Kangaroo Mother Care in India: Down Memory Lane

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Abstract

India has been at the forefront of Kangaroo Mother Care promotion and implementation in the past three decades. In this paper, we describe the history of KMC implementation in India and how KMC has become the standard of care for all preterm or low birthweight infants. We distinguish three phases in the development of KMC implementation and scale-up: the early year; the slow middle years; and becoming a leader.

Introduction

The World Health Organization (WHO) defines Kangaroo Mother Care (KMC) as continuous and prolonged skin-to-skin contact of the baby with a caregiver and support for exclusive breastmilk feeding.[1] Two other features widely considered to be part of the KMC package are early discharge from hospital with a reliable follow-up system in place and support by healthcare workers, the family and the community.[2, 3] KMC has attained centre-stage as the standard of care for preterm and low birthweight (LBW) infants, as it has been shown to reduce neonatal mortality by 40% and several neonatal morbidities such as hypoglycaemia, hypothermia and sepsis.[4] A recent global position paper presents KMC as a transformative innovation in health care and emphasizes the pivotal role of KMC as the foundation of small and/or sick newborn care around which the entire maternal-newborn service delivery is organized.[5]

India supports the global commitment of the Sustainable Development Goals to reduce the neonatal mortality rate (NMR) to as low as 12 per 1000 live births by the year 2030.[6,7] While there has been a significant reduction over two decades in the NMR in India from 44.7 (42.2-47.3) per 1000 live births in 2000 to 19.1 (17.1-21.4) per 1000 live births in 2021,[8] we still need to achieve a single-digit NMR by the end of this decade[9]. Approximately 80% of neonatal deaths are among LBW neonates and two-thirds are born prematurely.[10] India has been at the forefront of KMC promotion and implementation for the past three decades. In

this paper, we describe the history of KMC implementation in India and how KMC became integrated into the *India Newborn Action Plan*[9] (INAP) and India's roadmap to the Sustainable Development Goals[7] to achieve a single-digit neonatal mortality rate by 2030.

We describe the establishment of KMC practice and services in India over the past three decades in three phases:

- The early years: introduction of KMC to India (1995–2004)
- The slow middle years: establishment of KMC in India (2005–2014)
- Becoming a leader: scale-up of KMC in India (2015 – 2024)

The early years: introduction of KMC to India (1995–2004)

In 1994-95, KMC was introduced in BJ Medical College and Civil Hospital, Ahmedabad by Dr Shashi Vani. She presented the results of this implementation at the First Workshop on KMC in Trieste, Italy in 1996, at the end of which the International Network on KMC (INK) was created.[11] At the same time, Dr Rekha Udani endeavoured to convince nursing staff in King Edward Memorial (KEM) Hospital in Mumbai to allow mothers into the neonatal intensive care unit by conducting a series of training. She serendipitously came across KMC and its advantages and introduced KMC in the unit. To ensure safety, she designed the kangaroo bag in 1999 (see Figure 1). The initial study using the bag was presented in 2001 at the annual convention of the National Neonatology Forum (NNF) in Cochin.[12]

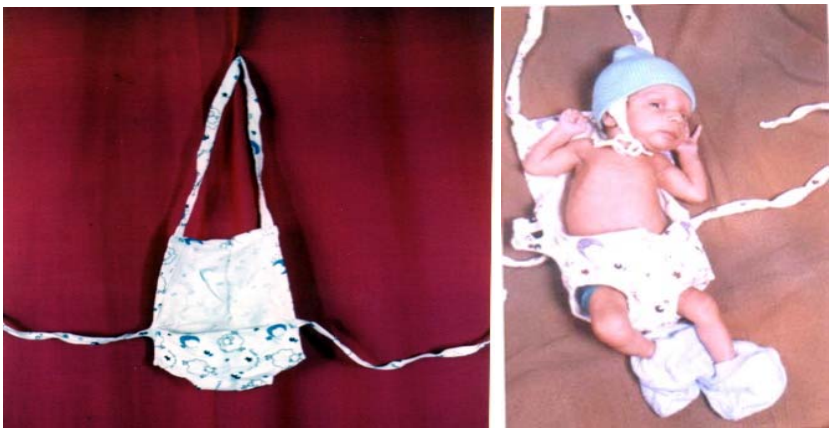

Figure 1. Kangaroo Bag.

