Effects of the Parental Sensitivity Intervention Among Mothers and Fathers of Preterm Infants: A Quasi-Experimental Study

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Abstract: Infants who are born prematurely or of a gestational age less than 37 weeks with birth weight less than 2500 grams usually require long hospitalizations in order to receive highly specialized care, resulting in separation from their parents. This separation may have negative consequences on the development of a healthy attachment between parents and their babies. In addition, due to the fragility of preterm infants, parents often lack confidence to care for them. This study aimed to examine the effects of a parental sensitivity intervention on attachment and confidence/self-efficacy among mothers and fathers of preterm infants. A convenience sampling was used to recruit 34 triads of mothers, fathers and preterm infants with 17 triads in each group. The Postpartum Bonding Questionnaire and the Maternal Confidence Questionnaire were used to measure attachment and self-efficacy at three points in time (Baseline, Day 3 and Day 7). The experimental group received four sessions of 1) teaching infant states and cues, 2) observing the mothers' state-modulation and cue-reading skills, 3) checking the mothers' state-modulation and cue-reading skills, and 4) providing parental support, and routine care while the control group received only the routine care at the hospital. Repeated measure ANOVAs were used to analyze the data.

The results revealed that father-infant attachment and self-efficacy were significantly higher in the intervention group compared to the control group at post-intervention of Day 3 and Day 7. However, mother-infant attachment and self-efficacy were not significantly different between the experiment and the control group. These findings suggest the benefit of a parental sensitivity intervention, especially for fathers of preterm infants. Nurses should utilize this intervention to educate the parents of preterm infants, focusing on both mother and father, before the baby is discharged from hospital.

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Introduction

Preterm babies are born prematurely of a gestational age less than 37 weeks with birth weights of less than 2500 grams.[1] Every year around 15 million babies are born preterm and the rate in the most countries is increasing.[2] Thailand calculates the preterm birth rate at about 12% of live births.[2]

In the present world, the medical advancements have tremendously increased the opportunity of survival among preterm infants who are admitted to neonatal intensive care units (NICUs) or sick new born units (SNBs) for specialized care in the hospital. Even though hospitalization is essential, it could have negative impacts on the parent-infant attachment because of the separation of the parents from their premature babies.[3] For preterm babies, this separation while in the NICU has interfered with the response and relationship processes because of less interaction between babies and their mothers.[4] In addition, in the NICU and SNB, the restriction and policies on parental visiting could limit closeness between parents and their newborn babies.[5] In addition to attachment, maternal and paternal self-efficacy on caring for very small premature infants is also a significant concern when the parents have to look after their preterm babies at home.

Attachment is the affectionate bond forming between infants with their close caregivers.[6] For appropriate parent-infant attachment, mothers and fathers must be sensitive to their infants by being able to read their infants' cues correctly, understand accurately and interpret their infants' needs appropriately and respond to their infants promptly.[7] This parental sensitivity helps foster healthy parent-infant attachment. Moreover, the self-confidence of the fathers and mothers in their capability to caring for their babies are necessary for a healthy adaptation to parenthood as well as positive mother-infant/father-infant relationships. In addition, intervention studies have presented that confidence increasingly by formal support or teaching.[8]

There are several reasons why programs on parental sensitivity to preterm infant enhancement should be developed. However, the program interventions are complicated and involved time-consuming procedures that are less likely to be sustainable for routine nursing practice and even for parents. New fathers fathers are becoming more active in infant caring activities.[9] In addition, reports on father-infant attachment and its promotion remain scarce in Thailand. Further, few studies have been conducted on enhancing parents' sensitivity, while even fewer have been conducted on promoting mother-father-preterm infant attachment.

Review of Literature

Attachment is an affective tie among infants and primary caregivers as well as a behavioral system functioning with the goal to arrange for babies with a sense of security.[6] Preterm birth has been shown to be a significant factor affecting the quality of mother-infant interactions.[10] In order to create effective mother-infant interactions, a mother must be able to read the infant's cues accurately and respond promptly and appropriately to those cues.[11] Maternal self-efficacy in the care of preterm babies is based on mothers' beliefs and expectations about their skills as successful parents. It has positively influenced the development and behavior of the infant, as well as a perception of the mother's own ability to take care of her infant and understand the infant's needs.[12,13] In a sick newborn unit, the separation of parents and preterm infants after birth also involves prolonged hospitalization that disrupts bonding by affecting parental confidence in caring for a fragile infant.[14]

Several studies have developed and tested programs or interventions in attempting to promote parent-infant attachment, for example, skin-to-skin contact and massage therapy. Moreover, multi-modality sensory stimulation, including, stroking, making eye contact, and talking to and rocking infants have all shown positive outcomes for enhancing attachment between mothers and their babies.[15-18] While most of these interventions have been effective in promoting attachment, they are often thwarted when infants have complex medical conditions. Other studies have used interventions to promote attachment through coaching or state modulation or cue reading.[19] There is only one longitudinal study in Thailand that used coaching for preterm babies that improved mother-infant

attachment and decreased the stress of mothers.[20] While parental education has been provided by using different modalities for example videos and video-feedback to enhance understanding of infant cues.[21-23] Furthermore, most studies are mainly focused on attachment and self-efficacy between mothers and their infants with a few including fathers.[15, 24-26] Regardless, it is necessary to intervene with both fathers and mothers to enhance attachment and confidence/self-efficacy.

