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EFFECTIVENESS OF ATRAUMATIC CARE APPROACH: SWADDLE AND SPONGE BATH ON VITAL SIGNS AND PAIN SCALE IN NEONATES

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ABSTRACT
The newborn's transition from an intrauterine to an extrauterine environment can increase stress. One of the treatments for newborns that is often neglected and causes trauma to infants is bathing. The purpose of the study is to determine the difference in effectiveness between swaddle and sponge bath on newborns' vital signs and pain thresholds. The study used a Quasi-Experimental Design with 2 groups Pre and Post-Test at Private Primary Clinic. The total sample of 32 neonates was divided equally into the swaddle and sponge bath groups. Data was analyzed by Paired T-Test, Independent T-Test, Wilcoxon Test, and Mann-Whitney Test based on data normality. The study defined that there was a significant difference in respiration rate, heart rate, oxygen saturation, body temperature, and pain scale at 5 minutes postbath with a p-value was <0.05 in both groups. The study concluded that a swaddle bath was considerably helpful, safe, protected, and stress-free in stabilizing vital signs and pain scales in neonates. Swaddle bath as part of developmental care to improve approach of the atraumatic care as a standard bathing technique. It is recommended that further research be done to add crying times and stress levels to the swaddle and sponge bath method.

Keywords: neonates; pain scale; sponge bath; swaddle bath; vital signs

INTRODUCTION

Neonates are from the birth of the infant until the postnatal age of 28 days (Oktiawati, Khodijah, Setyaningrum, & Dewi, 2017) and are a very vulnerable period of human life (Rustina, 2015). This period has a fairly high death rate. Therefore, greater attention is focused on reducing further child mortality. Providing high-quality and appropriate care for newborns is essential and can prevent a significant number of neonatal deaths worldwide (United Nations (UN), 2017). The transition of a newborn from an intrauterine to an extrauterine environment can increase stress on the infant. Repeated stress will have consequences for a long period on the development of an infant's brain. One of the treatments for newborns that is often neglected and causes trauma to infants is bathing (Vinall & Grunau, 2014). As a response to trauma, it can be demonstrated by hypothermia, pain obtained through pain scale measurements, and oxygen desaturation due to crying for too long (Ceylan & Bolışık, 2018). The bathing method that is often used in Indonesia is the sponge bath method and a combined method conventional tub and sponge bath which can cause trauma and stress in neonates. The atraumatic care approach is to provide nursing care through implementations that minimize the physical and psychological distress experienced by infants while being treated at health services (Datta, 2018). One of the atraumatic care approaches is the Swaddle bath (Fernández & Antolín-Rodríguez, 2018).

There was a meaningful significant distinction between the sponge and swaddle bath methods in crying time and vital signs. Pain and Stress levels were significantly increased in the group of sponge baths (Ceylan & Bolışık, 2018). There aren't any significant differences in physiological reactions between swaddle and conventional tub baths, however, swaddle baths are more effective in limiting problems in comfort responses in newborns (Tambunan &

Mediani, 2019). The research location, which is a Private Primary Clinic, was chosen because the first bathing of neonates is done by a sponge bath and the number of newborns in a month is quite large. Therefore, researchers are interested in applying sponge and swaddle bath interventions to changes in vital signs and neonatal pain scale. The objective of the study is to determine the difference in effectiveness between swaddle and sponge bath on newborns' vital signs and pain thresholds.

METHOD.

The study used Quasi-Experimental Design with Pre and Post-Test in 2 Groups. This research was conducted at a Private Primary Clinic that serves deliveries and has access to National Health Insurance. The study population was all newborns with an average birth rate of 40 neonates monthly and a total sample of 32 neonates (16 neonates for the sponge group and 16 neonates for the swaddle bath group) using a purposive sampling technique with the following inclusion criteria: mature gestation age, postnatal age 0 – 2 days, and neonates in stable condition with body temperature ≥36.5 ◦C. While the exclusion criteria were as follows: on oxygen and cyanosis, caregivers who withdrew participation were included in this study after data collection. Instruments for vital signs are digital thermometer, stethoscope, stopwatch, and pulse oximeter which are purchased new and sealed. The instrument for the pain scale was adopted from the Neonatal Infant Acute Pain Assessment Scale (NIAPAS) (Pölkki, Korhonen, Axelin, Saarela, & Laukkala, 2014) which had been tested for the Content Validity Index (CVI) and the Reliability test (Septiana, Rustina, & Efendi, 2021). Univariate and bivariate data analyses were used in this study. The Shapiro Wilk used for data distributed normally or not. Paired T-Test and if the data is not normally distributed, then use the Wilcoxon Test. Analyze the comparative data of the two interventions to determine effectiveness using the Independent T-Test and Mann-Whitney Test.

