A national survey on the implementation of Kangaroo Mother Care for premature infants in hospitals across Malaysia

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ABSTRACT

Introduction: Kangaroo Mother Care(KMC) is essential for preterm infants and strongly recommended by the World Health Organization. However, national data on KMC implementation in Malaysia are lacking. We aimed to describe current KMC practices in Malaysian hospitals and identify factors influencing its adoption.

Materials and methods: We conducted a cross-sectional survey using a self-administered online questionnaire. Ninety-three public and private hospitals providing Level II and/or III neonatal care were identified and invited to participate. The questionnaire covered KMC practices, facility availability, eligibility criteria, and documentation.

Results: Sixty-nine hospitals(74%) responded, including 48 public and 21 private facilities. Of these, 60(87%) hospitals self-reported implementing KMC (33 regularly, 27 occasionally), most commonly in NICUs and SCNs. Among hospitals implementing KMC, 73% allowed KMC for infants on tube feeds, 71% for those on nasal oxygen, 53% for those on intensive respiratory support, and 68% for infants born <32 weeks gestation. Only 55% documented KMC consistently, 37% had protocols, and 25% reported most staff were trained. Key barriers included limited administrative support, training, infrastructure, and comfort amenities. Logistic regression showed that availability of KMC protocols, front-button blouses, training, and documentation showed a borderline association with regular KMC practice. Among non-implementing hospitals, most cited overcrowding and lack of resources; nearly all expressed a need for training.

Conclusion: KMC is practiced in most public and some private Malaysian hospitals, but key gaps remain. Simple measures such as providing front-button blouses, enhancing staff training, and introducing formal protocols can strengthen KMC as routine neonatal care.

KEYWORDS:
Kangaroo Mother Care, healthcare workers, hospital, preterm, barrier, training

INTRODUCTION

Prematurity is a major public health concern globally, contributing significantly to neonatal morbidity and mortality. In 2015, the prevalence of preterm birth in Malaysia was 12.4%, exceeding the global prevalence of 10.6% estimated in 2014.[1] Despite technological advancements in neonatal care, the preterm infants' death related to complications contribute to the second leading cause of death among infants after pneumonia. KMC, defined as prolonged skin-to-skin contact between the newborn and the caregiver, has been shown to promote early and sustained breastfeeding, reduce hospital-acquired infections and enhance overall neonatal survival. It also facilitates earlier discharge for stable premature infants. Recognising these benefits, the World Health Organization (WHO) first recommended KMC in 2003 and in its 2022 update, strongly reaffirmed KMC as essential care for preterm and low birth weight infants.[2-5]

In Malaysia, KMC was formally introduced in 2013 to four hospitals as part of the South East Asia - Using Research for Change in Hospital-acquired Infection in Neonates (SEA URCHIN) project, an evidence-based educational initiative focused on reducing neonatal infections through both provider and trainer capacity building.[6] Subsequently, various national-level efforts have aimed to promote KMC, including widespread training workshops and advocacy initiatives, details of which will be published in a separate paper. In brief, this included the establishment of the Kangaroo Mother Care Advocates Malaysia (KAMY), a dedicated national level non-governmental organisation and the development of a KMC website (www.kangaroomothercaremalaysia.net) to support provider engagement and parental advocacy.

However, the absence of national data on KMC implementation poses a challenge. Without a clear understanding of current practices, it is difficult to assess the impact of these initiatives or identify gaps and opportunities for improvement. This study sought to quantify the extent of KMC implementation nationwide and to identify modifiable institutional factors associated with routine practice.

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MATERIALS AND METHODS

Study design

This was a structured, cross-sectional survey conducted in Malaysia between April and August 2024 using a self-administered online questionnaire. All public hospitals (GH) and private hospitals (PH) providing Level II to III neonatal care were invited to participate. Each participating hospital designated a representative knowledgeable about their institution's KMC practice to complete the survey and provide hospital-level insights on KMC implementation. The study exclusively collected aggregate data at the hospital level and did not involve individual staff, patients or their families at any stage.

Inclusion criteria

Only hospitals providing level II or level III neonatal care were invited to participate as these facilities are typically responsible for the management of preterm and low birth weight infants.

Level II neonatal care involves specialised support for newborns who require more than routine care, including care for those transitioning to or from intensive care. Level III neonatal care refers to the management of newborns who are critically ill or at high-risk and require comprehensive intensive care services.[3-5,7]

Recruitment

Eligible public and private hospitals were identified using data from the 2020 Malaysian National Neonatal Registry (MNNR) report and the Malaysian Society for Quality in Health (MSQH) registry.[8-9] Formal approval was first obtained from the hospital directors of all identified facilities. Following approval, an invitation email containing study information and a link to the online Google Form survey was sent to the head of each hospital's neonatal unit. Heads of neonatal units who consented to participate either completed the survey themselves, or nominated a suitably qualified representative.