The parental sensitivity intervention (PSI) designed for this study was comprised of education, live demonstration videos, video-feedback, and parental support. It provided knowledge on preterm infant cues, behaviors and proper responses to encourage mother-infant and father-infant interactions. While promoting interaction and attachment between parents and their infants, it is based on previous interventions that have shown positive consequences in terms of responsiveness and sensitivity. Mother-infant and father-infant attachment, are mother's and father's confidence/self-efficacy in the provision of infant care are the outcomes of interest for this intervention.

Study aim and hypothesis

This study aimed to examine the effects of the PSI on mother and father-infant attachment and self-efficacy in the caring for a preterm baby. The hypothesis was that the mean scores on mother and father-infant attachment and self-efficacy in the experimental group would be significant higher than those in the control group after completion of the intervention at Day 3, and at follow-up at Day 7.

Method

This study employed a quasi-experimental design with two-group pretest-posttest.

Participants and Setting

The sample size was calculated by using G* Power 3.1.9.2. To achieve a power of 0.80, a probability of Type I error of 0.05, and an effect size of 0.25 based on previous studies,[27] a sample of 28 infants

was needed. However, an additional sample of 20% was recommended to compensate for the attrition rate or loss in the follow-up of the participants. Therefore, the total sample was 34, with 17 participants per group. The participants were triads of a mother, father and preterm infant in a sick newborn (SNB) ward at a hospital in central Thailand. The inclusion criteria for the parents were that the preterm infant's biological mother and father lived together, were able to communicate in Thai, and resided in the municipality. The inclusion criteria for the preterm infant were those with a gestational age between 34-37 weeks, singleton birth and stable vital signs with no requirement for respiratory support. A convenience sampling technique was used to recruit the participants. The primary investigator (PI) collected data in the control group until completion. Subsequently, implementation of the PSI was also conducted by the PI for the experimental group.

Ethical Considerations

This study was approved by the Ethics Committee of the Faculty of Nursing, Burapha University, Thailand (No.07-04-2561) and of Chon Buri Hospital (No. 74/61/O/h3). The participants were informed about the study objectives and processes, confidentiality, risks, benefits and their rights. They were able to ask questions and withdraw from the study at any time. Consent and agreements were obtained from parents on behalf of their babies. Data collection was performed after the participants had signed informed consent forms.

Research Instruments

Data were obtained via 3 instruments; a parent and infant demographic questionnaire, the Postpartum Bonding Questionnaire (PBQ), and the Maternal/Paternal Confidence Questionnaire (MCQ)

The demographic questionnaire included parents' and infants' information collected by interviewing the parents and from the medical records of the infants. This was parents' age, education, religion, and family income as well as infant age, gender, gestational age at birth, birth weight and length.

The *Postpartum Bonding Questionnaire* (PBQ) developed by Brockington et al.[28] measures problematic mother-infant and father-infant attachment. The original is in English language. With permission from the instrument developer, it was translated into Thai by the PI using a back-translation technique.[29] The PBQ contains 25 positive and negative statements. The participants were asked to rate how often each behavior occurred toward the infant on a 6-point Likert scale (5 = "Always" to 0 = "Never"). An example of a positive statement is "I feel close to my baby" and a negative statement is "I wish my baby would somehow go away". The scores on positive items are reversed before summing for the 25 items, which range from 0-125 points. A lower score of PBQ indicates a lower problematic mother-to-infant bond, which implies a higher attachment. A previous study reported a Cronbach's alpha reliability at 0.87 for the PBQ.[28] In this study, the Cronbach's alpha was 0.73.

The *Maternal/Paternal Confidence Questionnaire* (MCQ) developed by Parker et al. was used to measure mothers' and fathers' self-efficacy to interact and care for the infant.[30] The original is also in English. With permission, it was translated into Thai by the PI using a back-translation technique. The MCQ has been used to investigate the efficacy of interventions in the neonatal intensive care unit with mothers and infants.[30] The scale consists of 14 items. Each item is rated on a 5-point rating scale from 1 = never to 5 = a great deal. A total score ranges from 14-70 points. The MCQ is uni-dimensional with higher scores indicating higher perceived self-efficacy. An example of an item is 'I know when my child wants to play with me'. A previous study provided evidence of face and content validity, and a reliability score of 0.91.[31] In this study, the Cronbach's alpha reliability was 0.75.

The Parental Sensitivity Intervention (PSI)

The PSI was developed by the researcher based on the theory of attachment which advocates the importance of a reciprocal infant-mother relationship for healthy child development as well as a state-modulation (SM) intervention.[19] The SM intervention included sessions aimed at enhancing mother-infant attachment by improving the mother's ability to moderate her infant's state and read infant cues.

The content and procedures of PSI was validated by 3 experts including a pediatrician, a maternal-newborn nursing and midwifery instructor and a pediatric nursing instructor. After revision following the experts' comments, the PSI was then tested for feasibility with three triad participants prior to implementation with the experimental group. The intervention was conducted in the following four sessions:

1) teaching infant states and cues; 2) observing the mothers' state-modulation and cue-reading skills; 3) checking the mothers' state-modulation and cue-reading skills, and 4) providing parental support. Each session took approximately 40-60 minutes. Two to three triads of fathers, mothers and babies received the intervention per time.

Sessions 1 and 2 (Day 1)

Session 1: The PI provided knowledge about preterm infant characteristics, infant cues and behavior, and parents' appropriate responsiveness to the preterm infants by using a Power Point presentation and a handbook, which can be accessed at: http://www.preemiebabies101.com/,https://www.hopkinsmedicine.org/howard_county_general_hospital/services/mothers_and_babies/taking_baby_home.html.

