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Effect of Five-Element Music Combined with Acupoint Moxibustion on Lactation Capacity in Mothers of Premature Infants During Mother-Infant Separation

Nini Ma, Yvjuan Li, Zhirong Huang, Liting Qin, Qiurong Liang

General Pediatrics Ward, Affiliated Hospital of Youjiang Medical University for Nationalities, Baise 533000, Guangxi, China

Abstract: ***Objective:*** ***To explore the effect of Five-Element Music Combined with Acupoint Moxibustion on Lactation Capacity of mothers of premature infants in mother-infant separation period, and to provide reference for nursing mode of keeping lactation of mothers of premature infants in separation period.*** ***Methods:*** ***A retrospective cohort study design was adopted. 45 mothers of premature infants with liver-qi stagnation in 2024-2025 were selected as Observation group (Five-Element Music Combined with Acupoint Moxibustion + routine nursing). 45 mothers of premature infants with liver-qi stagnation in 2023 were selected as control group. Daily milk yield within 7 days after delivery, initiation time of Lactogenesis II, prolactin level within 72 hours after delivery and breast feeding within 42 days after delivery were compared between the two groups.*** ***Results:*** ***The milk yield of Observation group was significantly better than that of control group (P<0.05). Initiation time of Lactogenesis II, prolactin level at 72h postpartum and exclusive breastfeeding rate at 42d postpartum in Observation group were significantly better than those in control group (all P<0.05).*** ***Conclusion:*** ***Five elements music combined with Acupoint Moxibustion based on TCM theory can improve Lactation Capacity and short-term exclusive breast-feeding rate of premature infants in separation period.***

Keywords: Premature infant, Mother, Mother-infant separation, Breast feeding, Five-Element Music, Acupoint Moxibustion, Lactogenesis II, Milk yield.

1. Introduction

Breast milk is the ideal food for infants. Studies have shown that breastfeeding reduces the incidence of preterm birth related diseases such as feeding intolerance, delayed sepsis and necrotizing enterocolitis; it also promotes neurological development, prevents brain damage, and improves neurodevelopmental outcomes in premature infants [1-3]. However, premature infants' mothers' psychological self-blame, depression, anxiety, mother-infant separation, insufficient breast development, postpartum fatigue, etc. lead to prolonged initiation time of Lactogenesis II and reduced milk yield, thus increasing the risk of breastfeeding failure [4-5]. Five-Element Music is a kind of music therapy aiming at regulating yin and yang of zang-fu organs, smoothing qi and blood and regulating emotion through resonance of music sound wave and affiliated zang-fu organs and meridians, and finally helping human body to reach the state of balance of body and mind of "yin and yang" are secret, and spirit is the cure[6]. Mugwort Leaf is an aromatic herb used in China for thousands of years. Mugwort Leaf contains a variety of pharmaceutical ingredients and strong volatile substances, burning drugs can penetrate the body, play a role in warming meridians, qi and blood. Acupoint Moxibustion is a moxibustion therapy in Traditional Chinese Medicine acupuncture therapy. It is a natural therapy to form heat radiation by lighting moxa cone/moxa stick made of Artemisia argyi to smoke and roast human acupoints, accelerate blood circulation and stimulate nerve endings excitation, promote metabolism of the body, regulate nerve-endocrine-immune network system and circulation system of the body through warm and drug stimulation, so as to balance the internal environment of the body to achieve health care and treatment [7-8].The purpose of this study is to explore the effect of Five-Element Music combined with Acupoint Moxibustion intervention on lactation capacity of mothers of premature infants during mother-infant separation period based on Traditional Chinese Medicine theory, so as to provide reference for the construction of nursing mode of keeping lactation of mothers of premature infants during mother-infant separation period.

