Effect of Music on Immediately Postpartum Lactation by Term Mothers after Giving Birth: A Randomized Controlled Trial

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Background: *The benefits and importance of maternal breastfeeding have been emphasized worldwide. Early mother-infant contact and newborn suckling within the first hour after birth positively influences lactation and results in more successful breastfeeding. Maternal anxiety and stress are factors that inhibit lactation and happiness, whereas relaxation with the newborn and emotional connection can promote lactation.*
Objective: *To determine the effect of music on the lactation of mothers immediately after giving birth.*
Material and Method: *A randomized controlled trial was performed. The intervention group consisted of 152 mothers who listened to music after giving vaginal delivery. The control group consisted of 152 mothers who received routine, immediate postpartum care in the delivery room.*
Results: *Upon evaluation of the milk volume from each participant before and after suckling, the intervention group showed a statistically significant association with increased lactation after suckling ($p<0.05$). Adjusting for lactation time, maternal age, and birth history, the odds ratio was 2.36 (95% CI 1.54 to 3.63) for the intervention group, which suggested that music triggered increased lactation ($p<0.001$).*
Conclusion: *Breastfeeding mothers who listened to music immediately postpartum showed significantly increased lactation after suckling compared to the control group.*

Keywords: *Music, Breastfeeding, Lactation, Human milk*

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Human breast milk has long been accepted as the gold standard for infant nutrition. The benefits and importance of maternal breastfeeding have been emphasized worldwide[1]. The promotion of breastfeeding is a well-known, simple, and effective strategy to decrease global infant morbidity and mortality[2,3]. Early mother-infant contact and suckling within the first hour after birth positively influences lactation and results in a significant increase in the success of breastfeeding[4]. However, the inability of some mothers to lactate during the first crucial hours post-parturition, despite the desire of the infants to suckle, often results in induced anxiety or stress among mothers and their families. The perception of an insufficient milk supply is a relatively common problem among breastfeeding mothers[5]. New mothers whose newborns failed to meet expected weight gains in the immediate postpartum period were subsequently advised by family members to supplement with formula milk or to discontinue breastfeeding[6]. Maternal anxiety and stress are considered factors that inhibit lactation and happiness, whereas relaxation with the newborn and a strong emotional connection can promote lactation[7,8].

The milk let-down reflex can be inhibited by stressful situations[9]. Several studies have examined whether maternal stress affects this reflex or the amount of milk transferred during nursing[10,11]. Earlier expression of milk may improve a mother's confidence in breastfeeding[12]. Prolactin is important for initiating and maintaining milk supply, while oxytocin is more closely involved in milk ejection. Oxytocin has been called the "love hormone" because it is secreted by the body during exquisite, pleasurable experiences[13,14] and is essential for milk secretion[15]. Three randomized, double-blind studies were previously conducted to evaluate the impact of an oxytocin nasal spray on

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milk production when given immediately prior to each breastfeeding session. Compared to the placebo group, milk production increased three to five-fold with the oxytocin nasal spray among primiparous mothers and two-fold among multiparous mothers[16,17]. In addition to the appropriate hormones, successful establishment of the milk supply also relies on an effective latch and suck by the baby[11].

Music has been used to promote health and well-being in clinical settings by reducing pain, stress, and anxiety levels in patients for relaxation and psychotherapy[18-21]. In a controlled study, Chang et al demonstrated that music therapy significantly reduces the intensity of stress, anxiety, and depression in pregnant women[22]. Listening to music in bed while resting after open-heart surgery has some effect on increasing oxytocin and subjective relaxation levels[23]. Music has also been demonstrated to induce new mothers of 162 preterm infants in an experimental group to produce significantly more milk[14] and increased their breastfeeding rates[2]. However, previous studies have not evaluated the effect of music on the immediate postpartum milk volume of term infant mothers.

Therapeutic and relaxing effects of favorite and familiar music are well-documented[23]. Patients are often benefit from music that evokes positive, or reduces negative, emotions[19]. Music that is meaningful to the mother and child may produce positive effects on maternal feelings and moods, which can induce earlier lactation and milk ejection. Music may also reduce maternal and familial anxiety, improve breastfeeding confidence, and increase breastfeeding success rate. The objective of the present study was to determine the effect of listening to music on the immediate postpartum lactation response of women who had vaginal delivery at term.

