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Scoping Review

EFFECTS OF RELAXATION THERAPY USING MUSIC ON BREAST MILK PRODUCTION IN POSTPARTUM MOTHERS

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A B S T R A C T

Introduction: *Low milk production is one of the main reasons mothers do not provide breast milk exclusively. Relaxation therapy interventions are expected to help increase milk production.*
Purpose: *The purpose of this scoping review is to map available evidence related to the effect of relaxation therapy interventions on breast milk production in postpartum mothers.*
Methods: *In this scoping review, the authors identify studies that explain the effect of relaxation therapy on breast milk production in postpartum mothers from three databases (PubMed, Wiley, and Science Direct). Searches are limited to studies published in English and present data for the period 2010-2019. The identified research was reviewed using the PRISMA Flowchart. Studies with quantitative designs related to the effect of relaxation therapy on the production of breast milk are then selected for review.*
Results: *From a total of four articles that have been reviewed, two sub-themes are found, relaxation therapy increases milk production (increased success of breastfeeding, increased milk secretion and fat content in breast milk), and relaxation therapy decreases maternal stress levels (reduces stress scores and cortisol levels).*
Conclusion: *From this review, some evidence shows music therapy is effective in significantly increase milk production. All studies included in the analysis have limitations related to the research design or sample collection procedures. The method of relaxation therapy is simple, inexpensive, and easy to use without the involvement of hospital staff. Regarding the intervention, all the intervention groups in this study showed a significant effect compared to the control group.*

INTRODUCTION

Breastfeeding infants exclusively protects against diarrhea and diseases in children such as pneumonia, and possibly also long-term health benefits for mothers and children, reducing the risk of obesity in childhood and adolescence (1). Globally, the average number of exclusive breastfeeding in the world is only 38% (2017). WHO targets that in 2025, the rate of exclusive breastfeeding will increase by 50% (2), 20% of mothers discontinue breastfeeding because they feel the amount of milk is lacking (3).

In 2018 the number of infants receiving exclusive breastfeeding in Indonesia was 65.16%. This number indicates that the level of exclusive breastfeeding is still below the national target of 80% (4).

Nonpharmacological interventions that can be implemented to increase milk production to help the performance of the hormone oxytocin and prolactin, namely breast care, back massage, and music therapy (5-7). Music, when applied scientifically, is proven to alleviate human suffering (8).

Music in the operating room prevents or minimizes disturbances, reduces stress, and reduces anxiety of patients, staff, and users (9). The anxiolytic effect of music on patients before, during, and after surgery has long been well known and well documented. Not only is anxiety reduced, but the pain is well tolerated when music is playing (10-11).

Several studies have shown that listening to music is effective in reducing levels of anxiety and pain. Music provides a relaxing effect and plays an essential role in providing comfort for patients by reducing the activity of the

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sympathetic nervous system (12-14). Therefore a literature review about the effect of relaxation therapy is vital to do. The purpose of this scoping review is to map available evidence related to the effects of relaxation therapy interventions using music on breast milk production in postpartum mothers.

METHODS

This study is a scoping review, which reviews systematically to interpret the evidence-based results available, used to map the concepts that underlie the research area, sources of evidence, and types of evidence available.

Determine and align research objectives and questions

This review is guided by the question "What is the effect of the provision of Relaxation Therapy on the production of breast milk for Postpartum Mother?". For this study, the literature review is defined as a synthesis of research aimed at mapping the literature on the topic of how Relaxation Therapy provides benefits for breastmilk production in Postpartum mothers, especially for the adequacy of the amount of breastmilk, the content of breastmilk and the relaxing effect obtained.

Develop and align inclusion criteria with research objectives and questions

This study uses the PICO Framework (Population, Intervention, Comparison, Outcome) in managing and solving the focus of the review. The focus of the search for articles in this review is quantitative research, and PICO is considered appropriate for use.