Study Instrument

Data were collected using a structured, self-administered online questionnaire hosted on Google Forms. The survey comprised 17 items organised into four sections: Section A – informed consent, Section B – hospital demographics, Section C - current KMC implementation practices; and Section D - availability of KMC-related facilities. The questionnaire captured information on hospital location, total and premature deliveries in 2023, KMC implementation practices, infant eligibility criteria, availability of supporting infrastructure and documentation practices. (See Appendix 1: Questionnaire)

The questionnaire was developed specifically for this study by the research team. Content validity was enhanced through pilot testing among healthcare staff in neonatal wards at four hospitals representing different facility types and levels of KMC implementation: one public and one private hospital practising KMC, and one public and one private hospital without KMC. Formal psychometric validation was not undertaken as the survey was descriptive and practice-oriented. Completion of the survey required approximately 15 to 20 minutes.

Data Analysis

Data were analysed using Stata version 13.[10] Categorical variables were summarised as frequencies and percentages. Open-ended responses were reviewed and thematically categorised. Logistic regression analysis was performed to identify factors associated with self-reported regular KMC implementation. Regular KMC was defined as routine provision of KMC to eligible infants, whereas occasional KMC referred to ad-hoc or selective practice without systematic integration. A p-value of < 0.05 was considered statistically significant.

Ethics approval

This study was registered with the National Medical Research Register (NMRR ID-24-00330-TDK) and ethical approval was obtained from the Medical Research & Ethics Committee, Ministry of Health Malaysia (KKM/NIHSEC/P15-583) 24-24-00330-TDK (1). Written informed consent was obtained from the participants prior to the commencement of study.

RESULTS

A total of 93 hospitals in Malaysia were identified as providers of Level II–III neonatal care, of which 69 responded to the survey, yielding an overall response rate of 74%. Responses were received from all 13 states and both Federal Territories in Peninsular Malaysia. Public hospitals demonstrated a higher response rate than private hospitals (89% vs. 55%) (Figure 1).

Reported numbers of preterm birth in 2023 varied widely among participating hospitals. Among public hospitals, 29 reported between 70 and 499 preterm births, 10 reported 500 to 944, and six reported between 1,015 and 3,096; three did not provide data. The median number of preterm births among public hospitals was 380 (IQR 206–889; range 70 – 3,096). Among private hospitals, 17 reported 5 to 80 preterm births, while four did not disclose figures. The median number was 25 (IQR 11–41; range 5 – 80).

KMC Implementation and Practices

Of the 69 participating hospitals, 60 (87%) reported implementing KMC with 33 (48%) practising it regularly and 27 (39%) occasionally; nine hospitals were not practicing KMC at the time of the survey.

Among the 60 hospitals implementing KMC, the practice was most commonly undertaken in neonatal intensive care units (NICUs) and special care nurseries (SCNs), with fewer hospitals supporting KMC in postnatal wards or rooming-in areas. Regarding eligibility, 44 hospitals (73%) permitted KMC for infants receiving tube feeding, 43 (72%) for those on nasal oxygen, and 32 (53%) for those requiring intensive respiratory support (e.g. CPAP, HFNC, or mechanical ventilation). KMC was permitted for infants born before 32 weeks' gestation in 41 hospitals (68%), whereas only one hospital allowed KMC for infants with central lines. (Table I)

Facilities and Support Infrastructure

Regarding maternal comfort and support, 42 hospitals (70%) provided front-button blouses, 41 (68%) had reclining chairs or sofas, and 17 (28%) offered KMC binders.

Table I: Response to questions regarding KMC Implementation, Eligibility Criteria, and Support Among Hospitals Implementing KMC practices (N = 60)

	Total KMC implementation (N = 60)	GH with KMC implementation (n = 42)		PH with KMC implementation (n = 18)
Administrative KMC support	20 (33%)	14 (33%)		6 (33%)
Incentives provided for KMC Implementation	6 (10%)	5 (12%)		1(6%)
Structured training sessions provided for staff	20 (33%)	16 (38%)		4 (22%)
Availability of trained staff		GH with >1000 preterm births (n = 9)	GH with <1000 preterm births (n = 33)	PH (all had fewer than 300 preterm births) (n = 18)
Only a few trained	26 (43%)	3	12	11
Some staff trained	19 (32%)	4	13	2
Most staff trained	15 (25%)	2	8	5
KMC Documentation & Policy				
Documentation of KMC Activities	57 (95%)	41 (98%)		16 (89%)
Availability of Institutional Policy/Protocol	21 (35%)	17 (40%)		4 (22%)
Parent-Focused Support				
KMC binders	17 (28%)	14 (33%)		3 (17%)
Front-button blouses	42 (70%)	35 (83%)		7 (39%)
Privacy screens	42 (70%)	28 (67%)		14 (78%)
Reclining chair/bed, lazy chair, etc	41 (68%)	25 (60%)		16 (89%)

GH: Public Hospital; PH: Private Hospital; KMC: Kangaroo Mother Care; GA: Gestational Age: CPAP: Continuous Positive Airway Pressure; HFNC: High-Flow Nasal Cannula; NICU: Neonatal Intensive Care Unit; SCN: Special Care Nursery, ICU: Intensive Care Unit; HDU: High Dependency Unit

Documentation and Protocols

Nearly all hospitals practising KMC (n=57, 95%) reported some form of documentation, but only 33 (55%) did so consistently. Documentation was mostly recorded in nursing handover notes or infant medical records, with physician notes rarely used (n = 3; 5%). Among hospitals with inconsistent or absent documentation, the main reason cited was the lack of integration into institutional workflow or policy. Only 22 hospitals (37%) had formal KMC protocols or guidelines, and just five (8%) maintained a dedicated KMC census or registry.

