Investigating the Effect of Held Position during Kangaroo Care on Physiological Parameters of Premature Infants: A Randomised Controlled Trial

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Introduction

- Provision of kangaroo mother care (KMC) in neonatal intensive care units (NICU) is an integral part of neonatal care.
- Studies have found that KMC reduced mortality, increased growth and improved neurodevelopmental outcomes, breastfeeding success and modulation of pain was observed in preterm infants receiving KMC.
- There is evidence to show that KMC helps to achieve cardiovascular, respiratory and temperature stability.

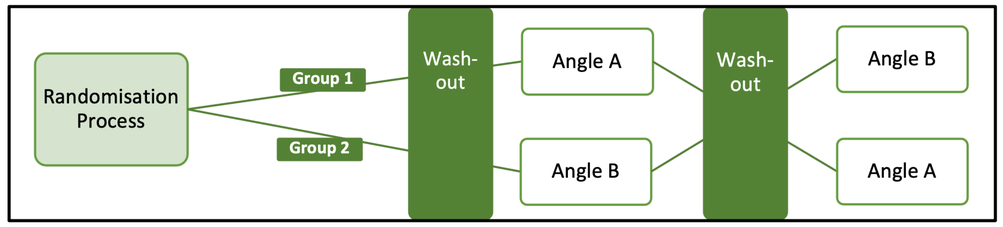
The objective of this study was to ascertain if there is an optimum position for carrying out KMC in the NICU in Cork University Maternity Hospital.

Methods

- Prospective superiority cross-over RCT
- Inclusion criteria: ≥28 weeks corrected gestational age (cGA), ≥600g at time of recruitment and receiving KMC routinely.
- Exclusion criteria: known neurological abnormalities, orthopaedic conditions or chromosomal abnormalities.
- Primary outcomes: NIRS-derived median values for cerebral oxygenation (rSO2) and fractional tissue oxygen extraction (FTOE).
- Secondary outcomes: peripheral oxygen saturation (SpO2), heartrate, bradycardic and/or desaturation events during KMC.

Results

20 babies were randomised to commence KMC at either 30° or 60° angle held position.



	Birth	Session 1	Session 2
Gestational age: Median (Range)	28^{+1} (23^{+2} – 32^{+6})	32^{+6} (28^{+0} – 39^{+5})	33^{+2} (28^{+1} – 42^{+3})
Birth Weight: Median (Range)	0.985kg (0.620 – 2.0kg)		
Level of Respiratory Support	**Session 1**		**Session 2**
Self-ventilating (%)	8 (40%)		10 (50%)
CPAP[1] (%)	5 (25%)		3 (15%)
BIPAP[2] (%)	1 (5%)		1 (5%)
High-flow oxygen therapy (%)	3 (15%)		4 (20%)
Low-flow oxygen therapy (%)	3 (15%)		2 (10%)

[1]Continuous positive airway pressure
[2]Biphasic positive airway pressure

There were no significant numbers of bradycardic or desaturation events during KMC sessions.

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Results

Primary outcome results:

Primary Outcome: Cerebral NIRS		30° Median (IQR)	60° Median (IQR)	p value
Period 1	rSO_2	67 (54.5 – 75)	68 (59.5 – 73)	0.882
	FTOE	0.3 (0.19 - 0.39)	0.28 (0.23 – 0.36)	0.882
Period 2	rSO_2	62 (58.5 – 71.5)	69 (63 – 78)	0.331
	FTOE	0.33 (0.25 – 0.37)	0.23 (0.17 – 0.36)	0.37
Period 3	rSO_2	63 (54.5 – 71)	68 (57 – 75)	0.412
	FTOE	0.3 (0.24 – 0.39)	0.29 (0.22 – 0.39)	0.603
Period 4	rSO_2	70 (63 – 75)	66 (59 – 72.5)	0.603
	FTOE	0.28 (0.23 – 0.34)	0.28 (0.23 – 0.33)	1

Results of secondary outcomes:

Secondary Outcomes: Peripheral oxygen saturations (SpO_2) and Heartrate (HR)		30° Median (IQR)	60° Median (IQR)	p value
Period 1	SpO_2	95 (94 – 99)	94 (92 – 95.5)	0.295
	HR	157 (141 – 164)	154 (149 – 163)	0.941
Period 2	SpO_2	94 (92 – 97.5)	95 (92 – 98)	0.603
	HR	154 (147 – 160)	161 (148 – 163)	0.37
Period 3	SpO_2	94 (90 – 97.5)	95 (92 – 98)	0.766
	HR	153 (146 – 156.5)	155 (149 – 160)	0.503
Period 4	SpO_2	96 (94 – 98)	95 (90.5 – 97)	0.37
	HR	154 (146 – 157)	153 (144.5 – 161.5)	0.941

Conclusions

Kangaroo care remains an important part of NICU care for infants. This study did not find that one held position was more advantageous than the other.
Further larger studies are required to ascertain whether there is an optimum held position or other optimal parameters for the delivery of KMC in extremely preterm infants.

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