.

The LHWs Lodhran had attended training but manual or pictorial IEC material related to KMC was not provided during session or for distribution to mothers. LHWs mentioned that during the training, the trainers were using terminologies which many of them did not understand.

During house to house visit LHWs also provide counseling to other family members including fathers. However they do not have specific IEC material for men and there are no male social mobilizers available in the community.

Monitoring of KMC ward:

The monitoring of KMC intervention is made jointly by RS project staff and district health team and they make monitoring visit twice in a month.

Coordination forums:

District level committees are notified in order to review the data of KMC beneficiaries and to address challenges and issues and propose solutions. However it was observed that these committee are underutilized and may be utilitzed to address challenges such as HR availability etc. .

Beneficiaries

Knowledge and practices of mother and caregivers at home:

The FGDs and IDIs findings of mothers of pre-term and LBW babies admitted in the KMC ward revealed mothers had limited knowledge about benefits of KMC.

According to mothers, they were worried about their LBW babies at the time of birth. For them, stay in KMC ward and overall experience was good and satisfactory.

We provided skin to skin contact to babies in KMC ward and breastfed them, we were happy as our babies were with us not like they keep them in nursery away from us and difficult to breast feed them, FGD with mothers Lodhran

Mothers recalled their counseling session with providers and their stay in KMC ward was good. They were satisfied in KMC ward as compared to nursery ward.

The doctor provided a dress and along with a bag (KMC kit) which have baby clothes, thermometer, baby glass and binders etc. The doctor and nurse counselled and guided on how to give skin to skin contact to the baby during stay in KMC ward and at home after discharge, which I continued at home. FGD participant, a mother, Lodhran

Most mothers referred that LHWs used to visit them home and provided counseling on importance of KMC. Out of ten participants of the FGD, four mothers continued KMC at homes, for 4-8 days. They liked it as it was easy to them. The mothers informed that after counselling, their awareness on the importance of KMC raised and they learned skin to skin contact and breast feeding.

A few respondents mentioned that family members such as husband and mother in-laws had supported them to continue KMC at home.

Husbands can provide KMC also, however, they feel shy. They also have other outside tasks to do. It is not easy for them to give time for KMC. FGD participant, a mother, Lodhran

Despite of counseling none of the mother made a follow up visit. According to them we do not visit health facility if child is healthy and have no health problem. Physical distance and travel cost are mentioned as barriers to follow up visits.

KMC Kits was liked by mothers however they mentioned the binder was not very comfortable and they "felt discomfort" with it.

On the contrary fathers had very limited knowledge about KMC. Almost all of them stated that they did not expect whether their babies would be LBW or born before expected date/term. Four out of ten fathers mentioned that their babies got admitted in the KMC ward as their babies were LBW and weak. The father received counseling from medical doctor and nurse. However only two fathers could correctly explained KMC and its benefits.

For a father, KMC means "*to tie up mother and baby with a binder and give mother's body temperature the newborn*". Most of the fathers mentioned that they continued KMC at home, 6-8 days after discharge. Only one father mentioned that he provided skin to skin care to his baby at home.

CHALLENGES:

Socio-cultural Barriers to KMC practice

Culture was mentioned as a barrier by LHWs of Swabi as a hindering factor for mothers to continue KMC at their homes. In most cases mothers do not get privacy required for KMC practice due to limited physical space (rooms) in their homes.

> *They (mother) feel shy to practice KMC in the presence of other family members. And if there is no family support and arrangement for room, it is difficult for them to practice KMC at home. LHW from Swabi*

Similarly, culture is a barrier for fathers too. Despite knowing that KMC can be practice be other family members, such as fathers, LHWs said "fathers cannot do it". Mostly because of culture and sometimes, due to their gender role. "they remain busy for work outside homes".

Culturally KMC is not practicable by fathers especially in KP. LHW from Swabi

Almost all fathers (FGDs participants) informed that culturally it is not appropriate for fathers to give thermal care to children and they "feel shy". These fathers mentioned that mother in laws can provide KMC at homes as they take care mother and baby at home. Majority of them were agreed that mothers should be given relaxation from household chore so they can provide KMC to their babies at home.

These fathers further said that people should be given guidance and support and they should be given orientation/sensitization.

They will accept KMC and KMC practices by fathers. One session per month will be good. It should be a long session. LHWs visit communities regularly so they can be utilized for it. Participant of a FGD with fathers

Culture is a barrier for women who lacks power to decide about admission in KMC ward even on HCPs advice. Mothers have to take permission and consent from family members such as husband and mother in law. Hence awareness raising of just mothers may not be beneficial for KMC.

Mothers who live in nuclear family system feel it difficult to provide KMC at home as they have to do other chores as well. They also need support.

HCPs also mentioned that mothers sometimes resist KMC because of culture and lack of knowledge about KMC benefits. However HCP agreed that if proper counseling provided to mothers and their family members then they agree to provide KMC to their babies.