2. Data and Methods

2.1 General Information

This study adopted a retrospective cohort design and selected mothers of preterm infants who delivered and separated from their mothers in the Affiliated Hospital of Youjiang Medical College for Nationalities from 2023 to 2025.Inclusion criteria: 1) Delivery at 28 weeks to 36+6 weeks; 2) Age between 18 and 34 years; 3) No contraindications to breastfeeding, willing to breastfeed; 4) The premature infant was admitted to NICU immediately after delivery, and the hospital stay was ≥14 days; 5) Willing to participate in this study and sign the informed consent form. Exclusion criteria: 1) Serious pregnancy complications or complications affecting postpartum milking; 2) Skin sensitivity intolerance to external forces, moxibustion stimulation, etc.; 3) Inability to cooperate with manual milking and breast pumping; 4) Poor milk discharge due to breast carbuncle; 5) Breast disease causing serious damage to breast tissue; 6) Mother or premature infant with breast feeding contraindications; 7) Allergic to Artemisia argyi; 8) Mother suffering from mental disorders or hearing, reading and writing disorders, affecting hearing and communication. Exclusion criteria: Premature infants transferred to hospital or hospitalization time <7 days; Serious complications or death of premature infants; Premature

infants' mothers cannot insist or request withdrawal from the study. This study was a single center, prospective, non-concurrent controlled study. According to the inclusion and exclusion criteria, 45 premature infants' mothers in 2023 were selected as control group and 60 premature infants' mothers in 2024-2025 were selected as observation group. Among them, 6 cases in control group lost contact after leave hospital, and 39 cases were finally included; 17 cases in observation group did not adhere to the intervention, and 2 cases of premature infants' mothers lost contact after leave hospital, and 41 cases were finally included. A comparison of the two groups of general data is shown in Table 1.

Table 1: Comparison of general data between the two groups

Group	*n*	age	educational Level [n(%)]			employment status [n(%)]		number of fetuses [n(%)]	
		(years, *x*±*s*)	secondary or below	associate degree	bachelor's or higher	employed	unemployed	singleton	twins
Control group	39	32.31±3.35	12(30.8)	19(48.7）	8(20.5)	33(84.6)	6(15.4)	36(92.3)	3(7.7)
Observation group	41	31.78±2.97	15(36.6）	17(41.5）	9(21.9)	32(78.0)	9(22.0)	39(95.1）	2(4.9)
Test		*t*=0.744		*Z*=-0.301		χ^2=0.566		χ^2=0.003	
P		0.459		0.764		0.452		0.965	

Group	*n*	parity [*n* (%)]		mode of delivery [*n* (%)]		gestational age	NICU stay	previous breastfeeding experience [*n* (%)]	
		primipara	multipara	vaginal delivery	cesarean	(week,*x*±*s*)	(day,*x*±*s*)	Yes	No
Control group	39	32(82.1)	7(17.9)	26(66.7)	13(33.3)	32.79±2.09	22.20±9.06	32(82.1)	7(17.9)
Observation group	41	28(68.3)	13(31.7)	25(61.0)	16(39.0)	32.69±2.14	23.09±8.80	28(68.3)	13(31.7)
Test		χ^2=2.018		χ^2=0.280		*t*=0.216	*t*=-0.447	χ^2=2.018	
P		0.155		0.597		0.830	0.656	0.155	

2.2 Method

2.2.1 Control group

Conventional Western medicine-based nursing care were administered. The details are as follows: 1) After admission; the nurse carries out health education to the family members, including: the benefits of breastfeeding; how to keep breastfeeding during separation, guiding the parturient to apply hot compress, cold compress, massage breast, milking and other methods; scientific storage and transportation of breast milk, etc. Encourage the family members to create a warm and harmonious atmosphere for the mother, without gender discrimination, so as to reduce the psychological burden of the mother, stabilize her mood, and maintain a happy spirit and sufficient sleep. Secondly, the diet should be guided to eat more soup, such as crucian carp papaya soup, soybean pig's trotters soup, pork rib soup, and so on. 2) The mother is required to start milking within 3 hours after delivery, and the milking time for each breast shall not be less than 10 minutes, followed by milking once every 3 hours, including at least milking once at night.

