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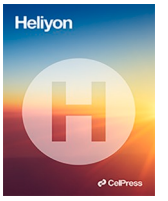

Research article

Effects of traditional Chinese medicine-assisted intervention on improving postpartum lactation: A systematic review and meta-analysis

Yu-Wen Fang [a,*], Shu-Fen Chen [b], Ming-Ling Wang [c], Mei-Hua Wang [d,**]

[a] Department of Health Administration, Tzu Chi University of Science and Technology, Hualien, Taiwan
[b] Department of Nursing, Shuang Ho Hospital, Taipei Medical University, New Taipei City, Taiwan
[c] Researcher, School of Nursing, International Ph. D. Program in Gerontology and Long-term Care, Taipei Medical University, Taipei, Taiwan
[d] School of Nursing, National Taipei University of Nursing and Health Sciences, Taipei, Taiwan

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ABSTRACT

Importance: Breast milk is the safest food for infants and has many psychological and physical benefits for infants and mothers. However, problems encountered during the breastfeeding process can reduce postpartum women's willingness to breastfeed. Lactation and engorgement may be improved through Traditional Chinese Medicine auxiliary therapy. However, the overall efficacy of various Traditional Chinese Medicine auxiliary therapies and the relevant meridians and acupuncture points for treating breast milk deficiency remain unclear.
Objective: To investigate Traditional Chinese Medicine auxiliary therapy's effectiveness and acupoints for postpartum women who experience problems during the breastfeeding process.
Methods: Data were sourced from Embase, Web of Science, CINAHL, Cochrane, CNKI, PubMed, and the Airiti Library Central Register of Controlled Trials and Clinical Trials from the database inception to October 2022. We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses.
Main outcome measures: The primary outcomes were overall efficiency, prolactin level, milk volume, and breast engorgement in postpartum women with lactation deficiency after-assisted therapies and the correlation between meridian points and milk secretion.
Results: A total of 1,516 studies were initially identified, and 357 articles were assessed. In the final analysis, 20 studies were included, covering various Traditional Chinese Medicine therapies (acupuncture, acupressure, scrapping, moxibustion cupping, etc.) to stimulate relative acupoints without any acupoint stimulation. The overall efficiency (odds ratio [OR] = 14.17, 95% confidence interval [CI] = 6.49 to 30.92), prolactin level (standardized mean difference [SMD] = 0.36, 95% CI = 0.074 to 0.64), improvement of milk volume (SMD = 0.94, 95% CI = 0.59 to 1.29), reduction of engorgement level (OR= 18, 95% CI = 8.34 to 38.82) demonstrated that Traditional Chinese Medicine therapies can effectively improve lactation and breast fullness, thereby helping patients with breast milk deficiency. The most common acupuncture points used to treat agalactia were classified as the Stomach Meridian, Small Intestine Meridian, and Conception Vessel, with the common acupoints CV17: Danzhong, ST18: Rugen, SI1: Shaoze, ST36: Zusanli, and ST16: Yingchuang.

* Corresponding author.
** Corresponding author.
E-mail addresses: yonnef1998@gmail.com (Y.-W. Fang), meihua@ntunhs.edu.tw (M.-H. Wang).

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Conclusion: Adjuvant Traditional Chinese Medicine therapy can improve lactation and breast engorgement, thereby increasing the willingness to breastfeed. Clinical Finding: 1. The best time for Traditional Chinese Medicine acupoint intervention for breast deficiency treatment is within 24 h 2. The most effective acupuncture points for improving milk deficiency and bloating pain are ST18: Rugen, ST16: Yingchuang, ST36: Zusanli, SI1: Shaoze, CV17: Danzhong. 3. Traditional Chinese Medicine is non-invasive and effective techniques such as scraping, cupping, acupressure and ear peas. 4. Traditional Chinese Medicine can be combined with other different acupuncture points according to the different constitutions of post-partum women. Breast acupressure, ear acupuncture, scrapping, cupping, and moxibustion are noninvasive treatments that can effectively help patients during lactation, and their clinical practice should be considered and widely promoted.

1. Introduction

Breast milk is considered the best source of nutrition for infants. The World Health Organization (WHO) and the American Academy of Pediatrics agree that babies should be fully breastfed for the first 6 months of life [1]. Breastfeeding protects mothers from many short- and long-term health problems [2,3]. For instance, mothers who breastfeed for more than 1 year show a reduction of 34% in ovarian cancer, 26% in breast cancer risk, and 26% in postpartum depression [4,5]. Breastfeeding also reduces the risk of postpartum depression [6].

Breast milk prevents lower respiratory tract infections in infancy [7], reduces the severity and incidence of respiratory diseases [8], and creates a lasting psychosocial link between mothers and infants [9]. Overall, breastfeeding provides physical and psychological benefits for mothers and their babies. Prolactin (PRL) and endogenous oxytocin induce lactation. Breastfeeding is the most important physiological stimulus affecting PRL secretion, an important factor in maintaining lactation [10,11]. PRL levels peak 30 min after initial breastfeeding [12], and basal PRL levels correlate positively with milk production per second and daily pumping frequency [13]. However, many factors contribute to breastfeeding success, and the most common problems in the mother's lactation process include inadequate milk production [14,15], prolonged frequent feeding [15,16], and discomfort including engorgement, swelling, and mastitis [15–17], causing abandonment of breastfeeding. Moreover, breast fullness can reduce the baby's ability to hold milk, leading to the blockage of milk ducts and exacerbating the formation of tender or painful lumps in the breast [18].

However, reduced breast milk has been associated with maternal morbidity, anxiety, and emotional stress [19]. Previous studies have reported that mothers encounter many discomforts and difficulties during breastfeeding, leading to a decrease in their willingness to breastfeed exclusively. Inadequate breast milk supply is clinically treated with galactagogues [20,21] or conservatively [22–24]. Although drugs such as galactagogues increase breast milk supply, no studies have confirmed their efficacy, safety, or side effects [21]. The effects of antibiotics on infant breastfeeding require pharmacokinetic determination, and those with low transfer to breast milk or low oral absorption by infants must be evaluated [24]. Other conservative therapies include hyperthermia therapy, cold therapy, milking, and ultrasound therapy [22–24]. Nevertheless, these methods remain controversial; cold pouches have been identified as the cause of vasocytopenia, whereas hot pouches can exacerbate swelling [22]. Therefore, the safety of infants and their mothers remains uncertain.

