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Literature Review

Interventions strategy reducing postpartum fatigue: a literature review

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Abstract
Background: Postpartum fatigue is a severe concern for mothers worldwide, and fatigue has a high prevalence rate. Fatigue symptoms impact postpartum maternal role attainment and are also considered to affect her quality of life adversely. Objective: This study aimed to identify interventions strategy reducing postpartum fatigue. Methods: Literature reviews were conducted with PubMed, Scopus, Cochrane Library, Web of Science, and Google Scholar database. Inclusion criteria (1) randomized controlled trials or quasi-experimental studies (2) strategies on mothers with postpartum fatigue study (3) English. Full text. Two reviewers will independently perform selection articles, quality assessment, and data extraction. The methodology's quality and evidence level will be graded using the modified Jadad Scale. Results: Eight studies were included (819 postpartum women and, executed nine kinds of interventions). Aerobic gymnastic exercise used DVD significantly decreased levels of postpartum fatigue and also significantly improved stress and postpartum sleep quality. The professionally-led telephone support significantly decreased fatigue and depression, anxiety, stress, and significantly higher self-care behavior. In addition, most instruments used to measure postpartum fatigue are Postpartum Fatigue Scale (PFS) and Fatigue Severity Scale (FSC). Conclusions: Aerobic gymnastic exercise used DVD and professionally-led telephone support are recommended as strategic interventions for reducing postpartum fatigue.

Keywords: intervention; postnatal fatigue; postpartum fatigue

1. Introduction

The most frequent and unpleasant postpartum symptom, which has become one of the main worries for new mothers, is postpartum fatigue (Badr & Zauszniewski, 2017; Giallo, Gartland, et al., 2015; Kushnir et al., 2013; Zhang et al., 2022). In the postpartum and early parenting phase, fatigue is thought to be a related but different entity from depression (Giallo, Gartland, et al., 2015; Wilson et al., 2018). Postpartum fatigue had a high prevalence rate, 93.8 % of mothers had high of postpartum fatigue (El-Morsey, 2019). The results of previous study in Turkey showed that 98.9% of postpartum mothers experienced fatigue ranging from mild to high levels of fatigue at 1 week postpartum (Fata & Atan, 2018). Postpartum women anxiety identified as a strong predictor of fatigue at 1-24 weeks after birth (Taylor & Johnson, 2013).

Due to hormonal changes and the responsibility of caring for a newborn, the majority of women had considerable disruptions in their sleep habits during the postpartum period (Ashrafinia et al., 2014), leading to fatigue and functional problems (El-Morsey, 2019). MIP-1β, an essential cytokine for delivery processes that may produce mother stress, exhaustion, and depressive symptoms, was associated with elevated levels of various cytokines in the postpartum over the prenatal period (Cheng & Pickler, 2014). Postpartum fatigue causes unfavorable and potentially serious impacts, including a reduction in lactation (Bai et al., 2018; Senol et al., 2019); delayed return to sexual intercourse, and decreased intercourse frequency (Pardell-Dominguez et al., 2021; Yee et al., 2013); the emergence of mood and stress disorders (McBean & Montgomery-Downs, 2015) the likelihood of postpartum depression rising (Giallo et al., 2016; Henderson et al., 2019; Wilson et al., 2019). Most factors

predictive of fatigue were discovered at week 12 postpartum (Bakker et al., 2014). This may have a negative impact on her ability to fulfill postpartum parental roles and lower her quality of life (Lai et al., 2015). Unfortunately, both the woman and her care provider are often unaware of this.

Postpartum fatigue is still one of the five main postpartum problems and its treatment is often a topic debated in many studies (Ashrafinia et al., 2015). The techniques people employ to reduce fatigue and their perception of how effective those strategies are may be influenced by the fatigue symptoms. Additionally, the methods employed to manage fatigue may alter as its intensity develops over time. Enlisting the help of family members to reduce workload, sleep, rest, relax, and reduce energy expenditure are some of the strategies to manage postpartum fatigue recommended in the literature (Giallo et al., 2013; Henderson et al., 2019; Sinai & Tikotzky, 2012; Vatwani & Margonis, 2019). The strategies women used (sleep, requesting assistance with tasks) were generic and applicable to any situation in which a person was exhausted. Further, the shortened postpartum hospital stays makes the long term strategies of professional nursing intervention difficult, if not impossible. Considering the circumstances of a postpartum woman, long term interventions at home is a potentially cost-effective and reasonable. There are fewer barriers to parenting, and as a result, mothers are more willing and motivated (Ashrafinia et al., 2015). Therefore, it is crucial that an effective solution be discovered for this problem.