Table 1. PICO Framework

Population	*Intervention*	*Comparison*	*Outcome*
Postpartum mothers who breastfeed their babies	*Listening Therapy uses music*	Postpartum mothers who were not given listening therapy	- Breastmilk production - psychologi impact

Identifying Relevant Studies

Article search strategy, researchers only focus on peer review of articles using databases. The databases are PubMed, Wiley, and ScienceDirect. Keyword: "(Breastfeeding) OR lactation) OR lactating) OR breastfeed) OR breastfed) OR human milk) AND relaxation therapy) OR music therapy.

Study Selection

Table 2. Inclusion and Exclusion Criteria

Kriteria Inklusi	Kriteria Eksklusi
- The past ten years (2010-2020) - In the English language - Original research - Humans	- Review article - Systematic review

The article selection process is described using the PRISMA flowchart. PRISMA is considered appropriate because it can improve the quality of publication reporting.

Quality assessment of articles

Critical Appraisal Skills Program (CASP) is used for a critical appraisal to assess the quality of the article. The selected studies are studies with grades A and B.

RESULTS AND DISCUSSION

Search Result

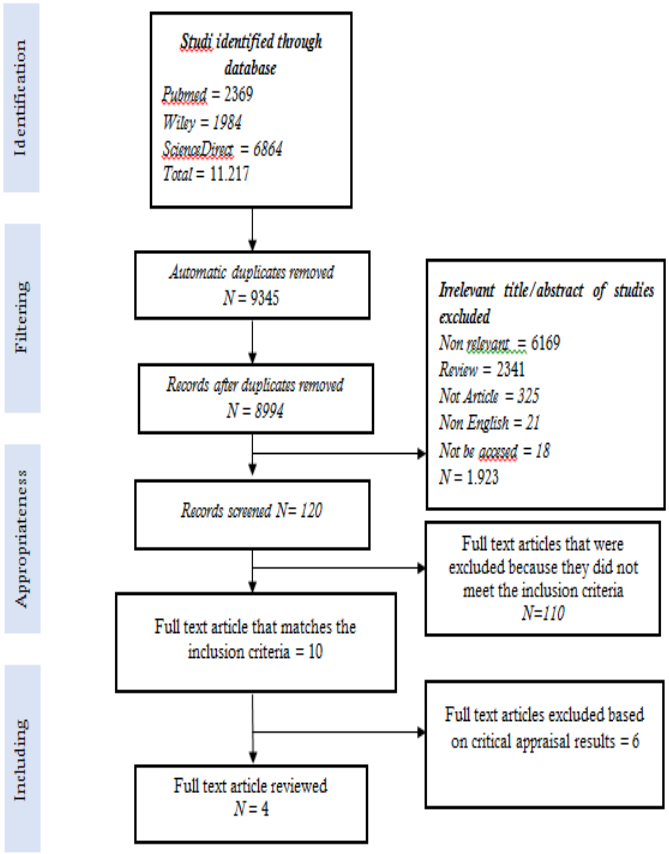

Chart 1. PRISMA Flowchart

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Charting Data

Table 3. Characteristics of Studies in Review

No	Author/ year/ Grade	Country	Aim	Study Design	Participants / number of samples	Results
1	(Vianna *et al.,* 2011)/ Q2/ Grade B	Brasil	To determine the effect of music therapy on breastfeeding rates in postpartum mothers with premature babies	*Randomized Controlled Trial*	94 Postpartum Mother (48 participants in the intervention group received Music Therapy treatment, and 46 participants in the control group received usual care while in hospital	- There are statistically significant differences between the intervention and control groups. At the first follow-up visit (p = 0.03), and the trend toward significance. At the time, the baby was discharged from the hospital, as well as at the follow-up visit on the 30th and 60th days (p = 0.06; p = 0.13; p = 0.09, respectively). - Characteristics of Participants in this study are demographic, socioeconomic, and obstetric characteristics. However, no statistical tests were carried out regarding the relationship of these characteristics to the production of breast milk. - Characteristics of infants studied in the study were: Infant Weight (p = 0.69), gestational age (p = 0.72), total length of stay (p = 0.44), duration at NICU (p = 0.45) , mothers at kangaroo care (p = 0.85), babies at kangaroo care (p = 0.49), mothers discharged from the hospital first (p = 31), length of time infants and mothers were treated (p = 0.001).
2	(AK, 2015)/ Q3/ Grade A	India	To determine the effect of therapy using music on the production or secretion of breast milk in postpartum mothers with premature babies	Quasi Experiment	30 Postpartum Mothers with premature babies (<34 weeks)	Intervention Duration: 4 days 1. Volume of milk Intervention Group (Music therapy) = 7.12 ± 1.6 ml; Control Group (non-music therapy) = 6.68 ± 1.4 ml (p = 0.033). The volume of mother's breast milk increases significantly from the first day of the intervention, until the fourth day of the intervention (p = 0.024) 2. Cortisol Saliva Intervention group = 2.99 ± 4.0 nmol/ L Control group = 3.31 ± 3.5 nmol / L There was a significant decrease in salivary cortisol levels after four days of intervention, p = 0.001 3. Stress of level The mean PSS on the fourth day (33.5 ± 3.5) was significantly lower than the first day (42.4 ± 3.3) p = 0.01

