Neonatal Nurses' Acceptability of a Study of Light and Noise Reduction during Kangaroo Mother Care

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Background & Significance

- Kangaroo Mother Care [KMC] has gained popularity in Neonatal Intensive Care Units [NICUs] as this practice has many benefits for preterm infants and their mothers;
- Light and noise may influence outcomes of preterm infants and their mothers when they are experiencing KMC in the NICU; [1,2,3]
- A dimmed and quiet NICU environment during KMC could then be beneficial for preterm infants and their mothers.

[1] Ludington-Hoe, S. M., Johnson, M. W., Morgan, K., Lewis, T., Gutman, J., Wilson, P. D., & Scher, M. S. (2006). Neurophysiologic assessment of neonatal sleep organization: Preliminary results of a randomized, controlled trial of skin contact with preterm infants. *Pediatrics, 117*(5), e909-e923.

[2] Flacking, R., Ewald, U., Nyqvist, K. H., & Starrin, B. (2006). Trustful bonds: A key to "becoming a mother" and to reciprocal breastfeeding. Stories of mothers of very preterm infants at a neonatal unit. *Social Science and Medicine, 62*(2006), 70-80.

[3] Neu, M. (2004). Kangaroo care: Is it for everyone? *Neonatal Network, 23*(5), 47-54.

Background & Significance

- As the first step to a randomized control trial [RCT] is a pilot study[1], one was conducted to evaluate the feasibility and acceptability of reducing light and noise levels during KMC in a NICU with preterm infants and their mothers;

- Nurses have a strategic position in the NICU:
  - to reduce preterm infants' exposure to inappropriate light and noise levels;
  - to encourage KMC;
  - as professionals delivering care to preterm infants;

- It was pertinent in this pilot study to evaluate their acceptability as to the reduction of light and noise levels during KMC.

[1] Feeley, N., Cossette, S., Côté, J., Héon, M., Stremler, R., Martorella, G., & Purden, M. (2009). The importance of piloting a RCT intervention. C*anadian Journal of Nursing Research, 41*(2), 84-99.

Aims of the Study

1- Describe nurses' acceptability in regards to the intervention, i.e. reducing NICU light and noise during KMC;

2- Assess if nurses found that the NICU light and noise reduction during KMC interfered with their care delivery.

Neo-BFHI:

- Guiding principle 2
- Step 4

Methods

Design

- A pilot RCT with an *experimental group* where NICU light and noise is reduced during KMC and a *control group* where no attempt is made to control the NICU environment during KMC.

Sample and Setting

- So far, 24 nurses from a level III NICU of a Mother and Child University Hospital Center in Canada participated in the pilot study;
- NICU is composed of single rooms with two beds;
- NICU has adopted some practices to control light and noise, but no formal protocols are implemented to control environmental lighting or ambient noise.

Methods

Sample

- To participate, nurses had to:
  - provide care in the room where preterm infants and their mothers were experiencing KMC, which lasted at least 1-hr as per experts' recommendation[1];
  - agree to complete the questionnaire during their work time;
  - speak French or English.
- There were no restrictions for participation as per the number of years of experience as a nurse or years of experience as a NICU nurse.

[1] Nyqvist, K. H., & an Expert group of the International Network on Kangaroo Mother Care: Anderson, G. C., Bergman, N., Cattaneo, A., Charpak, N., Davanzo, R., Ewald, U., Ludington-Hoe, S., Mendoza, S., Pallás-Allonso, C., Ruiz Peláez, J. G., Sizun, J., & Widström, A-M. (2010). State of the art and recommendations. Kangaroo mother care: application in a high-tech environment. *Acta Paediatrica, 99*, 812-819.

Methods

Procedure

- In the *experimental group*:
  - Light was reduced by turning off ceiling lights, procedure lamps, and closing windows blinds;
  - Noise was lowered by reducing monitors' and equipment' alarms as well as telephone ringer in addition to closing the room's door and limiting entries of professionals/visitors with a sign posted on the door.
- Nurses completed the questionnaire at the end of the 1-hr KMC session.

Methods

Questionnaire

- Ten questions on a 5-point Likert scale were assessing if the nurses found the reduction of light and noise levels acceptable i*n general* during KMC and in regards to specific *interventions* reducing NICU light and noise levels;
- Two questions on a 5-point Likert scale were also evaluating if the nurses found that reducing NICU light and noise levels during the KMC interfered with their care delivery;
- Nurses were also asked to list challenges they generally encounter in controlling NICU light and noise.

Findings

Table 1. Nurses' acceptability of NICU light and noise reduction during KMC in general and with specific interventions reducing NICU light (n=24)

	Totally acceptable n (%)	Acceptable n (%)	Neutral n (%)	Unacceptable n (%)	Totally unacceptable n (%)
In general[a]	16 (69,6%)	5 (21,7%)	1 (4,3%)	--	1 (4,3%)
LIGHT:					
Closing ceiling lights	22 (91,7%)	2 (8,3%)	--	--	--
Closing procedural lamps	19 (79,2%)	3 (12,5%)	--	2 (8,3%)	--
Closing windows blinds[a]	16 (69,6%)	4 (17,4%)	3 (13,0%)	--	--

[a]n=23

Findings

Table 2. Nurses' acceptability of NICU noise reduction during KMC with specific interventions (n=24)

	Totally acceptable n (%)	Acceptable n (%)	Neutral n (%)	Unacceptable n (%)	Totally unacceptable n (%)
NOISE:					
Reducing monitors' alarms	15 (62,5%)	5 (20,8%)	2 (8,3%)	1 (4,2%)	1 (4,2%)
Reducing incubators' alarms[b]	15 (68,2%)	5 (22,7%)	2 (9,1%)	--	--
Reducing infusion pumps' alarms	15 (62,5%)	5 (20,8%)	4 (16,7%)	--	--
Reducing telephone's ringer	19 (79,2%)	4 (16,7%)	1 (4,2%)	--	--
Closing room's door	22 (91,7%)	2 (8,3%)	--	--	--
Limiting professionals' entry	14 (58,3%)	7 (29,2%)	2 (8,3%)	--	1 (4,2%)

[b]n=21

Findings

Table 3. Nurses' assessment of the interference of NICU light and noise reduction during KMC with their care delivery (n=24)

	Very often n (%)	Often n (%)	Sometimes n (%)	Rarely n (%)	Never n (%)
Light reduction	--	--	3 (13,0%)	6 (26,1%)	14 (60,9%)
Noise reduction	1 (4,3%)	--	1 (4,3%)	5 (21,7%)	16 (69,6%)

Challenge:

- The only challenge stated by nurses in controlling the NICU noise level was to limit the entry of other professionals or the maintenance staff in the room during KMC.

Conclusions

- Findings encourage the reduction of NICU light and noise during KMC;
  - Nurses found acceptable the reduction of NICU light and noise levels during the KMC;
  - Nurses responded, for both the reduction of NICU light and noise levels during KMC, that it did not interfere with their care delivery;
- All nurses found totally acceptable that the ceiling lights were closed during KMC along with the room's door;
- As nurses encountered a challenge in controlling NICU noise level during KMC, they should be supported in performing this effort.

Recommendations

For Practice

- Training should be offered to other NICU professionals and maintenance staff to sensitize them to the importance of noise reduction during KMC;
- Guidelines should be adopted in NICUs in regards to the reduction of light and noise during KMC.

For Research

- Findings support the elaboration of a full-scale RCT to evaluate the effect of reducing light and noise in NICUs during KMC on preterm infants' and mothers' outcomes.
- Evaluate the nurses' preferences when KMC is done in the NICU to optimize this practice.

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Questions?