RESULTS

Table 1.
Distribution of Respondent Characteristics Based on Gestational Age, Postnatal Age, Birth Weight, Gender, and Type of Delivery in Group Swaddle Bath and Group Sponge Bath (n=16)

Characteristics	Swaddle Bath Group, n = 16				Sponge Bath Group, n = 16			
	Min.	Max.	Mean (SD)	f (%) *	Min.	Max.	Mean (SD)	f (%) *
Gestational Age (Week)	37	42	39.38 (1.6)		37	42	39.25 (1.7)	
Postnatal Age (Hour)	6	29	16.50 (6.7)		16	28	20.44 (3.9)	
Birth Weight (Gram)	2525	3650	3090.88 (335.34)		2625	4300	3381.25 (444.48)	
Gender								
1. Male				8 (50)				10 (62.5)
2. Female				8 (50)				6 (37.5)
Type of Delivery				16				16
1. Spontaneous				(100)				(100)
2. Vacuum Extraction				0 (0.0)				0 (0.0)

Table 1 defined that the group of swaddle bath had gestation age (least was 37, most extreme was 42, and mean was 39.38 weeks); postnatal age in hours (minimum was 6, maximum was 29, and mean was 16.50); and birth weight in grams (minimum was 2525, and maximum was 3650, and mean was 3090.88). While sponge bath group had a gestation age in weeks (minimum was 37, maximum was 42, and mean was 39.25); postnatal age in hours (least was 16, maximum was 28, and mean was 20.44); and birth weight in grams (minimum was 2625, and maximum was 4300, and mean was 3381.25).

Table 2.
Description of Vital Signs and Pain Scale in Neonates Before and After Swaddle and Sponge Bath (n=16)

	Swaddle Bath Group, n = 16					Sponge Bath Group, n = 16				
Variables	Min	Max.	Mean	Median	SD	Min	Max.	Mean	Medan	SD
Temperature (◦C)										
Pretest 5 Min	36.6	37.3	36.9	36.9	0.22	36.6	37.3	36.9	36.9*	0.21
Postbath 5 Min	36.6	37.1	36.8	36.8	0.14	36.2	36.5	36.4 ****	36.4	0.09
Heart Rate (x/min)										
Pretest 5 Min	154	168	158.7	158.0	4.49	150	168	159.2	159.0	5.25
Postbath 5 Min	156	172	165.0	165.0	4.56	162	174	168.5	168.0	3.16
Respiration Rate (x/min)										
Pretest 5 Min	40	54	47.0	47.0	4.84	40	54	46.2	46.0	4.61
Postbath 5 Min	44	56	50.3	50.0	4.08	50	58	55.0	56.0	2.53
Oxygen Saturation (%)										
Pretest 5 Min	90	94	92.1	92.0*	1.70	90	94	92.2	92.0*	1.77
Postbath 5 Min	90	96	92.2	92.0*	1.61	88	92	89.8	90.0*	1.54
Pain Scale										
Pretest 5 Min	0	1	0.50	0.50*	0.51	0	1	0.56	1.00*	0.51
Postbath 5 Min	3	5	3.88	4.00*, **	0.88	5	7	6.13	6.00*, ***	0.71

*= Abnormal Data Distribution; **=Mild Pain; ***=Moderate Pain; ****=Mild Hypothermia

Table 2 shows the descriptive outcomes on body temperature among neonates in the swaddle bath group who had a 5-minute pretest mean body temperature of 36.9 °C, and the mean at 5 minutes postbath was 36.8 and within normal value. Mean pretest heart rate and respiration rates were 158.7 and 47 x/minutes and both increased within normal levels at postbath after 5 minutes. The median at 5 minutes pretest and posttest of oxygen saturation was 92% and the reading was within normal level. The median pretest at 5 minutes was no pain and at 5 minutes postbath was on 4.00 (mild pain). Table 2 shows the descriptive outcomes on body temperature among neonates in the sponge bath group who had a 5-minute pretest median body temperature of 36.9 °C, and the mean at 5 minutes postbath was 36.4 and it is on mild hypothermia stage. Mean at 5 minutes pretest heart rate and respiration rates were 159.2 and 46.2 x/minutes and both increased within normal level at postbath after 5 minutes. While median pretest oxygen saturation was 92%, and it went down a little bit (90) at 5 minutes postbath and the reading was within normal level. The median pretest at 5 minutes was mild pain and at 5 minutes postbath was on 6.00 (moderate pain).