The "Huangdi Neijing" of Traditional Chinese Medicine (TCM) mentions the relationship between breasts and meridians, which is the academic basis for modern theoretical research on breast disease in TCM and clinical auxiliary therapy with TCM [25–27]. The common methods of auxiliary therapy in TCM include acupoint stimulation, acupuncture, acupoint massage, massage, moxibustion, ear-point bean embedding, cupping, and scraping [25–27]. Empirical research has shown that it effectively reduces breast pain during lactation [28] and increases breast milk production [29]; however, there are no reports on its safety. Therefore, Chinese medicine-assisted therapy is a viable treatment option.

Current evidence does not show the effectiveness of different TCM auxiliary therapies on breastfeeding, including prolactin levels, milk production, and breast engorgement, or the integration of relevant meridians and acupuncture points. Therefore, the purpose of this study was to conduct a systematic review and integrated analysis to explore the effectiveness of auxiliary TCM therapy during lactation and the use of related meridian acupuncture points. This will provide a reference for the clinical use of auxiliary TCM therapy in breastfeeding care with empirical results.

2. METHODS

2.1. Study design

This study was a comprehensive systematic review and meta-analysis of randomized controlled trials.

2.2. Data sources and searches

The main data for this study were collected before October 2022 and included relevant literature published locally and abroad on the effects of acupoint stimulation as an intervention measure for milk secretion in postpartum patients with breast milk deficiency.

The electronic database search procedure was as follows: Patient(P), Intervention(I), Outcome(O), "keyword," entered using "Text word" and "MeSH" (medical subject headings) terms for the systematic search query. We used Bollinger logic to merge related words for the literature search, and the electronic databases Embase, Web of Science, CINAHL, Cochrane, CNKI, PubMed, and Airiti Library were searched in Chinese and English.

According to the structured search strategy, the following search terms were used: "Patient: Postpartum Women; " "Interventions: Acupressure," "Zhi Ya," "Massage," "Zone Therapy," "Acupuncture," "Acupoint,*" "Moxibustion," "Gua-Sha,*" "scrapping; " "Outcomes: Breastfeeding," "Exclusive Breastfeed," "insufficient breast milk," "insufficient lactation," "Hypogalactia,*" "Lactation," and "breast engorgement."

2.3. Data filtering

2.3.1. Inclusion and exclusion criteria

The inclusion criteria were as follows: postpartum women who underwent spontaneous delivery or cesarean section; those with weakness or hepatic stagnation and postpartum breast milk deficiency; and those who received one or more TCM adjunctive therapy interventions to stimulate relevant acupuncture points, although the intervention excluded TCM-assisted therapy combined with other active treatments (pharmacological or non-pharmacological). Patients with mastitis or other concomitant diseases due to breast blockage were excluded. Randomized controlled trials (RCTs) were included regardless of publication status (published, unpublished, or ongoing). The first phase of crossover trials was also eligible for inclusion. Other exclusion criteria included non-original research (review articles and meta-analyses), absence of complete data, and undocumented protocols.

2.3.2. Reliability

Two reviewers screened the titles and abstracts and compared the first 200 recorded decisions, checking for methodological consistency (23 conflicting decisions), with an 87.5% agreement. All remaining titles and abstracts were screened for relevance by an examiner (Y.-W. F.) because of the low barrier to entry into the next stage. The full-text screening of potentially relevant records was performed by two reviewers. The first reviewer (Y.-W. F.) performed the extraction, and the second reviewer (M.-H. W.) was used to verify the accuracy of the method. Any disagreements were resolved through discussions with a third reviewer.

2.4. Quality of research articles

2.4.1. Risk of bias 2.0

The Cochrane risk-of-bias tool (RoB 2.0) was used to evaluate the quality of the included studies. It is independently evaluated by two reviewers using Review Manager 5.3 (RavMan), a quality assessment tool for quantitative research. RoB 2.0 evaluates six items: randomization process, deviations from intended interventions, missing outcome data, measurement of the outcome, selection of the reported result, and overall. Article quality assessment was divided into three types: high risk, some concern, and low risk.

2.4.2. Modified Jadad Scale

The Jadad Score can be used for randomized controlled trials, with blinding assessment and randomization as keys. The original score ranged from 0 to 5 points; 0 indicated the worst quality, and 5 indicated very good quality (Jadad et al., 1996). In this study, the modified Jadad scale developed by Oremus et al. (2001) was evaluated with a total of eight questions on randomization: whether randomization is appropriate, double-blind (single-blind score of 0.5 points), double-blind appropriateness, description of the number and reasons for dropping out (0.5 points for unspecified reasons), whether adverse events were evaluated, statistical analysis methods, inclusion or exclusion criteria, with a total score of 8. The total score for each article ranged from 0 to 8 and was computed by summing the score of each item. Low-quality studies had scores of 0–3, and high-quality studies had scores of 4–8 [39,40].

2.5. Data analysis

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement [30] was followed, and statistical software was used to analyze the effects of acupoint stimulation interventions. The measured variables were the efficacy of lactation deficiency treatment, mean and standard deviation of postpartum PRL, lactation volume, and breast tenderness to a lesser extent. An integrated analysis was conducted when more than two (inclusive) articles on measurement variables were included. To avoid the variation of research articles and increase the error range, the "random effect mode" was used for effective analysis. The comprehensive effect amount was demonstrated using a forest plot and a 95% confidence interval (CI). The effect amounts were 0.2, 0.5, and 0.8, indicating low, medium, and high, respectively (Cohen, 1988). Publication bias was examined using funnel plots and Egger's test. Microsoft Excel was used to count the top five meridians and acupuncture points that appeared most frequently in the articles.

3. RESULTS

3.1. Filtering results

3.1.1. Incorporating the article process

Overall, 1,516 relevant references were collected during the electronic database searches. Duplicate articles were removed, and

Table 1
Characteristics of the included clinical studies.