The PI explained the intervention and presented the Power Point slides to the participants. A handbook (in Thai) was also distributed to the parents who were encouraged to ask any questions related to the topics of the session for more clarification.

Session 2: The PI instructed the participants on how to observe, understand and respond to infant cues properly by showing video clips (each clip took approximately 5-6 minutes). The video used in this session can be accessed at: https://www.youtube.com/watch?v=ve7yXXRaYT8 and https://www.youtube.com/watch?v=upQ1_jLt54M

After watching the video, the parents offered feedback on the video for encouragement. In addition, the PI discussed video content with the parents and offered some comments and suggestions.

Session 3 (Day 2): This session allowed the fathers and mothers to be involved in their infants' routine activities in real situations. The PI assessed the participants' reading and responding to the infants' cues by observing the interactions of the fathers and mothers with their babies. For example, the PI asked the parents to hold and talk to the babies, use soothing tones and motions in talking, touching or having skin contact with eye-contact, soothing facial expressions and breastfeeding. Next, the PI discussed reciprocal behaviors between the parents and their babies with the participants in terms of interactive and responsive behaviors. Then, the PI demonstrated and provided suggestions and recommendations on how to read and respond appropriately, and offered positive feedback about interactive and responsive behaviors.

Session 4 (Day 3): This session reviewed all of content provided from the beginning. The PI asked how the participants had taken care and engaged in responsive behaviors with their infants during previous days, and whether or not they had any problems or questions regarding reading and responding to the infants' cues. In addition, the PI also encouraged the parents to ask questions. Then the PI provided explanations until the participants were satisfied and clearly understood. Lastly, a handbook about preterm infants and how to respond sensitively (in Thai) was distributed to the participants to study at home.

Data Collection Procedures

The PI coordinated with the supervisor and head nurses of the SNBs and the participants in order to explain the goals and procedures of the study, research objectives, data collection procedures, study timeline, risks and benefits of participation and confidentiality. After participants agreed to participate in the study and the consent form was signed, they were asked to complete a demographic questionnaire, the PBQ and

the MCQ (baseline, Day 0) before commencing with the study. Then, the intervention was given. In the experimental group after Session 4, the parents were asked to complete the (PBQ) and the MCQ again on Days 3 and 7. However, if a baby was allowed to be discharged from the hospital, a telephone interview was employed for data collection at this time. The PI evaluated the outcomes for the control group at the same time-points as the experimental group.

Routine care was carried out by staff nurses for all preterm infants and their parents in the SNBs consisting of infant physical assessment, nursing care, breast feeding, and parental health education for discharge planning. Moreover, participants in the control groups were also provided the handbook at the end of their participation with thankfulness from the PI.

Data Analysis

A statistical software package was used to analyze the data. The demographic data of both groups were analyzed by descriptive statistics. Chi-square and independent t-test were used to examine the mean differences between the two groups, and among the demographic variables. Prior to running further statistical analyses, assumptions of normality, homogeneity of variance, sphericity, univariate and multivariate outliers for repeated measure ANOVA were tested. Two cases of father-infant attachment and one case of paternal self-efficacy were outliers. These were deleted. Then the final participants among the mothers were 17 for both groups; among the fathers, however, 15 remained in the intervention group and 16 in the control group.

Repeated measured ANOVAs were used to determine the differences in the mean scores of mother-infant attachment, mothers' self-efficacy, father-infant attachment, and fathers' self-efficacy between the groups. The measurements were performed three times, namely, before the intervention (Day 0), immediately at the end of the intervention (Day 3), and at the follow-up on Day 7. One-way ANOVAs with Bonferroni post hoc were used to compare the scores over time within the experimental group.

