Assessment of Kangaroo Mother Care Services and Identifying Its Implementation Bottlenecks: Situational Analysis of Special New Born Care Units in Gujarat State of India

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Abstract:

Introduction: Kangaroo Mother Care (KMC) and optimal feeding in Low Birth Weight (LBW) infants are evidence based cost effective interventions which if properly implemented across all facilities can help to save millions of newborn. The study, focussing on status of KMC services in Gujarat State, has not been conducted so far. **Objectives:** The intent of present study was to ascertain the infrastructure, facilities, policies and practices related to Kangaroo Mother Care at Special Newborn Care Units (SNCUs) of various regions of Gujarat and to suggest strategies for effective delivery of KMC services. **Method:** A pre tested, semi structured and validated questionnaire including general information about SNCU, baseline data about KMC protocols and practices of each SNCU etc. was developed. The information was collected from all 40 Special Newborn Care Units (SNCUs) of Gujarat State of India. The data analysis was performed using EpiInfo 7 Statistical Software developed by Centres for Disease Control and Prevention (CDC), Atlanta. Simple frequency tables were used for analysis. **Results:** About 81% of the facilities reported that newborns with birth weight less than 2000 grams, either stable or with non-serious medical conditions were eligible for receiving KMC. None of the facilities were providing continuous KMC more than 12 hours. Thirty (81.08%) SNCUs had an earmarked space for performing KMC either in the form of separate ward or identified corner in the ward. **Conclusion:** The present study revealed inadequate Kangaroo Mother Care services in selected newborn care units of Gujarat State of India. The services, especially basic facilities like drinking water, food, toilet and hand washing was not available in some of the facility.

Key words: Gujarat State, Kangaroo Mother Care Services, Special Newborn Care Units

Introduction:

Low birth weight (LBW) is an essential determinant of infant's health at birth, child's survival and freedom from sickness and also mother's antenatal health and well-being.[1] Of the 20 million low birth weight (LBW) infants born globally every year, about 8 million are in India.[2] The prevalence of LBW in India is around 28% as compared to 4.5 % in developed nations.[3]

Indian Council of Medical Research (ICMR) reported wide inter-state variation in incidence of low birth weight in India with magnitude ranging from 25.9 % to 56.9%.[4] Even though Gujarat State of India has witnessed significant decline in neonatal and infant mortality, it reported incidence of LBW as high as 20.37% in certain cities.[5]

Kangaroo Mother Care (KMC) is a low resource, high impact intervention and standardized care for low birth weight infants which, like breastfeeding, should be part of routine care.[6] The clinical efficiency and health benefits of KMC have been demonstrated in several settings. Kangaroo Mother Care and optimal feeding in LBW Infants are evidence based cost effective interventions which if properly implemented across all facilities can help to save millions of

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newborn.[7]

The health system plays a vital role in effective scaling up of KMC. Addressing the barriers in implementing KMC at each level of health system helps to promote context specific health system changes for greater KMC adoption.[8] The study, focussing on status of KMC services in Gujarat State, has not been conducted so far. The intent of present study was to ascertain the infrastructure, facilities, policies and practices related to Kangaroo Mother Care at special newborn care units (SNCUs) of various regions of Gujarat and to suggest strategies for effective delivery of KMC services.

Objectives:

Primary:

1. To identify the status of KMC implementation in Special New Born Care Units (SNCU) of various health care centres in Gujarat State.
2. To assess the implementation bottlenecks at SNCUs for practice of KMC.

Secondary:

To recommend for suitable strategic actions to accelerate KMC services in Gujarat.

Method:

Study design and sample population

Gujarat is situated on the western coast of Indian Peninsula with approximate population of 67.16 million.[9] The state receives medical services through tertiary health care institutions, district hospitals, sub district and private specialty hospitals. A Cross-sectional study design was carried out between September to December 2016 in all 40 Special Newborn Care Units (SNCUs) of Gujarat either run by or receiving financial support from the government. It included 19 Medical colleges attached hospitals, 16 District hospitals, 2 Sub-district and 3 Charitable Trust hospitals.

Ethics procedures

The research protocol was approved by the Institutional Ethics Committee (IEC) of the P. S. Medical College, Karamsad (Approval No-IEC/HMPCMCE/2018/Cr. 07/102/18 dated 12/05/2018). An informed consent was also obtained from the administrative heads of all study centres.