Staff Training and Capacity

Seventy-five percent of hospitals reported a need for more structured and routine KMC training. Only 15 hospitals (25%) indicated that most staff caring for newborns had received KMC training, while 11 (18%) reported no trained staff. The remaining hospitals reported that only some staff had received training. (Table I)

Barriers to Implementation

Key challenges reported by hospitals included limited administrative support, insufficient training, overcrowding, lack of privacy and space, inadequate amenities, staff shortages and low public awareness. (Figure 2)

Factors Associated with Regular KMC Implementation

Simple logistic regression identified several factors significantly associated with regular KMC implementation: availability of KMC protocols or guidelines (OR 4.68, 95% CI: 1.43-15.32, p = 0.01), presence of training or CME sessions with trained staff (OR 4.98, 95% CI: 1.36 - 18.23, p = 0.02), regular documentation (OR 2.91, 95% CI: 1.01 - 8.36, p = 0.04), and provision of front-button blouses for mothers (OR 5.29, 95% CI: 1.54 - 17.52, p = 0.01). In the multivariable model, regular KMC remained significantly associated with availability of protocols or guidelines (aOR 3.63, 95% CI: 0.97 – 13.59, p = 0.05), and provision of front-button blouses (aOR 4.25, 95% CI: 1.02 – 17.65, p = 0.04). No significant associations were observed with other maternal comfort amenities (e.g., KMC binders, privacy screens, reclining chairs), institutional incentives, preterm birth burden, or availability of dedicated space. Variables significant in univariable analysis ($p < 0.05$) were included in the multivariable model.

Non-Implementing Hospitals

Among the nine hospitals not implementing KMC, seven (78%) reported space constraints, overcrowded wards and limited resources as key barriers. Eight of nine hospitals (89%) expressed a need for KMC training for their staff.

DISCUSSION

This study represents the first national-level assessment of KMC implementation across Malaysian hospitals providing Level II and III neonatal care. The findings demonstrate encouraging uptake, particularly in the public sector, where the majority of hospitals reported offering at least some form of KMC. This reflects Malaysia's commitment to evidence-based neonatal care, given the substantial burden of prematurity on under-five mortality.[9] The high number of preterm births reported by participating hospitals highlights the ongoing need for effective, low-cost interventions such as KMC, which consistently improves survival and reduces morbidity among preterm and low birth weight infants.[3,11-13] The widespread adoption of KMC in public hospitals suggests that national training and advocacy initiatives, such as those