Lack of Human Resources:

There is no designated staff for KMC ward. Overall, there are shortage of HR and medicines at the facilities. It is challenging to designate dedicated staff in KMC ward. Also at all three KMC wards, staff is only available during day time and no staff deputed for evening and night shifts. Frequent postings and transfers within hospital is also an issue.

Key learnings from the KMC Pilot implementation Project, includes challenges or impeding factors and enabling factors:

The enabling factors:

Hospital Leadership and Management:

The district leadership and facility management team of all three sites is found highly dedicated and committed to continue and sustain the established KMC wards in the HFs. They were strong supporter of KMC services at their health facilities and acknowledged the technical support of NI in establishing KMC services in the piloted HFs. Further they had requested NI to extend support in scaling up the KMC intervention in other HFs of the districts.

We just need technical support for scaling up the KMC intervention in other HFs, we will procure the supplies and equipment for KMC kits, DHO, Swabi

This high level commitment played an important role in establishment of this new intervention at the HFs and in resolving challenges.

HealthCare Providers:

Similarly, HCPs play a key role in improving acceptance to practice KMC by mothers and families through effective counseling. The trained HCPs of all three sites were motivated and competent to continue KMC services at their HFs. However, the availability of HCPs at the KMC site round the clock was a challenge. District Coordination forums may be utilized for advocacy purpose to improve availability of HCPs round the clock and in the KMC wards; and to avoid frequent transfer of KMC trained HCPs.

Beside availability of HCPs, a continuous capacity development mechanism of HCPs is crucial to build and refreshed KMC related knowledge, skills and practices of HCPs.

Physical Infrastructure of KMC ward:

The study found appropriate physical infrastructure of KMC wards however enhancement is required to maximize privacy and to provide conducive environment, a critical part in uptake of KMC in these HFs.

KMC Kits/Supplies:

The study found that the mothers and families liked KMC kits-items, as helpful in practicing KMC. Mothers may be provided those items such as binders and KMC friendly mother's dress suited to local cultures and norms. The district leadership has expressed willingness to procure essential KMC supplies from district budget to sustain KMC services.

A DHO can easily procure or locally prepare those KMC supplies such as binder etc from their own budget, we just need some guidance from you, technically, and we will locally prepare and continue to give our delivered mothers…DHO, Jamshoro

Community engagement:

Community engagement is critical in acceptance of KMC at facility and continue KMC practices at the household level. Family counseling especially men involvement will improve KMC stay at the facility and continued KMC at home and by other family members such as fathers. The study findings showed that KMC practice at home is feasible within the Pakistani culture and context.

Beside, community based workers, such as LHWs were knowledgeable and convinced on KMC in reducing newborn morbidity and mortality. However clarity on their role in follow-up, referral and home visits may improve KMC outcomes.

CONCLUSIONS

This assessment study was conducted to document KMC pilot intervention by RS project in three districts of Pakistan. The study highlighted strengths and gaps in the implementation of KMC pilot intervention at three KMC wards established by the project in a public health facility of the pilot districts of Pakistan. The assessment study documents many strengths of the KMC pilot intervention such as strong leadership and management support at district level, well established KMC wards, committed and dedicated HCPs and LHWs and conducive communities. However there are technical gaps which needs to be filled to maximize the results that the project has achieved so far.

RECOMMENDATIONS

1. The support and commitment of district and hospital administration should be capitalized to further scaling the KMC services at the KMC pilot intervention sites. For this purpose an advocacy strategy may be devised to further scale up KMC services as well as resolve the issues such as hiring of staff and to sustain trained staff at the facility and stop their frequent transfer and posting etc.
2. A clearly written KMC policy and it implementation guideline should be developed and available at the KMC ward and health facility. The guidelines should include
    - Admission criteria in KMC ward
    - Stay and care in the KMC ward
    - Record keeping
    - Discharge criteria
    - Follow-up at the KMC ward/ HF and community
3. Similarly, the implementation guidelines should include plans and activities with timelines, by addressing the identified gaps to sustain KMC at the existing sites and scale up KMC at the three KMC pilot intervention sites
4. The implementation guidelines must include community KMC, linkages between facility and community based staff and LHWs, referrals from community to facility and follow-up of the babies at the community level by LHWs. Similarly, coordination forums may be developed to communicate and share the information between the various stakeholders. The community engagement through LHWs and community volunteers should be clear.
5. Internationally developed KMC training and technical materials may be adapted to the local context and should be available to further train and refresh the trained staff providing KMC services. The manuals include recording and reporting formats which can also be adapted.
6. The capacity of HCPs may be developed through competency based trainings and their counseling skills may be enhanced through refreshers trainings. Trained staff should be follow-up and monitored regularly.
7. Linkages and referral mechanism within facility and from facility to facility should be strengthened. This include the linkages between gyne and pediatrics ward within the

facility and linkages with other health facilities such as CMW run clinics and BHUs in the catchment areas of KMC intervention site.