Material and Method

The study followed the Helsinki Declaration on medical research. The protocol of the study was approved by the Ethics Committee of the Ang Thong Provincial Hospital in Ang Thong, Thailand. All participating mothers were informed of the study objective, and written informed consents were obtained from all mothers by the research nurse during the admission to the delivery room.

Definition of "term pregnancy"

Term pregnancy was defined as a gestational age from 37 completed weeks to less than 42 completed weeks of gestation[24].

Study population

A randomized controlled trial was conducted between January and November 2013 among 304 term mothers who had given vaginal birth, included prophylactic vacuum and forceps extraction in the delivery room at Ang Thong Provincial Hospital. A sample size of 152 women per group was calculated based on the results of a pilot study in which 8 of 12 mothers not exposed to music had ejected milk by manual breast expression after suckling, in contrast to 10 of 12 mothers among those who had listened to music. Using the N Query program to calculate the sample size for a two-group Chi-squared test with a 0.050 two-sided significance level has a 90% power to detect the difference between a Group 1 proportion of 0.670 and a Group 2 proportion of 0.830 (odds ratio of 2.405), a sample size of 152 in each group was required.

Eight hundred sixty six mothers had spontaneous labor during the study period. Based on the selection criteria, 562 mothers were excluded due to gestational periods less than 37 weeks or more than 41 weeks and 6 days, complicated pregnancies, complicated neonatal outcomes, delivery, and postpartum complications. Mothers who had contraindication for breastfeeding and those who were hearing-impaired or who could not verbally communicate in the Thai language were also excluded from the study. In all, 304 mothers were enrolled consecutively. In the birth position, all of the mothers lied on their back with legs raised. Continuous external fetal monitoring was used during the labor. None of the mothers had epidural or any pain relief during labor. None of the mothers lost follow-up (Fig. 1).

In the present trial, the mothers were randomly divided into two groups by a research nurse:

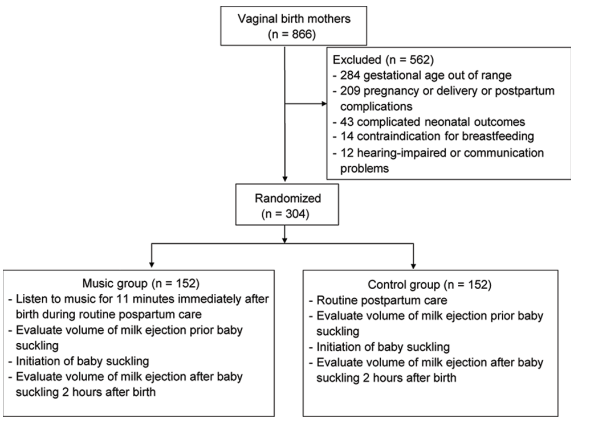

Fig. 1 Study profile.

"the music group" referred to mothers who listened to music immediately postpartum, and "the control group" referred to mothers who were not provided with the music. The stratified randomization codes were generated in two listings, for primiparous and multiparous mothers. The lists were kept by a research nurse who assigned the mothers to listen to the music. The nurse who performed milk collection was semi-blinded from the study and may or may not have known which group the mothers were in. They were asked to simply perform the task without knowing that the objective of the study was to compare milk outcomes between the two groups.

Music intervention and lactation measurement

Immediately after birth, the control group did not have any music played in the delivery room. The music group, however, listened to three versions of the popular Thai song "Im Oon", which were played from a CD. The music length was about 11 minutes (https://www.youtube.com/watch?v=kWRdVzqPvcs, https://www.youtube.com/watch?v=2PJgIl1xzyo, https://www.youtube.com/watch?v=6I1zCyqugZ0). In Thai, "Im" literally means "full" and "Oon" means "warmth". The lyrics in this song are meant to convey the feelings of warmth and security that a mother is able to provide for her child, whether physical (such as a simple hug or a kiss) or emotional (such as maternal-child bonding during breastfeeding). Within 1 hour after birth, a measurement of milk volume expressed from the nipple was assessed in both groups by the research nurse prior to the infant suckling/ breastfeeding. This period was referred to as "time measured before suckling". Next, infants were allowed to suckle in both groups as part of the normal standard nursing care. Two hours after birth, breast milk volume was again assessed in both groups (referred to as "time measured after suckling"). Mothers were then moved out of the delivery room.