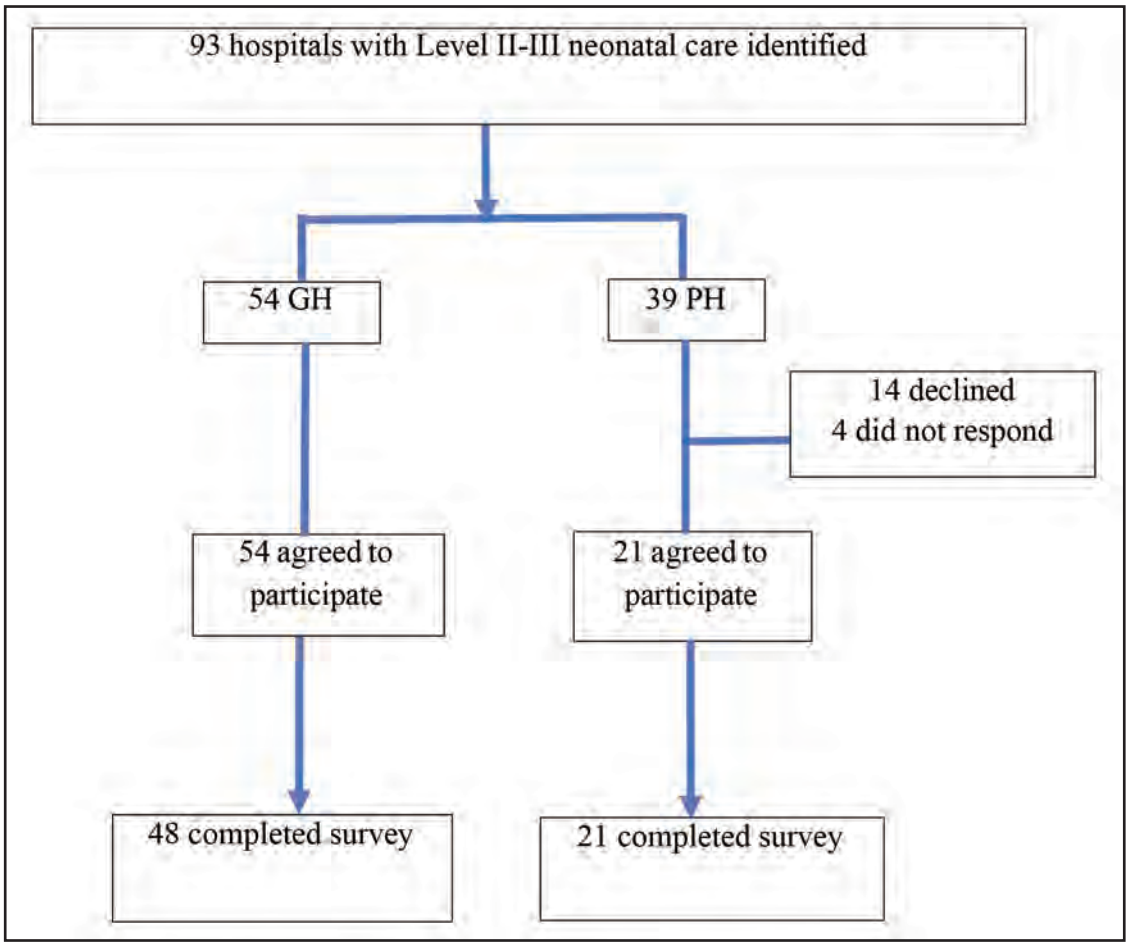

Fig. 1: Study flow chart
(Flow diagram of public hospitals (GH) and private hospitals (PH): approached, responded and included in the final analysis.)

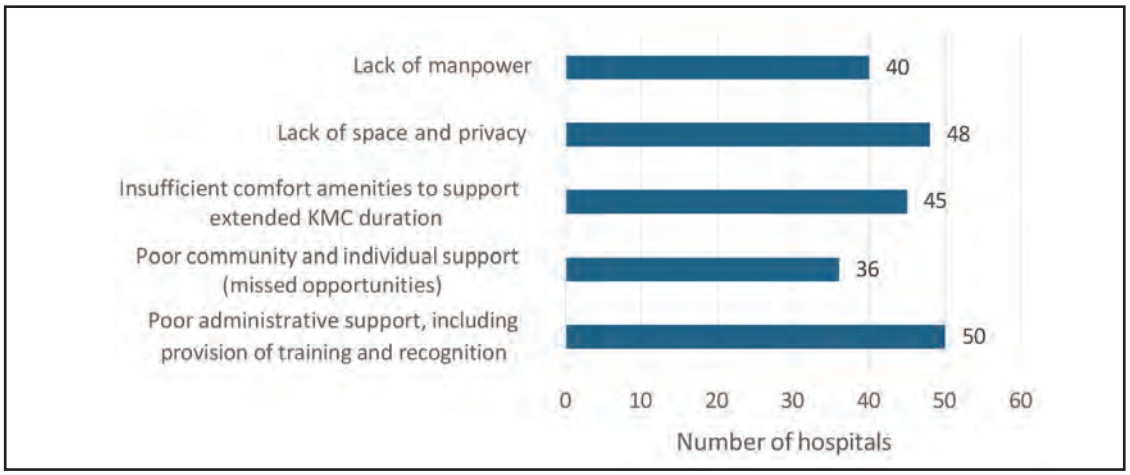

Fig. 2: Barriers to KMC Implementation
(Number of hospitals reporting each barrier to Kangaroo Mother Care (KMC) implementation. Respondents could select more than one barrier).

through the SEA-URCHIN project and supported by KAMY may have had a meaningful impact.

In contrast, the lower response rate among private hospitals may reflect differences in service models and priorities. Anecdotal feedback indicated that some private facilities considered KMC irrelevant to their practice and therefore chose not to participate. This highlights the need for targeted advocacy and training to support routine KMC adoption in the private sector. Consistent with this, our multivariable analysis identified staff training as a key factor associated with regular KMC implementation. Although KMC workshops have been conducted nationwide, their impact appears not to have been sustained, and some hospitals managing large numbers of premature infants reported few or no formally trained staff – a situation likely linked to the non-mandatory nature of KMC training.