Results

A total of 34 mothers and 34 fathers of preterm babies completed all intervention sessions with 17 in the experimental and 17 in the control group (**Figure 1**). For both groups, almost all of mothers and fathers had undergraduate education and employment. Most of the families had never have a preterm baby before, but they had some support from family members and friends. Infants from both groups were approximately equal between boys and girls, and delivery type either normal or cesarean section. Infant's age had a wide range, from 2-42 days. There were no differences in the demographic characteristics between the two groups (**Table 1**).
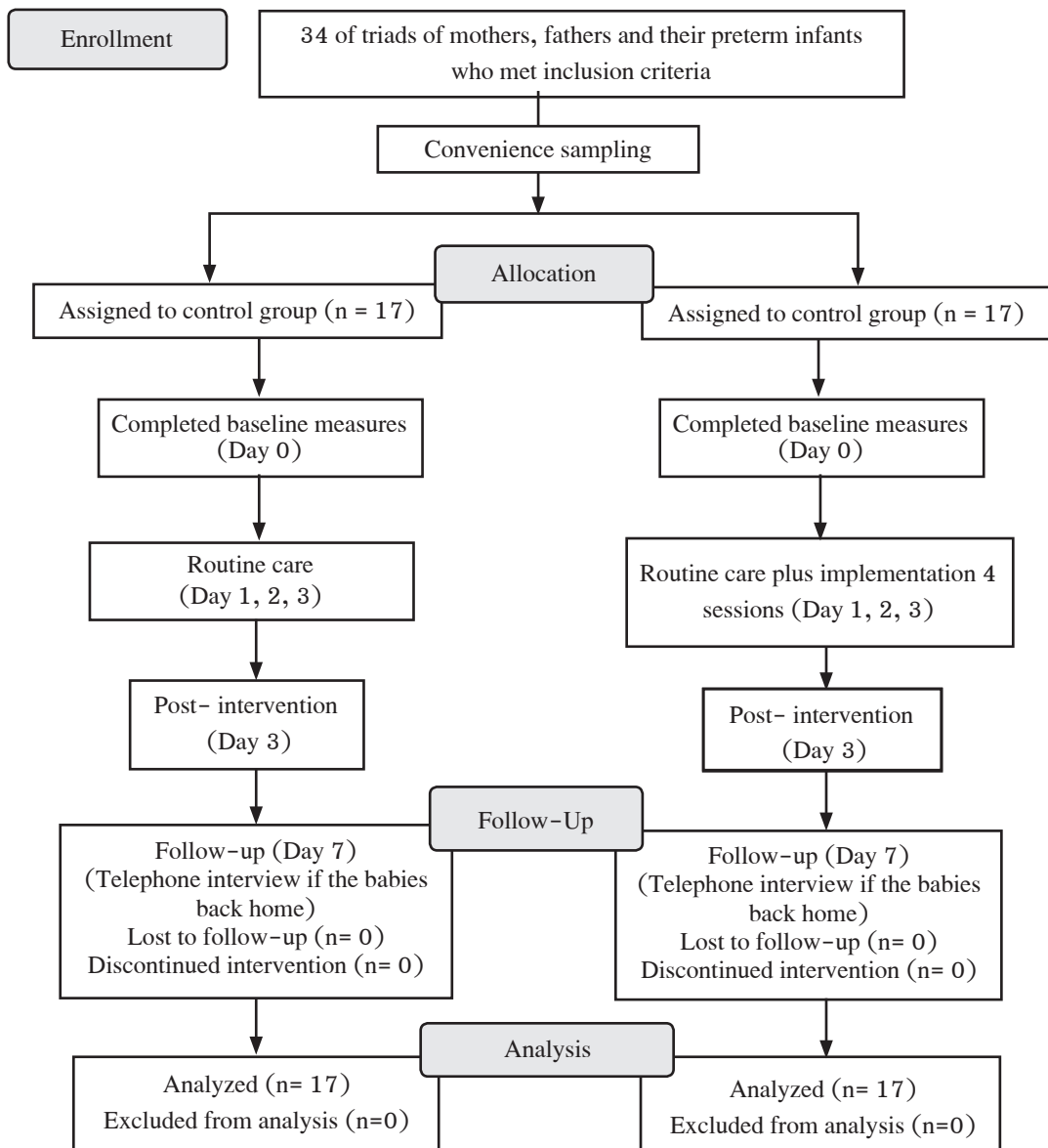
Figure 1 Flow of participants through each stage of the study

Table 1 Comparison of the participants' characteristics between the intervention and the control groups.

Characteristic	Group				t	χ^2	P
	Intervention (n=17)		Control (n=17)				
	n	%	n	%			
Mother							
Age (Year)	M = 32.24, SD±6.40 range = 20–42		M = 35.00, SD ± 5.56 range = 20–37		1.259		.921
Education						1.030*	1.000
< Undergraduate	16	94.1	17	100			
≥ Undergraduate	1	5.9	0	0			
Occupation						1.030*	1.000
Employee	16	94.1	17	100			
Unemployed	1	5.9	0	0			
Father							
Age (Year)	M = 35.00, SD ± 6.86 Range = 22–52		M = 32.53, SD ± 5.36 Range = 20–52		.942		.340
Education						1.030*	1.000
< Undergraduate	16	94.1	17	100			
≥ Undergraduate	1	5.9	0	0			
Occupation						.366*	1.000
Employee	16	94.1	15	88.2			
Unemployed	1	5.9	2	11.8			
Family							
Family type						.125	.724
Nuclear	11	64.7	10	58.8			
Extended	6	35.3	7	41.2			
Number of children						.486	.486
1	11	64.7	9	52.9			
> 1	6	35.3	8	47.1			
Previous premature baby						.810*	.656
Yes	2	11.8	4	23.5			
No	15	88.2	13	82.4			
Support from family						.000*	1.000
members or friends	15	88.2	15	88.2			
Yes	2	11.8	2	11.8			
No							
Family income (Thai Baht / month) (30 Thai Baht ~ 1 USD)						2.615*	.225
< 20,000	2	11.8	6	35.3			
≥ 20,000	15	88.2	11	64.7			
Infant							
Gender						.486	.486
Boy	8	47.1	6	35.3			
Girl	9	52.9	11	64.7			
Delivery type						1.889	.169
Normal	10	58.8	6	35.3			
Cesarean	7	41.2	11	64.7			

* Fisher's Exact Test

Table 1 Comparison of the participants' characteristics between the intervention and the control groups. (Cont.)

Characteristic	Group				t	χ^2	P
	Intervention (n=17)		Control (n=17)				
	n	**%**	**n**	**%**			
Diagnosis						.119	.730
Some clinical	7	41.2	8	47.1			
No clinical	10	58.8	9	52.9			
Apgar score							
at 5 mins	M = 9.35, SD ± 0.70, range = 8–10		M = 9.24, SD ± 0.90, range = 7–10		.424		.46
at 10 mins	M = 9.59, SD ± 0.51, range = 9–10		M = 9.18, SD ± 0.88, range = 7–10		1.667		.15
Post conceptual age (wks)	M = 35.12, SD ± 1.41, range = 32–37		M = 35.24, SD ±1.68, range = 30–37		−.221		.99
Age(days)	M = 13.00, SD ± 12.04, range = 4–42		M = 12.18, SD ± 12.01, range = 2–42		.200		.84
Birth weight (grams)	M = 2170.53, SD ± 625.17, range = 972–3220		M = 2059.65, SD + 557.38, range = 880–3120		.546		.58
Length (cms)	M = 45.29, SD ± 4.77, range = 35–52		M = 44.68, SD ±4.55 range = 35–52		.386		.83
Head circumference (cms)	M = 30.62, SD ± 1.94, range = 29–33		M = 30.71, SD ± 2.21, range = 26–34		−.124		.57

Total scores of mother and father–infant attachment, and self–efficacy of the intervention and the control groups among 3–time measures are shown in **Table 2**.

