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Original Article

The Effect of the Facilitated Tucking after Vaginal Delivery on Stress, Comfort, and Physiological Parameters of Late Preterm: A Randomized Control Trial

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ABSTRACT

Background: Vaginal delivery may cause stress for all newborns; therefore, it is the responsibility of nurses to provide physiologic stability and first care of the preterm after birth. This study aimed to examine the effect of facilitated tucking (FT) after vaginal deliveries on stress, comfort, and physiologic parameters of late preterm infants.
Methods: This randomized controlled study was conducted with late preterm infants. The sample size was calculated using a computer program. A total of 60 preterm infants were included in the study, assigned to the FT group (n=30) and the control group (n=30). A newborn information and registration form, the Newborn Comfort Behavior Scale (NCBS), and the Newborn Stress Scale (NSS) were used to collect data.
Results: The mean NSS score was lower in the FT group and preterm infants showed less stress symptoms; however, the difference was not significant. The mean NCBS score was statistically significantly lower in the FT group, showing that the preterm babies were more comfortable in this group.
Conclusion: It was determined that FT, which is one of the individualized developmental care practices, provides physiologic stability, comfort, and reduced stress for late preterm infants after vaginal deliveries.

Keywords: Vaginal Delivery, Facilitated tucking, Preterm, Stress

Introduction

Feeding involves the process of receiving food, placing it in the mouth, and swallowing. In normal infants, feeding skills develop sequentially along with other motor skills with age (1).

Normal swallowing consists of four stages, including the oral preparatory phase, oral transfer phase, pharyngeal phase, and esophageal phase (2). Dysphagia, as one of the forms of feeding disorders, is caused by abnormal changes in the structures, function, or coordination of movements that are necessary for normal swallowing (3) that impairs the safety, effectiveness, and adequacy of feeding. Swallowing disorders in infants are mainly caused by five major reasons, such as neurologic matters (e.g., prematurity and cerebral palsy); anatomical abnormalities which affect aero-digestive tract (e.g., cleft palate); medical conditions (e.g., syndromes, as well as metabolic and degenerative diseases); conditions affecting sucking, swallowing, and breathing coordination; and other factors (e.g., feeder-child interaction dysfunction) (2, 4) that mainly results in poor suck-, swallow- breath coordination and weak/delayed oral sensorimotor skills with symptoms, such as feeding-related Bradycardia and desaturation, coughing, choking, gagging, arching the back, irritability, and refusal to

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feed (5).

Though the exact prevalence of neonatal dysphagia is not known, swallowing problems are nearly frequent in prematurely born infants and high-risk neonates in the neonatal intensive care units (NICU) (6). The prevalence of dysphagia was estimated high (about 10.27%) in newborns at the NICU of hospitals affiliated to Tehran University of Medical Sciences, Tehran, Iran (7). The prevalence rate is expected to be higher in small towns or suburbs of the cities due to higher rates of inadequate prenatal care and premature births.

A complete and comprehensive evaluation is the first necessary step in the early detection of feeding and swallowing problems to survive the child and achieve appropriate therapeutic intervention.

Videofluoroscopy (VFSS) or modified barium swallow test (MBS), fiber-optic endoscopic evaluation of swallowing (FEES), and ultrasound sonography (US) are used for the instrumental assessment of infants' swallowing (8, 9). VFSS is the most comprehensive instrument that can assess all four phases of swallowing by irradiating X-rays with barium-containing foods (10, 11). In FEES, the hypopharynx and larynx can be observed directly during swallowing by passing the endoscope through the nose (12). The US is a noninvasive accurate method for the detection of swallowing problems, specifically in neonates in the oral phase (13).

Although instrumental assessment is the most effective way to identify dysphagia, it also has disadvantages and limitations. Almost all of these techniques are expensive and need highly educated and trained specialists. VFSS is invasive and exposes the neonates to radiation, and the US provides only the views of the oral phase and no other (14).