Gaps in training may help explain why some hospitals did not permit KMC for very preterm infants requiring more intensive support, such as those on CPAP or receiving enteral feeding, despite strong evidence of benefit.[7,14-16] Similarly, several hospitals restricted KMC for infants receiving tube feeding or oxygen supplementation, even when these infants were clinically stable. Although this study did not explore the specific reasons for these exclusions, findings from our 2018 interviews suggest that KMC was often not considered part of immediate or acute care for smaller or more critically ill infants.[17-18] This perspective contrasts with current evidence and the updated WHO guidance which support KMC in such cases. Targeted training may therefore be critical for shifting these perceptions and enabling more consistent and effective KMC implementation.[13,19-22]

Encouragingly, all hospitals, regardless of their current level of KMC implementation, expressed a clear need for more structured and formalised KMC training. This reflects both recognition of existing gaps and institutional readiness to strengthen or initiate KMC practices. Importantly, unlike infrastructure constraints that require longer-term investment to address, training gaps are more readily addressable and should be prioritised.[4,23-24]

Overcrowded wards and limited physical space were frequently reported as barriers to KMC. One potential solution is to redesign neonatal wards into integrated mother–neonatal units, including mother–neonatal intensive care units (M-NICUs). These models, which prioritise zero separation between mother and infant, are increasingly recognised as critical for facilitating both conventional and immediate KMC as well as for advancing family-centred neonatal care. While such designs require long term planning and investment, they should be considered in national neonatal care strategies.[5,25-26]

We also identified a lack of comfort-related amenities necessary to sustain prolonged KMC sessions including KMC binders, front-button blouses, reclining chairs or sofas, and privacy screens. Few hospitals provided KMC binders, which may contribute to maternal fatigue during prolonged sessions. These findings are consistent with our 2018 key informant interviews, indicating that improvements in KMC infrastructure have yet to be widely implemented.[17-18] In addition, the availability of front-button blouses was independently associated with regular KMC practice. These blouses provide both comfort and modesty, helping mothers overcome discomfort in crowded wards where privacy is limited. At present, such blouses are generally reserved for in-patients and are not available to mothers who are rooming-in or visiting. Unlike large-scale ward restructuring, expanding access to front-button blouses and KMC binders is a low-cost, easily implementable intervention with the potential to improve KMC uptake and consistency.

Limited administrative support emerged as a key barrier to consistent KMC practice. The absence of KMC as a recognised key performance indicator, together with the lack of formalised protocols, may partly explain observed gaps in documentation and variability in practice across hospitals. Without integration into standard ward policies and routine staff training, KMC risks being perceived as a supplementary activity rather than a core component of neonatal care. Strengthened administrative support and commitment from hospital leadership and policymakers has been shown to be essential for successful KMC integration.[5,11, 26-30]

Consistent with previous studies, hospitals with regular and formalised KMC documentation were more likely to report consistent implementation.[26,28,29] Strengthening documentation practices, particularly among doctors may therefore be critical for elevating the clinical importance of KMC and promoting routine practice because our 2018 findings showed that doctors do not routinely document KMC activities.[18]

The absence of a hospital-level KMC census and a national KMC registry further limits the visibility of ongoing activities. Without systematic data collection, it remains challenging to monitor progress, identify implementation gaps, or scale up effective practices. Establishing a centralised national KMC registry could standardise documentation, support monitoring, and inform policy and quality improvement efforts.[21, 24, 31-32]

Our study also found that community awareness of KMC remains limited, which may contribute to suboptimal uptake.[17-18] Integrating KMC education into antenatal care visits is therefore an important strategy, preparing families to participate actively in KMC during the postnatal period.[29]

Interestingly, no clear association was observed between formal incentives and regular KMC practice, suggesting that intrinsic motivation, driven by professional responsibility, belief in KMC benefits, and a culture of compassionate care, may be more influential than formal rewards. This resonates with our 2018 interviews, in which consistent KMC practice was often attributed to staff motivation and supportive team dynamics, highlighting the importance of continuous education, visible leadership endorsement, and an enabling environment where staff feel empowered to provide KMC.[18]

Implications for Policy and Practice

1. **Strengthen administrative support through policy alignment.**
   Greater administrative commitment is needed to integrate KMC into routine neonatal care, including recognising KMC as a key performance indicator, developing formal protocols, and standardising documentation across neonatal wards.
2. **Establish routine KMC monitoring through a census or registry.**
   Implementing a hospital-level KMC census and, ultimately, a national registry, would improve the visibility of KMC activities, enable identification of implementation gaps, and support quality improvement and policy planning.
3. **Prioritise KMC training for all neonatal ward staff.**
   Routine training for doctors and nurses should be prioritised, as it represents an immediately actionable strategy to address knowledge gaps, correct misconceptions and improve consistent KMC practice.
4. **Address practical barriers with basic comfort-related amenities.**
   Ensuring access to front-button blouses, KMC binders, and privacy screens offers low-cost, easily implementable support to sustain KMC within existing infrastructure constraints.
5. **Improve community awareness and antenatal preparation for KMC.** Integrating KMC education into antenatal care services can enhance family awareness and readiness to participate in KMC during the postnatal period.
6. **Plan for long-term redesign of neonatal care environments.**
   Redesigning neonatal wards into integrated mother–neonatal units, including mother–neonatal intensive care units (M-NICUs), should be considered as a longer-term strategy to advance family-centred care and facilitate both conventional and immediate KMC.

Strengths

This study represents the first comprehensive national assessment of KMC implementation in Malaysia. It offers valuable insights into existing practices, common challenges, and critical gaps, offering an evidence-based foundation to inform national strategies for more effective integration of KMC into routine neonatal care.