Table 3.
Effect of Swaddle and Sponge Bath on Vital Signs and Pain Scale in Neonates (n=16)

Variables	Group Swaddle Bath, n = 16					Group Sponge Bath, n = 16				
	Mean (SD)	Ranks	Mean Ranks	f	p-value	Mean (SD)	Ranks	Mean Ranks	f	p-value
Temperature (◦C)										
Pretest 5 Min	36.9 (0.22)					36.9 (0.21)				
Postbath 5 Min	36.8 (0.14)				0.006[a], s	36.4 (0.09)	Negative	8.50	16	0.000[b], s
							Positive	0.00	0	
							Ties		0	
Heart Rate (x/min)										
Pretest 5 Min	158.7 (4.49)					159.2 (5.26)				
Postbath 5 Min	165 (4.56)				0.469[a], ns	168.6 (3.16)				0.036[a], ns
Respiration Rate (x/min)										
Pretest 5 Min	47.0 (4.84)					46.2 (4.61)				
Postbath 5 Min	50.38 (4.80)				0.601[a], ns	55.0 (2.53)				0.394[a], ns
Oxygen Saturation (%)										
Pretest 5 Min	92.1 (1.70)					92.00 (1.77)				
Postbath 5 Min	92.25 (1.61)	Negative	5.00	5	0.782[b], ns	89.8 (1.54)	Negative	8.50	16	0.000[b], s
		Positive	6.00	5			Positive	0.00	0	
		Ties		6			Ties		0	
Pain Scale	0.50					0.56				
Pretest 5 Min	(0.51)					(0.51)				
Postbath 5 Min	3.88 (0.88)	Negative	0.00	0	0.000[b], s	6.13 (0.71)	Negative	0.00	0	0.000[b], s
		Positive	8.50	16			Positive	8.50	16	
		Ties		0			Ties		0	

[a]Paired T-Test, [b]Wilcoxon Test, [s]Significant, [ns]Not Significan

Table 3 showed the effect of the swaddle bath on vital signs in neonates considering the variable of body temperature at 5 minutes postbath using paired t-test with p-value = 0.006, and there was a significant effect of the swaddle bath on the neonates' body temperature at postbath 5 minutes. Heart rate and respiration rate in neonates at postbath 5 minutes using paired t-test with p-value = 0.469 and 0,601, and there was no significant effect of the swaddle bath on neonates' heart rate and respiration rate at 5 minutes postbath. A similar result for oxygen saturation in neonates at postbath 5 minutes using the Wilcoxon test, and it had no indicative effect with the p-value = 0.782. Promisingly, the pain scale at 5 minutes postbath using the Wilcoxon test had a significant effect of swaddle bath with p-value = 0.000. Table 3 also showed the effect of sponge bath on vital signs in neonates in neonates that the variable of body temperature after 5 minutes postbath using the Wilcoxon test with p-value = 0.000 and it meant that there was a meaningful effect of sponge bath on the neonates' body temperature at 5 minutes postbath. Heart rate at postbath after 5 minutes using paired t-test and it had valuable influence after the intervention with p-value = 0.036. While respiration rate at 5 minutes postbath using paired t-test showed no significant effect of sponge bath with p-value = 0.394. While oxygen saturation and pain scale at 5 minutes postbath using the Wilcoxon test with p-value = 0.000, it means that there was a notable effect on oxygen saturation and pain scale after sponge bath.

Table 4.
The difference on Vital Signs and Pain Scale After Swaddle and Sponge Bath in Neonates (n=16)

Variables	Group Swaddle Bath, n = 16		Group Sponge Bath, n = 16		
	Mean (SD)	Mean Ranks	Mean (SD)	Mean Ranks	P-Value
Temperature (◦C) Postbath 5 Min	36.8 (0.14)	24.50	36.4 (0.09)	8.50	0.000[b], s
Heart Rate (x/min) Postbath 5 Min	165 (4.56)		168.6 (3.16)		0.014[a], s
Respiration Rate (x/min) Postbath 5 Min	50.38 (4.80)		55.0 (2.53)		0.001[a], s
Oxygen Saturation (%) Postbath 5 Min	92.25 (1.61)	21.97	89.8 (1.54)	11.03	0.001[b], s
Pain Scale Postbath 5 Min	3.88 (0.88)	8.97	6.13 (0.71)	24.03	0.000[b], s