In addition, one of the important limitations in developing and under sanctions countries, such as Iran, is the lack of access to these instruments or the lack of experts to conduct procedures, even in metropolitan areas. Therefore, access to valid, reliable, and efficient clinical scales, as a supplement or even an alternative for instrumental evaluations, is so important to identify infants with oropharyngeal dysphagia (OPD).

In 1993, Palmer et al. developed the Neonatal Oral Motor Assessment Scale (NOMAS) to assess jaw and tongue function during sucking (15). A Schedule for Oral Motor Assessment (SOMA) was also developed in 1995 by Riley et al. to evaluate the function of the lips, tongue, and jaw of 8- to 24-month-old children by eating fluids and foods of varying concentrations (16). These two tools merely assess the motor function of the mouth, while in a comprehensive assessment of an infant with a feeding disorder, the overall process of swallowing and feeding, the role of environment (e.g., parental concerns and the parent-child interaction), infant's internal disturbances, health status, state, and behavior should be taking into account (17).

Thoyre et al. (2005) developed Early Feeding Skills (EFS) to assess the readiness for the improvement of oral feeding skills in preterm infants (18, 19). Despite not evaluating all necessary factors in oral feeding, EFS is more comprehensive than NOMAS and SOMA. However, the clinician-reported checklist is the best substitution for studying the emergence of early feeding skills in premature infants; however, it is not suitable not for all neonates who are at high risk for OPD (children with certain syndromes, anatomical abnormalities, and congenital heart defects); moreover, it does not clearly focus on identifying neonates who are suspected of having swallowing disorders.

In 2016, Vivier et al. designed the Neonatal Feeding Assessment Scale (NFAS) using the Delphi method in English to comprehensively assess feeding skills in infants from 32 weeks of gestation to the end of 4 months (adjusted for preterm infants) and diagnose OPD. NFAS is a valid and reliable scale with 228 items. Its inter-rater reliability, sensitivity, and specificity were determined at 80%, 100%, and 78.6%, respectively, which are satisfactory (20, 21).

After a widespread literature review, to find a validated clinical instrument that provides a detailed profile of feeding behaviors of neonates and supports an accurate diagnosis of OPD in high-risk neonates to be used for Iranian neonates, in the situation of lack of access to instrumental examinations, NFAS was found as a comprehensive scale that provides these objectives.

This study aimed to translate the neonatal feeding assessment scale into Persian and define its psychometric properties. In some countries and rural areas, where normal birth is common, postpartum care is very important, especially for preterm babies. Stress causes autonomous-motor and behavioral effects in different systems in newborns (1). Nursing practices positively affect the response to stress physiologically and behaviorally in newborns and preterm infants (2, 3). In clinics, these practices are known as non-pharmacologic interventions such as facilitated

tucking (FT) (4), sucrose-nonnutritive sucking (5), breastfeeding (6), swaddling (7), and skin-to-skin contact (8).

FT is a procedure in which the newborn is gently flexed by placing hands on the head and hips. This procedure provides physiologic and behavioral stability in preterm infants, reduces stress, and positively affects their comfort. This procedure can be implemented in preterm infants in supine, prone and lateral positions (2, 3). In a randomized controlled study, pain scores were lower in the FT group and also effective in pain management of preterm infants (9). In another randomized controlled study, the combined use of non-pharmacologic interventions effectively reduced the frequency of infants' withdrawal behaviors (10). Comfort, heart rhythm changes, and oxygen saturation were evaluated in a study performed on very small preterm infants using echocardiography. It was determined that mean heart rate variations were reduced and pain scores were lower in the experimental group (11). A study examined how FT positioning during suctioning affected physiologic responses and coping with stress in premature infants (3). Another study suggested that FT was an effective method for pain management and it might be used as an alternative to or together with oral dextrose (12).