Despite the fact that few studies have addressed the management of fatigue, some of them recommend that women be evaluated for the existence and reasons of fatigue before choosing measures to alleviate it (Bick, 2003; Giallo et al., 2014; Parks et al., 1999). Higher levels of fatigue are linked to more disturbed sleep, showing that the women were more tired if they felt their sleep was of poor or short duration (El-Morsey, 2019; Giallo, Seymour, et al., 2015; Iwata et al., 2018; McBean & Montgomery-Downs, 2015). Poor or short sleep quality after childbirth can impact mother' physical and emotional well being. Because sleep deprivation persists after childbirth, mothers need a regular home-based intervention program to improve their sleep quality (Yang & Chen, 2018). In recent years, some studies have used postpartum exercise to encourage mothers to move more by boosting their motivation and self-assurance to improve mental well-being (Hatfield et al., 2022; Timlin & Simpson, 2017) and improves quality of life (Buttner et al., 2013; Kazeminia et al., 2022). Good quality of life and positive mental health, can help mother play their maternal roles more efficiently.

This review adds to knowledge the current interventions used to reduce postpartum fatigue was collected from online literature search by review to identify, evaluate and summarize studies, and the critically assess their methodological quality on the intervention strategies used to on various aspects with the evidence collected. A better understanding of the strategies women use, and the usefulness of those strategies, may lead to better interventions.

2. Methods

Literature review study were conducted, following electronic databases were specialized Health Sciences bibliographic databases for articles: PubMed, Scopus, Cochrane Library, Web of Science, and Google Scholar. The keywords used were "intervention" AND "postpartum fatigue" OR "postnatal fatigue". Mesh terms and synonyms were used to adjust search strategies for each database. Inclusion criteria (1) randomized controlled trials or quasi-experimental design. (2) Postpartum women (3) Level of fatigue (4) Full-text English language.

Study screening: EndNote (version X7) was used to manage all studies retrieved from the databases. Three steps were taken in the study selection process once duplicates were eliminated. Studies were classified as included, excluded, or uncertain in each step. In the first step, two reviewers (T and W) independently evaluated the studies based on the title. The two reviewers discussed disparities in study classification until they came to an agreement. Next, titles were assessed based on relevant terms in the title. Next step, the same method was used to retrieve and screen the abstracts of the included titles. The article was excluded if the abstract wasn't accessible. Next, the full text was accessed if the abstract did not contain adequate information to determine if the article was

relevant for this review. Finally, the full text of the remaining studies was screened. All full-text articles have been checked for citations and references to make sure no important papers were missed. Two reviewers discussed each study, whether it was included, excluded, or uncertain until they reached an agreement. All phases are documented, including the number of articles and the reasons for the articles excluded.

Quality appraisal: A modified version of the Jadad scale checklist, the popular scale used worldwide, was used to evaluate the methodology quality of the included studies (Oremus et al., 2001). The scale crores range of this instrument between 0 and 8 points, with higher scores showing better quality. 1–3 signified low-quality, while 4–8 signified high-quality. There are six items of the Jadad scale included: (1) randomization ("yes" scored 2 points, "no" scored 0); (2) blinding ("yes" scored 2, "no" scored 0); (3) description of withdrawals and dropouts ("yes" scored 1 point, "no" scored 0 points); (4) inclusion/exc1usion criteria ("yes" scored 1 point, "no" scored 0 points); (5) adverse effects ("yes" scored 1, "no" scored 0); (6) statistical analysis ("yes" scored 1, "no" scored 0) (Oremus et al., 2001).

Data extraction: Details on publications, study designs, participants, interventions, controls, outcomes, and results were included in the data extraction's content. It was retrieved independently by two reviewers, and they discussed it to achieve an agreement.

Data synthesis: Because the research varied in terms of their study designs, participants, level of intervention, and results, a narrative method was utilized to summarize the results. Results were tabulated and overviewed the characteristics of the included studies and explanations of the interventions' characteristics. The effectiveness of strategies supporting intervention in mothers with postpartum fatigue was synthesized by collating the study designs, sample size, and outcome measures narratively.

