Kangaroo mother care : effect on physiological parameters of newborn

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Background and Objective

- Low birth weight (birth weight < 2500 g; LBW) is an important cause of infant death.
- Preterm and LBW babies are more prone to develop hypothermia and other life threatening complications.
- Kangaroo Mother Care (KMC) is a non-conventional low cost method for newborn care .

An update Cochrane review reported, KMC is associated with 80% reduction in hypothermia.

Objective of this study was to identify and compare the physiological states of LBW babies during conventional care and KMC in a tertiary level teaching hospital setting.

Methodology

- **Setting:** Level III NICU of a tertiary care teaching hospital of West Bengal, India.
- **Ethics Approval:** Obtained from Institutional Ethics Committee of IPGME&R and SSKM Hospital, Kolkata.
- **Study population:** LBW babies born at SSKM Hospital, Kolkata and mothers of these babies.
- **Sample size:** 230 mother-baby pairs were selected through purposive sampling.
- **Study design:** Quasi-experimental with the study group serving as their own control.
- **Selection criteria:** After short session of teaching and counseling on KMC, mothers willing and able to continue KMC were included in the study.

Contd. Methodology

Intervention:

KMC was done following KMC India module.

First day KMC was provided for 1 hr, second day 2 hr, third day 3 hr and gradually duration was increased.

Measurements: Physiological state i.e. temperature, respiration rate, heart rate, and oxygen saturation of the baby was assessed immediately before KMC and after KMC for three consecutive days.

Results

	Statistics of paired differences (change)				
Difference between post-KMC and pre-KMC value with respect to	MC	SD	SEM	95% confidence interval of change	p value
Respiration rate – Day 1	2.643	2.887	0.190	2.268 – 3.019	< 0.001
Respiration rate – Day 2	3.452	3.315	0.219	3.021 – 3.883	< 0.001
Respiration rate – Day 3	3.822	3.676	0.242	3.344 – 4.299	< 0.001
Heart rate – Day 1	4.978	8.617	0.568	3.859 – 6.098	< 0.001
Heart rate – Day 2	5.783	8.598	0.567	4.666 – 6.900	< 0.001
Heart rate – Day 3	5.448	6.759	0.446	4.570 – 6.326	< 0.001

MC= Mean Change, SD= Standard Deviation, SEM= Standard Error of Mean

During KMC sessions, the babies were having regular respiration and started to sleep. At the beginning of the session some had bradycardia or tachycardia. During KMC session most of the babies had regular and stable heart rate.

Contd. Results

	Statistics of paired differences (change)				
Difference between post-KMC and pre-KMC value with respect to	MC	SD	SEM	95% confidence interval of change	p value
Temperature (℃) – Day 1	0.332	0.169	0.011	0.310 – 0.354	< 0.001
Temperature (℃) – Day 2	0.389	0.238	0.016	0.358 – 0.420	< 0.001
Temperature (℃) – Day 3	0.411	0.201	0.013	0.385 – 0.437	< 0.001
O_2 saturation (%) – Day 1	5.626	3.157	0.208	5.216 – 6.036	< 0.001
O_2 saturation (%) – Day 2	5.191	6.834	0.451	4.303 – 6.079	< 0.001
O_2 saturation (%) – Day 3	6.061	3.092	0.204	5.659 – 6.463	< 0.001

MC= Mean Change, SD= Standard Deviation, SEM= Standard Error of Mean

During the initial stage of the session some babies maintained normal temp. and some were having low temp. During KMC session, all babies showed small but significant rise in temp. and none developed hypothermia.

At the beginning of KMC session some babies had low O_2 saturation but within few minutes all improved their O_2 saturation.

Discussion and Conclusion

- The babies receiving KMC showed a statistically significant rise temperature, O_2 saturation, HR and respiration rate compared to baseline following KMC on all 3 days.
- KMC is a satisfactory strategy to provide LBW baby care in resource constrained settings.
- It can potentially contribute to improved newborn survival by stabilizing physiological parameters.