Previous studies have revealed that FT is frequently practiced, especially in pain management; however, no study has been found examining how FT affects the stress and comfort of preterm newborns during first nursing care after delivery. Furthermore, vaginal delivery may be a stressor for newborns. It is the responsibility of nurses to provide physiologic stability and first care of preterm infants after birth. Some procedures may not be highly invasive, but they could be disturbing for preterm infants. During these procedures, nursing practices are needed to relieve stress and provide comfort to the newborn. Therefore, it was aimed to examine the effect of FT after vaginal delivery on the stress, comfort, and physiologic parameters of late preterm infants.

Methods

Design and participants

This research was conducted with a randomized controlled experimental design, as a single-blind study. The study was conducted on late preterm infants of mothers who gave birth by spontaneous vaginal delivery in the delivery room of a State Hospital between January and June 2020, in a province in southeastern Turkey.

Inclusion and exclusion criteria

The inclusion criteria were as follows: (a) spontaneous vaginal delivery, (b) 1-min Apgar score of >7, (c) being between 35-$36^{6/7}$ gestational weeks, (d) having congenital anomalies or any syndrome, (e) having no need for surgery, (f) having no need for mechanical ventilation, (g) and agreement of the parents to participate in the study. The exclusion criteria were as follows: giving birth by cesarean section, needing neonatal resuscitation, and having first vaccinations for newborns.

In the power analysis, the sample size was calculated using the G*Power (ver. 3.1.7) program. Based on Cohen's coefficients for effect size, it was assumed that the effect size (d = 0.2) of the ratings to be made across two independent groups would be large with 5% alpha (two-tailed) and 95% power. Power analysis results from Peng et al., (4) showed that the effect size was 1.19. Therefore, the minimum sample size was 16 for each group. The present study was completed with a total of 60 preterm infants including 30 preterm infants in each group (it was assumed that there could be losses during the study). Randomization was achieved using a computer program (https://www.randomizer.org) and all preterm infants were assigned to the FT and control groups according to a simple random numbers table. The effect size calculated according to the NCBS mean score of this study was determined as 0.564. The study was registered at ClinicalTrials.gov NCT05430321. Figure 1 shows the CONSORT flow diagram of the study.

Data collection tools

Newborn Information and Registration Form

Newborns descriptive characteristics data.

Newborn Comfort Behavior Scale (NCBS)

The scale was developed by Ambuel et al. (1998) (13). Van Dijk et al. (2009) (14) revised the scale and performed the validity and reliability of the COMFORTneo scale to assess only the behavior of newborns without physiologic parameters. COMFORTneo is a Likert-type scale and consists of six subscales: alertness, calmness/agitation, respiratory response and crying, body movements, facial tension, and muscle tone. It is called the Newborn Comfort Behavior Scale (NCBS). Its minimum and maximum scores are 6 and 30, respectively. High scores signify that the infant is not comfortable and needs interventions. In addition, 4-6 points indicate moderate pain and distress, and 7-10