3	(Keith *et al*., 2012) / Q2/ Grade B	USA	To determine the effect of music-based listening on the quantity and quality of breast milk in postpartum mothers who use double electric breast pump.	*Randomized Controlled Trial*	The mothers of 162 premature babies were randomly divided into four groups. The control group received standard RS treatment, and the other three experimental groups received different music protocols	Intervention Duration: 14 Days 1. Milk Volume The control and intervention groups both showed a substantial increase in milk volume during the 14-day intervention. But based on the calculation of the amount per day, participants in the control group had the lowest milk volume content compared to the three other intervention groups. In contrast, the three experimental groups showed a significant increase in milk production. 2. Fat content in breast milk Participants in the control group produced milk with the lowest fat content during the intervention period. Statistically significant and clinically significant results were only found in groups D (verbal protocol) and C (a combination of oral contract, music, and images). 3. Calory Content Analysis of variance, which was performed repeatedly, showed no statistically significant differences between groups in terms of calorie content.
4	(Mohd Shukri *et al*., 2019)/ Q1/ Grade A	Malaysia	To investigate the physiological and psychological aspects between mother and baby during breastfeeding, then examine the effects of relaxation interventions on the mental condition of the mother, milk production, hindmilk cortisol levels, and infant behavior and growth.	*Randomized Controlled Trial*	64 Primiparous mothers and term infants 33 Relaxation Group (RG) 31 Control Group (CG)	Intervention Duration: 12 Weeks Assessments are carried out at each Home Visit (HV) 1. Stress Scores RG participants had lower post-intervention stress scores than CG at Home Visit-3 2. Hindmilk cortisol RG participants had lower hindmilk cortisol at Home Visit-1 (− 44.5%; 95% CI: −76.1%, −12.9%) 3. Infant Sleep Duration RG babies have a longer sleep duration (= 82 minutes / day; 95% CI: 16, 149 minutes / day) in HV2 4. Weight Gains The increase in Weight gain in RG was higher, and the standard deviation score of BMI compared to CG babies. 5. Milk Intake RG babies had an average milk intake at Home Visit-3 227 g / dL higher than CG babies (P = 0.031)

Mapping / Scoping

The results of the review found several themes that fit the focus of the study:

Table 4. Mapping / Grouping Themes

THEME	SUB THEMES
Relaxation therapy increases milk production	1. Increase breastfeeding success [(14)1] 2. Increase volume of breast milk secretion [2, 3, 4] 3. Increase fat content [3]
Relaxation therapy reduces stress levels	1. Reduce stress scores [2, 4] 2. Reduce cortisol levels [2, 4]

From the reviewed article, there is evidence to suggest that relaxation therapy significantly increases breastmilk production (Vianna et al., 2011; Ak, 2015; Keith et al., 2012; Mohd Shukri et al., 2019) and relaxation therapy significantly reduce stress levels (Ak, 2015; Mohd Shukri et al., 2019).

