

## PHYSIOLOGICAL EVALUATION OF PREMATURE NEONATES SUBMITTED TO BATH AND HUMANIZED BATH

Avaliação fisiológica de neonatos prematuros submetidos ao banho de imersão em banheira e banho humanizado

Evaluación fisiológica de neonatos prematuros presentados al baño y baño humanizado

*Bárbara Bertolossi Marta de Araújo<sup>1</sup>, Thamires Aparecida de Souza Martins<sup>2</sup>, Ana Flávia Rêgo de Miranda<sup>3</sup>, Angela Sousa de Moraes<sup>4</sup>, Bárbara de Castro Mesquita<sup>5</sup>, Vitorine Andrade Gonçalves de Souza<sup>6</sup>*

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### ABSTRACT

**Objectives:** were to describe and compare the physiological signs presented by premature babies during bath immersion in a bath and humanized bath. **Method:** quantitative, cross-sectional and observational study, carried out through the filming and analysis of the baths. All hemodynamically stable preterm infants participated in the study. Data collection took place from June 2018 to June 2019. Data analysis was performed using descriptive statistics. **Results:** the bath immersion bath showed a great loss in body temperature of 50% (15) of premature infants. The humanized bath did not show any significant loss of temperature in any neonate. **Conclusion:** the humanized technique promotes better care for the premature newborn, generating less physiological changes.

**DESCRIPTORS:** Baths; Premature; Humanization of assistance; Neonatal nursing; Body temperature.

### RESUMO

**Objetivos:** descrever e comparar os sinais fisiológicos apresentados pelos bebês prematuros durante o banho de imersão em banheira e banho humanizado. **Método:** estudo quantitativo, transversal e observacional, realizado através da filmagem e análise dos banhos. Participaram do estudo todos os prematuros hemodinamicamente estáveis. A coleta de dados ocorreu de junho de 2018 até junho de 2019. A análise de dados ocorreu por estatística descritiva. **Resultados:** o banho de imersão em banheira apresentou uma grande perda na temperatura corporal de 50% (15) dos prematuros. O banho humanizado não apresentou perda de significativa de temperatura

1 State University of Rio de Janeiro. <https://orcid.org/0000-0001-9421-0161>

2 State University of Rio de Janeiro / NotreDame Intermédica Group / Maternity Hospital Maria Amélia Buarque de Hollanda. <https://orcid.org/0000-0002-7110-6537>

3 Instituto Materno Infantil de Minas Gerais. <https://orcid.org/0000-0002-4460-942X>

4 Universitätsklinikum Schleswig-Holstein (Germany). <https://orcid.org/0000-0003-3173-5635>

5 Federal University of Rio de Janeiro State. <https://orcid.org/0000-0001-9624-0444>

6 Rio de Janeiro State University / Rio de Janeiro City Hall (SMS-RJ). <https://orcid.org/0000-0001-9155-1841>

em nenhum neonato. **Conclusão:** a técnica humanizada promove uma melhor assistência ao recém-nascido prematuro, gerando menos alterações fisiológicas.

**DESCRIPTORIOS:** Banhos; Recém-nascido prematuro; Humanização da assistência; Enfermagem neonatal; Temperatura corporal.

## RESUMEN

**Objetivos:** fueron describir y comparar los signos fisiológicos presentados por los bebés prematuros durante la inmersión en un baño y un baño humanizado. **Método:** estudio cuantitativo, transversal y observacional, realizado a través de la filmación y análisis de los baños. Todos los recién nacidos prematuros hemodinámicamente estables participaron en el estudio. La recopilación de datos se realizó entre junio de 2018 y junio de 2019. El análisis de datos se realizó mediante estadísticas descriptivas.

**Resultados:** el baño de inmersión mostró una gran pérdida de temperatura corporal del 50% (15) de los bebés prematuros. El baño humanizado no mostró ninguna pérdida significativa de temperatura en ningún recién nacido. **Conclusión:** la técnica humanizada promueve un mejor cuidado del recién nacido prematuro, generando menos cambios fisiológicos.

**DESCRIPTORIOS:** Baños; Recien nacido prematuro; Humanización de la atención; Enfermería neonatal; Temperatura corporal.