Item					(Experiment-1)					(Control-1)					
No.	Author	Year	From	Type	Intervention	N	Age (MD)	(SD)	dropout	Intervention	N	Age (MD)	(SD)	dropout	Outcome
1	Wang Hong-Cai	2007	China	RCT	Acupuncture (related points)	138	28.86	2.78	2	Acupuncture (unrelated points)	138	29.53	3.2	3	Clinical Efficacy Breast Engorgement TCM Syndrome Breast Milk Volume Prolactin
2	Wang Guan Li	2017	China	RCT	Moxibustion (related points)	45	25.11	3.61		Moxibustion (unrelated points)	45	24.99	3.11		Breast Engorgement Breast Milk Volume
3	Li Shih Yan	2020	China	RCT	Auriculotherapy and Acupressure	40	26.2	4.1		Usual Care	40	NA	NA		Clinical Efficacy Breast Engorgement
4	Jhou Yan-He	2016	China	RCT	Acupressure	50	27.5	5.5		Usual Care	50	28	6.2		Breast Comfort Breast Milk Volume Rate of Successful Breastfeeding
5	Ma Guang Li	2009	China	RCT	Acupressure	100	22–45	NA		Usual Care	100	22–45	NA		Breast Engorgement Breast Milk Volume Inverted nipples
6	Nie Chin	2015	China	RCT	Acupressure	100	20–40	NA		Usual Care	100	20–40	NA		Breastfeeding Onset Time Breast Comfort Breast Engorgement Breast Milk Volume Quality of life
7	Chen Ya Li	2017	China	RCT	Acupressure and Moxibustion	80	28.8	2.2		Massage	80	28.1	2.3		Clinical Efficacy Breast Milk Volume
8	Tsai Wen Ying	2022	China	RCT	Acupressure (in related time)	50	30	3.8		Acupressure (in unrelated time)	50	29	4.1		Breast Engorgement Breast Milk Volume Clinical Efficacy
9	Fan Li Yun	2018	China	RCT	Cupping Therapy and Acupressure	41	23–43	NA		Usual Care	41	23–43	NA		Breastfeeding Onset Time Breast Milk Volume
10	Liou Dan	2021	China	RCT	Acupressure	64	29.54	3.67		Usual Care	64	30.15	3.74		Breastfeeding Onset Time Prolactin Breast Engorgement Rate of Successful Breastfeeding
11	Dai Shiang	2009	China	RCT	Acupressure	100	NA	NA		Usual Care	100	NA	NA		Breastfeeding Onset Time Breast Milk Volume Breast Engorgement
12	Han Ying	2006	China	RCT	Acupuncture (related points)	40	25–35	NA		Acupuncture (unrelated points)	40	24–34	NA		Clinical Efficacy Breast Milk Volume Prolactin
13	Ahmed M. Maged, MD	2019	Egypt	RCT	Acupuncture (related points)	20	25.95	2.8		Medical treatment	20	27.75	3.31		Prolactin

(*continued on next page*)

Table 1 (*continued*)

Item					(Experiment-1)					(Control-1)					
No.	Author	Year	From	Type	Intervention	N	Age (MD)	(SD)	dropout	Intervention	N	Age (MD)	(SD)	dropout	Outcome
14	HUANG Tao	2008	China	RCT	Acupuncture (related points)	138	28.99	3.58		Medical treatment	138	29.53	3.76		Breast Milk Volume Artificial breastfeeding time amount of formula milk intake Prolactin
15	Jin-Yu Chiu	2010	Taiwan	RCT	Gua Sha	27	32.59	4.17		Usual Care	27	28.81	6.6		Breast Engorgement Physiological measurements
16	Parisa Mirzaie	2017	Iran	RCT	Acupressure	37	28.4	5.2		Did not receive intervention	37	28.1	5.2		Breast Milk Volume amount of formula milk intake Depression, anxiety and stress of the mothers
17	Ping Lu, MS	2019			Acupoint-Tuina	40	28.72	3.58		Standard Medical care	40	28.76	3.8		breast surface temperature breast milk production Serum prolactin level uterus recovery after delivery.
18	Sawittri Suwikrom MD	2021	Thailand	RCT	Acupressure	30	28.87	5.91		Did not receive intervention	30	30.57	5.98		Breast Milk Volume
19	ZHENG Juan-Juan	2012	China	RCT	Acupuncture (related points)	58	29.1	2.7		Usual Care	26	28.6	3.4		Breast Milk Volume Breastfeeding Onset Time Prolactin
20	ZHOU Hai-Yan	2009	China	RCT	Acupuncture (related points)	58	27.2	4.9		Acupuncture (unrelated points)	58	26.8	2.8		Breast Milk Volume Prolactin
Total						**1256**			**2**		**1224**			3	

