

Effect of kangaroo position on premature newborns



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ABSTRACT

Introduction: The kangaroo care method is a model of perinatal care aimed at the humanized care of the newborn and its family, which assists pregnant women in high-risk pregnancies or neonates in specialized hospitalization units, such as preterm and low birth weight infants. This position maintains skin-to-skin contact between the newborn and the parents, favoring affective bonding, thermal stability, encouragement of breastfeeding and the development of the baby. Thus, the kangaroo method is an effective and low-cost strategy, helping to reduce the mortality rate of premature and low birth weight babies. **Methodology:** Integrative literature review in the PubMed, LILACS and SciELO databases, using the descriptors: "Kangaroo Mother Care", "Kangaroo Mother Care and Low Birth Weight" and "Kangaroo Mother Care and Premature". A total of 12 articles were selected from 2015 to 2023. Studies published in low-impact journals were excluded. **Discussion:** Studies have associated kangaroo care with a reduction in mortality, incidence of infections, and hypothermia in premature and low birth weight babies, as well as improvements in body temperature, oxygen saturation, and mean weight gain. In addition, this position was also related to a shorter hospital stay, a lower stress level of the newborn and better cognitive development. Positive impacts were also observed on the mental health of mothers who adopted this method, highlighting benefits such as reduced risk of depression, anxiety and postpartum stress, which can be explained by a better mother-baby bond and complex physiological mechanisms, possibly related to increased oxytocin release. **Conclusion:** Given the low cost and positive impacts that the kangaroo care method has been demonstrating, the application of this approach is valid and beneficial for both neonates and mothers. Therefore, it is up to the attending physician to evaluate the indication of the method to his patients, and thus define whether there is an indication for the use of the technique.

Keywords: Kangaroo Care, Preterm and low birth weight neonates, Neonatal mortality.



1 INTRODUCTION

In 1979, the Colombian physician Dr. Edgar Ray Sanabria, developed the kangaroo method with the aim of lowering the costs of perinatal care, promoting the bond between mother and baby, greater thermal stability and better development of the newborn, which allows for an early hospital discharge. In 1999, a standard was presented to the Ministry of Health for the implementation of this method in Brazilian hospitals: the standard of Humanized Care for the Newborn - Kangaroo Method. In 2020, the project was published in the Official Gazette of the Union, establishing the Kangaroo Method as a National Health Policy¹.

This method consists of a perinatal care model focused on the qualified and humanized care of the newborn and its family, which assists pregnant women in high-risk pregnancies or neonates who are in specialized hospitalization units, such as preterm and low birth weight infants. It is based on skin-to-skin contact, which begins early and lightly, progressively evolving to the kangaroo position. This position consists of maintaining this skin-to-skin contact in a vertical position on the parents' chest, favoring affective bonding, thermal stability, stimulation of breastfeeding and the development of the baby². Preterm newborns are those born before completing 37 weeks of gestation and those who weigh up to 2500 grams are considered low birth weight newborns³.

A Cochrane systematic review associated kangaroo care with lower mortality, fewer cases of infections, better adherence to breastfeeding, and greater weight gain when compared to conventional neonatal care⁴. This position was also related to shorter hospital stays, lower stress levels in newborns, and better cognitive development⁵. In addition to presenting several advantages for the child, the kangaroo method can also reduce maternal anxiety and strengthen the parental bond, which provides more effective care for the newborn.

Worldwide, 20 million premature and low birth weight babies are born annually, with one-third dying before reaching one year of age⁶. In this context, the kangaroo method is an effective and low-cost strategy that helps to reduce this rate. Thus, the benefits of the kangaroo method seem to be numerous not only for the baby, but also for his family, and its contraindications are practically non-existent. Therefore, there is a need to expand studies on this technique, both to improve the understanding of its efficacy and to increase its dissemination among health professionals and families, providing the improvement and progress of perinatal care.

This article aims to evaluate the efficacy and benefits of the Kangaroo Mother Care (KMC) in reducing neonatal mortality, improving clinical parameters in premature and low birth weight newborns, and positively impacting mothers' mental health, based on evidence from recent systematic reviews and clinical trials.



2 METHODOLOGY

This is an integrative review of the literature. From the choice of the theme of great relevance, the study followed the following steps: selection of databases with significant academic-scientific relevance and selection of the descriptors used to select the most pertinent data for the preparation of the article; elaboration of inclusion and exclusion criteria for articles for the present study and selection of articles that met these criteria; organization of the selected items and, finally, presentation and analysis of the data obtained.