2.2.2 Observation group

On the basis of the control group, based on Traditional Chinese Medicine theory the Five-Element Music combined with Acupoint Moxibustion was adopted. Based on the theory of traditional Chinese medicine, the "Jiaodiao music" of Five-Element Music was selected to regulate liver qi and relieve emotional distress for mothers of preterm infants, Acupoint moxibustion was used to support the body and cultivate the yuan, regulate qi and activate blood to help the mothers of preterm infants improve the postpartum deficiency state, unblock the meridians and activate the blood, and promote lactation. The specific method is as follows: 1) Follow up and guide the mothers of preterm infants to ensure that they can correctly implement the Five-Element Music combined with Acupoint Moxibustion. 2) Choose the "Jiaodiao music" of the Five-Element Music, such as representative pieces like "Liezi Flying", "Zhuang Zhou Dreaming of a Butterfly", "Spring Sound Waltz", "Blue Danube", "Jiangnan Good", and so on. Play twice once day after childbirth, each time for 20-30 minutes, with the volume controlled at 40-60 decibels. 3) Initiate acupoint moxibustion within 48 hours postpartum at the following acupoints to promote lactation: Danzhong (CV17), Shenfeng (KI23), Yingchuang (ST16), Wuyi (ST15), Rugen (ST18), and Tianxi (SP18). Perform moxibustion once daily at noon, applying 5 - 10 minutes of stimulation to each acupoint, for 6 - 7 consecutive days. 4) From the 8th day postpartum onward, switch to moxibustion at Zhongwan (CV12), Shenque (CV8), Qihai (CV6), Guanyuan (CV4), Zusanli (ST36), and Sanyinjiao (SP6) to enhance milk supply. Administer moxibustion once daily at noon, with 5 - 10 minutes per acupoint, for 7 consecutive days.

2.3 Observation Indicators

The nursing supervisor instructed the mothers of preterm infants to fill out the lactation diary. 1) Daily milk secretion within 7 days after delivery. Mothers of preterm infants should record daily milk secretion, including date, time, duration, and amount of milk extracted from each breast. 2) Initiation time of Lactogenesis II: The mother of a preterm infant can self-assess the onset of Lactogenesis II according to breast hardness, fullness, swelling and galactia. The onset of Lactogenesis II can be regarded as the breast feeling "significantly full". The breast sensation is assessed using a 1-5 scoring system, where 1 indicates no changes in the breasts after delivery, 3 represents significant engorgement, and 5 signifies discomfort caused by fullness. The time interval between achieving a score of 3 or higher in breast sensation and the delivery date marks the onset of Lactogenesis II [9]. 3) Prolactin level: Blood samples were collected at 24h and 72h after delivery to detect serum prolactin concentration (the study showed that the concentration of prolactin on the first day and the third day could more directly reflect the trend of prolactin changes during the lactation initiation period and its promoting effect

on the second stage of Lactogenesis II [10]). 4) Breastfeeding after discharge: return to hospital for follow-up 42 days after delivery, and ask whether the breast milk of the mother can meet the needs of the premature baby or whether it is necessary to add formula milk.

2.4 Statistical Methods

SPSS26.0 software was used for statistical description, t test, χ2 test, Wilcoxon rank sum test, and generalized estimating equation analysis. The inspection level α=0.05.

3. Results

3.1 Comparison of Milk Yield Between Two Groups of Preterm Infants Mothers within 7 Days after Delivery is Shown in Table 2

3.2 Comparison of Initiation Time of Lactogenesis II and Prolactin Level Between the Two Groups is Shown in Table 3

Table 2: Comparison of milk yield between two groups of preterm infants mothers within 7 days after delivery ml, x±s

Group	*n*	postpartum						
		1d	2d	3d	4d	5d	6d	7d
Control group	39	5.95±1.53	18.54±7.08	66.21±13.88	170.64±25.10	345.69±42.62	477.82±50.30	582.77±47.88
Observation group	41	6.32±1.85	22.49±4.31	169.68±23.62	256.46±59.63	446.83±42.11	527.44±42.14	620.80±67.25
Test		-0.966	-3.028	-23.728	-8.313	-10.673	-4.791	-2.901
P		0.337	0.003	<0.001	<0.001	<0.001	<0.001	0.005

Note: Comparison between the two groups, Wald χ^2 inter-group =335.295, Wald χ^2 time =34271.740, Wald χ^2 interaction =861.062, all P<0.001.