## INTRODUCTION

The World Health Organization (WHO) Report in 2016 reveals that 15 million babies are born prematurely in the world. In Brazil, about 317,657 thousand premature births were registered in 2016, corresponding to 11.12% of the total Brazilian live births.<sup>1</sup>

According to the WHO, newborns (NB) with less than 37 weeks of gestation are considered premature or pre-term. Prematurity is the leading cause of neonatal death worldwide, followed by pneumonia and complications from labor. In Brazil, infant mortality has decreased above the global average in recent years, however, it is the tenth country with the highest number of premature births. The main determinants of the risk of dying in the neonatal period are low birth weight, gestational age, and low apgar.<sup>2</sup>

Due to the high neonatal mortality rate, the Ministry of Health (MH) has been promoting actions to strengthen and transform pre-term newborn care (PTNBC) and low weight care since 2002. One of the strategies adopted is the Kangaroo method, an assistance model of humanization that gathers several practices with the objective of promoting and protecting the health of these premature newborn babies (NB).<sup>3</sup>

Thus, the assistance practices have been transformed in the search for a gentle and protective care, being thus recommended the adoption of the immersion bath wrapped in cueiro or sheet, which is called humanized bath.<sup>4</sup>

Although humanized bathing is strongly recommended, the lack of evidence on the benefits to the newborn makes this care discredited and often not performed in the routine of the units. Thus, during the observation of the bath routine in the intermediate unit two bathing techniques

were observed, both the humanized and the bath immersion techniques were used for the hygiene of the premature newborn.

In view of the above, we outline as a research question: What are the physiological signs presented by premature neonates during bathtub immersion and humanized bath? Which of these baths presents the least physiological changes?

When seeking scientific basis that would support the recommendation of humanized bathing in premature infants by the MH because the bath immersion is a potential generator of stress and causing physiological changes, no evidence was found to support the recommended practice, thus justifying the importance of the study.

The relevance of the study is based on the need to investigate new strategies in the humanization of the assistance and elucidate the influence of bath in the physiological stabilization of the PTNBC, understanding that bath is part of the care process and routine of the sector, being necessary the evaluation of the convenience of this procedure and be performed in order to minimize future losses in the development of the PTNBC.

This study aims to describe and compare the physiological signs presented by premature babies during bath immersion and humanized bath.

## METHODOLOGY

It is a quantitative, transversal and observational study. It was developed in a neonatal unit (NU) of a University Hospital in the city of Rio de Janeiro, a reference for high-risk pregnant women.

The sample occurred intentionally, according to the rotation of the baths, bearing in mind that the unit routine allows bathing on alternate days. Sixty baths were observed, being thirty bath immersion baths and thirty humanized baths. The same newborn may have participated in both techniques or only one.

Included in the research were stable premature newborns, admitted to the NU and weighing over 1,800g, due to the routine of the study scenario that recommends bathing in babies over 1,800g. Excluding extreme premature babies, those born on term, post-term, those with contraindication to bath.

The data collection was performed from June 2018 to June 2019, according to the institution's bath routine. We used the analysis of medical records, observation of vital signs before and after the baths and recording in the data collection instrument prepared by the researchers based on specific literature. The water temperature was maintained in all baths at 37°C.

For data analysis, descriptive statistics were used, performed with the help of IBM SPSS version 21.0, with absolute numbers and percentage and the results were presented in the form of tables and graphs. This study is part of an umbrella project "Technologies for the care of premature

newborns in the context of neonatal unit: traditional bath, humanized bath”, was conducted respecting the criteria adopted for research with human beings and approved by the Ethics Committee of the institution under the Opinion: 2,099,818.on May 26, 2017.

## RESULTS

The research sample consists of 60 baths performed on premature newborns, being 30 bath immersion baths and 30 humanized baths. The gestational age varied between 29.2 weeks and 36.6 weeks, with a higher percentage between 32-34 weeks (63.3%) in the bathtub immersion and (73.3%) in the humanized bath. The birth weight varied from 850g to 3010g. In Tables 1 and 2 the general characteristics of the participants in the respective baths can be observed.

**Table 1** - Characteristics related to the sample identification of the bathtub immersion bath

Variables	F	%
<b>Gestational age</b>		
28-32	11	36,7
32-37	19	63,3
<b>Corrected gestational age</b>		
32-37	19	63,3
Above 37	11	36,7
<b>Weight at birth</b>		
More than 2,500g	3	10
Between 1501g and 2,500g	16	53,3
Between 1001g to 1.500g	11	36,7
<b>Current weight</b>		
More than 2,500g	4	13,3
Between 1800g and 2,500g	26	86,7
<b>Reasons for premature labor</b>		
Preeclampsia	13	43,3
Maternal Cardiopathy	2	6,7
Maternal use of illicit drugs	1	3,3
Urinary tract infection	2	6,7
Antiphospholipid syndrome	2	6,7
Gestational diabetes	1	3,3
Systemic lupus erythematosus	2	6,7
Chronic kidney disease + Pyelonephritis	1	3,3
Bilateral Salpingectomy	1	3,3
Premature membrane rupture	2	6,7
Gemelarity	3	10

Source: The authors, Rio de Janeiro, 2019.