Milk scores in both groups were recorded as "0" when no milk was ejected, "1" when 1 to 2 drops were ejected, "2" when 3 or more drops were ejected without flow, and "3" when 3 or more drops were ejected with flow.

Milk collection was performed by female nurses. The nurses were instructed to place her thumb and index finger of her preferred hand close to the nipple (approximately 3 cm from both sides of the nipple edge), press on the maternal chest wall, and pinch with both fingers. This test was performed once on both breasts, and the higher of the two scores was recorded.

Data analysis

After randomization process, all mothers in both groups participated in activities corresponding to the protocol, thus the analyses were based on the studied protocol. The recorded data were presented as levels of milk ejection. The baseline characteristics of the mothers in both groups were compared using the Chi-squared and independent t-tests. The main outcomes, which were the scores of milk production in both groups, were separately compared before and after suckling using the Chi-squared test. In addition, due to the outcomes being measured at four levels (no milk, 1 to 2 drops, 3 drops without flow, and 3 drops with flow), an ordinal logistic regression analysis was used for statistical analysis to evaluate differences between both groups after adjusting for potential confounding factors. This analysis took into account certain characteristics of the mothers at baseline and at the time of birth that could have had an effect on milk outcome, including age, number of children, history of previous breastfeeding, body mass index, weight change, and the timing of milk outcome. A p-value of <0.05 was considered statistically significant.

Results

Baseline characteristics of mothers

Of 304 term breastfeeding women, 152 were in the music group and 152 were in the control group. When comparing baseline characteristics, there were no statistically significant differences between the two groups except for occupation categories. The demographic, socioeconomic, and obstetric characteristics of the participating mothers were similar in both groups with regard to current residence, age group, average age in years (control 25.7±5.8, music 25.1±6.2, $p = 0.333$), education, monthly family salary in Thai Baht (control 12,776±7,057, music 12,586±8,911, $p = 0.858$), and marital status (Table 1). Of the control group, 43.4% lived in Mueang Ang Thong and 42.8% lived in other districts of Ang Thong. Similarly, 38.8% of mothers in the music group lived in Mueang Ang Thong and 40.1% lived in other districts of Ang Thong ($p = 0.246$). For educational background, 34.9% of the control group and 34.2% of the music group had graduated at the junior high school level, while 32.9% of the control group and 30.9% of the music group had graduated from senior high school ($p = 0.750$). Most mothers in both groups were married (control 86.8%, music 88.8%), while the remainder were either single (control 8.6%, music 7.9%) or separated (2.0% of both groups, $p = 0.864$).

Table 1. Demographic characteristics of mothers in the control vs. the music group

Characteristics	Control (n = 152) n (%)	Music (n = 152) n (%)	*p*-value
Age group (years)			
<20	33 (21.7)	41 (27.0)	0.230
21 to 25	47 (30.9)	47 (30.9)	
26 to 30	40 (26.3)	33 (21.7)	
31 to 35	21 (13.8)	23 (15.1)	
36 to 40	11 (7.3)	5 (3.3)	
>40	0 (0.0)	3 (2.0)	
Education			
Primary education or less	13 (8.5)	20 (13.2)	0.750
Junior high school	53 (34.9)	52 (34.2)	
Senior high school	50 (32.9)	47 (30.9)	
Diploma	15 (9.9)	12 (7.9)	
Bachelor or higher	21 (13.8)	21 (13.8)	
Occupation			
Agriculture	3 (2.0)	3 (2.0)	0.020*
Labor	71 (46.7)	68 (44.8)	
Merchant	21 (13.8)	16 (10.5)	
Government officer	3 (2.0)	5 (3.3)	
Housewife	21 (13.8)	28 (18.4)	
Unemployed	28 (18.4)	17 (11.2)	
Student	2 (1.3)	11 (7.2)	
Others	3 (2.0)	4 (2.6)	
Family salary** (Thai Baht per month)			
<5,000	8 (6.8)	8 (7.1)	0.572
5,001 to 10,000	58 (49.6)	55 (48.7)	
10,001 to 20,000	42 (35.9)	41 (36.3)	
20,001 to 30,000	7 (6.0)	4 (3.5)	
30,001 to 40,000	2 (1.7)	2 (1.8)	
>40,001	0 (0.0)	3 (2.6)	
Marital status			
Single	13 (8.6)	12 (7.9)	0.864
Married	132 (86.8)	135 (88.8)	
Separated	3 (2.0)	3 (2.0)	
Unknown	4 (2.6)	2 (1.3)	