The first KMC workshop for neonatologists from various states of India was conducted in 2002 at the All India Institute of Medical Sciences (AIIMS) as part of South East Asian Regional Trainers meeting. The workshop was sponsored by Save the Children/Saving Newborn Lives (SNL) and was facilitated by international faculty from Colombia (Nathalie Charpak and the Kangaroo Foundation team). Subsequently in 2002-2003, six teams (five physician-nurse teams and one team of two senior neonatal nurses) from Jaipur, King George's Medical University (KGMU) Lucknow, the Institute of Gynecology Chennai, the Postgraduate Institute of Medical Education and Research (PGIMER) Chandigarh, KEM

Hospital Mumbai and AIIMS Delhi received three weeks of training in KMC in Bogota, Colombia. The training included integration of KMC at various levels of mother and child care, including follow-up care.

On their return from Bogota, all six centres established KMC services. In 2003, the six institutions developed and launched the KMC India Network (www.kmcindia.org) under the leadership of AIIMS. Between 2004 and 2006 AIIMS (New Delhi), KEM Hospital (Mumbai) and PGIMER (Chandigarh) were awarded the status of KMC centres of excellence and received funding from Saving Newborn Lives and the Bill and Melinda Gates Foundation to develop fully-fledged KMC units for training staff from all over India and to establish kangaroo ambulatory adaptation services (dedicated KMC follow-up services for babies discharged from hospital).

The Department of Neonatology at KEM hospital spearheaded the training of health care personnel of all the hospital's departments involved with mother and child care to disseminate the message of KMC to the community – Pediatrics, Obstetrics & Gynaecology, Preventive and Social Medicine, and the School of Nursing. The first ambulatory KMC unit, the *Shishughar*, was also established in KEM hospital in 2004. *Shishughar* was built similarly to the "little house" observed in Bogota.

The three centres of excellence became demonstration centres for the operationalization of a comprehensive KMC program in labour rooms, postnatal wards, the neonatal intensive care unit and the intermediate care nursery. The centres' functions included the following: training; developing KMC policies, standard operating procedures and guidelines; disseminating of videos; developing parent education material in different languages; and producing case vignettes narrating parent experiences. The 13-module *Training Manual on Kangaroo Mother Care* for training of trainers (nurses, doctors and other paramedical staff) in the practice of KMC was published by KEM hospital. The team of KEM Hospital held 10 skills-based workshops, of which four were onsite workshops of 2-5 days and four were in-service workshops for 7 days. The team also organized 60 guest lectures and an oration on KMC as a part of educating and training of health care personnel in western and southern India.

During this first phase, the first KMC research results from India were published. Three of these studies were included in the Cochrane meta-analysis on KMC[4] that has changed policy and WHO recommendations. The first study published was from AIIMS[13] and the second from Sion General Hospital[14] in Mumbai. Furthermore, a landmark randomized controlled trial (RCT) was conducted that compared KMC and conventional care and showed KMC as an important intervention to reduce neonatal morbidities and promote growth.[15] This study subsequently won the Social Neonatology gold medal at the convention of the National Neonatology Forum (NNF) in 2005.

The slow middle years: establishment of KMC in India (2005–2014)

In the period 2006–2011, several KMC training workshops were held at centres of excellence during Newborn Week. Since 2009, KMC training workshops on KMC were held at the annual convention of the NNF. After the conclusion of the SNL-aided project, KMC practice, research and training were continued, but the further dissemination of KMC was slower than during the project years. The *Shishughar* at KEM Hospital continued to function with the support from other donor agencies, although the model had not been replicated elsewhere.