3. Results and Discussion

3.1. Results

The literature search identified 595 potentially relevant articles (Scopus 16, Web of Science 7, PubMed 171, Cochrane Library 6, and Google Scholar 395). Of these, 131 were eliminated because they were duplicated across different databases. Greening in the title and abstract of the remaining 464 articles, add 409 papers were excluded. Then, read the full text given in the 55 eligible studies; 47 did not meet the inclusion criteria and were also excluded. Finally, this review selected and reported eight studies (Figure1).

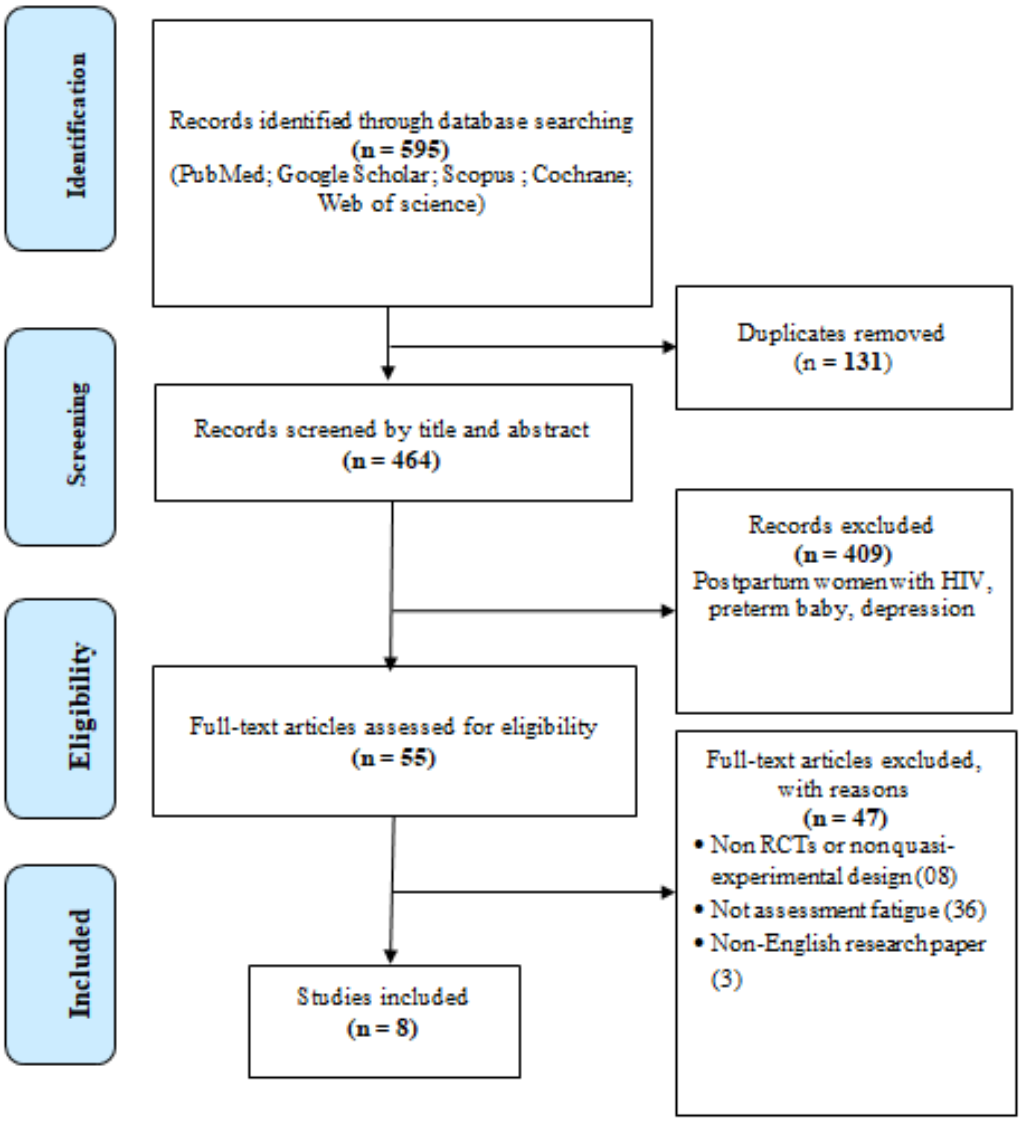

Figure. 1. Flowchart of studies

3.1. 1. Study quality appraisal

Based on the modified Jadad scale, five of the eight selected articles were given a score of five for quality. Three articles earned a score of 4, two articles scored 5, one article scored 6, and two articles received 7. Six studies are randomly assigned. The item in the description of the blinding approach was linked to the main methodological flaw. There are three single-blinded studies, and the other five are non-blinded. Nevertheless, the data show that our systematic review articles are high quality (summarized in table 1).