Table 2 Means and standard deviations of outcome variables for both the intervention and the control groups.

Variable	Time	Day	Intervention (n = 17)		Control (n = 17)	
			M	**SD**	**M**	**SD**
Problematic mother–infant attachment*	1	0	25.35	10.04	23.34	11.80
	2	3	22.59	10.12	21.18	6.26
	3	7	18.59	7.50	20.00	7.08
Mother's self–efficacy	1	0	40.12	9.65	45.94	9.92
	2	3	52.00	10.42	52.35	7.74
	3	7	57.24	5.65	55.12	8.36

Variable	Time	Day	Intervention (n = 15)		Control (n = 16)	
			M	**SD**	**M**	**SD**
Problematic father–infant attachment*	1	0	29.00	7.53	24.25	7.54
	2	3	25.47	7.45	21.56	6.54
	3	7	24.40	7.07	20.50	6.98
Father's self–efficacy	1	0	36.20	10.73	44.69	8.50
	2	3	45.60	8.80	50.00	8.84
	3	7	48.15	5.91	51.63	9.61

*Lower score reflects higher attachment

Mother−Infant Attachment: The results showed no interaction effect. Moreover, there was no main effect between subjects, thereby indicating no difference in mother−infant attachment scores between the intervention and the control groups (**Table 3**). When comparing each pair of times in the experimental group by using one−way ANOVA, there was also no significant difference between these.

Maternal Self−Efficacy: The results showed a significant interaction effect ($\eta^2 = 0.046$). However, there was no significant main effect between subjects, although the mean scores for mothers' confidence within subjects were significantly different between times ($\eta^2 = 0.506$) (**Table 3**). When comparing each pair of times in the intervention group by using one−way ANOVA, the mean score differences between maternal self−confidence at baseline were significant lower than on Day 3, and Day 7

Father−Infant Attachment: The results showed no interaction effect. However, there were significant main effects between and within subjects. For between subjects, there was a significant difference in father−infant attachment scores among the participants in the experimental and control groups. Concerning the differences in attachment scores when times were changed, the mean differences

of the experimental group were higher than those of the control group (**Table 2 and 3**). However, when comparing each pair of times in the intervention group by using one−way ANOVA, there was no difference between any pair of times ($p > .05$).

Paternal Self−Efficacy: The results showed no interaction effect. However, there were significant main effects for both between and within subjects. For between subjects, there was a significant difference of fathers' confidence scores among participants between the intervention and the control groups ($\eta^2 = 0.003$) with a group mean difference of −5.460 (SE = 2.543). Concerning the mean score differences of fathers' confidence when times were changed, the intervention group was higher than those in the control group (**Tables 2 and 3**). For within subjects, the result showed that mean scores of fathers' confidence were significantly different over time ($\eta^2 = 0.371$). When comparing each pair of times in the intervention group by using one−way ANOVA, the mean scores of father's confidence on Day 3 was significantly higher than those on baseline and Day 7 was significantly higher than those on baseline. However, there was no significant difference between Day 3 vs. Day 7 ($p > .05$).

Table 3 Repeated measure ANOVA of comparing 3−time measures among outcomes variable between the intervention and the control groups.

Source	SS	df	MS	F	p−value
Mother−infant attachment [b]					
Within Subjects					
Time	487.294	2	243.647	6.212	.003*
Time*Group	45.176	2	22.588	.576	.565
Error Time	2510.196	64	39.222		
Between Subjects					
Group	5.647	1	5.647	.034	.855
Error	5295.353	32	165.479		
Maternal self−efficacy [b]					
Within Subjects					
Time	3088.490	2	1544.245	36.236	.000**
Time*Group	280.765	2	140.382	3.294	.043*
Error Time	2727.412	57.800	47.187		
Between Subjects					
Group	46.676	1	46.676	.321	.575
Error	4653.000	32	145.563		

Table 3 Repeated measure ANOVA of comparing 3-time measures among outcomes variable between the intervention and the control groups. (Cont.)

Source	SS	df	MS	F	p-value
Father-infant attachment [a]					
Within Subjects					
Time	291.496	1.556	187.364	4.755	.020*
Time*Group	3.711	1.556	2.385	.061	.902
Error Time	1777.881	45.118	39.406		
Between Subjects					
Group	406.728	1	406.728	4.339	.046*
Error	2718.390	29	93.738		
Paternal self-efficacy [a]					
Within Subjects					
Time	1522.214	1.625	936.576	17.866	.000**
Time*Group	109.654	1.625	67.467	1.287	.281
Error Time	2470.797	47.134	52.421		
Between Subjects					
Group	692.328	1	692.328	4.611	.040*
Error	4354.124	29	150.142		

Note: [a] = Greenhouse-Gesser; [b] = Sphericity Assumed, *$p < .05$; **$p < .001$

Discussion

The findings suggest the effectiveness of the PSI on attachment and self-efficacy among fathers of preterm infant, but not mothers. Mother-infant attachment in the intervention group had lower mean score of problematic attachment on Day 3 than that in the control group, however this did not reach significance. Many earlier studies have reported significant differences between groups when parental education related to understanding infant cues and infant behavior is provided.[32-34] Mother- infant attachment in this study was not different between groups which may be due to several factors. One important factor is that at the time of the study, a new policy for breast-feeding was being promoted at the hospital. Nurses were instructed to encourage, demonstrate and help all mothers to breastfeed their infants. This may have prompted mothers in both groups to be in tune with their babies such as touching their baby's body and hands,

looking at their baby's face and talking with their baby negating the effect of the intervention. In addition, the process of parent-infant attachment requires time and responsive behaviors from parents. It may take more time than one week for the intervention to have an effect.

