



Does Kangaroo Mother Care have an impact on breastfeeding or oral feeding readiness measures in preterm infants?

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Background

Kangaroo Mother Care (KMC) was first established in Bogotá, Colombia as a cost-effective alternative to traditional incubation in under-resourced facilities (Rey & Martinez, 1983). In KMC positioning, an infant wearing only a diaper and a hat is placed between the mother's breasts in an upright position, creating skin-to-skin contact (SSC) between the mother and infant. Rey and Martinez (1983) promote early implementation of KMC in a continuous and prolonged manner where possible.

In addition to being a cost-effective and easy to administer alternative, there is research to support the efficacy of KMC for other outcomes including reduction in risk of mortality, infection, and sepsis in preterm infants (Conde-Agudelo, 2016). KMC has also been shown to significantly improve thermoregulation abilities and shorten hospital stays (Charpak et al., 1997). There is an increasing body of research on feeding measures regarding KMC's impact on feeding readiness in preterm infants. The purpose of our study was to investigate and systematically review the existing literature concerning the outcomes of Kangaroo Mother Care (KMC), or skin-to-skin contact (SSC) on breastfeeding or oral feeding readiness in preterm infants.

PICO Question

In preterm infants, how does Kangaroo Mother Care, or skin-to-skin contact, influence breastfeeding, or oral feeding, readiness?

Methods

Databases Searched

- PubMed, ProQuest, CINAHL

Inclusion Criteria

- Studies with a preterm population, oral feeding outcomes, and KMC or SSC as the primary intervention technique
- Studies must be peer reviewed and in English
- Studies reporting on original research

Exclusion Criteria

- Case or descriptive study designs

Time Limiting

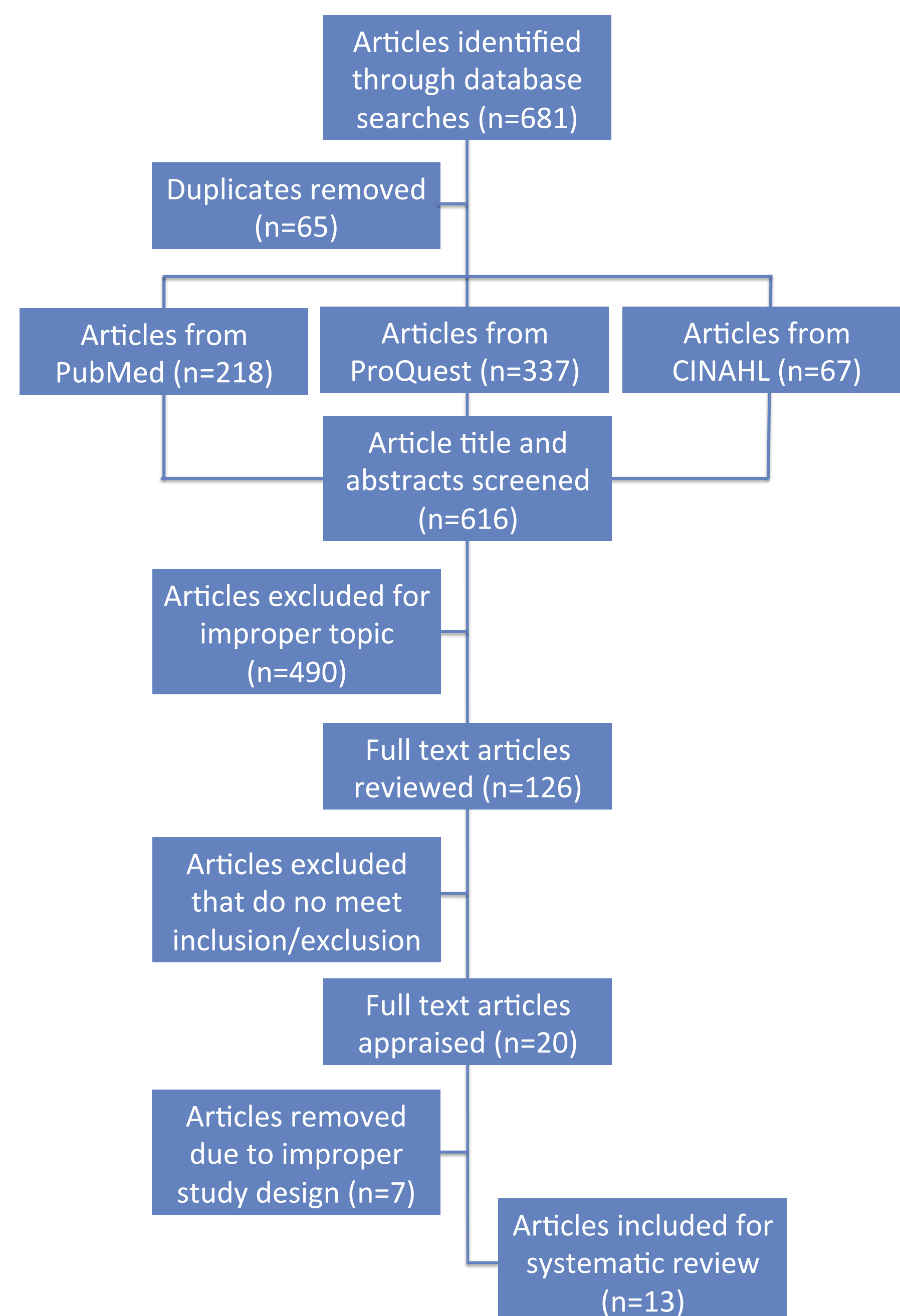
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Search terms

- ("Skin-to-skin" OR "Kangaroo Care" OR "Kangaroo Mother Care" OR SSC)
- (Preterm OR Premature*)
- (Infant* OR Baby OR Babies OR neonat*)
- (Breastfeed* OR "Oral feed*")