LIMITATIONS

Data were self-reported by a single representative at each participating hospital, and were not independently verified through clinical observations. As such, the findings reflect individual perspectives that may not fully represent hospital-wide practices, introducing potential reporting bias and variation in interpretation. For instance, some respondents did not select "administrative support" in structured response options but described it in open-text comments, or reported ongoing KMC-related CME despite not selecting training in structured options. These inconsistencies indicate possible differences in interpretation. Furthermore, while the overall response rate was acceptable, the non-participation of some hospitals, particularly from the private sector, may limit the generalisability of the findings to all Level II–III neonatal care facilities in Malaysia. Follow-up qualitative research is needed to explore these themes in greater depth.

CONCLUSION

This national survey provides the first comprehensive overview of KMC implementation in Malaysia, revealing that KMC is practiced in most public hospitals and in some private facilities. Significant gaps remain in administrative support, staff training, documentation practices, and infrastructure. Addressing these gaps is essential to optimise the impact of KMC and improve neonatal outcomes nationwide. Feasible, low cost interventions such as providing front-button blouses, enhancing staff training, and implementing formal KMC protocols, can support more consistent and sustainable integration of KMC into routine neonatal care. These findings provide a pragmatic roadmap for national scale-up of KMC aligned with Malaysia's neonatal care priorities.

CONFLICT OF INTEREST

All authors declare no conflict of interest except that SI and NI work in two of the participating hospitals.

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Appendix 1: Questionnaire (edited)

Title of study: National survey on the implementation of Kangaroo Mother Care for premature infants in hospitals across Malaysia

Tajuk kajian: Kajian kebangsaan mengenai pelaksanaan Kangaroo Mother Care untuk bayi pramatang di hospital di seluruh Malaysia

1. By clicking either option, I am providing my consent and agreement accordingly. *
   Berdasarkan pilihan saya, saya mengakui saya telah memberikan persetujuan yang sewajarnya.]

   Mark only one oval.

   ☐ I agree to participate in the study. [Saya bersetuju untuk mengambil bahagian dalam kajian ini.]
   ☐ I do not agree to participate in the study. [Saya tidak setuju untuk mengambil bahagian dalam kajian ini.]
   Skip to section 5 (Thank you very much for taking the time and effort in filling up this form. Please click the "Submit" button. Terima kasih kerana meluangkan masa dan tenaga untuk melengkapkan borang kajian ini. Sila klik butang 'Submit'.)

Section B

Demographic data

Thank you for your participation which will help guide future strategies to assist in the implementation of KMC in hospitals. Please note that in this study, **KMC refers to prolonged skin-to-skin practices between mother (or surrogates) and baby after the 1st hour skin-to-skin contact in the labour room.**

Terima kasih di atas penyertaan anda dalam kaji selidik KMC yang akan membantu meningkatkan strategi penambahbaikan perlaksanaan KMC di hospital.(Untuk makluman anda, ***KMC dalam kaji selidik ini merujuk kepada amalan sentuhan kulit-ke-kulit yang berpanjangan antara ibu (atau pengganti) dengan bayi, selepas amalan sentuhan kulit-ke-kulit pada jam pertama selepas kelahiran di dalam dewan bersalin.***

2. Study ID *

   _____

Your designation (eg Matron/ Neonatologist/ Medical officer etc) *
Jawatan anda: Contoh Ketua Penyelia Jururawat, Neonatologis, Pegawai Perubatan, dsb.

3. In which state is your hospital located? *(Dimanakah lokasi hospital anda?)* *
   Mark only one oval.

   ☐ Perlis
   ☐ Kedah
   ☐ Kelantan
   ☐ Penang
   ☐ Perak
   ☐ Pahang
   ☐ Selangor
   ☐ Negeri Sembilan
   ☐ Melaka
   ☐ Terengganu
   ☐ Johor
   ☐ Sabah
   ☐ Sarawak

4. Number of live births in your hospital in Year 2023 *(Pada tahun 2023, berapakah kelahiran bayi hidup di hospital anda?)*

   _____

5. Number of babies born preterm in your hospital in Year 2023 *(Pada tahun 2023, berapakah kelahiran bayi pramatang di hospital anda?)*

_____

6. Does your hospital implement KMC practices? *(Adakah hospital anda mengamalkan amalan KMC?)* *

Mark only one oval.

- ☐ Yes, this is regular practice in the neonatal units (Ya, sentiasa diamalkan di unit neonat)
- ☐ Yes, this is sometimes done in the neonatal units (Ya, tetapi sekali-sekala di unit neonat)
- ☐ No, this is not done (Tidah, tak pernah amalkan) *Skip to question 16*
- ☐ Don't know (Tidak tahu) *Skip to question 16*

Section C: KMC implementation practices *(Amalan perlaksanaan KMC)*

7. Does your hospital have any of these to support KMC practices? (Please tick (√) all items that apply).*
Adakah hospital anda mempunyai mana mana yang berikutan untuk menyokong amalan KMC? (Sila tandakan (√) pada semua yang berkenaan)

Check all that apply.