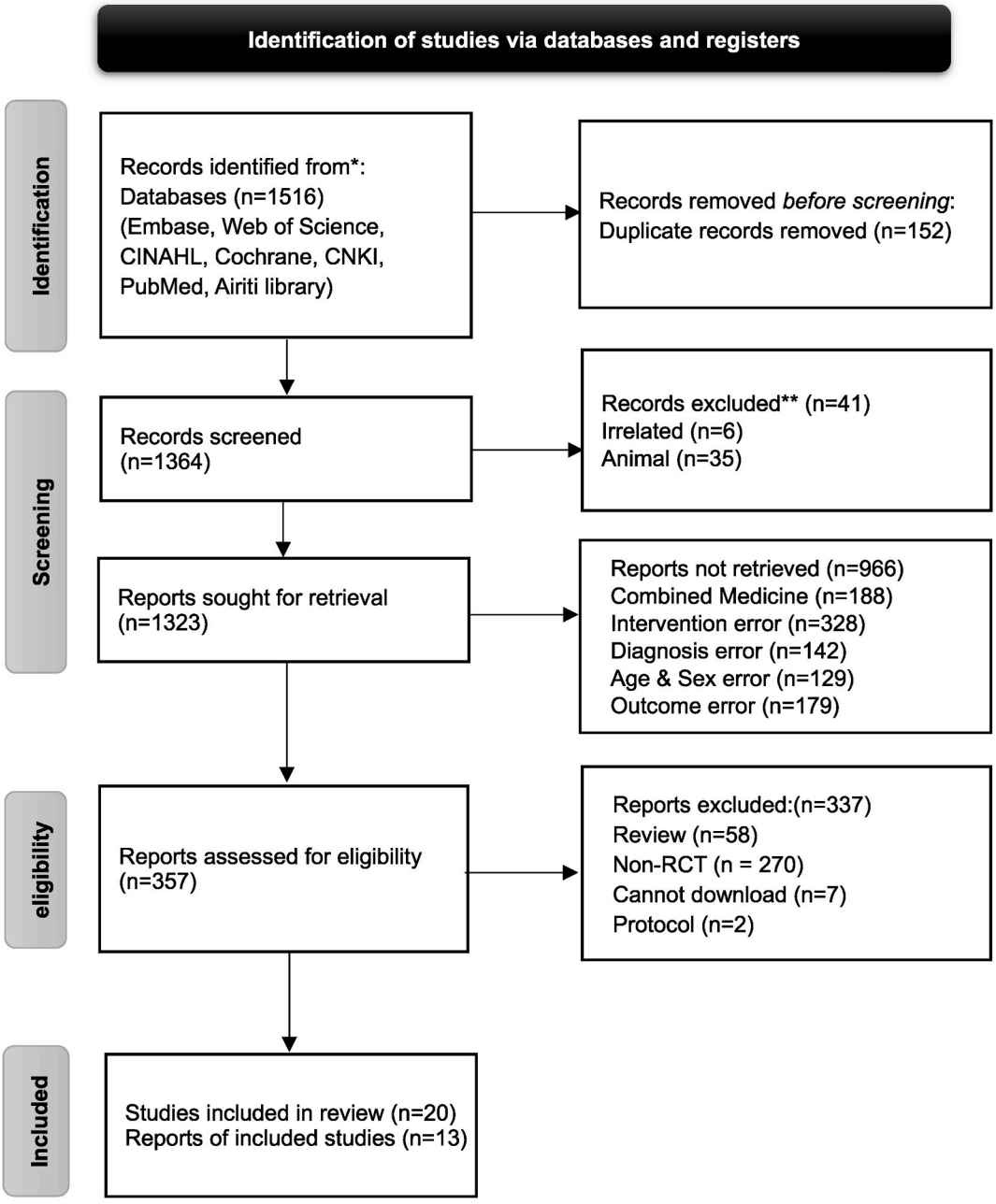


Fig. 1. Search strategy flow diagram.

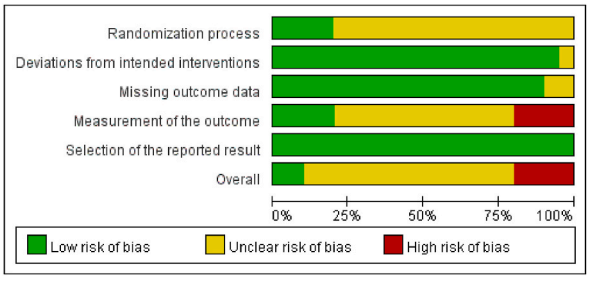


Fig. 2. Risk of bias graph: review authors' judgments about each risk of bias item presented as percentages across all included studies.

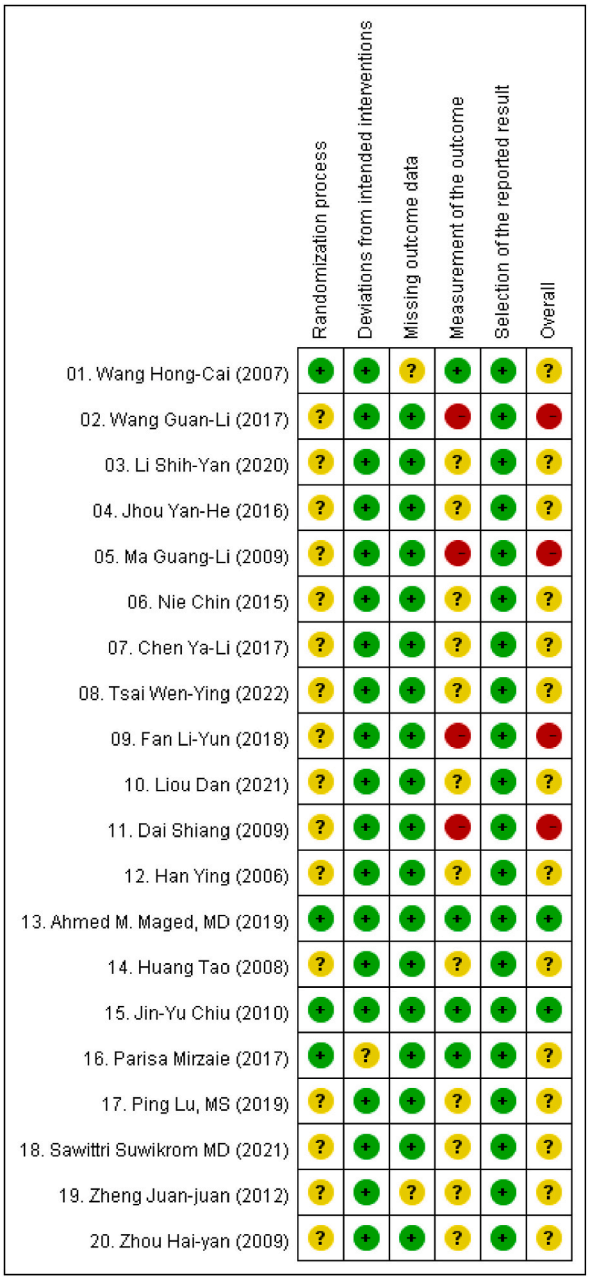


Fig. 3. Risk of bias summary: review authors' judgments about each risk of bias item for each included study.

1,364 articles remained. Preliminary screening of titles and abstracts excluded 966 irrelevant references. The full texts of 357 articles were screened, and 337 met the exclusion criteria. In the final phase, 20 studies were included (Table 1). A flowchart of the study selection process is presented in Fig. 1.