With the establishment of the special newborn care units (SNCUs), KMC received further impetus and it became an integral part of the facility-based newborn care guidelines in 2011.[16] It became mandatory for every SNCU to have a KMC ward for the care of small babies. The *Navjat Shishu Suraksha Karyakram* (NSSK) also included KMC as part of essential newborn care practices.[17] A further national boost was provided by the Ninth International Conference on Kangaroo Mother Care hosted in Ahmedabad in 2012.

Despite all the global initiatives to promote KMC, the uptake of KMC practice and coverage of KMC services had not progressed well in many countries.[18] In 2013, a KMC progress-monitoring assessment was conducted in India as part of an Asian study in five countries (Bangladesh, India, Indonesia, Pakistan and Philippines) to describe the state of KMC implementation and to gain insight into the KMC intervention at facilities known to implement some form of KMC.[19] In India, 10 level-III medical colleges with staff trained in KMC were sampled. Two assessors interviewed key informants and observed services. A scoring model with six stages and a total score of 30 was used to score facility implementation: >10 was considered evidence of KMC practice, >17 as integrated routine KMC practice, and >24 as sustainable practice.[20] Nine facilities scored ≥10; two facilities had reached the stage of integrating KMC into routine activities and but none had reached the stage of sustainable KMC practice. Figure 2 gives a graphic depiction of the facility scores.

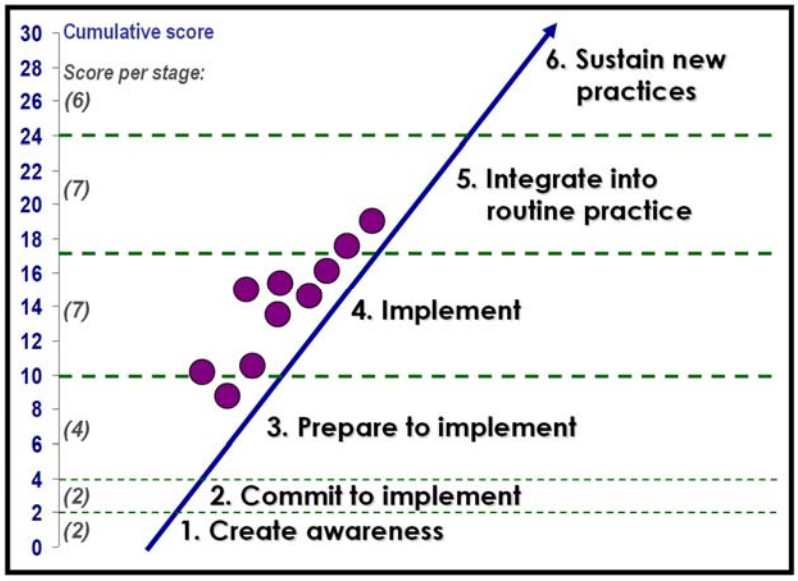

Figure 2. Evaluation of KMC Services in 10 Selected Facilities in 2013

This assessment was complemented by a short questionnaire survey among key neonatologists across the country, using convenience, purposive and snowball sampling techniques. Of the 139 facilities that responded across 16 states, 88% indicated that they were currently practicing or had been practicing KMC in the past.[21] A gradual attrition of diligent KMC practice was noted because it was perceived as not important to health authorities and key promoters of KMC and committed leaders had been transferred or had retired. Leadership was not strong, as senior management did not appear to understand the importance of KMC and was not actively involved in providing the necessary support (e.g., equipment, space or human resources).