* $p<0.05$
** Missing data: 35 in control group, 39 in music group

Table 2. Obstetric and birth information

Characteristics	Control (n = 152) n (%)	Music (n = 152) n (%)	*p*-value
History of birth			
No	68 (44.7)	68 (44.7)	1.000
Yes	84 (55.3)	84 (55.3)	
Number of children			
0	68 (44.7)	68 (44.7)	0.673
1	54 (35.6)	50 (33.0)	
2	24 (15.8)	25 (16.4)	
3	6 (3.9)	6 (3.9)	
4	0 (0.0)	2 (1.3)	
5	0 (0.0)	1 (0.7)	
History of breastfeeding			
Never	78 (51.3)	77 (50.7)	0.976
Yes	74 (48.7)	75 (49.3)	
Gestational age (week)			
37	20 (13.2)	27 (17.8)	0.321
38	56 (36.8)	47 (30.9)	
39	56 (36.8)	50 (32.9)	
40	20 (13.2)	28 (18.4)	
Baby weight (grams)			
<2,500	2 (1.3)	2 (1.3)	0.757
2,500 to 2,999	54 (35.5)	63 (41.4)	
3,000 to 3,499	76 (50.0)	70 (46.1)	
>3,500	20 (13.2)	17 (11.2)	

Table 3. History of breastfeeding experience with their previous children among mothers in this study

Characteristics	Control (n = 84) n (%)	Music (n = 84) n (%)	*p*-value
No. of breastfeeding children			
Never	10 (11.9)	7 (8.3)	0.977
1 baby	55 (65.5)	56 (66.7)	
2 babies	15 (17.8)	16 (19.0)	
>2 babies	4 (4.8)	5 (6.0)	
Duration of prior breastfeeding			
Never	10 (11.9)	7 (8.3)	0.763
<3 months	29 (34.5)	30 (35.7)	
3 to 6 months	24 (28.6)	27 (32.2)	
>6 months	21 (25.0)	20 (23.8)	

The maternal characteristics of both groups were shown in Table 2. It revealed that they were largely equivalent in all characteristics regarding their obstetric histories and current pregnancies. No statistically significant differences were observed in the history of birth, number of children, history of breastfeeding, duration of prior breastfeeding, pre-pregnancy nutritional status, weight on delivery date, maternal weight gain, type of birth, gestational age in weeks (control group mean 38.5±0.8, music group mean 38.5±0.9, $p = 0.855$), or baby weight in grams (control group mean 3,111.4±327.9, music group mean 3,078.9±313.2, $p = 0.378$), as shown in Table 2-4. Data showed that 44.7% of both groups had not previously given birth, 35.6% of the control group and 33.0% of the music group had one child, approximately 16% in both groups had two children, and 3.9% in both groups had three children ($p = 0.673$). The majority of both groups had no experience in breastfeeding.

The average pre-pregnancy weight in kilograms was slightly less in the music group than in the control group (control group mean 56.2±11.1, music group mean 53.4±10.5, $p = 0.028$). The pre-pregnancy nutritional status as measured by the body

Table 4. Maternal nutritional status

Nutritional status	Control (n = 152) n (%)	Music (n = 152) n (%)	*p*-value
Pre-pregnancy weight (kg)			
Mean (SD)	56.2 (11.1)	53.4 (10.5)	0.028*
<50.0	51 (33.6)	72 (47.4)	0.067]
50.1 to 60.0	57 (37.5)	47 (30.9)	
60.1 to 70.0	28 (18.4)	26 (17.1)	
70.1 to 80.0	12 (7.9)	4 (2.6)	
>80.1	4 (2.6)	3 (2.0)	
Pre-pregnancy nutritional status [BMI (kg/m^2)]			
Mean (SD)	22.0 (4.1)	21.3 (4.0)	0.127
Underweight (<18.5)	28 (18.4)	40 (26.3)	0.153
Normal weight (18.5 to 23.5)	75 (49.4)	74 (48.7)	
Overweight (>23.5)	49 (32.2)	38 (25.0)	
Maternal weight gain (kg)			
Mean (SD)	12.4 (5.8)	12.6 (5.1)	0.763
Poor weight gain	67 (44.1)	64 (42.1)	0.502
Normal weight gain	44 (28.9)	53 (34.9)	
Over weight gain	41 (27.0)	35 (23.0)	