Table 3: Comparison of initiation time of Lactogenesis II and prolactin level between the two groups x±s

Group	*n*	Initiation time of Lactogenesis II (h)	Prolactin levels (ng/mL)	
			Postpartum 24h	Postpartum 72h
Control group	39	73.13±4.95	213.54±14.21	321.64±19.39
Observation group	41	56.49±6.17	217.61±17.64	363.10±22.13
Test		13.267	-1.133	-8.891
P		<0.001	0.261	<0.001

3.3 Comparison of the Feeding Status of Mothers of Two Groups of Preterm Infants 42 days after Delivery

42 days after delivery, 13 cases (33.3%) of mothers in the control group achieved exclusive breastfeeding, and 26 cases (63.4%) of mothers in the observation group achieved exclusive breastfeeding. The difference between the two groups was statistically significant ($\chi^2 = 7.239$, P = 0.007).

4. Discussion

4.1 Based on Traditional Chinese Medicine Theory, the Five-Element Music Combined with Acupoint Moxibustion Can Increase the Secretion of Breast Milk in Premature Infants' Mothers During Mother - infant Separation

The results of this study indicated that the milk yield of the two groups of premature infant mothers increased over time. There was no statistical difference in milk yield between the two groups on the first day postpartum. However, the milk yield of the Observation group was significantly higher than that of the control group at other time points (all P < 0.05). Therefore, it can be inferred that the Five-Element Music combined with Acupoint Moxibustion may increase the milk secretion in mothers of preterm infants. Generally, preterm infants require NICU admission for treatment after birth, leading to mother-infant separation. The psychological status of mothers experiencing separation is influenced by multiple factors, and their anxiety scores are significantly higher compared to those of non - separating mothers. In addition, mothers of premature infants experience self - blame due to their premature children. Self - blame, low mood, and excessive anxiety can lead to liver qi stagnation, which may directly or indirectly affect the milk secretion. The Record of Music in the Book of Rites states that music arises from sound, and its origin lies in the human heart being moved by external things, which shows that music can change the mood. In Traditional Chinese Medicine, the liver is considered the organ that stores blood and also has the ability to regulate blood circulation. The Huangdi Neijing (Yellow Emperor's Inner Canon) records: "The jue note stirs the liver, the zhi note stirs the heart, the gong note stirs the spleen, the shang note stirs the lungs, and the yu note stirs the kidneys." In the Five Elements Music Therapy, the "Jiaodiao music" (where Jiaodiao corresponds to wood and connects to the liver) can achieve liver regulation and qi circulation, smooth the flow of qi, relieve emotions, and ensure a harmonious flow of blood through music, emotional resonance, and visceral interaction. In the Five-Element Music Therapy, the "Jiaodiao music" corresponds to the wood in the Five Elements system and is the sound associated with the liver. Through the resonant interaction of music, emotions, and organs, it can achieve the effects of soothing the liver and regulating qi, expanding and unblocking the qi flow, alleviating emotional distress, and promoting the smooth circulation of qi and blood. The effect of facilitating milk production was observed in mothers with liver - qi stagnation type. Traditional Chinese Medicine posits that the transformation of breast milk is closely related to qi and blood. Breast milk is derived from blood, and qi serves as the commander of blood, which is capable of generating and circulating blood.

Listening to "Jiaodiao music" can promote lactation in postpartum women with liver - qi stagnation. As a result, the lactation of preterm mothers in the observation group showed an increasing trend. Maternal childbirth depletes qi and blood, resulting in postpartum qi and blood deficiency, which leads to insufficient healthy qi. Traditional Chinese Medicine holds that postpartum moxibustion at specific acupoints can yield different therapeutic effects. Moxibustion at Zhongwan

(CV12), Shenque (CV8), Qihai (CV6), Guanyuan (CV4), Zusanli (ST36), and Sanyinjiao (SP6) can reinforce healthy qi and consolidate the root, as well as regulate qi and invigorate blood. This helps improve the postpartum state of deficiency, promotes lactation, and increases the secretion of breast milk; Conversely, moxibustion at Danzhong (CV17), Shenfeng (KI23), Yingchuang (ST16), Wuyi (ST15), Rugen (ST18), and Tianxi (SP18) can unblock meridians and collaterals and stimulate the flow of milk. This increases breast fullness after childbirth. Zhang Daibi et al. also demonstrated that early postpartum acupoint moxibustion at Danzhong (CV17), Rugen (ST18), and Zusanli (ST36) can promote lactation and increase breast milk production [11].