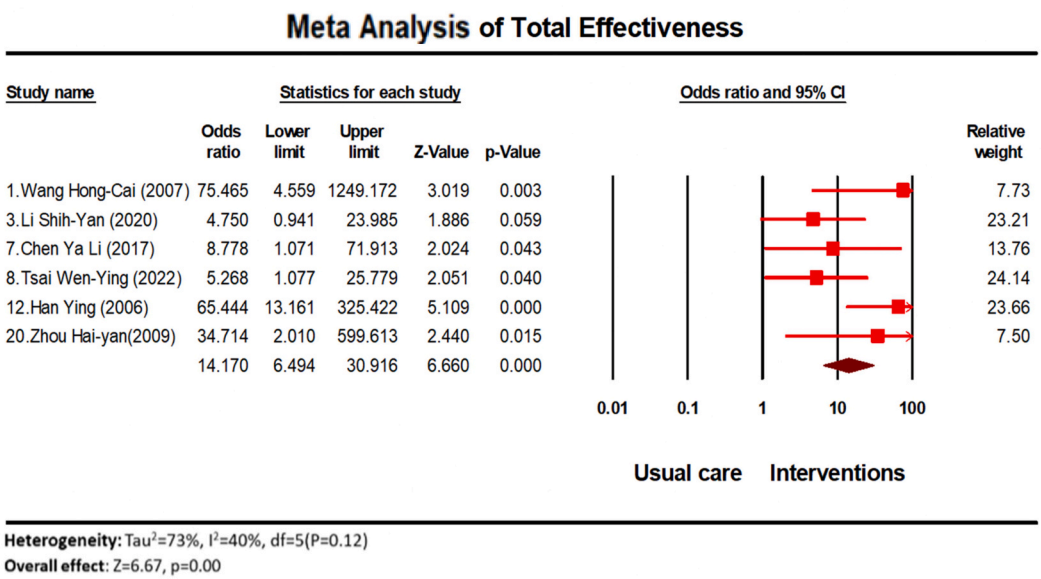
3.1.2. Risk of study bias assessment

Considering the RoB results shown in Fig. 2, two studies with low risk, 14 with some concerns, and four with high risk were recorded. Fig. 3 presents the results of each analysis, of which four of the random allocation processes were low-risk (#1, #13, #15, and #16), and the remaining 16 were some concerns (only random assignments, but the study did not mention whether the assignment process was hidden); one of the deviations from intended interventions was some concerns (#16 Subject reported tiredness and stress during the intervention and did not intervene for several days), and the others were low-risk. Regarding missing outcome data, there were two studies with some concerns (#1 churn rate of 1.1% less than 5% and #19 outcome PRL measurement attrition greater than 5%); the churn rates were 1.1% and 1.2%, respectively. The overall average churn rate was 0.76%, and all others were considered low

Table 2
Quality criteria of modified Jadad score.

	Randomization	Blinding			An account of all patients				
	Was the study described as randomized?	Was the method of randomization appropriate?	Was the study described as blinding?	Was the method of blinding appropriate?	Was there a description of withdrawals and dropouts?	Was there a clear description of the inclusion/exclusion criteria?	Was the method used to assess adverse effects described?	Was the methods of statistical analysis described?	Modified Jadad score
1. Wang Hong-Cai (2007)	1	1	0.5	0	1	1	1	1	6.5
2. Wang Guan-Li (2017)	1	1	0.5	0	1	1	1	1	6.5
3. Li Shih-Yan (2020)	1	1	1	1	1	1	1	1	8
4. Jhou Yan-He (2016)	1	0	0	0	1	1	1	1	5
5. Ma Guang-Li (2009)	1	0	0	0	1	1	1	1	5
6. Nie Chin (2015)	1	0	1	1	1	1	1	1	7
7. Chen Ya-Li (2017)	1	0	0.5	0	1	1	1	1	5.5
8. Tsai Wen-Ying (2022)	1	0	0	0	1	1	1	1	5
9. Fan Li-Yun (2018)	1	0	0	0	1	0	1	1	4
10. Liou Dan (2021)	1	0	0	0	1	1	1	1	5
11. Dai Shiang (2009)	1	0	0	0	1	0	1	1	4
12. Han Ying (2006)	1	1	0	0	1	1	1	1	6
13. Ahmed M. Maged, MD (2019)	1	1	1	1	1	1	1	1	8
14. Huang Tao (2008)	1	1	0.5	0	1	1	1	1	6.5
15. Jin-Yu Chiu (2010)	1	1	0	0	1	1	1	1	6
16. Parisa Mirzaie (2017)	1	1	0.5	0	1	1	1	1	6.5
17. Ping Lu, MS (2019)	1	0	0	0	1	1	1	1	5
18. Sawittri Suwikrom MD (2021)	1	1	0	0	1	1	1	1	6
19. Zheng Juan-juan (2012)	1	1	0	0	1	1	1	1	6
20. Zhou Hai-yan (2009)	0	0	0	0	1	1	1	1	4

A. Total effectiveness of Lack of Breast milk



B. Prolactin

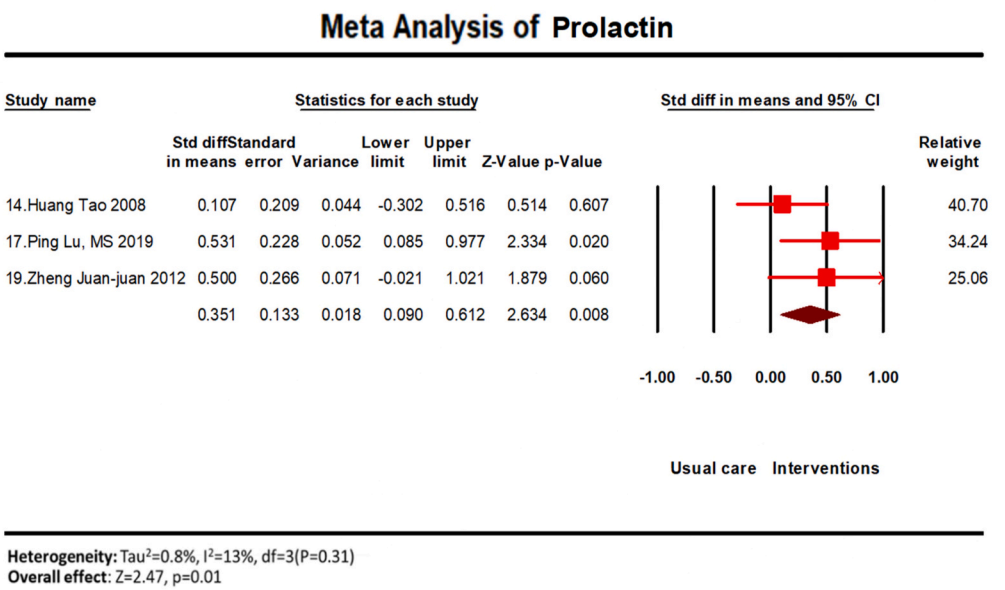
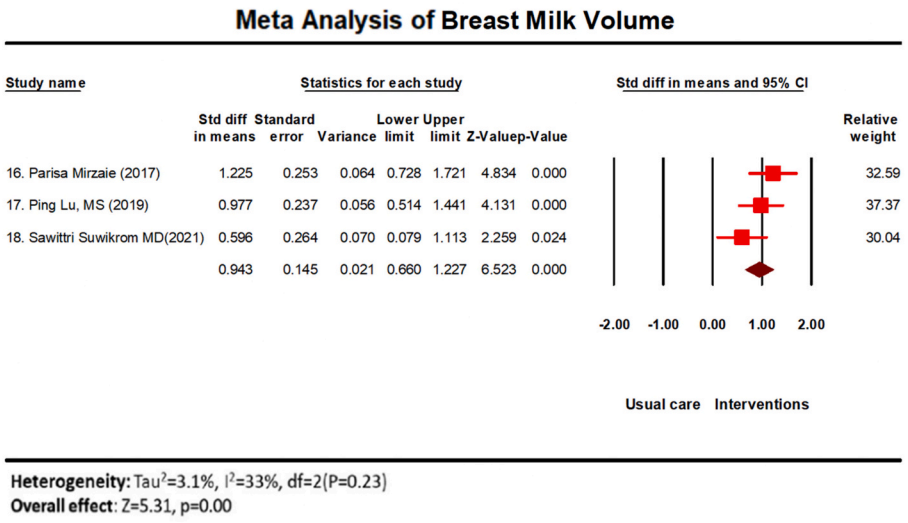