**Table 2** - Characteristics related to the identification of the humanized bath sample

Variables	F	%
<b>Gestational age</b>		
28-32	8	26,7
32-37	22	73,3
<b>Weight at birth</b>		
More than 2,500g	4	13,3
Between 1501g and 2,500g	19	63,3
Between 1001g to 1.500g	6	20
Less than 1.000g	1	3,3
<b>Current weight</b>		
More than 2,500g	8	26,7
Between 1800g and 2,500g	22	73,3
<b>Corrected gestational age</b>		
32-37	25	83,3
Above 37	5	16,7
<b>Reasons for premature labor</b>		
Premature labor	5	16,6
Pre eclampsia + eclampsia	1	3,3
Premature membrane rupture	4	13,3
Systemic hypertension + gestational diabetes + obesity	1	3,3
Pre eclampsia + rupture Premature membranes	1	3,3
Maternal Cardiopathy	2	6,7
Lupus erythematosus Systemic + pleural and pericardic effusion	1	3,3
Chronic kidney disease + pyelonephritis	1	3,3
iterativeness	1	3,3
Pre eclampsia	5	16,6
Lupus erythematosus Systemic + lupus nephritis + deep vein thrombosis in pregnancy	1	3,3
Antiphospholipid syndrome	2	6,7
Oligodramnia	2	6,7
Gemelaridade	3	10

Source: The authors, Rio de Janeiro, 2019.

The following vital signs were checked and compared in premature newborns: temperature (T), respiratory rate (RR) and heart rate (HR) before and after the 30 bath immersion baths and the 30 humanized baths.

According to the study, Table 3, before the bath, six NBs (20%) had axillary temperatures between 36°C and 36.5°C, but above 36°, not invalidating the bath according to the unit's POP. 24 NBs (80%) had temperatures between 36.5°C and 37.5°C. After that, 19 NB (63.3%) had an axillary temperature between 32°C and 35.9°C, eight NB (26.7%) had an axillary temperature between 36°C and 36.4°C. About three NBs (10%) had the temperature between 36°C and 37.5°C. While in the humanized bath nine NBs (30%) had an axillary temperature between 36°C and 36.4°C and 21 NBs (70%) had an axillary temperature between 36.5°C and 37.5°C before the technique

was performed. After the humanized bath about four NB(13.4) had a temperature between 32°C and 35.9°C, 13 NB (43.3%) had an axillary temperature between 36°C and 36.4°C and 13 NB (43.3%) had a temperature between 36.5-37.5°C.

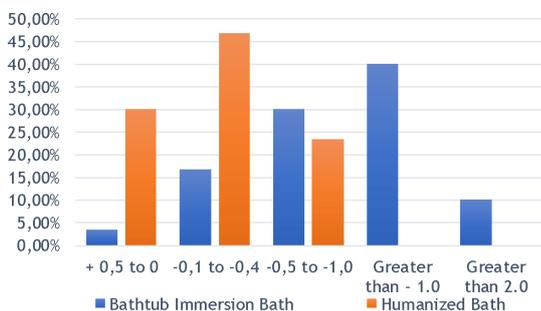
**Table 3 - Temperature Range in the Bathtub Immersion Bath and Humanized Bath.**

Axillary Temperature Range	Pre bath immersion in bathtub		After bath immersion in bathtub		Humanized pre-bath		After humanized bath	
	F	%	F	%	f	%	f	%
32 a 35,9	0	0	19	63,3	0	0	4	13,4
36 a 36,4	6	20	8	26,7	9	30	13	43,3
36,5-37,5	24	80	3	10	21	70	13	43,3
Total	30	100	30	100	30	100	30	100

Source: The author, Rio de Janeiro, 2019.

It was verified that in the bathtub immersion, Graph 1, one NB (3.3%) gained or did not present temperature alteration; five (16.7%) presented drop until 0.4°C; two NB (10.5%) had drop between 0.5°C and 1.0°C; 12 NB (40%) had drop above 1.0°C; and three NB (10%) had drop greater than 2°C. While in the humanized bath (Graph 1) nine NB (30%) gained or did not present changes in temperature; 14 (46.7%) presented drops of up to 0.4°C; seven NB (23.3%) had drops between 0.5°C and 1.0°C; no losses greater than 1°C were obtained.

**Graph 1 - Comparative analysis of the range of temperature variation in the bathtub immersion and the humanized bath**



Source: The authors, Rio de Janeiro, 2019.

## DISCUSSION

The present study evaluated the physiological signs comparatively before and after the immersion bath and the humanized bath. The procedure was performed following the unit's SOP (Standard Operating Procedure), which recommends bathing on even days in the morning in PTNBC that were within the criteria for research inclusion. It should be noted that according to the unit's SOP only newborns with axillary temperature above 36°C can be bathed .