4.2 Based on Traditional Chinese Medicine Theory, the Five-Element Music Combined with Acupoint Moxibustion can be Beneficial to the Early Breast Milk Secretion of Premature Infants' Mothers

This study found that the mothers of preterm infants in the observation group, who received Five-Element Music combined with Acupoint Moxibustion based on Traditional Chinese Medicine theory, had significantly higher prolactin levels at 72 hours postpartum, and a significantly earlier onset of lactogenesis II compared to the control group (both $P < 0.05$). Their milk yield was also significantly increased on the 3d postpartum. Studies have found that negative emotions can inhibit the lactation reflex, leading to a decrease in prolactin levels and affecting milk secretion [12].Studies have shown that the "Jiaodiao music" is melodious and soothing, capable of releasing dispersed stagnant qi and alleviating agitated heat [13].The selected "Jiaodiao music" in this study belongs to the "wood " in the Five Elements Music Therapy of Traditional Chinese Medicine, corresponding to the liver and gallbladder systems, with effects of soothing the liver to relieve depression, harmonizing qi and blood, and alleviating emotions. The significantly higher prolactin levels in the lactating mothers of premature infants in the observation group may be related to this. In addition, based on the core principle of "dispersing stagnation before tonification" in Traditional Chinese Medicine, in this study, the mothers of preterm infants in the observation group started moxibustion on the Danzhong (CV17), Shenfeng (KI23), Yingchuang (ST16), Wuyi (ST15), Rugen (ST18), and Tianxi (SP18) points within 48 hours postpartum. Traditional Chinese Medicine holds that moxibustion of these acupoints can regulate mammary gland hyperplasia and milk stasis, thereby preventing milk stasis from affecting prolactin secretion. From day 8 postpartum, switch to moxibustion at Zhongwan (CV12), Shenque (CV8), Qihai (CV6), Guanyuan (CV4), Zusanli (ST36), and Sanyinjiao (SP6). According to traditional Chinese medicine, moxibustion on these acupoints helps regulate patterns such as spleen-stomach deficiency, qi-blood insufficiency, and yang deficiency with cold-dampness. This therapy tonifies the kidneys and regulates the Chong and Ren meridians, thereby creating a more favorable internal environment for milk secretion.

4.3 Based on Traditional Chinese Medicine Theory, the Five-Element Music Combined with Acupoint Moxibustion is Conducive to Achieving Exclusive Breastfeeding of Premature Infants

Early postpartum lactation and the adequacy of breast milk secretion are key to ensuring the success of breastfeeding. The follow-up data at 42 days postpartum from mothers of preterm infants showed that the exclusive breastfeeding rate in the observation group was significantly higher than that in the control group ($P < 0.05$). This may be attributed to increased milk production and an earlier initiation time of Lactogenesis II in mothers of preterm infants. Kelly et al. found that delayed initiation of lactation increases the risk of early breastfeeding failure, shortens the duration of sustained breastfeeding, and ultimately reduces the exclusive breastfeeding rate [14].

In addition, Luan Dandan et al. found that there was a significant correlation between the milk yield on the 4th day postpartum and the milk yield during the stable lactation period [15]. In this study, the average milk production from the 3th day to the 7th day postpartum had a more significantly increased in the observation group of mothers of preterm infants than that in the control group, this also verifying that the Five-Element Music combined with Acupoint Moxibustion can promote exclusive breastfeeding of premature infants.

