Original Article

Nursing intervention-first bath of the NB: a randomized study on neonatal behavior

Intervenção de enfermagem-primeiro banho do recém-nascido: estudo randomizado sobre o comportamento neonatal

Intervención de enfermería-primer baño del recién nacido: estudio aleatorizado sobre el comportamiento neonatal

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Abstract

Objective: To assess the effects of nursing intervention-first bath on NB crying and sleep.

Methods: Randomized controlled clinical trial conducted at the joint accommodation of the University Hospital of the state of Espírito Santo (Brazil). Sample consisted of 33 full-term infants. The experimental group of 18 NBs received the nursing intervention-first bath technique. The dependent variables were the presence of crying and sleep time after the NB's bath. First bath intervention was defined as an independent variable. The control variables related to the NB were: gestational age; birth weight; weight before bath; weight loss; neonatal pain; saturation; vital signs; room temperature; water temperature; bath time; and time of body care by form after 24 hours of birth. We used the Brazelton Sleep and Wake Status Assessment Scale, the NIPS scale for assessing neonatal pain.

Results: The NBs in the study intervention group slept for about 180 minutes, did not cry during the experiment, and the neonatal pain scale assessment was lower.

Conclusion: Nursing intervention-first bath may improve NBs' behavioral state.

Resumo

Objetivo: Avaliar os efeitos da intervenção Enfermagem-primeiro banho sobre o choro e o sono do recém-nascido.

Métodos: Ensaio clínico randomizado controlado realizado no alojamento conjunto do Hospital Universitário do Espírito Santo (Brasil). A amostra constituiu-se de 33 neonatos a termo. O grupo experimental composto por 18 recém-nascidos recebeu a técnica intervenção de enfermagem-primeiro banho. As variáveis dependentes foram a presença de choro e o tempo de sono após o banho do RN a Intervenção-Primeiro Banho foi definida como variável independente. As variáveis de controle relacionadas ao recém-nascido foram: idade gestacional; peso ao nascimento; peso antes do banho; perda ponderal; dor neonatal; saturação; sinais vitais; temperatura do ambiente; temperatura da água; tempo do banho; e tempo do cuidado corporal por formulário específico após 24 horas de nascimento. Utilizou-se a Escala de Avaliação do Estado de Sono e Vigília, adaptada de Brazelton, a escala de NIPS para avaliação da dor neonatal.

Resultados: Os recém-nascidos do grupo intervenção do estudo dormiram cerca de 180 minutos, não apresentaram choro durante o experimento, e a avaliação da escala de dor neonatal foi menor.

Conclusão: A intervenção de enfermagem-primeiro banho pode apresentar melhora no estado comportamental dos recém-nascidos.

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Conflicts of interest: nothing to declare.

Resumen

Objetivo: Evaluar los efectos de la intervención enfermería-primer baño sobre el llanto y el sueño del recién nacido.

Métodos: Ensayo clínico aleatorizado controlado, realizado en la internación conjunta del Hospital Universitario de Espírito Santo (Brasil). La muestra consistió en 33 neonatos a término. El grupo experimental compuesto por 18 recién nacidos recibió la técnica intervención de enfermería-primer baño. Las variables dependientes fueron la presencia de llanto y tiempo de sueño después del baño del RN, la intervención-primer baño fue definida como variable independiente. Las variables de control relacionadas con el recién nacido fueron: edad gestacional, peso al nacer, peso antes del baño, pérdida ponderal, dolor neonatal, saturación, signos vitales, temperatura del ambiente, temperatura del agua, tiempo del baño y tiempo del cuidado corporal por formulario específico luego de 24 horas del nacimiento. Se utilizó la Escala de evaluación del estado del sueño y vigilia, adaptada de Brazelton, la escala de NIPS para evaluar el dolor neonatal.

Resultados: Los recién nacidos del grupo experimental del estudio durmieron cerca de 180 minutos, no presentaron llanto durante el experimento y la evaluación de la escala de dolor neonatal fue menor.

Conclusión: La intervención de enfermería-primer baño puede presentar mejoras en el estado de comportamiento de los recién nacidos.