Fig. 4. Forest plots presenting effect sizes and meta-analysis of different outcomes after interventions by TCM.

C. Breast Milk Volume



D. Breast Engorgement

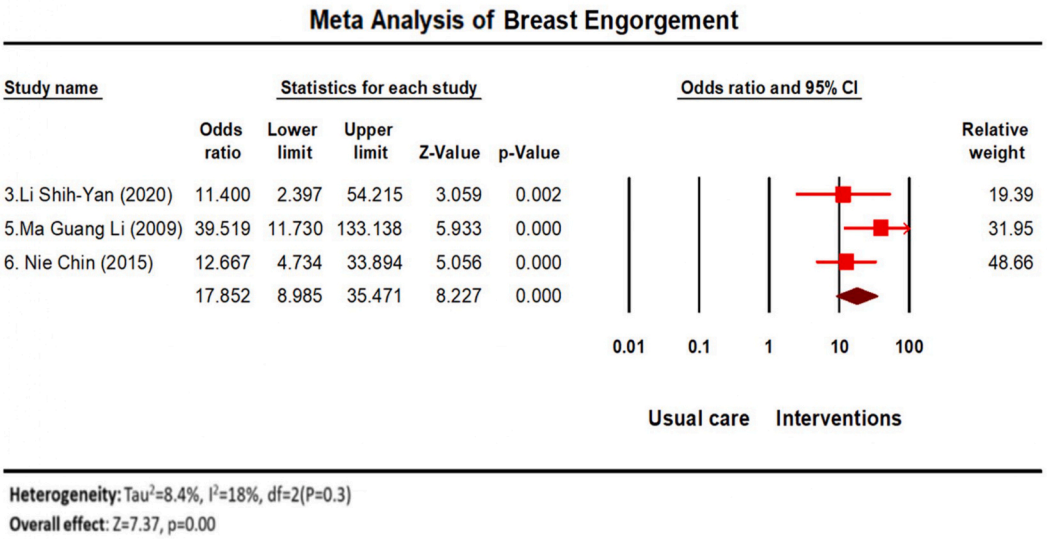


Fig. 4. (*continued*).

risk. Measurement of the outcome indicated that four articles were at low risk (#1, #13, #15, and #16), four were at high risk (#2, #5, #9, and #11), and the rest were some concerns (Because most of the studies were not double-blinded, but most of the results were analyzed in small detail, the impact of the assessment on the data results was low).

3.1.3. Modified Jadad Scale

Using the Modified Jadad Scale to assess the quality of the literature, as shown in Table 2, there were only two articles out of eight, followed by most with scores ranging from 5 to 7 to 4 (#9, #11, #20).

Table 3
The names of the top five acupuncture points most commonly stimulated in the treatment of milk deficiency and the location of acupuncture points.

Meridian & Vessel	Acupuncture Point	Location	Studies No.	Times
Stomach Meridian	ST18: Rugen	In the anterior thoracic region, in the fifth intercostal space, 4 B-cun lateral to the anterior median line.	#2,3,4,6,7,8,9,10, 11,15,17,19,20	13
	ST16: Yingchuang	In the anterior thoracic region, in the third intercostal space, 4 B-cun lateral to the anterior median line.	#4,7,10,15,17,19	6
	ST36: Zusanli	On the anterior aspect of the leg, on the line connecting ST35 with ST41, 3 B-cun interior to ST35.	#2,3,6,7,8,10,11, 17,19	9
Small Intestine Meridian	SI1: Shaoze	On the little finger, ulnar to the distal phalanx, 0.1 F-cun proximal-medial to the ulnar corner of the little fingernail, at the intersection of the vertical line of ulnar border of the nail and horizontal line of the base of the little fingernail.	#2,3,6,7,8,10,11, 17,19	12
Conceptional Vessel	CV17: Danzhong	In the anterior thoracic region, at the same level as the fourth intercostal space, on the anterior median line.	#2,3,4,5,6,7,8,9,10,11,14,15,18,19	14

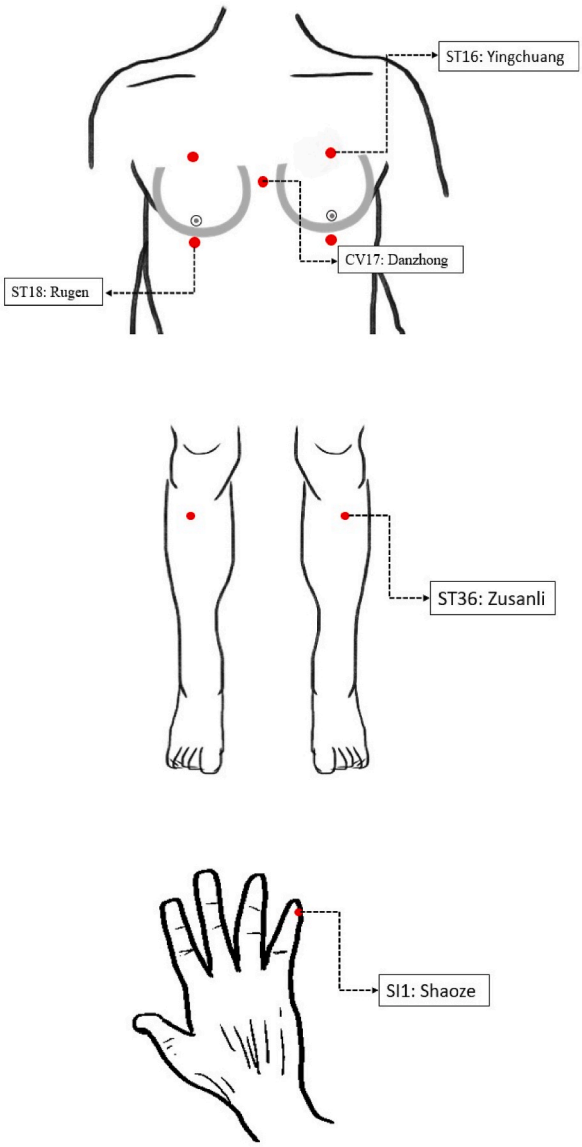


Fig. 5. Diagram of acupuncture points to promote lactation.