5. Conclusion

Based on Traditional Chinese Medicine theory, this study provided psychological and physiological interventions for mothers of preterm infants during maternal-infant separation by the Five-Element Music combined with Acupoint Moxibustion. The intervention applied soothing and melodious "Jiaodiao music" to soothe the liver and regulate qi, while acupoint moxibustion was used to unblock meridians and tonify qi and blood. For mothers of premature infants during mother-infant separation, this combined approach effectively accelerated the initiation time of Lactogenesis II, promoted early lactation in mothers of preterm infants, and increased the rate of exclusive breastfeeding at 42 days postpartum. This method is characterized by its simplicity, low cost, and non-invasiveness, resulting in high patient acceptability, thereby making it suitable for widespread clinical application.

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References

[1] Huang Xiaoxia, Feng Xiaofang, Hu Sisi, et al. Evidence-based practice of out-of-hospital management of breast milk for hospitalized newborns[J]. Chinese Journal of Nursing, 2022, 57(22): 2693-2699.

[2] Zhu Feng, Wei Li. Research progress on milk volume in different stages of lactation among mothers of preterm infants [J]. Chinese Journal of Nursing, 2019, 54(5): 780-785.

[3] PARKER MG，STELLWAGEN LM，NOBLE L，et al. Promoting human milk and breastfeeding for the very low birth weight infant[J]. Pediatrics, 2021, 148(5): e2021054272.

[4] Jiang Weiwei, Kong Wen, Yao Zhouyan, et al. Study on the incidence and influencing factors of insufficient milk production in mothers of preterm infants during maternal-infant separation in NICU[J]. Maternal and Child Health Care of China, 2019, 34(17): 3996-3998.
[5] Yuan Shuiqin, Li Qiufang, Xu Xinfen. Research progress on influencing factors of delayed onset of lactogenesis in mothers of preterm infants[J]. Chinese Nursing Management, 2019, 19(8): 1244-1247.
[6] Li Xia, Zhao Kunpeng. Research and application of “five tones” based on five-element music therapy[J]. Journal of Gansu University of Chinese Medicine, 2023, 40(6): 25-28.
[7] Chang Xiaorong, Liu Mi, Yan Jie, et al. Study on the mechanism and regularity of warming-dredging and warming-tonifying effects of moxibustion[J]. World Chinese Medicine, 2013, 8(8): 875-879.
[8] Lv Peng, Zhang Chengshun, Yin Haiyan, et al. Research status of thermal stimulation of moxibustion[J]. Journal of Chengdu University of Traditional Chinese Medicine, 2017, 40(1): 95-98.
[9] Sefidhaji S, Aziznejadroshan P, Mojaveri M H, et al. Effect of lullaby on volume, fat, total protein and albumin concentration of breast milk in premature infants’ mothers admitted to NICU: a randomized controlled trial [J]. International breastfeeding journal, 2022, 17(1):71.
[10] Neville, Morton. Physiology and endocrine changes underlying human lactogenesis II [J]. The Journal of Nutrition, 2001,131(11):3005S-3008S.
[11] Zhang Daibi, Wang Guanli, Dai Jihong, et al. Clinical observation on acupoint moxibustion for promoting early postpartum lactation[J]. Chinese Community Doctors, 2018, 34(25): 88-89.
[12] Zong Xiaoying, Shi Jiangping, Ren Huiming. Investigation and analysis of breastfeeding rate in primiparous women undergoing cesarean section and its relationship with maternal psychological state, postpartum lactation time, and personality characteristics [J]. Chinese Journal of Human Sexuality, 2022, 31(5): 117-120.
[13] Zhao Nan, Gu Shanshan, Zhao Jingtao, et al. Design and application of five-element music software based on emotion classification in cancer patients[J]. World Science and Technology-Modernization of Traditional Chinese Medicine, 2025, 27(7): 1990-1999.
[14] Kelly N M, Smilowitz J T, Cagney O, et al. Delayed onset of lactogenesis and reduced breastfeeding frequency in mothers who give birth by caesarean section [J]. Proceedings of The Nutrition Society, 2020, 79(OCE2): E445.
[15] Luan Dandan, Yu Xiurong, Wang Yunfang, et al. Study on milk production and related factors in mothers of preterm infants hospitalized in NICU during mother-infant separation[J]. Chinese Journal of Nursing, 2018, 53(1): 65-70.