[a]Independent T-Test, [b]Mann Whitney Test, [s]Significant, [ns]Not Significant

Table 4 explained the difference in mean vital signs (after bathing) among neonates with the swaddle and sponge bath which implied that the body temperature at 5 minutes postbath with a mean ranks group swaddle bath was 24.50 which is higher than the mean ranks group sponge bath was 8.50, the result of Mann Whitney Test gave p-value = 0.000, and there was a significant difference on body temperature at 5 minutes postbath in the two intervention groups. Next, the heart rate at 5 minutes postbath with a mean group of swaddle bath was 165 x/minute which is a bit lower than the mean group of sponge bath was 168.6 x/minute, The result of independent t-test gave p-value = 0.014, and there a notable difference on heart rate at 5 minutes in both of the intervention groups. The mean respiration rate at 5 minutes postbath in the swaddle bath group was 50.38 x/minute which is a slight increase than the mean group sponge bath was 55 x/minute, the result of the independent t-test gave p-value = 0.001, and there was a denotative difference on respiration rate at 5 minutes postbath in the two intervention groups. Meanwhile, the oxygen saturation at 5 minutes postbath with a mean ranks group swaddle bath was 21.97 which is sharply higher than the mean ranks group sponge bath was 11.03, The result using Mann Whitney Test gave p-value = 0.001, and there was a meaningful difference on oxygen saturation at 5 minutes postbath in both of the intervention groups. The opposite result on the pain scale at 5 minutes postbath was that the mean rank of the group swaddle bath was 8.97 which is sharply lower than the mean rank of the group sponge bath was 24.03, the result using Mann Whitney Test gave a p-value = 0.000, and there was a significant difference on pain scale at 5 minutes postbath in both of the intervention groups.

DISCUSSION

Demographic Data

Demographic data defined that the group of swaddle bath had gestation age (least was 37, most extreme was 42, and mean was 39.38 weeks); postnatal age in hours (minimum was 6, maximum was 29, and mean was 16.50); and birth weight in grams (minimum was 2525, and maximum was 3650, and mean was 3090.88). While sponge bath group had a gestation age in weeks (minimum was 37, maximum was 42, and mean was 39.25); postnatal age in hours (least was 16, maximum was 28, and mean was 20.44); and birth weight in grams (minimum was 2625, and maximum was 4300, and mean was 3381.25). To adapt and maintain life, newborns

move from the intrauterine to the extrauterine environment early in life (World Health Organization, 2015). One of the factors affecting a newborn's body temperature is their age. Because of their susceptibility to temperature, newborns might experience drastic fluctuations in body temperature depending on the weather (Potter, Perry, Stockert, & Hall, 2016). During intervention on both groups, the room temperature was controlled by switched off the Air Conditioning. More research on newborns is required to better the understanding of nurses and enable them to deliver skilled nursing care.

The mean in the swaddle bath group had gestational age of newborn was 39.38 weeks while in the sponge bath group had gestational age of newborn was 39.25 weeks. Coherently, the previous study explored that the mean gestational age was 38.05 weeks in the experimental (swaddle) group and in the control (traditional tub bath) group was 38.48 weeks (Çaka & Gözen, 2018). The mean of postnatal age in the swaddle bath group was 16.50 hours while the mean in the sponge bath group had postnatal age was 20.44 hours. The minimum postnatal age in the swaddle bath group was 6 hours while in the sponge bath group was 16 hours. Oppositely, the previous study explored that the mean postnatal age was 25.56 hours in the swaddle bath group (Tambunan, Mediani, & Nurjanah, 2019). The mean birth weight in the swaddle bath group was 3090.88 grams while the mean in the sponge bath group was and birth weight of 3381.25 grams. Another study showed that the birth weight was 3230 grams in the swaddle bath group (Çaka & Gözen, 2018).