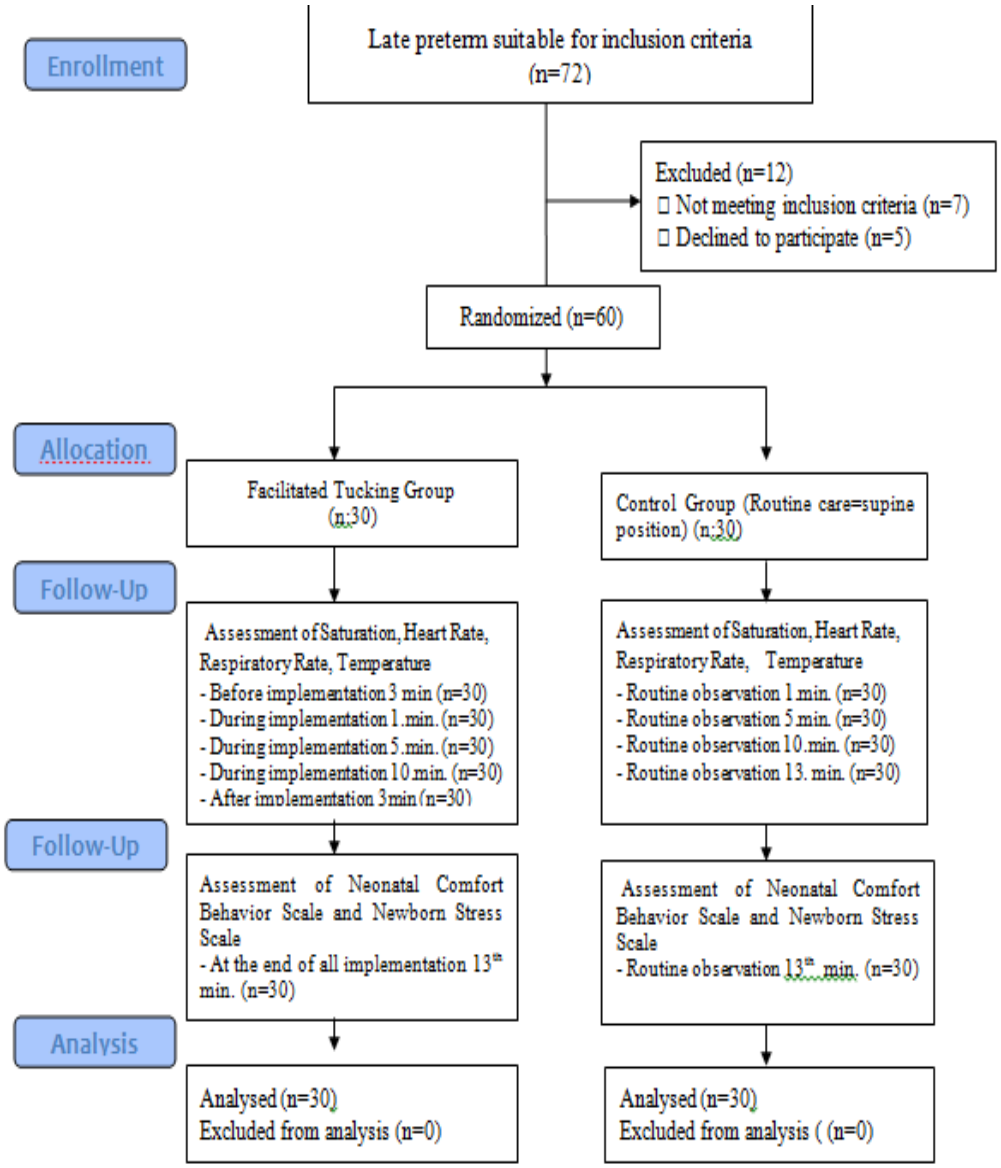

Figure 1. CONSORT flow diagram
Schulz KF, Altman DG, Moher D, CONSORT Group (2010) CONSORT 2010 Statement: Updated Guidelines for Reporting Parallel Group Randomised Trials. PLoS Med 7(3): e1000251. doi:10.1371/journal.pmed.1000251 Published March 24, 2010 (20).

points indicate severe pain and distress. Its Turkish validity and reliability study was conducted by Kahraman et al., (2014) (15), who determined that Cronbach's alpha coefficient was between 0.85-0.92. In our study, it was between 0.69-0.86 for observer one and between 0.77-0.85 for observer two.

Newborn Stress Scale (NSS)

The NSS was developed to assess stress in preterm infants. This three-point Likert-type scale consists of 24 items and eight subscales (facial expression, body color, respiration, activity level, condolence, muscle tone, extremities and posture). The lowest and highest scores on the scale are 3 and 11 points, respectively. Each subscale is rated between 0-2 points. 0 points indicate that the infant has no stress. As the score increases, the stress level of the infant increases. Its Turkish validity and reliability study was conducted by Ceylan and Bolisik (2017) (16). Cronbach's alpha value was found between 0.65-0.81; in the present study, Cronbach's alpha value was 0.78.

In the physiologic parameters, a special Massimo digital thermometer was used for temperature, which is preferred in hospital routines for saturation and heart rate

measurements. The frequency of the respirator was counted and evaluated by the nurses.