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Introduction

The WHO recommends promoting the NB's first bath within 24 hours of birth, keeping the skin with the protective layer of the caseous vertex. This improves the adaptation of the infant's transition from aqueous intrauterine environment to dry extrauterine environment, promoting antimicrobial function, skin hydration, decreased peeling, reduction of neonatal toxic erythema and thermoregulation, plus additional skin-to-skin time with mother.[1]

The neonatal heart rate soon after birth should be greater than 100 bpm maintaining fetal vitality, and may range from 120 to 140 bpm, through precordial auscultation. However, at rest, infants with tachycardia (160 bpm) require better assessment. Respiratory rate in the infant in one minute should be 40 to 60 raids. Values greater than 60 characterize tachypnea and should be investigated, as well as the intercostal and infra-sternal circulation. They are warning signs and should be referred for assessment by the infantologist.[2]

Therefore, when the newborn (NB) has regular respiration and pulse, pinkish peripheral and central skin color and no visceral changes. This indicates its organic stability, demonstrating that its physiological subsystem is capable of managing internal and external stimuli. Changes in these signs may indicate infant stress and stress, altering the child's balance.[3]

The NB's skin is also an immature organ, but already has functions, such as protection against harmful agents, through the caseous vertex released by the sebaceous glands, forming a lipid film on the skin.[4]

The NB's first bath can interfere with its adaptation to the extrauterine environment, altering its vital signs and its thermal protection which, when modified, can cause hypothermia, increased oxygen consumption, increased respiratory rate. It exhibits a suggestive stress picture and increases the risk of irritation dermatitis. Therefore it must be carried out properly, in a warm environment, with tranquility and safety. Immersion bath is the most suitable, with warm water, which allows the least heat loss and provides more comfort to the baby. [4.5]

The World Health Organization (WHO) recommends postponing bath for at least 6 hours after birth, keeping the caseous vertex on the baby's skin. Healthcare professionals should only remove possible meconium and blood debris, antiseptic agents should not be used.[6]

Bathing the NB also comprises providing a series of stimuli. NBs can respond by changing their behavioral state to external or internal stimuli. These states reflect the baby's internal organization and its ability to control external stimuli.[7]

The Neonatal Behavioral Assessment Scale defines six behavioral states, namely: (1) deep sleep; (2) light sleep; (3) drowsiness; (4) alert; (5) alert with activity; (6) crying, considering them as one of the main topics of behavioral examination and as a matrix for understanding infant reactions.[8]

Thus, care that the family will develop with the NB begins in the rooming under the nurse's guidance and demonstrations. This system enables

health education, empowering the family to perform scientifically effective care.[9]

The rooming system also enables the nurse to demonstrate techniques for cleaning the umbilical stump, effective breastfeeding, as well as the first bath of the baby's life. However, bath time represents the greatest vulnerability of the family. Bathing needs to be demonstrated individually for each family nucleus in the joint accommodation, which you must first observe to perform the next bath.[9]

During this study, the assessed educational institution had already adopted the first bath of life after 24 hours of birth. The responsibility for performing care lays on a nursing staff member following an internal care protocol.

In this context, the present study aims to compare the nursing intervention-first bath with institutional SOP bath on neonatal behavior.

Interest in the subject arose from the practice of the researcher when she worked in the private service at Unimed Vitória (the Brazilian National Confederation of Medical Cooperatives (Unimed - *Confederação Nacional das Cooperativas Médicas*) is the largest health insurance operator in Brazil) as a postpartum midwife nurse in the preventive health program Living Unimed on the BabyCare line. During the provision of neonatal care, she found that simple adaptations in the technique of home bathing generated manifestations in the behavior of babies. They had practically no crying and slept significantly longer, according to countless reports of women served. In the joint accommodation where she began to provide assistance after passing a public tender at the *Hospital Universitário Cassiano Antônio de Moraes* and also at the Nursing Graduate Program at the Professional Master's Degree at the *Universidade Federal do Espírito Santo*, the nursing assistant realized the need to study carefully. This practice has already been acquired in home neonatal reception.

Methods

This is a randomized controlled clinical trial conducted at the maternity ward at *Hospital Universitário Cassiano Antônio de Morais* based in Maruípe university campus, in the city of Vitória, state of Espírito Santo. It fulfills the function of hospital-school, acting in the academic formation in different areas of health.[10]

Sample size was calculated by mean number of NBs from January to April 2017, using the t-test for sample. The other standards used in the calculation were: test power (1 - β) of 90%, significance level (α) of 5% and expected mean of births of 68 infants resulting in a difference between the means in 6 infants. This led to a sample size of 33 infants. After calculating the sample size, it was divided into two groups: control group (15 infants) and intervention group (18 infants).