- Accurate standard records are the key to good individual care; accurate standard indicators may be used for sound programme monitoring and evaluation. It is recommended to carefully adapt key components of KMC interventions from literature and identify a limited set of key outputs and outcomes. The program team then identify some key indicators to track success from available sources of data at the facility and community. The program tools and reporting mechanisms should be designed or adapted to collect data on these core indicators since the start of an intervention in order to measure progress over time.

8.

9. Integration of KMC coverage and quality measures into standard medical documentation and routine HMIS should be promoted
10. Awareness raising campaign in the communities on KMC may be launched to address cultural barriers to KMC. The awareness raising activities with mother by LHWs in their catchment areas must be conducted regarding KMC services so all mothers irrespective of place of delivery may avail KMC services.
11. Both print and electronic media campaigns may be used. Similarly, success stories may be published and mothers and family members may be invited in community meetings or seminars.

Annexure A

Summary findings: Readiness of Health Facility for KMC services by KMC pilot site

	SASMI,Sehwan, Jamshoro	DHQ, Lodhran	Kalu Khan Hospital, Swabi
Hospital setting	√√√	√√√	√√
KMC ward in the facility	A separate room in gyne ward	A separate room in gyne ward	A separate room in gyne ward
Starting date	April-18	May-18	Apr-18
a separate spacious room with adequate electricity	√	√	√
Bed, pillow, chairs, curtain, electricity	√	√	√
Kitchen area	0	0	0
Bathroom with tap water, soap and towel	√	√	√
Temperature regulation system in room	√	√	√
Clothing for mother	√	√	√
Clothing for baby-the support binder *	√	√	√
Thermometer	√	√	√
Neonatal scales with 10 g intervals should be used	0	0	0
KMC guidelines, Job aids, IEC materials KMC posters	√	√	√
Basic resuscitation equipment, and oxygen (though provided by NI)	0	0	0
Drugs for preventing and treating frequent problems of preterm newborn babies may be added according to local protocols.	√√√	√√√	√√√
KMC supervision checklist, referral forms, daily score sheet, record of follow-up visits	√	√	√
Follow-up mechanism in place	0	0	0

Key: √√√-available and functional/adequate, √ available but not adequate, 0 not available

Annexure B

Data collection Instruments

Annexure C

Permission letters from District Health Authorities for data collection in the district

Annexure D

IRB Approval letter

Annexure E

List of People interviewed

Annexure F

List of items in KMC Kit provided to mothers of pre-term and Low Birth Weight babies (LBWs)

Annexure G

List of Items Provided by NI to the KMC Ward at three KMC Pilot sites

S. No	Item Name	Quantity per site
1	Wooden Almirah	01
2	Office Table	01
3	Officer Chair	01
4	Printer cum Scanner cum Photocopier	01
5	Visitor Chairs	01
6	Wall Mounted Glass board for KMC wards	01
7	4 KV UPS with relevant batteries for Swabi	01
8	AC for Lodhran 1.5 ton inverter (any brand)	01
9	Refrigerator for Lodhran	01
10	NI Visibility Stickers Size 3 X 5 inches	01

Annexure H: Role Matrix:

Health System level	Activities	Department of Health	Nutrition International	Partners
Leadership and Governance	1. Establishment of national and Provincial Coordination forums (PCFs) on KMC	√	√√	√
	2. Participation in PCFs to improve understanding, support and for KMC implementation and scale up.	√√	√√	√
	3. Participation in national forums on KMC to advocate policy makers to incorporate KMC as part of the national standard for pre-term birth management and LBW with service guidelines	√√	√√	√
Health Workforce	1. Development/adaptation of standardized technical and training materials and job aids for facility based HCPs	√	√√	√
	2. Review and endorsement of technical materials on KMC	√√	√	√
	3. Advocacy to include KMC training materials into pre-service and in-service curricula for HCPs for newborn care	√	√√	√
	4. Provide capacity building of/training of HCPS	√√	√	√
	5. Technical support in strengthening KMC monitoring and supervisory mechanism	√	√√	√
Health Service Delivery	1. Facilities should to continue and sustain KMC as per routine service delivery.	√√	√	√
	2. Technical support to strengthen KMC follow-up and referral mechanism incorporate it into existing	√	√√	√

	services in facilities and communities.			
Health Financing	1. Advocacy at provincial and national level for allocation of financial resources in government budgets for the introduction and on-going support to KMC.	√	√√	√
Essential Medical Products and Technologies	1. Technical support for the procurement of required equipment for KMC continuation and scale up a. KMC Kit supplies b. hospital beds, privacy screens etc. 2. Advocacy to incorporate basic KMC supplies into district health office budgets.	√ √	√√ √√	√ √
Health Information Systems	1. Advocacy to integrate KMC monitoring indicators and plans into routine data collection tools and supervisory checklists 2. Training of monitoring staff monitoring tools and plans	√ √	√√ √√	√ √
Community Ownership and Partnership	1. Technical support to develop a community engagement strategy (KMC awareness and promotion) through Lady Health Workers and Community Health Workers, with appropriate IEC materials, addressing male participation and culturally sensitive.	√	√√	√

Primary role: √√ and Support role: √