Interventions

The data were collected by the researcher from Monday to Friday. The researcher evaluated late preterm infants who met the inclusion criteria. The newborns were assigned to the FT and control groups according to the random number table. The parents were informed about the intervention to be made in the group with their infants in the delivery room. During delivery, the cervix or uterus opening and dilation were 3-5 cm. Also, the infant was followed with a non-stress test (NST) device. An information and registration form was completed for descriptive characteristics from patient files for the newborn. Information about the mother and baby were recorded in the delivery room. It is known that vaginal delivery is a stressful condition for all newborns. Care practices starting with birth can also cause stress and an uncomfortable state. In this study, routine care procedures are determined as body wiping, mouth, nose, eye, and simple intraoral care. These procedures may not be highly invasive; however, they might be disturbing to preterm newborns.

FT Group

To eliminate the pain and stress of late preterm infants during routine care after vaginal delivery, FT began 3 minutes before the procedures and lasted for 10 minutes. At the end of the procedures, an additional 3 minutes of FT were given. The NCBS and NSS were used at the end of all the procedures, at the 13th minute. While the researcher performed FT, the nurse who was on shift performed and also recorded postpartum care for the newborn. The scales were evaluated by the researcher and the nurse working in the shift (having neonatal experience of 5 years) (observer I-observer II).

Control group

The hospital routine care (supine position) was given to this group. The NCBS and NSS were used at the end of all the procedures, at the 13th minute. The scales were evaluated by the researcher and the nurse working in the shift who had 5 years of neonatal experience. (observer I-observer II).

Data analysis

The Statistical Package for the Social Sciences (SPSS) Ver 24 package software was used for statistical analysis. Numerical variables are expressed as mean, standard deviation, frequencies, and percentages. The Chi-square test, independent samples t-test, Mann-Whitney U test, and the paired-samples test were used, and differences between mean scores were considered to be statistically significant at a p-value of <.05. Cohen's kappa analysis was used for inter-observer agreement. Effect size (Cohen's d) was used for measure of the magnitude of the experimental effect. It was suggested that d = 0.2 be considered a 'small' effect size, 0.5 represents a 'medium' effect size and 0.8 a 'large' effect size. The larger the effect size the stronger the relationship between two variables.

Ethical approval

Written permission from the faculty administration and approval (IRB Number: 11.07.2019/211-05) were obtained from a University Medical Faculty Clinical Trials Ethics Committee. The consent of the participants was obtained using a signed informed consent form, and the study was conducted based on the principles of the Declaration of Helsinki.

Results

Table 1 shows the characteristics of the preterm infants and their mothers in the groups. It was determined that there was no difference between the groups in terms of parameters (except for Apgar 1 and 5 min ($p<.001$), and the groups were similar ($p>.05$).

Comparison of physiologic parameters (heart and respiratory rates)

The heart and respiratory rates of the groups were compared at admission, and the 1st, 5th, 10th, and 13th minutes (Table 2). It was observed that the mean heart rate and respiratory rate were lower in the FT group, but there was no statistically significant difference between the groups ($p>.05$). In the intra-group pairwise comparisons, there was a significant difference between both groups in terms of mean heart rate ($p<.001$). For respiratory rate, there was no significant difference between admission and 1st minute in the FT group ($p>.05$), but there was a significant difference between the admission and 5th, 10th, and 13th minutes in terms of respiratory rate ($p<.001$). The mean respiratory rates at admission and the 1st, 5th, and 10th minutes differed significantly in the control group ($p<.05$; $p<.001$).