3.1.2. Study characteristics

All of studies are in English language. Eight of the 595 studies yielded in the database search are included in this review (Fig.1). These include 6 RCTs and 2 quasi-experimental studies, two of which had no mention of withdrawals and dropouts (Ashrafinia et al., 2015; Moradi et al., 2016). A summary of the included studies is detailed in Tables 2 and 3. The 8 studies include a total of 819 postpartum women. The ages range from 18 to 43. The sample size in these studies range from 56 to 202. Seven studies took place in Asia and one in Australasia.

Table 1. Jadad quality score

First author (Year)	Modified Jadad scale						
	Randomization (2)	Blinding (2)	Withdrawals and dropouts (1)	Inclusion/ Exclusion criteria (1)	Adverse effects (1)	Statistical analysis (1)	Total
Yang (2017)	2	1	1	1	1	1	7
Vaziri (2017)	2	1	1	1	1	1	7
Choi (2017)	0	0	1	1	1	1	4
Moradi (2016)	2	0	0	1	0	1	4
Giallo (2015)	2	1	1	1	0	1	6
Chen (2015)	2	0	1	1	0	1	5
Ashrafinia (2015)	2	0	0	1	1	1	5
Ko (2008)	0	0	1	1	1	1	4

The following inclusion criteria were most frequently cited: 6 studies necessary to have no postnatal complications and normal vaginal delivery with a healthy baby (Ashrafinia et al., 2015; Chen & Chen, 2015; Choi & Song, 2017; Moradi et al., 2016; Vaziri et al., 2017; Yang & Chen, 2018), 1 of these 6 studies are both vaginal delivery or cesarean (Choi & Song, 2017). The method of delivery was not disclosed in the two studies (Giallo et al., 2014; Ko et al., 2008). Three studies specified in primiparous women (Ashrafinia et al., 2015; Moradi et al., 2016; Yang & Chen, 2018). Table 2. One study did not describe the setting in which the intervention was conducted (Giallo et al., 2014); 3 studies took place during the hospitalization stay (Choi & Song, 2017; Moradi et al., 2016; Vaziri et al., 2017); one study at 3 weeks maternity center stay (Ko et al., 2008) and 3 studies was performed after discharge at home (Ashrafinia et al., 2015; Chen & Chen, 2015; Yang & Chen, 2018). Following a qualitative examination of participant data, we conclude that postpartum women showed considerable variation at the time of intervention.

3.1.3. Interventions

A. Types of intervention:

There were 9 types of intervention in the 8 studies, included: Aerobic gymnastic exercise DVD vs regular postpartum care (Yang & Chen, 2018); Pilates home exercises vs the usual postnatal care (Ashrafinia et al., 2015); Low-intensity exercise program (Pilates, yoga movements and music) vs Traditional care (Ko et al., 2008); The professionally-led telephone support intervention vs self-directed written intervention vs usual health care services (Giallo et al., 2014); Slow stroke back massage vs routine postnatal care (Moradi et al., 2016); A footbath along with postnatal care vs the usual postnatal care (Choi & Song, 2017); Lavender oil aroma vs Sesame oil (Vaziri et al., 2017); Lavender tea after smelling (appreciating) its aroma vs Regular postpartum care (Chen & Chen, 2015). A total of 9 different types of interventions were performed.