The selection of articles was made from the following databases: PubMed, LILACS and SciELO; through the use of the descriptors: "Kangaroo Mother Care", "Kangaroo Mother Care and Low Birth Weight" and "Kangaroo Mother Care and Premature", being found, respectively, 423, 363 and 268. In Scielo, 111, 32 and 61 studies were found for the same descriptors, respectively. In the LILACS database, 1,660, 512 and 821 articles were found, also using the same descriptors. Firstly, we sought to elucidate the technique and define the concepts that underlie the Kangaroo Mother Method. Then, the effects on the development of a preterm newborn were associated with the method.

Therefore, for this study, the literature with the descriptors "Kangaroo Mother Care and Premature" was prioritized, considering that they address the central theme of this article. In addition, articles published between 2015 and 2023, in Portuguese, English and Spanish, available free of charge in full, were included. Literature published in low-impact journals and journals or with inconclusive methodologies and available only in abstract form was excluded.

3 DISCUSSION

The analysis of the effectiveness of the Kangaroo Mother Care (KMC) through our systematic review brought deep insights into neonatal care. MMC has been shown to play a crucial role in reducing neonatal mortality, particularly during the first 28 days of life. In addition, this method has been shown to significantly decrease the incidence of nosocomial infections and septicemia, as well as prevent episodes of hypothermia in infants born prematurely or with low birth weight. Such benefits extend not only to the hospital setting, but also to home care⁴.

Three recent systematic reviews broaden our understanding of the subject. The Cochrane systematic review, conducted in 2016, involved the evaluation of 21 studies, encompassing a total of 3,042 babies born with low birth weight. In this review, we found a statistically significant decrease in the mortality rate among infants at hospital discharge or 40 weeks postmenstrual age (RR 0.60, 95% CI 0.39 to 0.92; 8 trials, 1,736 infants). In addition, similar effects were observed with respect to the incidence of nosocomial infections/sepsis and the occurrence of hypothermia. Therefore, these results suggest that MMC may be a viable alternative to conventional neonatal care for low birth weight



infants, especially in resource-limited settings. However, it is important to note that the reliability of this evidence was considered moderate⁴.

A meta-analysis, published in 2023, which followed inclusion criteria and methodology similar to the Cochrane review and included data updated to March 2022, reinforced previous findings. The inclusion of new studies resulted in more accurate estimates and increased the reliability of the evidence. This review recommends the implementation of MMC for preterm and low birth weight infants immediately after birth, maintaining it for at least 8 hours daily, due to the remarkable clinical benefits observed in the newborns evaluated⁷.

The other review, also published in 2023, using data from 634 preterm newborn patients, corroborated the benefits of this technique. According to it, neonates submitted to KMC had a substantial improvement in the items "Temperature" ($z=3.21$; $p= 0.000$) and "Oxygen Saturation" ($Z=2.49$; $p= 0.000$). In addition, it is noteworthy that MMC, when applied in periods of one hour or less, proved to be more effective in improving the Temperature and Oxygen Saturation items. However, it should be noted that this same study does not have sufficient evidence to attest that MMC positively affected the heart rate and respiratory rate of these patients. For this reason, it recommends that new longitudinal, randomized and controlled studies be conducted to evaluate the effects of KMC on the vital signs of preterm newborns who have vital parameters that are outside the reference scales⁸.

In addition, a randomized controlled clinical trial, published in June 2020, using data from 140 neonates admitted to an intensive care unit, attested to important benefits of KMC. This study demonstrated beneficial results for those neonates submitted to KMC, so that they had a mean weight gain of 10.22 ± 1.65 grams/day/kg, while those in the control group had a gain of 7.87 ± 1.71 grams/day/kg ($p=0.0001$)⁹.

In confluence with the previous study, a randomized controlled trial published in May 2021 elucidated benefits of MMC in reducing mortality in low-birth weight infants. In this study, they grouped the data of 3211 low birth weight newborns, so that 1609 were assigned to the intervention group and 1602 were assigned to the control group. In the first 28 days of the study, 191 neonates (12.0%) in the intervention group died, compared to 249 deaths in the control group (15.7%) (Relative risk of death; 0.75, 95% CI: 0.64 to 0.89, $p=0.001$). In addition, when comparing deaths in the first 72 hours, the intervention group had 74 deaths in these circumstances (4.6%), while the control group had 92 deaths (5.8%) (Relative risk of death; 0.77, 95% CI: 0.58 to 1.04; $p=0.09$).

In addition to the favorable results already seen in the health of infants when adopting KMC, a recent meta-analysis, published in 2023, investigated the impacts of this method on the physical and mental health of parents. This study covered data from 7,719 mothers and fathers of premature or low birth weight babies. The results indicate that the implementation of KMC provides mothers and infants with a valuable opportunity to establish close contact, which helps them to gain confidence in their



care of premature babies. In addition, it helps babies recognize their parents, strengthening family bonds¹⁰.