Study Methodology

A pre tested, semi structured questionnaire was designed and validated in consultation with experts. The questionnaire primarily comprised of general information about SNCU, baseline data about KMC protocols and practices of each SNCU etc. Three key personnel were involved to collect specified information about all 40 SNCUs. They were faculty members of Department of Community Medicine of PS Medical College, representatives of KMC Foundation and UNICEF Consultants. The information was collected from three key informants namely clinicians, staff nurses and KMC providers of each health facility. The schedule was planned and face to face interview method was implemented to retrieve the data. In addition, some of the information was also collected through the observations and reviewing data generated from day to day activity.

Statistical analysis

The data analysis was performed using EpiInfo 7 Statistical Software developed by Centres for Disease Control and Prevention (CDC), Atlanta. Simple frequency tables were used for analysis.

Scoring and Grading of the health facility

The score points were set for different components of KMC services. There were total thirty points which were distributed as five points for policy and protocols, five points for awareness and knowledge, seven points for facilities, five points for recording and reporting, four points for KMC as a mode of transport and four points for other activities to promote KMC like research papers activities, awards and recognition. Based on these points, facilities were graded into six categories of 0-5, 6-10, 11-15, 16-20, 21-25 and 26-30 for necessary actions and improvement of KMC services.

Results:

A total of 40 SNCUs were approached for the survey. Out of these, 3 SNCUs were excluded from the study as in these facilities KMC was not practiced. Table 1 describes the distribution of 37 selected health facilities.

About 81% of the facilities reported that newborns with birth weight less than 2000 grams, either stable or with non-serious medical conditions were eligible for receiving KMC. Newborns, regardless of their birth weight were more likely to receive KMC at DH compared to MC (Table 1). None of the facilities was providing continuous KMC more than 12 hours. Thirty (81.08%) SNCUs had an earmarked space for

Table1: Basic information and facilities related to KMC according to type of facility based on interview

Details	MC*(n=19)	DH#(n=14)	SDH$ and Trust Hospitals n=4)	Total (N=37)
Babies who are currently eligible for receiving KMC				
All babies regardless their weight	1 (5.2)	5 (35.7)	0 (0)	6 (16.2)
Babies < 2000 g	11 (57.8)	3 (21.4)	2 (50)	16 (43.2)
Stable babies < 2000 g	7 (36.8)	6 (42.8)	1 (25)	14 (37.8)
Unsure	-	-	1 (25)	1 (2.7)
Average duration of KMC per baby per day				
Short (< 4 hours/day)	6(31.5)	6 (42.8)	2 (50)	14 (37.8)
Extended (5-8 hours/day)	8 (42.1)	4 (28.5)	1 (25)	13 (35.1)
Long duration (9-12 hours/day)	2 (10.5)	0 (0)	0 (0)	2 (5.4)
Continuous (>12 hours/day)	-	-	-	-
Unknown	3 (15.7)	4 (28.5)	1 (25)	8 (21.6)
Separate space for KMC				
Separate ward/unit	10 (52.6)	4 (28.5)	1 (25)	15 (40.5)
Space corner in another ward	7 (36.8)	7 (50)	2 (50)	7 (18.9)
No space	2 (10.5)	3 (21.4)	2 (50)	7 (18.9)

*MC- Medical College Hospitals, #DH- District Hospitals, $SDH- Sub-District Hospitals

performing KMC either in the form of separate ward or identified corner in the ward (Table1).

Table 2 reveals deficient KMC services at health centres. The drinking water facility was not accessible at 8 (21.62%) SNCUs. Roughly only at half of the centres, special bags or binders were available for safe holding of baby, but in place of it, local clothes like 'Saree' or 'Duppata' were used to support the baby. In more than 90% of facilities, mothers were trained for collecting and feeding 'Expressed Breast Milk' (EBM) but storage facility was available at only 21 (56.75%) SNCUs.

Table 3 highlights implementation of various policies and practices at selected SNCUs. Only in 9 (8.10%) health centres, babies were given to mother for immediate skin-to-skin contact. Father or any male member was allowed to be KMC giver only in 60% of centres.

Figure 1 illustrates the scoring and grading system of SNCUs. Out of 19 MCHs, only 4 (21.05%) scored more than 25 score points. Six MCHs and one DH scored between 21 and 25. More than 50% of the facilities belonged to category of 11 to 20 score points.