The software used in the calculation was Action™, with the system developed under the R platform, where they are free. We included in the study full-term infants with gestational age equal to or greater than 37 weeks, good vitality and birth weight ≥ 2,500 g, Apgar score ≥ 8 in the fifth minute of life and no complications at birth. Clinically unstable premature NBs with temperature changes, contraindicated in the immersion bath, neurological problems, presentation of an infectious process and children with congenital malformations or facial alterations that make the application of the NFCS assessment scale excluded from the study were excluded.

Data collection took place in the joint accommodation of *Universitário Cassiano Antônio de Morais*'s Maternal and Child Unit, with infants, from June 2017 to March 2018, after approval by the Hospital Research Ethics Committee under number 2,192,394.

The intervention group received the first bath intervention and the control group received the care recommended by the institution, the bath described in the Standard Operating Procedure (SOP).

The presence of crying and sleep time after NB bath were defined as dependent variables. The intervention group received the first bath intervention and the control group received the care recommended by the institution, the bath described in the SOP. The presence of crying and sleep time after NB bath were defined as dependent variables.

In both the control and intervention groups, NB physical assessment was performed using the form approved by the nursing process committee of the university hospital in use at the maternity hospital, with the adaptations approved by the same committee. It included pain scale assessment, neonatal facial mimic scale (NIPS) and the sleep time scale before and after both study baths.

Physiological standards such as heart rate (HR), respiratory rate (RR), mean arterial pressure (MAP), oxygen saturation (SaO^2) and body temperature (TAX) were assessed in the NB. The standards used were those proposed by Wong.[11]

To verify the physiological variables (MAP, RR, HR and SaO^2 and temperature), a Dixtal monitor with pediatric adapter was used. For physiological values, Wong's proposal was considered as standards.[11]

The Sleep and Vigilance Assessment Scale was used, considering the steps proposed by Brazelton, to analyze the behavior of preterm infants in relation to the sleep and wake phases. This scale provides a score for each NB sleep or wake state of the physical examination assessment tool.[12]

The Sleep and Vigilance Assessment Scale was used, considering the steps proposed by Brazelton, to analyze the behavior of preterm infants in relation to the sleep and wake phases. This scale provides a score for each NB sleep or wake state of the physical examination assessment tool.

All hospital equipment used in the research have an Inmetro (the National Institute of Metrology, Quality and Technology (*Instituto Nacional de Metrologia, Qualidade e Tecnologia*) is a Brazilian federal agency, in the form of an executive agency, linked to the Ministry of Economy) seal and are calibrated/monitored by the clinical engineering of the university hospital and have a technical report.

Preparation of the environment for bath

The first-bath intervention was performed bedside in the rooming-in sector in the Maternal and Child Unit following the routine of being 24 hours after birth. To perform the first bath, the hospital's standard acrylic crib was used after asepsis with 70% chlorhexidine and/or alcohol solution, according to the current guidelines of the Hospital Infection Control Commission (CCIH). The room temperature was kept at 26ºC and the water temperature was kept at 38ºC to 39ºC. An aquatic thermometer model zls-1270 was used.

NB's preparation for bath

The NB was positioned to breastfeed if in need of nutrition, by assessment and after being positioned with the head elevated in the mother's bed to perform the neonatal physical examination with collection of biological standards recommended by the institution. Pre-hygiene was performed before bathing with the NB in supine position, elevated head in the postpartum bed, as follows.

Eyes: 0.9% saline and gauze were used for the hygienization technique from the outer corner to the inner corner of the eye to stimulate the tear duct.

Oral cavity: hygiene with gauze and filtered water applied throughout the NB oral cavity to prevent oral candidiasis in mixed breastfeeding babies. Oral hygiene was performed by wrapping the gauze on the little finger, moistening it in water. Hygiene of the palate and cheeks as well as the tongue.[13]

Nail cut: if it is necessary to make the cut so that the NB does not get injured using the NB's own scissors. Baby's nails should be kept clean and short to prevent skin damage.[14]

Umbilical stump dressing: the presence of dirt with secretion in the umbilical stump was observed and pre-sanitized with 70% alcohol to remove dirt not contaminating the bath water. 70% alcohol, flexible cotton rod gauze with microbial load reduction and prevention of omphalitis were used.[2]