Studies suggest that the beneficial effect of Kangaroo Mother Care on mothers' mental health may be explained by improved mother-infant bonding and by complex physiological mechanisms, possibly related to increased oxytocin release. Benefits include reduced risk of depression, anxiety, and postpartum stress¹¹.

Therefore, based on ample and up-to-date evidence, it is evident that KMC can also exert a positive impact on mothers' mental health, including preventing postpartum depression, anxiety, stress and distress, while strengthening the mother-infant bond. However, the evidence on the benefits for father bonding is still limited.

4 CONCLUSION

It is possible to conclude, then, that the kangaroo care method has been shown to be valid in several situations, both maternal and neonatal. This method, in addition to being easy to cost and feasibility, can help prevent the occurrence of neonatal infections, sepsis, reduce mortality in early life, and enable a better evolution for neonates in terms of weight and maternal bonding. In addition, this greater mother-baby contact is advantageous for the mother by stimulating the release of oxytocin and increasing family recognition, which has been shown to be efficient in preventing various mental health issues, such as postpartum depression, anxiety, among others.

In addition, it is important to consider the extreme ease of applying the kangaroo method in any perinatal care service, since there is no cost and can even result in an earlier hospital discharge than expected. There are mostly only advantages related to the application of the kangaroo care method, and there are little or no contraindications or arguments that rule out the method during the care of a newborn.

In any case, it is up to the attending physician to evaluate the indication of the method to his patients, considering that he is aware of the possible benefits that will be part of the treatment of this mother and baby, in addition to the individualized knowledge of the case in question, and thus define whether the use of the technique is well indicated for him.



REFERENCES

- Cera Sanches MT, Costa R, Azevedo VMG de O, Morsch DS, Lamy ZC. Método Canguru no Brasil: 15 anos de política pública. São Paulo: Instituto de Saúde; 2015. [Acessado em 01/09/2023]. Disponível em <https://portaldeboaspraticas.iff.fiocruz.br/biblioteca/metodo-canguru-no-brasil-15-anos-de-politica-publica/>
- Morsch DS, Lamy ZC. Atenção Humanizada ao Recém-Nascido. 3ª edição. Brasília – DF: Secretaria de Atenção à Saúde, Departamento de Ações Programáticas Estratégicas, Ministério da Saúde; 2017. [Acessado em 01/09/2023]. Disponível em https://bvsmis.saude.gov.br/bvs/publicacoes/atencao_humanizada_metodo_canguru_manual_3ed.pdf
- Preterm birth. World Health Organization, Maio 2023. [Acesso em 01/09/2023]. Disponível em: <https://www.who.int/news-room/fact-sheets/detail/preterm-birth>
- Conde-Agudelo A, Daíz-Rossello J. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants [Internet]. Cochrane Database of Systematic Reviews; Publicado online 2016 Agosto. [Acesso em 02/09/2023]. Disponível em: <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD002771.pub4/full/pt?contentLanguage=pt>
- Mazumder S, Taneja S, et al. Impact of community-initiated Kangaroo Mother Care on survival of low birth weight infants: study protocol for a randomized controlled trial [Internet]. Trials, 2017. Publicado online 2017 Jun. [Acesso em 02/09/2023]. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5463407/#CR18>
- Método Canguru. Ministério da Saúde. Publicado em Novembro 2022; [Acesso em 03/09/2023]. Disponível em: <https://www.gov.br/saude/pt-br/assuntos/saude-de-a-a-z/s/saude-da-crianca/metodo-canguru>
- Sivanandan S, Sankar M. Kangaroo mother care for preterm or low birth weight infants: a systematic review and meta-analysis [Internet]. BMJ Glob Health 2023. Publicado online 2023 Maio. [Acesso em 06/09/2023]. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10254798/>
- Zengin H, et al. The effects of kangaroo mother care on physiological parameters of premature neonates in neonatal intensive care unit: A systematic review [Internet]. J Pediatr Nurs, 2023 Jul-Ago. [Acesso em 06/09/2023]. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/37149436/>
- Ovais Ur Rehman M, et al. Impact of intermittent kangaroo mother care on weight gain of neonate in nicu: Randomized control trial [Internet]. J Pak Med Assoc, 2020 Jun; [Acesso em 07/09/2023]. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/32810089/>
- Pathak BG, Sinha B, Sharma N, Mazumder S, Bhandari N. Effects of kangaroo mother care on maternal and paternal health: systematic review and meta-analysis [Internet]. Bull World Health Organ, 2023; [Acesso em 08/09/2023]. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10225947/>
- Scime N, Gavarkovs A, Chaput K. The effect of skin-to-skin care on postpartum depression among mothers of preterm or low birthweight infants: A systematic review and meta-analysis [Internet]. Journal of Affective Disorders, 2019 Jun. [Acesso em 08/09/2023]. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0165032719304367?via%3Dihub>