BMI = body mass index

mass index was similar between both groups (control group mean 22.0±4.1, music group mean 21.3±4.0, $p = 0.127$). There was no statistical significant difference regarding maternal weight gain in kilograms (control group mean 12.4±5.8, music group mean 12.6±5.1, $p = 0.763$), as shown in Table 4, or weight on birth date (control group mean 68.6±11.1, music group mean 66.1±10.7, $p = 0.541$). There was no statistical significant difference in type of birth ($p = 0.181$). The majority of both groups experienced normal delivery (control 85.5%, music 88.8%), while a small proportion of deliveries was assisted by prophylactic vacuum (control 14.5%, music 9.9%) or prophylactic forceps extraction (control 0%, music 1.3%).

Milk secretion before and after intervention

A comparison of milk production between the control and music groups prior to infant suckling showed that most mothers in both groups ejected 1 to 2 drops (control 45.4%, music 48.0%), followed by those who ejected no milk (26.3% of both groups), those who ejected more than 3 drops without flow (control 20.4%, music 21.1%), and those that ejected more than 3 drops with flow (control 7.9%, music 4.6%). There was no statistically significant difference in milk ejection prior to suckling between the music and control groups ($p = 0.695$). However, there was a statistically significant difference regarding the average time in minutes from birth until breast expression prior to suckling (control group mean 32.5±13.2, music group mean 35.5±12.2, $p = 0.042$). Nevertheless, there was no significant difference in the average time from birth until breast expression after suckling (control group mean 118.3±15.5, music group mean 115.1±16.8, $p = 0.089$), as shown in Table 5.

In contrast, there was a statistically significant difference in milk ejection between the two groups after suckling ($p = 0.001$). In the music group, 46.7% ejected more than 3 drops of milk without flow, 14.5% had more than 3 drops with flow, and 31.6% had 1 to 2 drops. In the control group, only 28.9% ejected more than 3 drops without flow, only 9.9% had more than 3 drops with flow, and 40.1% had 1 to 2 drops.

To address potentially confounding factors, ordinal logistic regression analyses were performed. When making a between-group comparison after adjusting for the time measured between milk outcomes, the mother's age, number of children, history of breastfeeding, duration of prior breast feeding, body mass index at the time of birth, and maternal weight gain, music intervention still had a strong effect on milk outcome. Compared to the mothers in the control group, those in the music group experienced a 2.36-fold increase in milk ejection ($p<0.001$, 95% CI 1.54 to 3.63) after adjusting for potential confounders (Table 6). Other factors that demonstrated a statistically

Table 5. Milk drop lactation from mothers in the two groups

Characteristics	Control (n = 152) n (%)	Music (n = 152) n (%)	*p*-value
Milk drop lactation before baby suckling			
No milk	40 (26.3)	40 (26.3)	0.695
1 to 2 drops	69 (45.4)	73 (48.0)	
>3 drops without flow	31 (20.4)	32 (21.1)	
>3 drops with flow	12 (7.9)	7 (4.6)	
Time measured before suckling			
Mean (SD)	32.5 (13.2)	35.5 (12.2)	0.042
<30 minutes	95 (62.5)	72 (47.4)	0.024
31 to 60 minutes	56 (36.8)	77 (50.6)	
>61 minutes	1 (0.7)	3 (2.0)	
Milk drop lactation after baby suckling			
No milk	32 (21.1)	11 (7.2)	<0.001
1 to 2 drops	61 (40.1)	48 (31.6)	
>3 drops without flow	44 (28.9)	71 (46.7)	
>3 drops with flow	15 (9.9)	22 (14.5)	
Time measured after suckling			
Mean (SD)	118.3 (15.5)	115.1 (16.8)	0.089
<60 minutes	3 (2.0)	5 (3.3)	0.510
61 to 120 minutes	123 (80.9)	127 (83.5)	
>121 minutes	26 (17.1)	20 (13.2)	

Table 6. Effect of music on milk drop production after adjustments for potential confounding factors