The evaluation of the physiological signs during the two types of bath is necessary because it is a frequent procedure in the unit and can offer a potential for stress to these neonates. In this sense, the caregiving team should be aware of the need to minimize stressful stimuli caused by the environment and by direct procedures to premature babies, who are in an important and delicate phase of brain growth.

The PTNBC are more susceptible to develop hypothermia, in relation to the NB in term, due to immaturity in thermoregulation, difficulty to maintain flexion, low body mass index and little amount of brown fat. Hypothermia leads to serious risks to the NB, such as hypoxia and asphyxia, among other commitments. For these PTNBC to have a better recovery, growth and ideal development it is necessary that their temperature is maintained between 36.5°C and 37.5°C.<sup>3</sup>

By establishing a care that maintains physiological, motor and behavioral stability during procedures, professionals preserve neurological development, as well as growth and motor development.<sup>4</sup>

It is essential that the PTNBC maintains the balance of your body and it is up to the professionals of the NICU to provide a more humanized assistance, as well as control environmental stimuli such as noise, lighting and temperature, in addition to excessive manipulation, thus seeking to help in an appropriate development.<sup>5</sup>

The comparative analysis showed that after the bathtub immersion bath about 27 (90%) neonates presented hypothermia, 19 NB (63.3%) with moderate hypothermia (32-35.9°C) and eight NB (26.7%) presented mild hypothermia (36-36.4°C). In the humanized bath 17 presented hypothermia, with only four NB (13.4) with moderate hypothermia (32-35.9°C), 13 NB (43.3%) with mild hypothermia (36-36.4°C) and 13 (43.3%) maintained eutermia (36.5-37.5°C).

It should be noted that the normal range of the NB temperature varies between 36.5 and 37°C, and may reach 37.4°C. Hypothermia, on the other hand, has levels of gravity, being light hypothermia generated by potential cold stress, when the NB presents a temperature range between 36 and 36.4°C. Moderate hypothermia when the NB remains between 32 and 35.9°C and severe hypothermia is that lower than 32.0°C.<sup>6</sup>

It was also possible to verify that 15 (50%) of premature newborns submitted to bathtub immersion had a drop of more than 1.0°C, a fact that generates a significant drop in body temperature.

It was still possible to observe that no newborn presented a drop greater than 1°C after being sanitized with the humanized bath, being that 30% still gained or did not present alterations of temperature.

Thus, we show that the immersion bath in a bath shows itself as a procedure that favors the hypothermia of the premature newborn, in contrast with the humanized

bath, which did not promote significant losses or gains in temperature.

It should be noted that in both procedures no significant variations in heart rate and respiratory rate were found.

In view of the evidence, we can affirm that the humanized bath shows itself as an effective procedure, because at the same time that it offers the possibility of hygiene, it promotes a significantly lower loss of temperature than the bath immersion in the majority of the premature babies of the research.

The humanized bath reduces heat loss through radiation, conduction and evaporation, being more effective in maintaining body temperature and preventing heat loss in premature infants.<sup>7</sup>

## CONCLUSION

This research aimed to compare the two types of baths held at the NU, emphasizing that it is not intended to criticize the practice carried out at the unit, but rather to highlight with the best technique for assistance provided to the PTNBC. Besides proving the hypothesis of this study that the PTNBC during the humanized bath presents greater physiological stability than during the bath immersion. Thus, the humanized bath as the best technique for care assistance, contributing with adequate physical and neurological development of these neonates.

PTNBC have their physiological and behavioral development in the extrauterine environment, with this study also points to the need for discussion and training of the team, for the provision of less mechanical assistance and more individualized care, which aims to facilitate self-regulation capabilities and thereby minimize future problems and decrease rates of mortality and neonatal morbidity. In addition, the family should be included during procedures performed in neonates.

The study has contributed to a more humanized assistance practice to the PTNBC, minimizing the negative impacts resulting from inadequate assistance. Giving subsidies to health professionals that rethink the way they perform the assistance techniques, contributing to the recovery of those premature.

In relation to teaching, it constitutes a scientific knowledge tool that awakens the desire of undergraduate and graduate students to deepen their knowledge on the subject, as well as providing a reflection on the care given by the team to NB admitted to NICU.

Regarding the research, the present study produces evidence regarding the type of assistance provided in the unit. Considering the precariousness of the subject, it arouses the interest for the research in this theme.

As limitations of the study we had the low rotation of the patient in the Neonatal Unit, which was not working with its total capacity of beds, due to the scarcity of basic materials and human resources for an adequate assistance, in the collection period. However, the N stipulated initially for the sample was reached.

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### Corresponding author

Thamires Aparecida de Souza Martins

Address: Rua General Fernando Batalha, 126

Rio de Janeiro/RJ, Brazil

Zip code: 21.330-760

Email address: [thamiresmartins.ufrj@gmail.com](mailto:thamiresmartins.ufrj@gmail.com)

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