Increasing breastmilk production

Increased breastfeeding success

Vianna's study (2015) stated that breastfeeding was significantly more in the intervention group than in the control group. The intervention group showed a higher rate

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of breastfeeding at the time the baby was discharged, at the initial visit and lasted up to 60 days after being removed from the hospital (15).

The increased volume of breastmilk secretion

Ak J research (2015) found that milk volume increased significantly since the first day of the intervention, the intervention group (7.12 ± 1.6 ml), and the control group (6.68 ± 1.4 ml) (p = 0.033). The volume of breastmilk increased significantly over the four day study period in the music group (16). Keith's (2012) study stated the control and intervention groups showed a substantial increase in milk volume over 14 days; three experimental groups showed a significant increase in milk production (17). The M Shukri study (2019) stated that infants in the intervention group had an average milk intake at the 3rd visit, which was 227 g / d higher than CG babies (P = 0.031). From this study, it was also stated that the infants of the intervention group participants had a longer sleep duration (82 minutes/day; 95% CI: 16, 149 minutes/day) at the 2nd visit. The weight gain of the infants in the intervention group was higher; the standard deviation score of the intervention group's IMT compared to that of the control group (18).

Increased fat content

Keith's (2012) study stated that the fat content in breast milk in the intervention group was significantly higher compared to the control group during the 6-day study period (17).

Reduces stress levels

Decreasing stress score

In the measurement of stress, scores found that maternal stress scores decreased significantly in the music group (17). M Shukri's research also stated that participants in the intervention group had lower post-intervention stress scores than the control group at the 3rd visit (-3.13; 95% CI: −5.9, −0.3) (18).

Decreased cortisol levels

Ak J Research (2015) on the measurement of salivary cortisol showed a significant decrease after the period of music therapy, p = 0.001. M Shukri's (2019) study found that participants in the intervention group had lower hindmilk cortisol at the first visit, but not at the second visit.

Several interventions are effective in helping milk production in postpartum mothers, such as the use of relaxation therapy with certain types of music (19). There is scientific evidence regarding the use of music in therapeutic bodily and mental illnesses about its effectiveness in dealing with pain, anxiety, and emotional stress (20-22).

In this review, 3 studies showed a significant increase in the volume of breast milk in the intervention group. However, these three studies have the potential to be biased because milk production may differ in the morning and evening (23). Interventions provide a relaxing effect to reduce stress. This leads to an increase in the quantity and quality of breast milk (24-25). Stress inhibits the reflexes of breast expenditure, resulting in decreased milk production (26). Mothers who feel stressed about milk production should be able to use fun relaxation techniques, such as listening to music to encourage the reflex of milk expenditure (27).

Relaxation therapy has a positive impact on the behavior and growth of infants; the babies of participants who were given music therapy have a longer sleep duration and proper weight gain (28). Changes influence this effect in the composition or intake of milk or a combination of both. Improving the psychological state of the mother can affect the outcome of breastfeeding, thus impacting on the growth and behavior of the baby (29).

Of the four articles reviewed, only two studies conducted cortisol measurements. In both studies, significant reductions in stress scores and cortisol levels were found. Another study stated the same thing; namely, the provision of music interventions for 2 hours in intraoperative patients showed that patients had low cortisol levels during surgery (30).

CONCLUSION

From this review, there is evidence that shows that relaxation therapy can effectively increase milk production and reduce postpartum maternal stress levels. The method of relaxation therapy is simple, inexpensive, and easy to use without the involvement of hospital staff.

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