Table 1. Comparison of belong to preterm infants and their mothers of characteristics according to groups (N=60)

Characteristics		Facilitated Tucking (n=30)	Control Group (n=30)	Test	p
		n(%)	n(%)		
Gender	Girl	19 (63.3)	17(56.7)	0.278	.579[c]
	Boy	11 (36.7)	13 (43.3)		
		Mean±SD(Min-Max)	Mean±SD(Min-Max)		
Age (Mother)		26.06±5.17 (18-35)	26.40±4.80 (18-36)	-.259	.797[a]
Gestational Age (week)		35.43±0.50 (35-36)	35.70±0.46 (35-36)	-2.128	.038[a]
Apgar 1. min		8.36±0.49 (8-9)	8.93±0.25 (9-10)	-4.563	.001[b*]
Apgar 5. min		9.43±0.50 (9-10)	10 (10-10)	-4.830	.001[b*]
Birth weight (gr)		2900±247 (2500-3300)	2951±504 (2550-3350)	-.814	.419[a]
Length (cm)		49.40±0.96 (47-51)	49.20±0.92 (48-51)	1.066	.291[a]
Head circumference (cm)		33.30±0.95 (32-35)	33.36±0.99 (32-36)	-.265	.792[a]

[a]Student-t Test [b]Mann Whitney U Test [c]Pearson Chi-Square Test SD: Standard Deviation *p<0.05

Table 2. Comparison of heart rate and respiratory rate according to groups

Physiological Parameters	Facilitated Tucking (n=30)		Control Group (n=30)		Test[a]	p
	Mean±SD (min-max)					
Heart rate-first	135.66± 20.65 (102-175)		137.60 ±14.66 (100-171)		-0.418	.678
Heart rate-1.min	141.03± 17.62 (102-171)		143.40± 14.67 (120-173)		-0.565	.574
Heart rate-5.min	145.03± 15.61 (118-174)		145.50± 15.81 (119-170)		-0.115	.909
Heartrate- 10.min	146.30± 15.52 (121-176)		147.63± 16.47 (121-172)		-0.323	.748
Heart rate-13.min	146.66 ± 12.33 (128-170)		149.20 ± 16.08 (124-175)		-0.684	.496
Test[d] ;p	t:-3.373[1-2]	p=.002**	t:-3.941[1-2]	p=.001*		
	t:-4.033[1-3]	p=.001**	t:-3.319[1-3]	p=.002*		
	t:-3.858[1-4]	p=.001**	t:-3.799[1-4]	p=.001**		
	t:-3.483[1-5]	p=.002*	t:-3.998[1-5]	p=.001**		
Respiratory-first	48.43± 6.89 (35-60)		49.86± 5.76 (40-62)		-0.873	.386
Respiratory-1.min	48.30± 6.47 (37-60)		50.13± 5.42 (40-62)		-1.189	.240
Respiratory-5.min	48.26± 6.24 (38-60)		50.90± 4.85 (43-62)		-1.822	.074
Respiratory10.min	48.10± 6.58 (35-62)		50.16± 5.25 (40-60)		-1.344	.184
Respiratory13.min	48.10± 6.89 (35-62)		50.40± 5.99 (41-64)		-1.380	.173
Test[d] ;p	t:-1.259[1-2]	p=.218	t:-2.304[1-2]	p=.029*		
	t:-4.352[1-3]	p=.001**	t:-3.363[1-3]	p=.002*		
	t:-4.601[1-4]	p=.001**	t:-3.309[1-4]	p=.003*		
	t:-5.525[1-5]	p=.001**	t:-3.817[1-5]	p=.001**		

[a]Student-t Test [d]Paired Sample Test SD: Standard Deviation *p<.05 **p<.001

Table 3. Comparison of oxygen saturation (SPO_2) and temperature according to groups