In terms of maternal self-efficacy, no significant differences were found between the control and experimental groups. However, within the intervention group, the mean scores of mothers' self-confidence on baseline were significantly lower than those on Day 3, and Day 7. This could also be explained as a result of the hospital breastfeeding policy.

The findings showed that the fathers who received the PSI had lower scores on problematic attachment (better attachment) than the fathers in the control group who received routine care only. Within the intervention group, the mean scores for father-infant attachment on baseline were significantly higher than those on Day 7. This could be explained

by the knowledge and skills the fathers received positive results in increasing their sensitivity to their infant's cues. Moreover, the ability to read and recognize their infant's cues accurately, interpret their baby's needs and promptly respond might have created an effective father-infant attachment. The findings of this study correspond with a previous study consisting of a 3-day program for promoting attachment between fathers and infants through holding demonstrations and teaching about infant care.[24] Moreover, using video feedback could improve early father-infant interaction and increase fathers' understanding of infants' thoughts and feelings.[35]

Fathers' self-efficacy showed a significant main effect between groups and within groups. Fathers who received the parental sensitivity intervention had higher scores on self-confidence than fathers in the control group at post intervention of both Days 3 and 7. Within the intervention group, the mean scores of fathers' confidence on Day 3 was significantly higher than those on baseline, and Day 7 was significantly higher than those on baseline. It could be explained that knowledge about preterm infant caring and practice in real situations received by the fathers resulted in an increase their skills. This study is consistent with the previous study noting that using a parent educational program could help fathers increase their knowledge of infant behavior and understand their infants better.[36] Furthermore, knowledge and experiences that fathers received could increase their self-efficacy to be confident in interactions with their infant.[10] However, there were no significant differences between Days 3 and 7. This could be due to the fathers being concerned about their baby's clinical conditions. They were afraid of providing care for their baby because they were very small and fragile compared to term babies. Some fathers were worried about infecting their baby, which corresponded with fathers stating this in a previous study, whilst some parents were afraid that they might put their preterm infants at risk or sepsis may occur

because of the size and physical appearance, as well as the clinical condition of their infants.[37]

Limitations

This study employed a convenience sampling technique that limits the generalizability of the findings. Moreover, the interval of the age of the preterm babies was too wide (from 2-42 days). The PI implemented the intervention and collected the data which could raise questions of bias. In addition, threats to internal validity cannot be avoided because of using a quasi-experiment design.

Conclusions and Implications for Nursing Practice

The PSI was effective and beneficial for preterm infants as it led to higher father-infant attachment and paternal self-efficacy. Therefore, after more testing with other samples, pediatric nurses could utilize this intervention with parents of premature infants, particularly focusing on both mother and fathers before hospital discharge of the infants. It is recommended that future studies should consider a randomized control trial to measure the effects of the parental sensitivity intervention on both parents and infant outcomes. The implementation period should be more than a week. Providing innovative strategies, like internet or smartphone-based are also recommended.

Acknowledgement

References

1. Hockenberry M J, Wilson D. Wong's nursing care of infants and children 10th ed. St. Louis: Mosby; 2015.

2. World Health Organization [Internet]. Preterm birth; 2018 [cited 2019 March12]. Available from: https://www. who.int/en/news-room/fact-sheets/detail/preterm-birth

3. Muller-Nix C, Forcada-Guex M, Pierrehumbert B, Jaunin L, Borghini A, Ansermet F. Prematurity, maternal stress and mother-child interactions. Early Hum Dev. 2004; 79(2):145-58.

4. Korja R, Ahlqvist-Björkroth S, Savonlahti E, Stolt S, Haataja L, Lapinleimu H, et al. Relations between maternal attachment representations and the quality of mother-infant interaction in preterm and full-term infants. Infant Behav Dev. 2010; 33(3):330-6.https://doi.10.1016/j.infbeh. 2010.03.010. Epub 2010 Apr 24

5. Greisen G, Mirante N, Haumont D, Pierrat V, Pallas-Alonso CR, Warren I, et al. Parents, siblings and grandparents in the neonatal intensive care unit: a survey of policies in eight European countries. Acta Paediatrica. 2009; 98(11): 1744-50. https://doi.10.1111/j.1651-2227. 2009.01439.x. Epub 2009 Jul 24

6. Bowlby J. Attachment. New York: Basic book; 1969.

7. Reyna BA, Pickler RH, Thompson A. A descriptive study of mothers' experiences feeding their preterm infants after discharge. Adv Neonatal Care. 2006; 6(6):333-40.

8. Yang HL, Chen YC, Mao HC, Gau BS, Wang JK. Effect of a systematic discharge nursing plan on mothers' knowledge and confidence in caring for infants with congenital heart disease at home. J Formos Med Assoc. 2004;103(1):47-52.

9. Satipan C, Sriareporn P, Sansiriphun . Marital relationship, father-infant attachment and father involvement in postpartum period. Nursing Journal. 2016;43(suppl): 71-81.[in Thai].