In this study, an inadequate awareness levels were observed among staffs of SNCUs regarding KMC. The awareness were observed about general concepts and perception regarding KMC practices. The nurses from only 14 (37.83%) SNCUs were well versed with guidelines of KMC. However, staff members had satisfactory knowledge about cardinal benefits of KMC.

Discussion:

Kangaroo Mother Care provides multipronged advantages to the parents, preterm and low birth weight newborn, health establishments, and the community. World Health Organization (WHO)

Table 2: Basic facilities to carry out KMC according to type of facility based on observation

Details	MC (n=19)	DH(n=14)	SDH and Trust	Total (N=37)
Hand washing facility (Elbow tap)	18 (94.7)	14 (100)	4 (100)	36 (97.2)
Drinking water facility	15 (78.9)	10 (71.4)	4 (100)	29 (78.3)
Toilet facility	13 (68.4)	8 (57.1)	4 (100)	25 (67.5)
Food facility	16 (84.2)	11 (78.5)	4 (100)	31 (83.7)
Reclining chairs / Back rest for KMC providers	17 (89.4)	12 (85.7)	3 (75)	32 (86.4)
Special KMC bags / Binder / Wraps available for safe holding baby	13 (68.4)	6 (42.8)	2 (50)	21 (56.7)
Educational posters, charts, or videos available for mothers	13 (68.4)	8 (57.1)	1 (25)	22 (59.4)
Recreational facilities like TV, reading materials	6 (31.5)	1 (7.1)	-	7 (18.9)
Facility to store Expressed breast milk (EBM)	14 (73.6)	6 (42.8)	1 (25)	21 (56.7)

Figure 1: Categorization of SNCUs by using score points

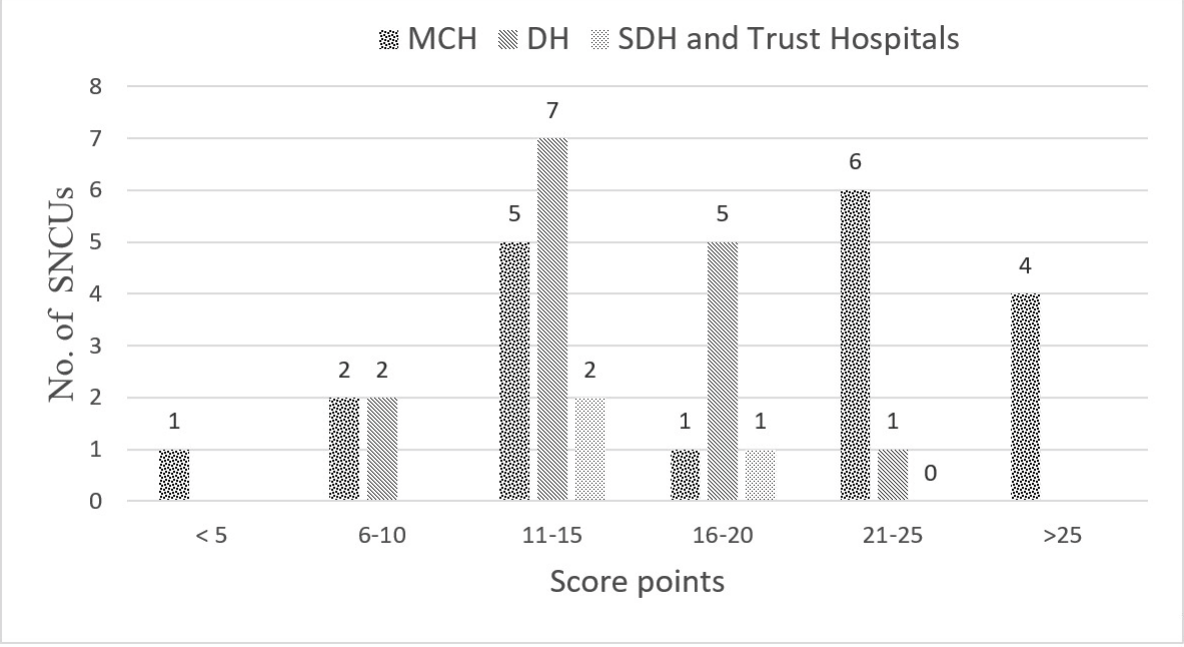

Table 3: Policy and practice related to KMC according to type of facility based on interview