The recommendations emanating from the 2013 study (see Figure 3) and the global emphasis on KMC highlighted the need for a national policy and guidelines on KMC. In 2014, KMC was included in the *India Newborn Action Plan* (INAP) as a specific intervention recommended for reducing morbidity and mortality among small and sick newborns. One of the priority actions outlined in the INAP was the establishment of fully functional SNCUs with attached KMC units or wards. The KMC coverage targets were set to 35% by 2017, 50% by 2020, 75% by 2025, and 90% by 2030.[9] The Ministry of Health and Family Welfare allotted funds to each state for the adaptation of KMC spaces within the SNCUs. Engagement of health care providers and the identification of champions would help foster the ownership of KMC as an effective intervention, speeding up the rate at which KMC services could be adopted throughout the country.

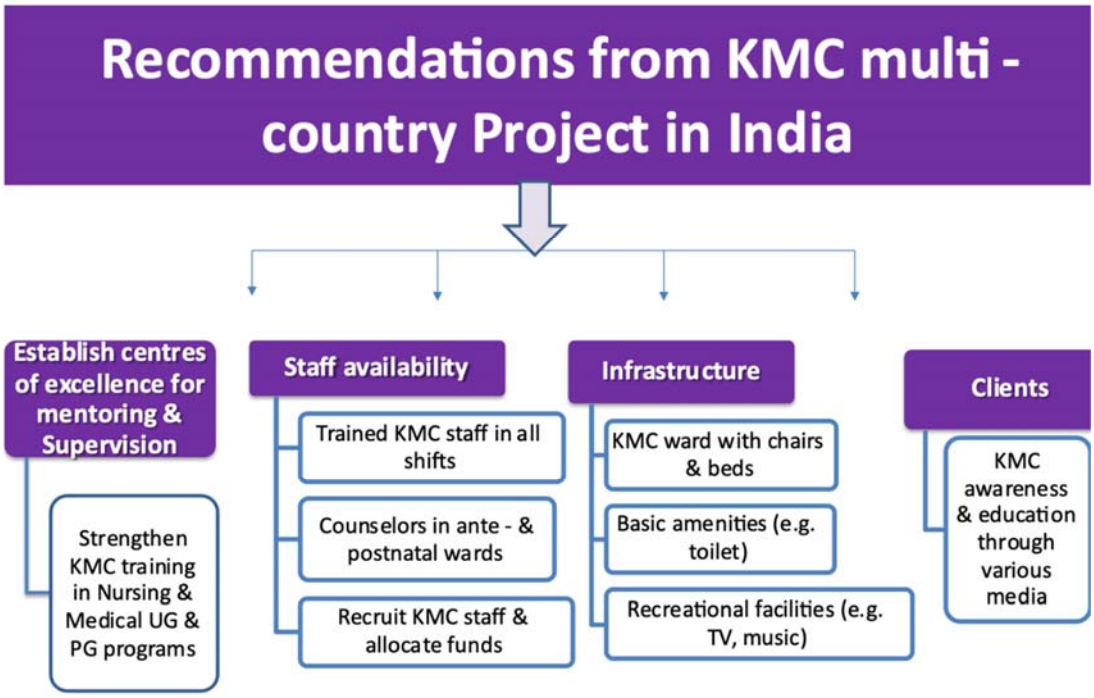

Figure 3. India's Recommendations from the KMC Multi-country Study

The other landmark publication in 2014 was the *Kangaroo Mother Care and Optimal Feeding of Low Birth Weight Infants: Operational Guidelines for Programme Managers & Service Provider* [sic].[22] This guideline included eligibility criteria for KMC, infrastructural requirements to establish a KMC ward, budgetary guidelines, and a communication strategy. The document included guidance on monitoring and evaluation of KMC regarding output and outcome indicators and ways of reporting data at district, state and national level. KMC was introduced in the government health management information system (HMIS). But as the it was only a binary response of KMC given yes/no, the capture of KMC practices has been suboptimal.

Becoming a leader: scale-up of KMC in India (2015 – 2024)

In the past decade India has become a leader in KMC research with scholars contributing to three large KMC studies led by the World Health Organization (WHO), namely the community KMC study, the immediate KMC study and the KMC scale-up study.