10. Forcada-Guex M, Pierrehumbert B, Borghini A, Moessinger A, Muller-Nix C. Early dyadic patterns of mother-infant interactions and outcomes of prematurity at 18 months. Pediatrics. 2006;118(1):e107-14.

11. Bang KS. Effects of maternal role education program on the mother-infant interaction and infant development. Korean J Child Health Nurs. 2001;7(1):21-34.

12. Coleman PK, Karraker KH. Maternal self-efficacy beliefs, competence in parenting, and toddlers' behavior and developmental status. Infant Ment Health J. 2003;24(2): 126-48. https://doi.org/10.1002/imhj.10048

13. Badr LK. Further psychometric testing and use of the Maternal Confidence Questionnaire. Issues Compr Pediatr Nurs. 2005;28(3):163-74.

14. Ribeiro NA, Kase JS. The evolution of parental self-efficacy in knowledge and skill in the home care of preterm infants. J Pediatr Neonat Individual Med. 2017; 6(1):e060118. https://doi.10.7363/060118

15. Chen EM, Gau ML, Liu CY, Lee TY. Effects of father-neonate skin-to-skin contact on attachment: a randomized controlled trial. Nurs Res Pract. 2017;2017:8612024. https:// doi.10.1155/2017/8612024. Epub 2017 Jan 17

16. Holditch-Davis D, White-Traut RC, Levy JA, O'Shea TM, Geraldo V, David RJ. Maternally administered interventions for preterm infants in the NICU: effects on maternal psychological distress and mother-infant relationship. Infant Behav Dev. 2014;37(4):695-710.

17. Moore ER, Anderson GC, Bergman N, Dowswell T. Early skin-to-skin contact for mothers and their healthy newborn infants. Cochrane Database Syst Rev. 2012;16;(5): CD003519. https://doi.10.1002/14651858.CD00 3519.pub3

18. Charoensri P. Effects of multi-modalities sensory stimulation program on the growth of premature infants and maternal infant attachment. Master thesis 99p Mahidol University; 2002.

19. Kusanagi M, Hirose T, Mikuni K, Okamitsu M. Effect of early intervention using state modulation and cue reading on mother-infant interactions in preterm infants and their mothers in Japan. J Med Dent Sci. 2011;58(3):89-96.

20. Eamkusolkit R. Development of early mother-preterm infant attachment coaching program. Doctoral dissertation 171p Burapha University; 2016.

21. Barlow J, Sembi S, Underdown A. Pilot RCT of the use of video interactive guidance with preterm babies. J Reprod Infant Psyc. 2016;34(5):511-24. https://doi.org/10 .1080/02646838.2016.1217404

22. Kalinauskiene L, Cekuoliene D, Van IJzendoorn MH, Bakermans-Kranenburg MJ, Juffer F, Kusakovskafa I. Supporting insensitive mothers: the Vilnius randomized control trial of video-feedback intervention to promote maternal sensitivity and infant attachment security. Child: Care Health Dev. 2009;35(5):613-23. https://doi. org/10.1111/j.1365-2214.2009.00962.x

23. Ra JS, Lim J. Development and evaluation of a video discharge education program focusing on mother–infant interaction for mothers of premature infants. J Korean Acad Nurs. 2012; 42(7): 936-46. http://dx.doi.org/10.4040/jkan.2012.42.7.936

24. Promneramit P. The effects of the paternal role promotion program on paternal–infant attachment and paternal role adaptation for first–time fathers. Master thesis 127p Mahidol University; 2005.

25. Shorey S, He HG, Morelius E. Skin-to-skin contact by fathers and the impact on infant and paternal outcomes: an integrative review. Midwifery. 2016;40: 207–17. https://doi.10.1016/j.midw.2016.07.007. Epub 2016 Jul 5

26. Varela N, Dclinpsy PM, Tessier R, Charpak N. Indian fathers and their premature baby – an early beginning: a pilot study of skin-to-skin contact, culture and fatherhood. Fathering. 2014;12(2):211-7. https://doi.10.3149/fth.1202.211

27. Klein Velderman M, Bakermans–Kranenburg MJ, Juffer F, Van Ijzendoorn MH. Effects of attachment-based interventions on maternal sensitivity and infant attachment: differential susceptibility of highly reactive infants. J Fam Psychol. 2006; 20(2):266-74. https://doi.10.1037/0893-3200.20.2.266.

28. Brockington IF, Oates J, George S, Turner D, Vostanis P, Sullivan M, et al. A screening questionnaire for mother–infant bonding disorders. Arch Womens Ment Health. 2001;3(4):133-40.

29. Beaton D, Bombardier C, Guillemin F, Ferraz MB. Recommendations for the cross–cultural adaptation of the DASH & Quick DASH outcome measures. Institute for Work & Health; 2007 Jun. 45p.

30. Parker SJ, Zahr LK, Cole JG, Brecht ML. Outcome after developmental intervention in the neonatal intensive care unit for mothers of preterm infants with low socioeconomic status. J Pediatr. 1992;120(5):780-5. https://doi.org/10.1016/S0022-3476(05)80248-3

31. Kuo CP, Chuang HL, Lee SH, Liao WC, Chang LY, Lee MC. Parenting confidence and needs for parents of newborns in Taiwan. Iran J Pediatr. 2012;22(2): 177-84.