Details	MC (n=19)	DH (n=14)	SDH and Trust Hospitals n=4)	Total (N=37)
All Newborns weighed soon after birth	19 (100)	14 (100)	4 (100)	37 (100)
Immediate skin to skin contact in labour room is routine for all newborns				
Yes	4 (21)	4 (28.5)	1 (25)	9 (24.3)
Sometimes	7 (36.8)	3 (21.4)	0 (0)	10 (27)
KMC is being provided to mildly sick babies	13 (68.4)	8 (57.1)	3 (75)	24 (64.8)
Father or other male members can provide KMC to baby	11 (57.8)	9 (64.2)	3 (75)	23 (62.1)
KMC is being practiced on arrival to health facility				
Yes	5 (26.3)	3 (21.4)	0 (0)	8 (21.6)
Don't know	4 (21)	1 (7.1)	1 (25)	6 (16.2)
KMC is being practiced on discharge from health facility	-	-	-	-
Yes	13 (68.4)	10 (71.4)	3 (75)	26 (70.2)
Don't Know	1 (5.2)	2 (14.2)	-	3 (8.1)
Availability of compliance chart for KMC	10 (52.6)	1 (7.1)	-	11 (29.7)

recommends three essential resources for effective KMC viz mother, personnel with special skills and supportive environment in the form of well formulated policies, equipment and organized services etc.[10] The present study revealed inadequacies in KMC implementation in selected SNCUs in the state of Gujarat.

Facilities, equipment and supplies

KMC does not require special facilities, but basic arrangements need to be done to ensure optimum health of mother and newborn.[10] 'The support binder' is the only special item required for KMC. In 37 SNCUs visited, at 16 (43.24%) units, KMC bags or binders were not available for safe holding of baby. Instead of it, obtaining and using local clothes like 'Saree' or 'Duppata' to support the baby was perceived as a challenging task by some mothers and families. Only 7 (18.9%) SNCUs had recreational facilities as they are crucial to reduce the inevitable frustrations of being away from home and in an institution.[10] Twenty two (59.4%) SNCUs provided educational material in the form of posters, charts and videos. Bergh AM et al[11] found the availability of educational posters only at 11 facilities without any video equipment. The storage facility of expressed breast milk was not available at 16 (43.23%) units, as it is an essential to maintain nutritional and anti-infective quality of breast milk.

KMC Policies and practices

Most published experience and research regarding KMC proved that early, continuous and prolonged skin-to-skin contact promotes the health and well-being of infants.[10] In current study, even though the majority of SNCUs claimed to practice continuous KMC, none of them followed the principle of having the newborn in the skin-to-skin position for minimum 20 hours per day for some of the babies (Table 1). Studies carried out in low income countries revealed

that 'father' too can conserve heat in newborns and provides an effective skin to skin contact.[12] In this study, only at 23 (62.01%) facilities, males including fathers were allowed to give KMC to babies.

Precise standardized documentation is not only the key to good patient care but also the necessary prerequisite for sound programme evaluation. Out of 37, only 16 (43.24%) units maintained a special register for documenting various information about KMC. At 4 (10.81%) SNCUs, daily KMC practice was recorded on the newborn's treatment sheet while KMC details were noted in the form of 'case notes' in remaining SNCUs. In some of the facilities,'KMC compliance charts' were available but they were not standardized.

Strategic actions and futuristic views

The present study reiterated the need to strengthen 'KMC policy and protocol' and it should be a part of pre service education and in service training of health care staff. The efforts should be made to create special area/space for KMC by infrastructural up gradation. Online monitoring software like 'ImTeCHO' or 'SNCU' portal needs to be practised to ensure uniform monitoring and evaluation of KMC services. The current study covered the first phase of assessing the status of KMC policies and practices in all SNCUs of Gujarat State of India. Based on the results and analysis, the second interventional phase of study will comprise of modular training of selected SNCU staff about baseline guidelines of KMC.

Limitations and challenges:

A thorough training was organized by the UNICEF, Gujarat for all the stakeholders regarding filling of the proforma but there were different key personnel involved to collect specified information about all 40 SNCUs may be considered as possible limitation.

Challenges were many but the most important was to involve very senior and busy professionals to collect the information about SNCUs placed in a very remote parts.

Conclusion:

The present study revealed inadequate Kangaroo Mother Care services in selected newborn care units of Gujarat State of India. The services, especially basic facilities like drinking water, food, toilet and hand washing should be made available in the vicinity of KMC area. In service training of KMC staff needs to be an integral part of comprehensive KMC services.

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Declaration:

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Conflict of Interest: Nil

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