Effect of Swaddle and Sponge Bath on Vital Signs and Pain Scale in Neonates

The effect of the swaddle bath on vital signs in neonates considering the variable of body temperature at 5 minutes postbath using paired t-test with p-value = 0.006, and there was a significant effect of the swaddle bath on the neonates' body temperature at postbath 5 minutes. Heart rate and respiration rate in neonates at postbath 5 minutes using paired t-test with p-value = 0.469 and 0,601, and there was no significant effect of the swaddle bath on neonates' heart rate and respiration rate at 5 minutes postbath. A similar result for oxygen saturation in neonates at postbath 5 minutes using the Wilcoxon test, and it had no indicative effect with the p-value = 0.782. Promisingly, the pain scale at 5 minutes postbath using the Wilcoxon test had a significant effect of swaddle bath with p-value = 0.000. The effect of sponge bath on vital signs in neonates in neonates that the variable of body temperature after 5 minutes postbath using the Wilcoxon test with p-value = 0.000 and it meant that there was a meaningful effect of sponge bath on the neonates' body temperature at 5 minutes postbath. Heart rate at postbath after 5 minutes using paired t-test and it had valuable influence after the intervention with p-value = 0.036. While respiration rate at 5 minutes postbath using paired t-test showed no significant effect of sponge bath with p-value = 0.394. While oxygen saturation and pain scale at 5 minutes postbath using the Wilcoxon test with p-value = 0.000, it means that there was a notable effect on oxygen saturation and pain scale after sponge bath.

The bath should be given 24 hours after birth, but cultural traditions dictate that the newborn is given a bath six hours after birth to clean the body's dirt with baby oil and prevent hypothermia (World Health Organization, 2015). Bathing causes heat loss through evaporation and radiation, so it is not advisable to bathe a newborn before this time. The first bath for infants shouldn't be given until the vital signs have stabilized (Mardini et al., 2020) because hypothermia after bathing may be a threat to respiration rate and increased oxygen use. To avoid cold stress, medical practitioners advise keeping bathing times to no more than five minutes (Blume-Peytavi et al., 2016). Some of the postpartum's mothers wanted to give bath to their newborns as early as possible. This study showed the effect of a swaddle bath on vital signs in neonates considering the variable of body temperature at 5 minutes postbath using paired t-test with p-

value = 0.006, and there was a significant effect of the swaddle bath on the neonates' body temperature at postbath 5 minutes. There was no significant influence at postbath 10 and 20 minutes (Freitas, Martini, Munhoz, Costa, & Kimura, 2018); no meaningful effect at post-bath 10 minutes (Edraki, Paran, Montaseri, Razavi Nejad, & Montaseri, 2014); no significant effect at postbath 1, 5, 15 and 30 minutes (Ceylan & Bolışık, 2018). Previous research similarly explored this with a p-value of 0.05 at postbath 10 minutes and high statistical significance at postbath 30 minutes with a p-value of 0.001 (Swapna, Nandhini, Princely, Kanchana, & Celina, 2017). The mean pretest body temperature was 36.95 and mean posttest body temperature was 36.82 °C in the intervention group, which was consistent with predictions (McKim, 2020). However, the body temperature in this study's swaddle bath participants was within the normal range at 5 minutes postbath because there was atraumatic approach care introduced.

Heart rate and respiration rate in neonates at postbath 5 minutes using paired t-test with p-value = 0.469 and 0,601, and there was no significant effect of the swaddle bath on neonates' heart rate and respiration rate at 5 minutes postbath. According to a previous study, there was a meaningful effect on heart rate, respiratory rate, and oxygen saturation at postbath 10 minutes with a p-value of 0.05 (Freitas et al., 2018), a highly denotative effect on heart rate and respiratory rate at postbath 10 and 30 minutes, and a meaningful effect on oxygen saturation at postbath 1 minute (Ceylan & Bolışık, 2018). A similar result for oxygen saturation in neonates at postbath 5 minutes using the Wilcoxon test, and it had no indicative effect with the p-value = 0.782. Promisingly, the pain scale at 5 minutes postbath using the Wilcoxon test and had the significant effect of swaddle bath with p-value = 0.000.

The finding showed the effect of sponge bath on vital signs in neonates in neonates that the variable of body temperature after 5 minutes postbath using the Wilcoxon test with p-value = 0.000 and it meant that there was a meaningful effect of sponge bath on the neonates' body temperature at 5 minutes postbath. However, the body temperature in this study's sponge bath participants was still mild hypothermia because there was no atraumatic approach introduced. Infants' mean postbath respiratory rate and heart rate were higher when sponge baths were used. The oxygen saturation averages were lower in the sponge bath condition. Oxygen saturation levels dropped after a bath in the sponge (Ceylan & Bolışık, 2018). Heart rate at postbath after 5 minutes using paired t-test and it had valuable influence after the intervention with p-value = 0.036. While respiration rate at 5 minutes postbath using paired t-test showed no significant effect of sponge bath with p-value = 0.394. While oxygen saturation and pain scale at 5 minutes postbath using Wilcoxon test with p-value = 0.000, it means that there was a notable effect on oxygen saturation and pain scale after sponge bath.