3.2. Outcomes measures

3.2.1. Efficacy of TCM in the treatment of breast milk deficiency

The effectiveness of TCM adjuvant therapy for treating breast milk deficiency was evaluated in six study samples. The results of the integrated analysis (odds ratio [OR] = 14.17, 95% CI = 6.49–30.92) (Fig. 4A) revealed that TCM adjuvant therapy had a significant effect on lactation (Fig. 4A). The test for sample heterogeneity did not indicate any significant differences ($I^2 = 40\%$, $p > 0.12$), and the heterogeneity between the samples was low as shown in Fig. 4.

3.2.2. PRL outcome

Since the time of recording PRL values varied across studies, the results of this study were selected for statistical analysis of the difference in PRL levels (n = 3) before and on day 3 after the intervention (standardized mean difference [SMD] = 0.36, 95% CI = 0.074–0.64) (Fig. 4B), which revealed that TCM adjuvant therapy stimulated PRL secretion. The test for sample heterogeneity did not show a significant difference ($I^2 = 13\%$, $p > 0.31$), and the heterogeneity between samples was low.

3.2.3. Milk production

The analysis of human milk secretion by TCM adjuvant therapy (n = 3) (SMD = 0.94, 95% CI = 0.59–1.29) (Fig. 4C) revealed that the stimulation of PRL secretion by TCM adjuvant therapy also promoted the increase of breast milk volume. The test for sample heterogeneity did not indicate a statistically significant difference ($I^2 = 33\%$, $p > 0.23$), and the heterogeneity between the samples was low.

3.2.4. Breast tenderness

Considering breast tenderness during lactation, the degree of breast pain was assessed after interventional acupoint stimulation. The studies included in the data analysis were divided into four levels according to the WHO pain grading standard (n = 3). The results (OR = 18, 95% CI = 8.34–38.82) (Fig. 4D) indicated a significant reduction in pain with the intervention of TCM-assisted therapy. The test for sample heterogeneity did not suggest any statistically significant differences ($I^2 = 18\%$, $p > 0.30$), and the heterogeneity between the samples was low.

3.3. Meridian and vessel

We counted the most common acupuncture points used to treat agalactia in all research articles, classified them using Ren vessels and meridians, and explained the common acupoint codes, names, and acupuncture locations [31] (Table 3). The meridians to which the common acupoints belong are the Stomach Meridian, Small Intestine Meridian, and Conception Vessel. The most frequent acupoints were the following: CV17, Danzhong (n = 14); ST18, Rugen (n = 13); SI1, Shaoze (n = 12); ST36, Zusanli (n = 9); and ST16, Yingchuang (n = 6) (Table 3). A diagram of acupuncture points to promote lactation is presented in Fig. 5.

I. CV17: Danzhong (n = 14): In the anterior thoracic region, at the same level as the fourth intercostal space on the anterior median line [31, p 228].
II. ST18: Rugen (n = 13): In the anterior thoracic region, in the fifth intercostal space, 4 B-cun lateral to the anterior median line [31, p54].
III. SI1: Shaoze (n = 12): On the little finger, ulnar to the distal phalanx, 0.1 F-cun proximal-medial to the ulnar corner of the little fingernail, at the intersection of the vertical line of the ulnar border of the nail and horizontal line of the base of the little fingernail [31, p 38].
IV. ST36: Zusanli (n = 9): On the anterior aspect of the leg, on the line connecting ST35 and ST41, 3 B-cun inferior to ST35 [31, p 64].
V. ST16: Yingchuang (n = 6): In the anterior thoracic region, in the third intercostal space, 4 B-cun lateral to the anterior median line.

4. Discussion

According to previous studies, there is consistent evidence that auxiliary therapy with TCM effectively improves milk secretion after childbirth. PRL primarily causes lactation during late pregnancy. PRL binds to the receptors on breast cells to promote breast development. This development pathway controls the mammary epithelial layer [32]. TCM-assisted therapy stimulates acupuncture points related to the breast and nipples to accelerate the release of oxytocin and PRL from the pituitary gland, thereby increase milk secretion and maintaining lactation. A meta-analysis revealed a positive correlation between PRL and lactation [14]. With acupoint stimulation, the PRL value will increase or be held at a certain level ($p = 0.01$) if auxiliary treatment with TCM is administered after delivery, thereby promoting increased milk secretion ($p < 0.001$).

According to “Huangdi Neijing,” “The Stomach Meridian of Foot Yangming runs through the breast; the Liver Meridian of Foot Jueyin goes up to the diaphragm, runs through the chest and hypochondrium and goes around the nipple; the Kidney Meridian of Foot Shaoyin goes up to the liver diaphragm and connects with the breast.” In TCM, it is believed that “milk” is transformed by qi and blood and originates in the spleen and stomach. The nipples and breasts belong to the Liver Meridian of Foot Jueyin and the Stomach Meridian of Foot Yangming, respectively. Postpartum lactation is caused by physical weakness, insufficient qi and blood, or liver and qi

stagnation. This hinders milk production and excretion. However, efficacy is also affected by different acupoints. Among them, the Tanzhong point (CV 17) and Shaoze point (SI 1) are often used to clear the breasts, and the Rugen point (ST 18) is used to promote lactation. Zusanli strengthens the spleen and stomach and clears the qi and blood. In terms of physiological mechanisms, electroacupuncture at Zusanli (ST 36) may activate adenosine monophosphate-activated protein kinase and increase mitochondrial autophagy, thereby regulating the spleen and stomach and treating spleen deficiency [34]. In addition, by combining with other acupoints, it has been found that transcutaneous electrical acupoint stimulation can promote the recovery of gastrointestinal function after surgery in patients with rectal cancer [35]. The abovementioned acupoints, commonly used to treat hypogalactia, are basic acupoint combinations for treating postpartum agalactia. They work together to replenish qi and blood, soothe the liver, and regulate qi. Acupressure points can promote local blood circulation and milk secretion so that the stagnant qi can be dredged, the stasis lump can be dissipated, the qi and blood can be regulated, the heat and inflammation can be reduced, and the function of milk secretion can be effectively promoted. This combination can effectively treat postpartum milk deficiencies caused by insufficient qi and blood transformation sources and qi stagnation [36].