Physiological Parameters	Facilitated Tacking (n=30)	Control Group (n=30)	Test[a]	p
	Mean±SD (min-max)			
SPO_2-first	93.93± 3.23 (88-99)	93.46± 2.54 (88-97)	0.621	.537
SPO_2-1.min	94.40± 2.98 (89-99)	94.16± 1.98 (90-97)	0.356	.723
SPO_2-5.min	95.73± 2.59 (90-99)	94.93± 2.47 (88-99)	1.221	.227
SPO_2-10.min	95.90 ± 2.30 (91-99)	95.13± 2.73 (85-99)	1.172	.246
SPO_2-13.min	96.60± 2.34 (90-99)	95.43± 2.88 (87-99)	1.719	.091
Test[d];p	t:-1.259[1-2] p=.218 t:-4.352[1-3] p=.001** t:-4.601[1-4] p=.001** t:-5.525[1-5] p=.001**	t:-2.304[1-2] p=.029* t:-3.363[1-3] p=.002* t:-3.309[1-4] p=.003* t:-3.817[1-5] p=.001**		
Temperature-first	36.04± 0.16 (35.7-36.4)	35.99± 0.14 (35.7-36.3)	1.323	.191
Temperature 1.min	36.15± 0.21 (35.8-36.7)	36.10± 0.18 (35.8-36.5)	1.048	.299
Temperature 5.min	36.34± 0.22 (36-36.9)	36.28± 0.18 (36-36.6)	1.207	.233
Temperature10.min	36.52 ± 0.21 (36.2-37)	36.41 ± 0.17 (36-36.7)	2.221	.030*
Temperature13.min	36.61± 0.17 (36.3-37.1)	36.50± 0.12 (36.2-36.8)	2.589	.012*
Test[d];p	t:-4.547[1-2] p=.001** t:-9.225[1-3] p=.001** t:-12.544[1-4] p=.001** t:-17.233[1-5] p=.001**	t:-4.862[1-2] p=.001** t:-11.164[1-3] p=.001** t:-17.016[1-4] p=.001** t:-22.9661-5 p=.001**		

[a]Student-t Test [d]Paired Sample Test SD: Standard Deviation *p<.05 **p<.001

Comparison of physiologic parameters (saturation and temperature)

In Table 3, it can be seen that the mean SPO_2 values were high in the FT group at all times, but there was no significant difference between them (p>.05). The mean temperature was higher in the FT group at all times, and there was a significant difference at the 10th and 13th minutes (p<.05). In intra-group pairwise comparisons of SPO_2, no significant difference was found between admission and the 1st minute in the FT group (p>.05). By contrast, there was a significant difference between admission and the 5th, 10th, and 13th minutes (p<.001). The mean SPO_2 values of the control group differed significantly between admission and the 1st, 5th, 10th, and 13th minutes (p<.05). In the intra-group pairwise comparisons of mean temperature, there was a significant difference between the FT and control groups at the 1st, 5th, 10th, and 13th minutes (p<.001).

Comparison of NSS and NCBS mean scores and subscales of NCBS

Table 4 shows a comparison of the mean NSS and NCBS scores of the groups. The mean NSS

Table 4. Comparison of mean scores NCBS and NSS according to groups

Scales	Facilitated Tucking (n=30)	Control Group (n=30)	Test	p
	Mean±SD (min-max)			
NSS	5.30± 4.08[b] (1-14)	7.46± 4.56[b] (1-15)	-1.782	0.075
NCBS (Total)	13.73± 5.09[a] (6-25)	16.80± 5.76[a] (6-26)	-2.184	0.033*
Alertness	1.93±1.04	2.30±0.91	-1.443	0.154
Calmness/Agitation	2.00±0.94	2.46±0.89	-1.957	0.055*
Respiratory Response	1.90±0.99	2.66±1.21	-2.677	0.010*
Crying	2.06±1.11	2.50±1.16	-1.472	0.146
Body Movement	2.10±0.92	2.40±1.03	-1.184	0.241
Facial Tension	1.76±0.62	2.26±0.98	-2.355	0.022*
Muscle Tone	1.93±0.73	2.20±0.92	-1.233	0.222

[a]Student-t Test [b]Mann-Whitney-U Test SD: Standard Deviation *p<.05

score was lower in the FT group and preterm infants showed fewer stress symptoms; however, the difference was not significant (p>.05). The mean NCBS score was statistically significantly lower in the FT group, showing that the preterm babies were more comfortable in this group (p<.05). In the NCBS subscales, there was a statistically significant difference between the groups in terms of calmness/agitation, respiratory response, and facial tension (p<.05).