32. Bostanabad MA, Areshtanab HN, Balila M, Jafarabadi MA, Ravanbakhs K. Effect of a supportive–training intervention on mother–infant attachment. Iran J Pediatr. 2017;27(6): e10565. https://doi.10.5812/ijp.10565

33. Chung FF, Wan GH, Kuo SC, Lin KC, Liu HE. Mother–infant interaction quality and sense of parenting competence at six months postpartum for first–time mothers in Taiwan: a multiple time series design. BMC Pregnancy Childbirth. 2018; 18:365. https://doi.10.1186/s12884-018-1979-7

34. Newnham CA, Milgrom J, Skouteris H. Effectiveness of a modified mother–infant transaction program on outcomes for preterm infants from 3 to 24 months of age. Infant Behav Dev.2009;32(1):17-26. https://doi.10.1016/j.infbeh.2008.09.004. Epub 2008 Nov 20

35. Lawrence PJ, Davies B, Ramchandani PG. Using video feedback to improve early father–infant interaction: a pilot study. Clin Child Psychol Psychiatry. 2013;18(1):61-71. https://doi.10.1177/1359104512437210

36. Kadivar M, Mozafarinia SM. Supporting fathers in a NICU: effects of the HUG Your Baby program on fathers' understanding of preterm infant behavior. J Perinat Educ. 2013;22(2): 113-9. https:// doi.10.1891/1058-1243.22.2.113

37. Fraser D. Health problems of newborns. In: Hockenberry MJ, Wilson D, editors. Wong's essentials of pediatric nursing (9th ed). St. Louis: Mosby Elsevier; 2013. p. 228-307.

ผลของกิจกรรมความไวในการตอบสนองของบิดามารดา: การศึกษาแบบกึ่งทดลองในบิดามารดาของทารกเกิดก่อนกำหนด

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บทคัดย่อ: ทารกที่เกิดก่อนกำหนดหรือเกิดเมื่ออายุครรภ์น้อยกว่า 37 สัปดาห์ที่มีน้ำหนักแรกเกิดต่ำกว่า 2500 กรัม มักจะต้องเข้ารับการรักษาในโรงพยาบาลเพื่อรับการดูแลพิเศษอย่างใกล้ชิดซึ่งต้องแยกจากบิดามารดา สถานการณ์เช่นนี้อาจส่งผลทางลบต่อการพัฒนาสัมพันธภาพที่ดีระหว่างบิดามารดาและทารก และเนื่องจากทารกคลอดก่อนกำหนดมีรูปร่างเล็กมากและเปราะบาง บิดามารดามักจะขาดความมั่นใจในการดูแลบุตรที่ การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อศึกษาผลของกิจกรรมความไวในการตอบสนองของบิดามารดาต่อสัมพันธภาพระหว่างบิดา/มารดากับทารกและความมั่นใจหรือความสามารถของตนเองในบิดา/มารดาของทารกคลอดก่อนกำหนด กลุ่มตัวอย่างคัดเลือกแบบสะดวกคือบิดา มารดา และทารกก่อนกำหนดจำนวน 34 ชุด แบ่งเป็นกลุ่มทดลองและกลุ่มควบคุมกลุ่มละ 17 ชุด แบบสอบถามสัมพันธภาพระหว่างบิดามารดาและทารกและแบบประเมินความมั่นใจของมารดาและบิดาใช้เก็บรวบรวมข้อมูลของกลุ่มตัวอย่าง 3 ครั้ง (เริ่มต้น, วันที่ 3 และวันที่ 7) กลุ่มทดลองได้รับกิจกรรมความไวในการตอบสนองของบิดามารดา 4 ขั้นตอนคือ 1) การสอนเกี่ยวกับลักษณะและท่าทางของทารก 2) การสังเกตทักษะของมารดาเกี่ยวกับการอ่านและแปลท่าทางของทารก 3) การตรวจสอบทักษะของมารดาเกี่ยวกับการอ่านและแปลท่าทางของทารก และ 4) การสนับสนุนบิดามารดา ร่วมกับการดูแลตามปกติ ในขณะที่กลุ่มควบคุมได้รับการดูแลตามปกติเท่านั้น ใช้การวิเคราะห์ความแปรปรวนที่มีการวัดซ้ำเพื่อวิเคราะห์ข้อมูล

ผลการวิจัยพบว่าความผูกพันระหว่างบิดากับทารกและความสามารถของตนเองของบิดาระหว่างกลุ่มทดลองกับกลุ่มควบคุมแตกต่างกันอย่างมีนัยสำคัญ ในขณะที่ความผูกพันระหว่างมารดากับทารกและความสามารถของตนเองของมารดาไม่แตกต่างกันระหว่างกลุ่มทดลองกับกลุ่มควบคุม ผลการวิจัยนี้แสดงให้เห็นว่ากิจกรรมความไวในการตอบสนองของบิดามารดามีประโยชน์โดยเฉพาะอย่างยิ่งสำหรับบิดาของทารกที่คลอดก่อนกำหนด พยาบาลควรนำกิจกรรมนี้ไปใช้เป็นส่วนหนึ่งของแผนการดูแลสุขภาพเพื่อให้ความรู้แก่บิดาและมารดาของทารกที่เกิดก่อนกำหนดโดยมุ่งเน้นทั้งมารดาและบิดา โดยจัดกิจกรรมก่อนที่ทารกจะได้รับการจำหน่ายออกจากโรงพยาบาล

คำสำคัญ: ความผูกพันระหว่างบิดากับทารก ความสามารถของตนเองของบิดา ความผูกพันระหว่างมารดากับทารก ความสามารถของตนเองของมารดา กิจกรรมความไวในการตอบสนองของบิดามารดา ทารกเกิดก่อนกำหนด

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