In terms of preventing breast swelling and pain, scraping can effectively prevent mastitis and relieve breast swelling and pain by stimulating acupuncture points such as the ventral window (ST16), Tanzhong point (CV 17), and breast root (ST 18) [37]. TCM auxiliary therapies can achieve the therapeutic effect of acupoint stimulation through different methods, such as moxibustion (increasing local temperature and improving local qi and blood flow), acupoint massage, acupuncture (stimulating acupoints in specific areas), scraping (scraping out purple-red stains), subcutaneous bleeding spots or blood stasis spots, and irritation of body surface meridians), etc. A comprehensive and systematic review of the overall clinical efficacy shows that no matter what kind of auxiliary TCM therapy is used, it is very effective in treating agalactia. In addition to increasing milk production, it can effectively reduce breast swelling and pain, making the breastfeeding process more comfortable and smoother for postpartum women. The acupoint massage had the greatest effect.

Although auxiliary therapy with TCM has proven to be effective in treating hypogalactia and relieving swelling pain, the effect will still be affected by some factors, such as intervention time, frequency, course of treatment, and whether there are interruptions during the process, especially the increase or decrease of PRL. Secretion is affected by many factors: physiologically, surgical anesthetics and analgesics, incision pain, fever, fatigue, rapid weight gain, etc. Psychologically, stress, tension, and anxiety, and people who passively cope with stressful situations in real life have higher prolactin levels [33], which can cause neuroendocrine disorders in the hypothalamus; therefore, PRL is often considered to be one of the sensitive indicators reflecting breast milk secretion [38]. Therefore, a detailed systematic review found that the earlier postpartum intervention with TCM-assisted therapy leads to better lactation outcomes.

5. CONCLUSION

Breast milk is the best choice for babies, and TCM adjuvant therapy can comprehensively improve lactation and address its deficiencies. Lactation can be increased, and postpartum breast tenderness can be prevented and treated during the early postpartum period and throughout the lactation period. This can help treat milk stasis and acute and chronic mastitis, increase breast milk production, correct nipple depression, and wean off the healthcare worker's role to ensure a smooth breastfeeding process and the growth and development of the baby. Therefore, not only can the discomfort of postpartum women be reduced, but the breastfeeding rate can also be increased, thus benefiting the infants and mothers. Acupressure can effectively increase milk production and help achieve breastfeeding goals and is thus worth encouraging. The preliminary results of this study confirm the mechanism of Western medicine but also suggest the specific application of acupuncture points in TCM, which can be used as a reference for future researchers to establish an empirical research design. The advantages of TCM are its low cost, low risk, and relative safety. Acupressure points have significant effects in reducing breast engorgement. It should be promoted to help lactating women to breastfeed successfully. The results of the present study can be used as a reference for postpartum breast engorgement care. It can be performed at home under effective guidance.

Clinical finding:

1. This study found that the intervention time of auxiliary treatment with Traditional Chinese Medicine will affect the effectiveness, especially the best time to intervene within 24 h after delivery, and whether it is breast swelling and pain or lack of milk, most subjects are still undergoing treatment 5–7 days has greatly improved or even recovered.
2. Traditional Chinese Medicine auxiliary therapy can improve the problems of lactation and distension by stimulating acupuncture points to clear the meridians. The study found that the five most effective acupuncture points include: ST18: Rugen, ST16: Yingchuang, ST36: Zusanli, SI1: Shaoze, CV17: Danzhong, and the use of drugs in Western Medicine will cause the drugs to be absorbed in the body and affect the quality of breast milk, which has concerns about the health and safety of infants.
3. In addition to acupuncture, auxiliary therapies of Traditional Chinese Medicine include scraping, cupping, ear pea sticker, and acupoint massage. These are all non-invasive treatments and are safer.
4. From the perspective of Traditional Chinese Medicine, meridians and acupuncture points are closely connected with other parts of the body. Therefore, proper treatment can not only solve existing problems but also improve deficiencies in other aspects. The patients with agalactia are divided into Qi and blood [28,37]. For frail groups and those with liver stagnation and qi stagnation, the physical constitution will also be assessed in the treatment method. According to the different physical constitutions, the acupuncture points involved will also be different.

Strengths and limitations

The advantages of TCM include its low cost, low risk, and relative safety. Moreover, the procedure can be performed at home under effective guidance. However, this study has some limitations. First, the research participants were mostly Eastern, and the generalizability of the research intervention may be limited. Second, this study discussed the main acupuncture points involved. The application of auxiliary acupoints needs to be carefully considered; the individuality of the constitution should be added, and more research design results should be supported. Third, some of this research acknowledges that the number of studies used to assess each parameter is small. Finally, many Western countries are unfamiliar with popularized technologies or concepts. However, such research usually lacks funding, leading to instability and insufficient motivation. Although many Western countries have limited research on acupuncture points to promote lactation, in the future, our Asian countries should work hard to obtain funding to do further in-depth research. We will continue to encourage and promote the benefits of TCM during postpartum lactation. Therefore, the study breakthroughs and improvements are required in future research.

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Institutional review board statement

This study was conducted in accordance with the Declaration of Helsinki.

Informed consent statement

Not applicable.

Data availability

All data included in this study are available upon request by contact with corresponding authors.

CRediT authorship contribution statement

Yu-Wen Fang: Writing – original draft, Supervision, Software, Methodology, Formal analysis, Data curation, Conceptualization. **Shu-Fen Chen:** Visualization, Resources, Investigation. **Ming-Ling Wang:** Validation, Software, Resources, Formal analysis, Data curation. **Mei-Hua Wang:** Validation, Software, Resources, Investigation, Formal analysis.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interestsYu-Wen Fang reports writing assistance was provided by Tzu Chi University of Science and Technology. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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