Neonatal intimate hygiene: The removal of diaper feces was made with the objective of preventing diaper dermatitis, using mild soap and water. Guided for the presence of bloody secretion in girls (due to the excess of hormones it receives in pregnancy) and urate crystals if there is orange urine.[4] The NB is undressed paying attention to the need for previous cleaning, with warm water and cotton, of the genital and diaper area.[14]

Preventive abdominal massage from gas accumulation

Abdominal cramps, although a benign condition, can be a traumatic experience for parents and family, and can be irritating to children. Abdominal massage in babies can cause reduced hours of crying and improved sleep and parental behavior regarding the discomfort babies may experience during the first six months of life. [15.16]

First movement: gentle circular sliding and sliding circularly around the umbilical stump, clockwise, with greater pressure at the end of the maneuver, just below the umbilical scar at the end of the large intestine, performing 5 turns.

Second movement: soft compressive clamping. Simultaneously clamp the ascending and descending colon in a press and release motion 5 times.

Third movement: simultaneous flexion of the hip. Simultaneously flex and press the hips and knees against the abdomen, then extend the lower limbs.

Fourth movement: sustained fetal positioning. Flex the lower limbs against the abdomen, associated with adduction of the upper limbs, reproducing the fetal position, and make slight movements from side to side, finishing the technique for 10 seconds.

Massage in babies promotes behavioral change (sleep pattern) and reduces crying time for abdominal pain, decreasing neonatal stress and improves parents 'attitude towards babies' discomfort. [16]

Intervention-first bath

Steps:

1. Roll up the baby keeping the head/neck out - start by washing the head, to rinse or hands (procedure performed with the baby out of the water).
2. Protect the ears with fingers.
3. Wash face with water little soap (out of water).
4. Dry the baby's head and face. Remove mop.
5. Place the baby in the tub (start soaking) in the ventral position with a safety hook (NB secured by the axillary region resting on the forearm). Lather the whole dorsal region with little soap, rinse. Perform lathering with the immersed baby. The amount of water should be sufficient for the full immersion of the NB keeping the chest to the height of the water.
6. Change the position of the NB from ventral to dorsal in the bathtub by cleaning the chest, abdomen, soaping the umbilical stump.
7. Keeping baby with hands centered, perform slight movements in water keep immersion in mean 8 to 10 minutes.
8. Remove the baby in the ventral position (curling it).
9. Keep the NB organized, curled by proceeding with the wardrobe to prevent heat loss.

After the baby was organized, it was positioned to breastfeed if it manifested a search reflex. Baby sleep was only started timing when they were in stage 2 of the Brazelton scale.[12]

For the control group, bath was performed by the nursing staff of the rooming room and the SOP of the Maternal and Child Unit, rooming room sector was used. SOP recommends that any member of the nursing team is able to bathe (assistant, technician or nurse).

The hospital's SOP recommends the promotion of hygiene NB's body wellbeing does not yet describe the life span that the NB must have to be submitted to the procedure that should be done in the morning. When comparing the procedures we observed that the SOP only observes the infant's axillary temperature that should be <36ºC; keeping the room free of drafts; the water temperature should be 37.8°C (check with the water touch on the front of the forearm); do not guide the use of thermometer, the water level reaches the baby's belly button height when lying down; The NB's face is cleaned during bath, also keeping it curled, starting from the face (scalp, eyes, nostrils, are sanitized inside the bathtub). It also guides systematic top-down hygiene starting with the baby in supine position, and intimate hygiene also in immersion. The control bath advises not to prolong the shower time to avoid loss of TAX. And if he or she is in deep sleep (which lasts about 20 minutes) wait for he or she to wake up; if he or she is protesting or crying, comfort him or her completely before the procedure. SOP

advises that bathing should not be prolonged to avoid loss of TAX. To assess the sleep time of the babies, the observation started after the end of the two baths when the babies were drowsy with their eyes closed (state 03 proposed by Brazelton). For statistical analysis, the IBM SPSS-version 24 software was used. It began by characterizing the data through the observed frequency, percentage, measures of central tendency and variability. The significance level adopted was 5% with a 95% confidence interval. Fisher's Exact Test compared the percentages of crying during bathing and sleep time between groups. Student's t-test for paired samples compared the means of clinical data between groups. Shapiro-Wilk parametric test was performed on variables that rejected normality in at least one application of the test: NIPS scale score (after), oxygen saturation (before and after), axillary temperature (after) and MAP (before). Thus, when performing the tests for these two variables, the nonparametric and nonparametric analyzes were performed to assess if the p values were similar and this was verified. Therefore, it was decided to leave the parametric technique.