The difference on Vital Signs and Pain Scale After Swaddle and Sponge Bath in Neonates

The study explained the difference in mean vital signs (after bathing) among neonates with the swaddle and sponge bath which implied that the body temperature at 5 minutes postbath with a mean ranks group swaddle bath was 24.50 which is higher than the mean ranks group sponge bath was 8.50, the result of Mann Whitney Test gave p-value = 0.000, and there was a significant difference on body temperature at 5 minutes postbath in the two intervention groups. Vital signs, oxygen saturation levels, and crying times varied across bathing methods in a statistically meaningful way. According to the bathing method, the sponge bath condition had considerably greater tension and pain levels with a p-value was 0.05 (Ceylan & Bolışık, 2018). Across all weight groups, the differences in temperature 15 minutes after the bath and before were consistently substantial. In stable preterm infants, routine sponge bathing temporarily lowers body temperature but does not result in hypothermia. It can be utilized as a component of routine

care for stable preterm infants because it is a relatively straightforward procedure and combines developmental care (Mangalgi & Upadhya, 2017).

Next, the heart rate at 5 minutes postbath with a mean group of swaddle bath was 165 x/minute which is a bit lower than the mean group of sponge bath was 168.6 x/minute, The result of independent t-test gave p-value = 0.014, and there a notable difference on heart rate at 5 minutes in both of the intervention groups. The mean respiration rate at 5 minutes postbath in the swaddle bath group was 50.38 x/minute which is a slight increase from the mean group sponge bath was 55 x/minute, The result of the independent t-test gave p-value = 0.001, and there was a denotative difference on respiration rate at 5 minutes postbath in the two intervention groups. At 10 minutes after bathing, the swaddle group had a lower overall mean score of discomfort than the regular bathing group, which was highly statistically significant. After bathing, there were statistically significant variations in the mean scores of heart rate and respiration rate between the traditional bathing group and the swaddle bathing group but stability in the mean score of body temperature for both groups (Mohamed & Elashry, 2022).

Meanwhile, the oxygen saturation at 5 minutes postbath with a mean ranks group swaddle bath was 21.97 which is sharply higher than the mean ranks group sponge bath was 11.03, The result using Mann Whitney Test gave p-value = 0.001, and there was a meaningful difference on oxygen saturation at 5 minutes postbath in both of the intervention groups. The opposite result on the pain scale at 5 minutes postbath was that the mean rank of the group swaddle bath was 8.97 which is sharply lower than the mean rank of the group sponge bath was 24.03, The result using Mann Whitney Test gave a p-value = 0.000, and there was a significant difference on pain scale at 5 minutes postbath in both of the intervention groups. Although there were no significant differences in physiological responses between the two intervention groups, the swaddling bath was more successful in limiting problems with comfort reactions in preterm neonates (Mediani, Nurjanah, Sansuwito, Hassan, & Tambunan, 2022).

The investigation's limitations also include the existence of unfavorable environmental stressors. Given that environmental factors might have an impact on a newborn's behavior, it was important for the study that baths be administered in a calm, stress-free setting. To perfectly control every environmental stimulus in the private primary clinic because there is no special room that is already designated room for performing baths to the infants. Every newborn is exceptional, and stress-related social reactions differ from person to person. The study's conclusions could thus be practically impacted by this, and it is advised that more research be done to examine preterm neonates' crying times and stress levels on the swaddle and sponge bath method. Swaddle bath is stress-free (Mokhtari_naseri et al., 2021), it is most likely plausible to assume that the swaddle bath approach is a method of bathing that is safer and more reliable in gauging the physiologic and comfort responses of preterm newborns (Finn, Meyer, Kirsten, & Wright, 2017). Swaddle bathing is a relaxing, safe, and comfortable bathing practice that mimics the uterine environment. For premature neonates, swaddle baths provide comfort during bath time and a delightful bathing experience (Denton & Bowles, 2018).

CONCLUSION

The results showed that the swaddle bath was considerably helpful, safe, protected, and stress-free in eliciting vital signs and pain scale in neonates, maintaining good body temperature, preserving oxygen saturation stability, and reducing pain level. Swaddle baths, however, can be incorporated as parts of developmental care to improve the atraumatic care approach as a standard bathing technique in the private primary clinic.

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