Milk drop production after sucking	Odds ratio	95% CI	*p*-value
Being in music group	2.36	1.540, 3.630	<0.001
Time measured for milk outcome	1.00	0.990, 1.020	0.553
Age at giving birth	0.96	0.920, 0.995	0.031
Number of children	1.12	0.700, 1.810	0.628
History of breast feeding	0.73	0.390, 1.350	0.311
Duration of prior breast feeding	1.36	1.020, 1.800	0.035
BMI (pre-pregnancy)	0.95	0.890, 1.000	0.064
Maternal weight gain	0.96	0.920, 0.997	0.038

Data were analyzed using ordinal logistic regression

significant effect on milk outcome included the age of the mother at the time of birth ($p = 0.031$, OR = 0.96, 95% CI 0.92 to 0.99), duration of prior breastfeeding for mothers who had a history of birth ($p = 0.035$, OR = 1.36, 95% CI 1.02 to 1.80), and maternal weight gain ($p = 0.038$, OR = 0.96, 95% CI 0.92 to 0.99).

Discussion

In the present study, the results suggested that meaningful music played to term mothers immediately postpartum had a significant effect on increasing the amount of milk ejected by manual breast expression after initial suckling. After reviewing related literature, the present study might be the first randomized controlled trial to evaluate the impact of music on breast milk ejection among term mothers immediately postpartum. A review of previous randomized and quasi-randomized trials suggested that mothers who were provided with relaxing music produce more milk than mothers who were not, with a mean difference of 34.70 ml per single expression ($p = 0.007$, 95% CI 9.51 to 59.89; Becker et al[25]). Keith et al studied 162 mothers of premature infants admitted to the NICU and found that listening to music increased the fat content and volume of breast milk during 14 days of study[14]. A study by Vianna et al found that, in 94 preterm mothers, music had a significant effect on increasing breastfeeding rates among the mothers of premature newborns[2]. Hill et al found that 17% of term infants and 52% of preterm infants were at risk of breastfeeding failure related to inadequate maternal supply, and that interventions which promoted the initiation and maintenance of adequate milk supply during the first week of infancy were critical[26,27].

Rondo and Souza showed that maternal stress was negatively correlated with breastfeeding duration[15]. Experimental studies on breastfeeding women have shown that acute physical and mental stress can reduce the release of the hormone oxytocin responsible for the milk ejection reflex during nursing[11]. Stuebe et al found that higher anxiety and depression scores were associated with lower oxytocin levels during feeding[8]. Therefore, it is plausible to assume that methods of stress reduction could potentially be effective in improving lactation[27].

In a randomized controlled trial with hospitalized premature infants, Feher et al found that using a 20-minute audio cassette tape and visual imaging techniques for relaxation were effective in increasing breast milk production by 63% in one week when compared to the control group[10]. Furthermore, a systematic review showed that listening to music reduced patient anxiety and pain in pre-operative settings, and also reduced the use of sedatives and analgesics[18]. The beneficial effects of musical intervention have been documented to decrease heart rate, blood pressure, and respiratory rate in perioperative settings[19,23].

Traditional methods to increase lactation include therapies within the realm of conventional medicine, as practiced in the United States, such as increased frequency of manual expression, rest, increased fluid intake[27], prescription galactagogues[28], complementary and alternative techniques like kangaroo mothering and breast massaging[27], and the consumption of some foods and herbs[29]. However, in the present study, we did not collect baseline data on mothers' favorite foods, which might affect lactation. Due to limited clinical trials on their effectiveness and the lack of randomized controlled studies on whether relaxation techniques could improve breastfeeding quality remain controversial[27]. We assumed that the habits of both groups were similar as all mothers came from similar environmental and residential setting. Furthermore, differences exist between countries. For example, in a program of breast massaging and clinical counseling called the Oketani method developed by midwife Satomi Oketani, breast massages supposedly aid milk production by significantly increasing lipids in the late lactating period[30,31]. Acupuncture[32] and several methods of relaxation have been proposed as therapy to increase milk production[10,15,31,32]. In Thailand, one study had compared the difference between folk music and classical music in decreasing labor pains[33], and another had shown that music reduced the sensation and distress of labor[34]. However, the data on the effect of music on postpartum lactation by mothers after giving birth in Thailand was limited.