To assess the variables NIPS scale, oxygen saturation, axillary temperature and mean arterial pressure, the Shapiro-Wilk normality test was performed at NIPS scale score (after), oxygen saturation (before and after), axillary temperature (after) and MAP (before). Thus, when performing the tests for these two variables, the nonparametric and nonparametric analyzes were performed to assess if p values were similar and this was verified. Therefore, it was decided to leave the parametric technique. Below are the p values of Table 3 by the two techniques.

Results

Assessing the a priori control group, it can be seen that the mean score on the NIPS Scale was higher after bathing (2.3; SD ± 1.9). The mean gestational age was 38.7 months (SD ± 1.1 months). RR was higher in mean after shower (54.7 rpm; SD ± 9.5 rpm). Mean oxygen saturation was higher before bathing (97.2%, 1.6%). Axillary temperature mean was higher before bathing (36.5º; SD ± 0.5º). HR mean was higher after bath (124.4 bpm; SD ± 17.9 bpm). MAP was higher after bath (62.8 mmHG; SD ± 9.8 mmHG). Mean birth weight was 3.268.3 g (SD ± 374.9 g). Current mean weight was 3,147.2 g (SD ± 424.7 g). Mean weight loss was 5.8% (SD ± 1.9%). Mean bath time was 8.7 min (SD ± 2.2 min) and mean body care time was 3.3 min (SD ± 2.5 min). As for the intervention group, the mean NIPS Scale was higher for pre-bath (2.8; SD ± 1.4), mean gestational age was 39.1 months (SD ± 1.0 month). RR was higher in mean before bath (58.3 rpm; SD ± 11.8 rpm). Mean oxygen saturation was higher before bathing (96.7%, 1.9%). Axillary temperature mean was higher before bath (36.7º; SD ± 0.3º). HR mean was higher before bath (128.2 bpm; SD ± 13.9 bpm). MAP was higher after bath (55.0 mmHG; SD ± 9.9 mmHG). Mean birth weight of 3411.6 g (SD ± 432.6 g), current mean weight of 3,191.6 g (SD ± 388.3 g), mean weighted loss of 6.2% (SD ± 1.9 %), mean bath time 14.7 min (SD ± 2.7 min) and mean body care time 0.9 min (SD ± 1.5 min) (Table 1).

The control group had a higher proportion of NB who cried during bath (93.33%) compared to the intervention group NB (55.56%); the 120-minute sleep time was the most observed for the control group NB (60.00%), while in the intervention group it was 180 minutes (77.78%) (Table 2).

In the control group, only the axillary temperature was significant. In the intervention group, the NIPS scale score and oxygen saturation were significant. Thus, the highest axillary temperature mean was before bath (36.5º; SD ± 0.5º) in the control group and in the intervention group there was a higher mean NIPS scale score than before bath (2.8; SD ± 1.4) and higher mean oxygen saturation before bath (96.7%; SD ± 1.9%). The other comparisons presented similar means for before and after bath in both groups (Table 3).

Table 1. Description of NB variables in the control and intervention groups of mothers in a public maternity hospital

Description	Groups					
	Control			Intervention		
	Median	Mean	Standard Deviation	Median	Mean	Standard Deviation
NIPS scale score/before	2.0	2.2	1.9	3.0	2.8	1.4
NIPS scale score/after	2.0	2.3	1.9	0.0	0.4	0.8
Gestational age	39.2	38.7	1.1	39.4	39.1	1.0
Respiratory rate (rpm)/before	55.0	52.7	14.3	55.5	58.3	11.8
Respiratory rate (rpm)/after	54.0	54.7	9.5	55.5	56.9	9.4
Oxygen saturation (%)/before	97.0	97.2	1.6	97.0	96.7	1.9
Oxygen saturation (%)/after	98.0	97.1	3.0	96.0	95.6	2.4
Axillary temperature (ºC)/before	36.6	36.5	0.5	36.8	36.7	0.3
Axillary temperature (ºC)/after	35.8	35.6	0.9	36.6	36.6	0.4
Heart rate (bpm)/before	123.0	123.3	12.8	129.0	128.2	13.9
Heart rate (bpm)/after	120.0	124.4	17.9	121.5	122.2	14.5
Mean arterial pressure (mmHG)/before	58.5	58.5	11.2	52.0	54.2	10.9
Mean arterial pressure (mmHG)/after	62.5	62.8	9.8	54.5	55.0	9.9
Birth weight (g)	3348.0	3268.3	374.9	3452.0	3411.6	432.6
Current weight (g)	3163.0	3147.2	424.7	3190.0	3191.6	388.3
Weight loss (%)	5.3	5.8	1.9	6.0	6.2	1.9
Bath time (min)	9.0	8.7	2.2	15.0	14.7	2.7
Body care time (min)	2.0	3.3	2.5	0.0	0.9	1.5