Table 2. General study characteristics

Study (year) Country	Setting	Study population Sample size	Age	Inclusion criteria	Exclusion criteria
Yang (2017) Taiwan	Postnatal clinic of a medical center	n = 140	21 - 43	1) Primiparous women with normal vaginal delivery 2) No postnatal complications	
Vaziri (2017) Iran	Educational hospital affiliated to Shiraz University of Medical Sciences	n = 56	18 - 32	1) Vaginal delivery with episiotomy and without spinal or epidural anesthesia, 2) Singleton pregnancy, live and normal infant, 3) Not suffering from severe chronic diseases 4) At least 4 h later than delivery, perineal pain score ≥4 in visual analog scale (VAS), 5) No history of allergy to lavender plant.	1) Not willing to continue participation in the study, 2) Not bear the smell of lavender essential oil, 3) Complications such as hypertension, bleeding, and fever.
Choi (2017) Korea	Two obstetrics and gynecology hospitals	n = 100	20 - 40	1) Understood and agreed to study's purpose. 2) Underwent vaginal delivery and episiotomy or cesarean section between weeks 37 and 41. 3) No complication during the delivery and postnatal period. 4) Understood and communicate about the content of the questionnaire survey.	
Moradi (2016) Iran	Amir Al Momenin hospital	n = 100	29 - 40	1) Primiparous with a healthy baby deliver 2) Had a normal spontaneous vaginal delivery 3) Age of 18 - 45 years 4) No history of reflexology in the last 6 months 5) Ability to read and write, acceptable ability of listening and speaking to answer the questions, and breastfeeding while they are in the hospital, 6) Having a degree of fatigue, a minimum score of fatigue	1) History of chronic diseases, addiction, mental health problems, facing a disaster in the last 6 months in their lives or their relatives' lives 2) Infertility 3) any ulcer, infection or

Study (year) Country	Setting	Sample size	Study population Age	Inclusion criteria	Exclusion criteria
				between (10 to 37) based on fatigue questionnaires.	illness that would avert massage.
Giallo (2015) Australia	Seven local government areas (LGAs) in Melbourne	n = 202	> 18	1) Older than 18 years 2) Had a child younger than the age of 6 months 3) Had sufficient English to complete the questionnaires and resided within the selected LGAs.	
Chen (2015) Taiwan	The postnatal clinic of a medical center	n = 80	25 - 42	1) Uncomplicated childbirth, 2) No postnatal complications, 3) Postpartum Sleep Quality Scale (PSQS) score 16, 4) Informed consent to participate.	Had a history of allergy to any herbal tea, food, or medicine
Ashrafinia (2015) Iran	Seven Rafsanjan Health Centers	n = 80	24.4 – 24.6	1) Primiparous women possess Iranian nationality. 2) Aged 18–35 years 3) Singleton pregnancy 4) No history of physical and mental diseases 5) Normal vaginal delivery of a healthy term neonate.	1) Postpartum depression score ≥ 10, based on the Edinburgh Postnatal Depression Scale (EPDS) 2) Postpartum anaemia, 3) Respiratory infection, 4) Had emigrated, missed three successive exercise sessions or had five interrupted sessions.
Ko (2008) Taiwan	Maternity center	n = 61	34.17 – 34.33	1) Speak and read Mandarin, 2) Free of obstetrical complication 3) Over 20 years of age, married	

Table 3. Interventions approach and outcomes

First author (Year)	Research Design				
	Intervention vs Control Condition	**Procedures**	**Outcomes measures**	**Time of assessment**	**Main results and author's conclusions**
Yang 2017	Aerobic gymnastic exercise DVD vs Regular postpartum care	6 weeks after childbirth, women were instructed to engage in aerobic gymnastic exercise at least three times (15 min per section) a week for three months.	PSS, PFS, PSQS, and EPDS	After 4 week and 12 week	1. PSS had significant improves 2. Significant decrease in PFS 3. Significant increase in PSQS. 4. EPDS scores had no significant changes. **Authors conclusion:** The findings can be used to encourage postnatal women to perform moderate intensity gymnastic exercise in their daily life to reduce their stress, fatigue and improve sleep quality.
Vaziri 2017	Lavender oil aroma vs Sesame oil.	Three doses during the first 24h after delivery	Fatigue VAS and PANAS	After 1 hour and before discharge.	1. Significant decrease in perineal pain, physical pain, fatigue and distress scores 2. PANAS had significant changes. **Authors conclusion:** Inhalation aromatherapy practice in the early hours of postpartum could reduce the mothers' pain and fatigue and improve their mood.
Choi 2017	A footbath along with postnatal care vs the usual postnatal care	Two times during the hospitalization	FCF	1 day after delivery and before discharge.	The Fatigue Continuum Form scores had significant changes **Authors conclusion:** A footbath helps to decrease fatigue among postpartum women, it is a good