- ☐ Yes. a written policy (Ya, ada polisi bertulis.)
- ☐ Yes, a guideline or protocol (Ya, ada garispanduan atau protokol)
- ☐ Yes, regular CME or hands-on teaching on the job on KMC (Ya, ada CME atau kursus berkenaan KMC sewaktu kerja dair masa ke semasa)
- ☐ No (Tiada)

8. In which part(s) of your hospital is/are KMC support provided? (please tick all items that apply) *
Di hospital anda, di manakah sokongan KMC disediakan? (Sila tandakan (√) pada semua yang berkenaan)

Check all that apply.

- ☐ Postnatal wards (Wad postnatal)
- ☐ Special care nursery or neonatal wards (Wad perawatan bayi) Mother's rooming in room (Bilik 'rooming-in' ibu)
- ☐ KMC room (Bilik KMC) NICU
- ☐ Maternal ICU or HDU (ICU atau HDU si ibu selepas bersalin)
- ☐ Other: _____

9. Which of the following groups of babies receive KMC in your hospital? (please tick all items that apply) *
Antara bayi-bayi yang disenaraikan dibawah, bayi yang mana menerima perawatan KMC di hospital anda? (Sila tandakan (√) untuk semua yang berkenaan)

Check all that apply.

- ☐ Term AGA (Cukup bulan AGA) Term SGA (Cukup bulan SGA)
- ☐ Preterm baby 34 weeks to 36 weeks and 6 days (Bayi pramatang 34 minggu hingga 36 minggu dan 6 hari)
- ☐ Preterm baby 32 weeks to 33 weeks and 6 days (Bayi pramatang 32 minggu hingga 33 minggu dan 6 hari)
- ☐ Preterm baby < 32 weeks and 6 days (Bayi pramatan kurang dari 32 minggu) Baby on tube feeding (Bayi yang memerlukan tube feeding)
- ☐ Baby on oxygen (Bayi yang memerlukan bantuan oksigen)
- ☐ Baby on CPAP (Bayi yang sedang menggunakan bantuan pernafasan CPAP)
- ☐ Baby on mechanical ventilator (Bayi yang sedang menggunakan bantuan pernafasan ventilator)
- ☐ Baby with central lines (Bayi yang ada "central lines")
- ☐ Other: _____

10. What facilities or support do your hospital have for KMC practices? (choose all that apply) *
Apakah kemudahan atau sokongan untuk amalan KMC yang sedia ada di hospital anda?(Sila tandakan (√) untuk semua yang berkenaan)

Check all that apply.

- ☐ KMC corner in the ward (Sudut KMC di wad)
- ☐ Allowance of KMC practices in mother's rooming-in rooms (Kebenaran untuk mengamal KMC di bilik rooming-in)
- ☐ Lazy chair (Kerusi malas)
- ☐ Bed/reclining chair or sofa (kerusi atau sofa bersandar)
- ☐ KMC binders (not bedsheets/big blanket) [pengikat/karung KMC, bukan cadar atau selimut panjang]
- ☐ Screens (Skrin)
- ☐ Front-button blouses (Baju berbutang depan) Changing room (Bilik tukar pakaian)
- ☐ KMC pamphlets (Risalah KMC)
- ☐ Having KMC as part of routine ward duties (Amalan KMC sebagai sebahagian tugasan harian)
- ☐ Other:

11. When KMC is provided, is this documented somewhere? (e.g. in the patient's notes) *
Apabila KMC dilakukan, adakah aktiviti ini dicatatkan? (Cth: seperti di dalam laporan pesakit)

Mark only one oval.

- ☐ Yes, all KMC activity is documented. (Ya, semua aktiviti KMC dicatatkan.)
- ☐ Yes, but only intermittently documented. (Ya, tetapi hanya kadang kadang dicatat.)
- ☐ No. (Tidak) *Skip to question 16*
- ☐ Don't know. (Tidak tahu) *Skip to question 16*

12. If only intermittently documented, could you let us know why?
Jika aktiviti KMC tidak selalu dicatatkan, bolehkah anda beritahu mengapa?

_____

_____

_____

_____

13. Where do the neonatal staff write down KMC practices that is done for the infants? (please tick all items that apply) *
Dimanakah kakitangan neonat menulis laporan aktiviti KMC untuk bayi? (Sila tandakan (√) untuk memilih semua yang berkenaan)

Check all that apply.

- ☐ Patients' observational notes (Laporan harian pesakit)
- ☐ Doctors' handover sheet (Lembaran penyerahan doktor)
- ☐ Nurses' handover sheet (Lembaran penyerahan jururawat)
- ☐ the Ward's Noticeboard (Papan notis wad)
- ☐ Other: _____

14. Do you have a census to document ongoing data collection of all KMC practice records in your hospital? *
Adakah hospital anda memperoleh data melalui bancian bagi semua rekod amalan KMC?