Source: *Universidade Federal do Espírito Santo*. 2013. *Hospital Universitário Cassiano Antônio Moraes* (Hucam). [cited on: 20 Mar 2018] Available from: http://www.ufes.br/hospital-universitário-cassiano-antonio-moraes-hucam.[10]

Table 2. Description of crying NB during bathing and sleep time in groups control and intervention in a public maternity hospital

Description		Groups		p value*
		Control	Intervention	
		n(%)	n(%)	
Crying during bath	No	1(6.67)	8(44.44)	0.021
	Yes	14(93.33)	10(55.56)	
Sleep time (min)	60	6(40.00)	0(0.00)	< 0.001
	120	9(60.00)	4(22.22)	
	180	0(0.00)	14(77.78)	

(*) c
Source: *Universidade Federal do Espírito Santo*. 2013. *Hospital Universitário Cassiano Antônio Moraes* (Hucam). [cited on: 20 Mar 2018] Available from: http://www.ufes.br/hospital-universitário-cassiano-antonio-moraes-hucam.[10]

Table 3. Comparison of clinical data means before x after bath in control and intervention groups in a public maternity hospital

Comparison of means	Groups					
	Control			Intervention		
	Mean	Standard deviation	p value*	Mean	Standard deviation	p value*
NIPS scale score/before	2.2	1.9	0.744	2.8	1.4	< 0.001
NIPS scale score/after	2.3	1.9		0.4	0.8	
Respiratory rate (rpm)/before	52.7	14.3	0.655	58.3	11.8	0.614
Respiratory rate (rpm)/after	54.7	9.5		56.9	9.4	
Oxygen saturation (%)/before	97.2	1.6	0.878	96.7	1.9	0.012
Oxygen saturation (%)/after	97.1	3.0		95.6	2.4	
Axillary temperature (ºC)/before	36.5	0.5	0.001	36.7	0.3	0.403
Axillary temperature (ºC)/after	35.6	0.9		36.6	0.4	
Heart rate (bpm)/before	123.3	12.8	0.823	128.2	13.9	0.062
Heart rate (bpm)/after	124.4	17.9		122.2	14.5	
Mean arterial pressure (mmHG)/before	58.5	11.2	0.165	54.2	10.9	0.767
Mean arterial pressure (mmHG)/after	62.8	9.8		55.0	9.9	

(*) T student test for paired samples.
Source: *Universidade Federal do Espírito Santo*. 2013. Hospital *Universitário Cassiano Antônio Moraes* (Hucam). [cited on: 20 Mar 2018] Available from: http://www.ufes.br/hospital-universitário-cassiano-antonio-moraes-hucam.[10]

Discussion

The NB initiates a new adaptation process that differs from the previous condition of intrauterine life. This process has behavioral changes that can be expressed in a variety of ways, including agitation, crying, muscle stiffness, limb flexion, facial expression, moaning, and sleep and wakefulness.