When the NSS and NCBS total scores were evaluated in the study, they were found to be statistically significant, with a very high power of agreement between observer I and observer II (NSS total κ = 0.998 p<.001; NCBS total κ = 0.993 p<.001).

Discussion

In the study, it was found that the mean heart rate was lower in the FT group than in the control group, but there was no statistically significant difference between the groups (Table 2). Similar results have been reported in the literature (9, 11).

The mean respiratory rate was lower in the FT group. Although there was no significance between the groups, there were significant time-dependent differences within the group in terms of respiratory rate (Table 2). Kucukoglu et al. reported that respiratory rates were lower in the FT group and there was no difference between the groups (9). In another study, researchers found a statistically significant difference between the mean respiratory rates of both groups and also that FT was effective in preterm infants during venipuncture procedures (19). In their study, Avcin and Kucukoglu stated that the mean respiratory rate was the lowest in the FT group, but there was no significant difference (6). In the present study, there was no difference between the groups, but the FT group showed better respiratory performance over time and this created a significant difference within the group.

In our study, it was found that the mean oxygen saturation values were higher in the FT group. The mean oxygen saturation values were similar between the groups at all minutes, but there was a significant difference in favor of the FT group at the 5th, 10th and 13th minutes in the intra-group pairwise comparison (Table 3). Other studies also reported higher mean oxygen saturation values of FT groups (6, 11); conflictingly, one study found a significant difference (6), but the other observed no difference (11).

In the present study, the stress and comfort scales of preterm babies born after vaginal delivery were evaluated within 13 minutes in total because the neonatal nurses continued the application for an additional 3 minutes after the end of the general care procedures. Postnatal FT applied to preterm infants was found to provide physiologic stability.

In the study, it was determined that the mean NSS score was lower in the FT group, the infants showed less stress symptoms, but the difference was not significant between the groups (Table 2). Taplak and Bayat (2021) stated that preterm infants who were given FT positioning had less stress than other groups (2). Avcin and Kucukoglu (2021) reported that there was a significant difference between the groups, especially the FT group had shorter crying time and less stress (6). Peng et al. (2018) stated in their study that FT was effective in reducing pain and stress among preterm infants (4). It was found that infants who underwent FT experienced less stress.

It was determined that the mean NCBS score was lower in the FT group, the preterm infants were more comfortable, and the difference between the groups was statistically significant (Table 2). Cirik and Efe (2020) found that breast milk and swaddling were beneficial, but the comfort of infants in the FT group was higher compared with the other groups (2). In another study, Gautheyrou et al. (2018) reported that preterms were more comfortable than the control group (7). Valizadeh et al., (2018) investigated the effects of FT on the duration and frequency of crying during rest among hospitalized premature infants. They found that FT reduced the duration and frequency of crying during rest times among preterms and improvement in sleep and waking cycles in premature infants (17). Salmani et al. (2017) found that their FT group had more comfort in comparison with the control group, and this finding also demonstrated that FT was a more reliable position in preterms (19). FT prevents newborns from staying in the same position for long periods and developing muscle deformities and asymmetries. In addition, it reduces unnecessary energy expenditure, thereby allowing infants to rest, and making them feel more comfortable (7, 18). FT was found to provide comfort for late preterm infants in the first care after vaginal delivery.

Conclusion

According to the results of the study, although

there was no statistical difference between the NSS scores of the FT and control groups, the NSS scores of the FT group were found to be lower. It was determined that NCBS scores of preterm babies were significantly lower in the FT group than in the control group, showing that they were more comfortable.

According to the physiologic parameter findings, the mean heart rate and respiratory rate of the FT group were lower, and the mean oxygen saturation and body temperatures were higher, but the difference between the two groups was not significant.

It is recommended that more studies be conducted on FT regarding the effect of stress and comfort levels in preterm babies in practices such as vaginal or cesarean postpartum first care, vaccination, and blood collection. FT can also be compared with different non-pharmacologic nursing practices.

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Conflicts of interest

There is no conflict of interest.

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