Mark only one oval.

- ☐ Yes (Ada)
- ☐ No (Tiada)
- ☐ Don't know (Tidak pasti)

Section D: Facilitating KMC implementation practices
Sokongan kepada amalan perlaksanaan KMC

15. What does your hospital need (or is still lacking) which makes KMC practice difficult to implement? (choose all that apply)*
Apakah sokongan yang diperlukan oleh hospital anda (atau masih berkurangan) yang menyebabkan amalan KMC susah diimplementasi?

Check all that apply.

- ☐ KMC corner in the ward (Sudut KMC di wad)
- ☐ Allowance of KMC practices in mother's rooming-in rooms (Kebenaran untuk mengamal KMC di bilik ibu)
- ☐ KMC room (Bilik KMC) Lazy chair (Kerusi malas)
- ☐ Bed/reclining chair or sofa (Kerusi atau sofa bersandar)
- ☐ KMC binders (not bedsheets/big blanket) [pengikat/karung KMC, bukan cadar atau selimut panjang]
- ☐ Screens (Skrin)
- ☐ Front-button blouses (Baju berbutang depan) Changing room (Bilik tukar pakaian)
- ☐ KMC pamphlets (Risalah KMC)
- ☐ Ward policy and protocol on KMC (Polisi dan protokol amalan KMC di wad)
- ☐ Recognising KMC as key performance index (Pengiktirafan KMC sebagai KPI)
- ☐ Other: _____

16. How many of the staff in the neonatal ward (including yourself) have been trained (formally or informally) to support KMC?*
Berapakah kakitangan di wad neonat (termasuk anda) yang pernah dilatih untuk KMC (secara formal dan bukan formal)?)

Mark only one oval.

- ☐ Most of them (Kebanyakan)
- ☐ Some of them (Sebahagian)
- ☐ Very few of them (Segelintir)
- ☐ Not sure (Tidak pasti)
- ☐ None of us are trained (Tiada)

17. Where did they get KMC training from? (tick (√) all that applies) *
Di manakah mereka menerima ilmu amalan KMC? (Sila tandakan (√) untuk kesemua yang berkenaan)

Check all that apply.

- ☐ Don't know/No one has been trained (Tidak tahu. Tiada antara kami dilatih)
- ☐ Workshops organised by Hospital Sultan Abdul Halim (Bengkel yang dianjurkan oleh Hospital Sultan Abdul Halim)
- ☐ Workshops organised by Hospital Seberang Jaya (Bengkel yang dianjurkan oleh Hospital Seberang Jaya)
- ☐ Workshops organised by Hospital Pulau Pinang (Bengkel yang dianjurkan oleh Hospital Pulau Pinang)
- ☐ Workshops organised by Hospital Sultanah Bahiyah (Bengkel yang dianjurkan oleh Hospital
- ☐ Workshops organised by Hospital Raja Permaisuri Bainun (Bengkel yang dianjurkan oleh Hospital Raja Permaisuri Bainun)
- ☐ Workshops organised by Hospital Raja Perempuan Zainab II (Bengkel yang dianjurkan oleh Hospital Raja Perempuan Zainab II)
- ☐ Workshops organised by Hospital Sibu (Bengkel yang dianjurkan oleh Hospital Sibu) Workshops organised by Hospital Kuching (Bengkel yang dianjurkan oleh Hospital Kuching)
- ☐ Workshops organised by PPUKM (Bengkel yang dianjurkan oleh PPUKM)
- ☐ Workshops organised by Penang Medical College (now RCSI & UCD Malaysia Campus) and KAMY (Bengkel yang dianjurkan oleh RUMC dan KAMY)
- ☐ SEA-URCHIN Project (South East Asia - Using Research for Change in Hospital-acquired Infection in Neonates Project) (Melalui projek SEA-URCHIN)
- ☐ Self-training using World Health Organisation (WHO) guidelines 2003 (Latihan kendiri dengan garis panduan WHO 2003)
- ☐ Self-training using WHO guidelines 2022 (Latihan kendiri dengan garis panduan WHO 2022)
- ☐ Other: _____

18. Would your hospital be interested to receive KMC support? *
Adakah hospital anda berminat untuk menerima sokongan KMC?

Mark only one oval.

- ☐ Yes (Ya)
- ☐ Maybe (Mungkin)
- ☐ No (Tidak)
  Skip to section 5 (Thank you very much for taking the time and effort in filling up this form. Please click the "Submit" button. Terima kasih kerana meluangkan masa dan tenaga untuk melengkapkan borang kajian ini. Sila klik butang 'Submit'.)

19. Please describe what support your hospital needs.
Sila nyatakan sokongan yang diperlukan oleh hospital anda

_____

_____

_____

_____

Thank you very much for taking the time and effort in filling up this form. Please click the "Submit" button.
Terima kasih kerana meluangkan masa dan tenaga untuk melengkapkan borang kajian ini. Sila klik butang 'Submit'.