A previous study found that early touching of the nipple and areola released the hormone oxytocin and helps the mother to feel more loving and attached to her baby[35], which in turn increased milk production. To address this confounding factor in the present study, the difference between the time from birth to the time of breast expression before and after suckling was assessed. Although suckling in the music group occurred approximately three minutes later on average compared to the control group, there was no significant difference in the amount of milk ejected prior to suckling between both groups. However, the mothers in the music group had significant higher amounts of milk ejected after suckling than those in the control group.

As music sessions for mothers are non-invasive, harmless, and inexpensive, they could be provided in the delivery and recovery rooms immediately postpartum with the women's consent. Specific selections or types of music may exert different effects on different people. In addition, the same music may even provide varying effects on an individual depending on timing. Furthermore, the meaning of lyrics in the music could also be important for relaxation effects. Thus, meaningful music that encourages mother-baby bonding and mentions breast milk would probably have a positive effect on lactation and milk expression.

Conclusion

The results of the present study suggest that listening to music by term mothers immediately postpartum had a significant effect on increasing the amount of milk upon the initiation of suckling.

What is already known on this topic?

The use of music in promoting better health has been clinically investigated and was found to improve relaxation and influence pain management. Several studies have shown the beneficial effects music has on reducing anxiety and depression in expecting mothers, as well as an association with better recovery after surgery. Music therapy has also been shown to assist in lactation during mother-infant nursing, but quantitative assessment of the ability for term mothers to produce milk postpartum has not been investigated.

What this study adds?

This study demonstrated that listening to music by term mothers immediately postpartum was associated with a significant increase in milk production upon initiation of suckling.

Authors' contributions

Study design: Kittithanesuan Y, Kaewkungwal J
Data collection and analysis: Kittithanesuan Y, Chiarakul S, Kaewkungwal J, Poovorawan Y
Manuscript writing and revision: Kittithanesuan Y, Chiarakul S, Kaewkungwal J, Poovorawan Y

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Potential conflicts of interest

None.

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ผลของการฟังเพลงต่อการหลั่งน้ำนมในช่วงทันทีหลังคลอด ในมารดาที่คลอดครบกำหนด: การศึกษาเปรียบเทียบแบบสุ่ม

เยาวเรศ กิตติธเนศวร, สุภาวดี เจียรกุล, จรณิต แก้วกังวาล, ยง ภู่วรวรรณ

ภูมิหลัง: *เป็นที่ทราบกันดีถึงประโยชน์และความสำคัญของการให้นมมารดาในทารกทั่วโลกว่า การสัมผัสระหว่างมารดาและทารกในช่วงชั่วโมงแรกหลังคลอดจะมีผลดีต่อความสำเร็จในการให้นมมารดา ความกังวลและความเครียดของมารดาจะยับยั้งการสร้างน้ำนม ส่วนความสุขและความผ่อนคลายจะเป็นผลดีต่อการสร้างน้ำนม*

วัตถุประสงค์: *เพื่อศึกษาถึงผลของการฟังเพลงทันทีหลังคลอดต่อการหลั่งน้ำนมของมารดา*

วัสดุและวิธีการ: *การศึกษาแบบสุ่มโดยแบ่งเป็น 2 กลุ่ม กลุ่มละ 152 คน โดยกลุ่มแรกให้ฟังเพลง และไม่ได้ฟังเพลง โดยที่ทั้ง 2 กลุ่ม ได้รับการดูแลหลังคลอดตามมาตรฐานหลังคลอดเหมือนกันตามปกติ*

ผลการศึกษา: *จากการศึกษา ปริมาณน้ำนมในช่วงก่อนและหลังการดูดนม เมื่อเปรียบเทียบทางสถิติระหว่าง lactation time อายุมารดา และประวัติการคลอดระหว่าง 2 กลุ่ม พบว่ากลุ่มที่ได้ฟังเพลง มีการหลั่งน้ำนมหลังการดูดมากกว่า อย่างมีนัยสำคัญทางสถิติ ($p<0.05$) ค่าทางสถิติ odd ratio 2.36 (95% CI 1.54-3.63)*

สรุป: *มารดาที่ให้นมบุตรในกลุ่มฟังเพลงหลังคลอด มีการหลั่งน้ำนมหลังทารกดูดนมมารดามากกว่ากลุ่มควบคุมที่ไม่ได้ฟังเพลง*