Reliability

- Title and Abstract Screen: 84%
- Full text review: 100%
- Quality Appraisals: 93%



Summary of Articles

Summary of Study Characteristics						
Article Information				Results Reported		
Primary Author	Type of Study	Definition of Preterm	Definition of Intervention	Successful Breastfeeding	Breastfeeding Exclusivity	Breastfeeding Duration
Higher Quality						
Facking	L	GA < 37 weeks	Standard Method of KMC	X		X
Gianni	L	GA ≤ 32 weeks	Standard Method of KMC for at least 90 minutes/day		✓	
Gregson	C	GA 34-36 weeks	Standard Method of KMC "as much as possible" (pg. 570)		✓	
Hake-Brooks	RCT	GA 32 - 36 weeks BW 1300 - 3000 g	Standard Method of KMC for an average of 4.47 hours		✓	✓
Heidarzadeh	CS	Presence in NICU	Standard Method of KMC for at least 1-3 hours at least 3x/day		✓	
Ramanathan	RCT	BW < 1500 g	Standard Method of KMC for at least 4 hours/day			✓
Tully	RCT	BW < 1750 g	Standard Method of KMC at least 15 minutes/day 3x/week	X		X
Lesser Quality						
Gathwala	RCT	BW ≤ 1800 g	Standard Method of KMC for at least 90 minutes/day		✓	
Gavhane	RCT	BW < 1500 g	At least 8 hours/day	X	X	
Morelius	RCT	GA 32-25 weeks	Standard Method of KMC for an average of. 19.6 hours/day	X		
Menezes	L	BW ≤ 1750 g	Not reported		(unknown)	
Oras	L	GA 28 - 34 weeks	Standard Method of KMC	X	✓	X
Rojas	RCT	GA ≤ 32 weeks and BW ≤ 1500 g	Standard Method of KMC	✓		

RCT = Randomized Control Trial; L = Longitudinal Study; CS = Cross Sectional Study; C = Cohort Study;

GA = Gestational Age; BW = Birth Weight

Standard Method of KMC: Infant placed skin-to-skin on mother or father, having only a diaper and a cap/socks on when necessary and covered with a blanket or the mother's clothing; sling to hold infant optional

Outcome Measures

Successful Breastfeeding

- 6 studies reported on successful breastfeeding as the result of KMC or SSC intervention
- 1/6 (17%) of studies found that KMC or SSC has a statistically significant impact on ability of the preterm infant to successfully breastfeed
- Successful breastfeeding defined as partial or exclusive oral feeding at the breast, often as determined by a lactation consultant, nurse, physician, or other medical professional

Breastfeeding Exclusivity

- 7 studies reported on exclusive breastfeeding as the result of KMC or SSC intervention
- 6/7 (86%) of studies found that KMC or SSC had a statistically significant impact on whether or not the preterm infant exclusively breastfed at a variety of time points after discharge from the NICU

Breastfeeding Duration

- 5 studies reported on duration of breastfeeding as the result of KMC or SSC intervention
- 2/5 (40%) of studies found that KMC or SSC has a statistically significant impact on the duration a preterm infant will engage in oral feeding at the breast after discharge from hospital

Results

Significance Data & Effect Sizes				
Title	Study Design	Successful Breastfeeding	Breastfeeding Exclusivity	Breastfeeding Duration
Gianni	L		P<0.0001, N/R	
Gregson	C		P=0.015, OR=2.09	
Hake-Brooks	RCT		P=0.047, N/R	P=0.003, N/R
Heidarzadeh	CS		P=0.00, OR=4.1	
Ramanathan	RCT			P=0.04, N/R
Gathwala	RCT		P<0.05, N/R	
Oras	L		P<0.001, N/R	
Rojas	RCT	P=0.06, OR=2.8		

- Successful Breastfeeding:** The single study that found statistically significant differences in successful breastfeeding reported a large effect size (odds ratio = 2.8).
- Breastfeeding Exclusivity:** Of the six studies that found statistically significant differences in breastfeeding exclusivity, two reported large effect sizes (odds ratio of more than 2.0) and the remaining four did not report on effect size.
- Breastfeeding Duration:** Of the two studies that found statistically significant differences in breastfeeding duration, none reported on effect size.

Conclusions

- Due to the significant variation among critical aspects of the included studies there is insufficient evidence to support or refute the use of KMC to improve oral feeding readiness in preterm infants.
 - Definitions of preterm infants included gestational age of 32 to 37 weeks, birth weight ranging from 1300 to 1800 grams, or simply the infant's presence in the NICU
 - Amount of KMC infants received ranged from 90 minutes to over 19 hours per day
 - Wide range of breastfeeding outcomes
- While KMC cannot be proven to be beneficial, clinicians can be confident that it is assuredly not harmful for preterm infants.
- KMC is cost effective, easy to implement, and has other positive outcomes suggests that it could be an effective intervention to use for preterm infants that are medically stable, particularly those in more rural and under-resourced areas.

Future Research

- Further research is needed in order to draw a reliable conclusion about the effects of KMC on oral feeding readiness in the preterm infant population.
- Future research efforts should focus on establishing and adhering to more consistent definitions of KMC, breastfeeding outcomes, and preterm infants, in order to make a more confident claim about the efficacy of KMC as an intervention for feeding outcomes.
- Going forward, studies that find statistical significance among outcomes should calculate the effect size in order to understand the clinical significance of KMC on feeding outcomes

Disclosures/Acknowledgements: The researchers have no intellectual or financial conflicts of interest. This systematic review was completed as a project for SPHS 701 Research Methods for Dr. Linda Watson & Dr. Jessica Steinbrenner.

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