Associated with these findings, physiological changes are frequent, such as changes in HR and respiration, changes in oxygen saturation and decreased gastric motility, and pain is the main cause of these changes.[2]

One of the most effective procedures for alleviating neonatal pain is decreased tactile stimulation, i.e., avoiding light, noise and excessive handling, facilitating wakefulness and sleep and conserving the baby's energy.[2] Study reports that pain is considered the fifth vital sign and can be transmitted by peripheral receptors to the cortex from the 16th week of gestation and reaching full development after the 26th week. It thus acts as a risk factor for neonatal and familial stress.[17]

In this context, it is important to assess the nursing care performed with the NB at birth, which may trigger stressors for extrauterine adaptation. Thus, nursing should understand pain as a vital sign that can be measured using a validated scale, such as the Infant Pain Scale and the Neonatal Infant Pain Scale (NIPS). They assess behavioral and physiological standards, include the assessment of facial expression, crying, breathing, arms, legs and alertness of NB with pain.[17]

Right after birth, the NB should breathe regularly and sufficiently to maintain HR above 100 bpm. HR is assessed by precordium auscultation with stethoscope. The heart rate ranges, in mean, from 120 to 140 bpm. Resting NBs with heart rates above 160 bpm (tachycardia) should be better assessed. Another standard is the assessment of RR which in the NB is 40 to 60 incursions per minute (counted in 1 minute). Frequency above 60 characterizes tachypnea, which should be investigated. The presence of suprasternal and suprasternal intercostal circulation is abnormal, even in premature infants.[2]

WHO defines infant temperature as normothermia at 36.5 to 37°C and classifies hypothermia according to severity: mild hypothermia (potential cold stress) when the temperature ranges from 36 to 36.4°C. In this study, it was observed that axillary temperature was maintained as recommended by WHO, thus preventing infant hypothermia.[6]

Cold-exposed NBs may develop physiological and metabolic problems. Due to increased oxygen uptake and pulmonary and peripheral vasoconstriction resulting in decreased pulmonary oxygen uptake and oxygen delivery to tissues, anerobic glycolysis, in turn, increases, thereby increasing NB RR. Hypothermia or hyperthermia may lead to severe changes in vital signs, predisposing the NB to hypoxia.[18]

During data collection, it was observed that there was no routine for temperature measurement of term infants in rooming-in, except those undergoing phototherapy treatment. It is believed that the study may contribute to solve a problem of great relevance for nursing interventions in joint accommodation and NB families, which is the prevention of neonatal hypothermia, with the implementation of this new approach to bathing the NB.

In California, United States, a nurse conducted a literature review study on NB bathing in which she identified six cohort studies. Five of them compare soaking bath versus sponge bath. As the main statistically significant results common to the studies, it was found that the NB cried less with a bath ($p < 0.001$); mothers had greater satisfaction with bathing ($p = 0.00$); babies submitted to bath had less temperature loss ($p = 0.00$).[19]

Due to its physiological and morphological immaturity, the NB needs full care focused on its particularities of extrauterine adaptations. Thus, there is a proposal to minimize the stress of the first bath of life as a nursing intervention to provide better adaptive response. This response causes better organization of sleep pattern, minimizing pain with interaction with the environment and increasing bonding with the family. As a limitation of the study we can point out the lack of standardization of the measurement of the temperature of the hospital environment and of the water in the rooming system.

Conclusion

The NB submitted to the intervention bath cried less, that is, they presented a comforting behavior, since the crying denounces discomfort; longer sleep peri-

od, and presented with lower NIPS. These variables are important in the behavioral assessment of NB. Sleep is a balancing factor for energy recovery, and the presence of pain discomfort is a stressor and demands physiological changes harmful to NB. These variables showed evidence that the NB, who received the intervention bath were more stable, experienced more comfort than those of the control group. Data were statistically significant p <0.5. However, further studies need to be performed to verify a greater stability in the oxygen saturation variable that were changed in both procedures. The water and infant temperature should also be monitored during the procedure (38ºC) as well as the ambient temperature that should not be below 26ºC. We suggest the institutional documentation of 24 hours minimum of birth to perform the first baby bath with good vitality in the rooming system. The first demonstration of the procedure is done by the midwife nurse and the other baths performed by the postpartum/companion observed by the nursing staff. We recommend that the NIPS pain scale be used as a service protocol in the rooming-in, as it demonstrates behavioral change in term NBs. There is no scale in the service adopted to assess neonatal pain only with Intensive Care Unit babies. The institution needs to advance effective and non-iatrogenic interventions to term NBs. A first bath that has systematic TAX monitoring, thereby decreasing tactile stimuli and causing greater well-being to the NB and less stress to the newcomer in adapting to extrauterine life.

Collaborations

Lima RO, Amorim MHC, Estevam LD, FMC Milk, Bringuente MEO, Almeida MVS and Nascimento L declare that they contributed to the study design, data analysis and interpretation, writing of the article and approval of the final version to be published.

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