The landmark community-initiated KMC study published in the *Lancet* is the largest RCT in KMC to date, with 8402 infants enrolled in Haryana.[23] The results showed a 30% reduction in mortality and improved breastfeeding with initiation of KMC in the community among LBW infants 1500-2250 g.

The second WHO-led RCT was the immediate KMC study published in the *New England Journal of Medicine* in 2021.[24] Results showed a 25% reduction in mortality over and above

conventional KMC when KMC was initiated immediately after birth without waiting for "stabilization". Infants from Safdarjung Hospital, which had the first mother-newborn intensive care unit (MNICU) in the world, constituted 43% percent of the 3211 infants enrolled in the study. These two RCTs led to a major change in the WHO guidelines on the care of preterm or low birthweight infants, which now strongly recommend initiating KMC immediately after birth in both facility or at home.[1]

The third WHO led-study focused on implementation research and was a KMC scale-up study published in *BMJ Global Health*.[25] It was conducted in one district each in three states – Haryana, Karnataka and Uttar Pradesh. This study provided a model for rapid scale-up of KMC to achieve high population-based coverage in a short period of two years. The results of this study contributed to the global implementation strategy for rapid scale-up of KMC.[26]

India is not only leading in KMC research, but also in KMC advocacy and capacity building. The Kangaroo Mother Care Foundation of India (https://kmcfoundationindia.org/) – a voluntary service organization – was founded in 2015 with the objective of strengthening KMC in the country. Figure 4 shows the logo of the Foundation and its mission statement. The Foundation's activities include the following: capacity-building programs for master trainers, facility-based service providers and trainers of community health workers; awareness and demand generation activities; publication of a newsletter, job charts, booklets and pamphlets; and the annual celebrations of KMC Awareness Day (15th May) and World Prematurity Day (17the November). Since 2017, the Foundation has organized seven theme-based national KMC conferences in different parts of the country and commitment to the cause of KMC has been sought from various professional organizations, such as the NNF, Indian Academy of Pediatrics (IAP) and its Developmental Pediatrics and Neonatology chapter, Indian Society of Perinatology and Reproductive Biology (ISOPARB), Federation of Obstetric and Gynaecological Societies of India (FOGSI), Indian Medical Association (IMA), Trained Nurses Association of India (TNAI), Indian Association of Neonatal Nursing (IANN), Society of Midwives of India (SOMI), Breastfeeding Promotion Network of India (BPNI), Medical Council of India (MCI), International Pediatric Association (IPA), chapters of Infant and Young Child Feeding (IYCF), and the Indian Association of Preventive and Social Medicine (IAPSM). The Professor Rekha Udani KMC oration is conferred during the conferences on KMC champions who have done exceptional work on KMC. To encourage the young researchers, KMC research papers for oral presentation and posters are displayed during the conferences. The Foundation hosted the 2nd Regional Conference of the Asia-Oceania Network of KMC last year.

Mission

- Mother's chest is the best place for newborn
- Mother's milk is the best food for newborn
- Zero separation for the mother and newborn

Figure 4 Mission of the KMC Foundation of India

India has also shown progress in KMC service delivery. The NNF developed accreditation guidelines for newborn units in the public and private sector, which include KMC services. The Government of India set up a technical advisory group in 2017 for supporting and promoting KMC. The national, regional and state collaborative centres of excellence in newborn care support SNCUs and Newborn Stabilisation Units (NBSUs) with KMC services. Locally, several quality improvement initiatives and collaborative efforts to improve KMC are ongoing.[27] Home-based KMC is promoted and the KMC Foundation and the Government of Maharashtra produced a manual for community health workers on implementing KMC at primary health care level.[28]

Conclusion

Three decades of relentless efforts to introduce, establish and integrate KMC into routine care for LBW infants is finally bearing fruit. KMC is now considered a standard of care for LBW infants around which the entire delivery of newborn services in India is organized.

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