First author (Year)	Intervention vs Control Condition	Research Design Procedures	Outcomes measures	Time of assessment	Main results and author's conclusions
					preventative strategy for post-partum women who should initiate it in the early postpartum period.
Moradi 2016	Slow stroke back massage vs routine postnatal care	A trained researcher performed massage during 24 hours, one sessions every 4 hours (6 sessions totally), each massage session was twenty minutes.	FSC	Before starting and after the end of the sixth session.	Significant decrease in fatigue. **Authors conclusion:** Slow stroke back massage is easy, low-cost, non-invasive and also it is available at home and can be easily taught and lead to a level of empowerment inpatients and their families to relieve postpartum fatigue.
Giallo 2015	The professionally-led telephone support intervention vs self-directed written intervention vs usual health care services	Give the Wide Awake Parenting (WAP) intervention workbook, to contain information about fatigue and suggested strategies and activities for saving and recharging energy. Professionally-Led Telephone Support performed one home visit, and three telephone calls Self-Directed Written: mothers asked to readread the booklet and	FAS, FSS, DASS-21, self-care behavior,	2 weeks after intervention completion or 6 weeks after starting of the intervention, or 12 weeks after starting of the intervention.	1. The professionally-led telephone support group had significantly decrease in fatigue, depression, anxiety, and stress. 2. The professionally-led telephone support and self-directed written groups also had significantly higher self-care behavior. **Authors conclusion:** Wide Awake Parenting is effective in promoting mothers' self-efficacy to prioritize, plan for, and engage in health and self-care behaviors to promote mental health and manage fatigue.

First author (Year)	Intervention vs Control Condition	Procedures	Research Design Outcomes measures	Time of assessment	Main results and author's conclusions
		work through the activities over a 4-week period.			
Chen 2015	Lavender tea after smelling (appreciating) its aroma vs Regular postpartum care.	At 6 weeks after childbirth, women were instructed to drink one cup of lavender tea after smelling (appreciating) its aroma 1 hour before bedtime for a period of 2 weeks.	PSQS, EPDS, PFS, and PBQ.	Before the intervention and at 2 and 4 weeks post intervention.	1. At 2 weeks, significant decrease in EPDS, PFS, and significant increase in PSQS, PBQ. 2. At 4 weeks, EPDS, PFS, PSQS, PBQ had no significant changes. **Authors conclusion:** The positive effects of lavender tea were limited to the immediate term.
Ashrafinia 2015	Pilates home exercises vs the usual postnatal care	72 hours after delivery, the mothers performed Pilates home exercises five times a week (30 min per session) in 8 week	MFI-20	After 8 weeks	Significant decrease in MFI-20 with regard to general fatigue. Authors conclusion: Physical exercise can significantly reduce postpartum maternal fatigue in all subscales.
Ko 2008	Low-intensity exercise program (Pilates, yoga movements and music) vs Traditional care	First week stay at maternity center participate in at least 6 exercise program session during 3 weeks in maternity center stay.	FSC, CESD.	First week stay at maternity center and before discharge during 3 weeks in maternity center stay.	1. Significant improve in FSC. 2. CESD had no significant changes. **Authors conclusion**: Low-intensity exercise program can offer a good platform for clinicians and researchers to help reduce fatigue in postpartum women.

B. Times of intervention

There is great heterogeneity at time of intervention for postpartum women due to different type of intervention. Three studies took place during the hospitalization stay included: Three doses Lavender essential oil during the first 24h after delivery (five drops of lavender essential oil were applied to a cotton ball, which the participants were instructed to hold 20 cm from their nose for 10-15 minutes

while breathing normally. This procedure was repeated six hours after the first intervention and before going to bed) (Vaziri et al., 2017); during the hospital stay, a footbath system that allowed for automatic temperature adjustment was used twice. Participants were required to immerse their feet once daily for 30 minutes in the footbath machine, which held 20 cm of water that had been heated to 42°C. Participants should dry their feet after the footbath and put on socks to keep their feet warm and maintain the effects (Choi & Song, 2017); One massage treatment every four hours for a total of six sessions (20-minute/session) was given over 24 hours by a trained researcher (Moradi et al., 2016).

Four of eight studies in this review performed intervention after discharge at home included: women were instructed to conduct aerobic gymnastic exercises for three months at least three times (15 minutes per segment) per week beginning six weeks after giving birth (Yang & Chen, 2018); the mothers engaged in pilates exercise five times per week (30 minutes each)for eight weeks starting 72 hours following birth (Ashrafinia et al., 2015); at six weeks after childbirth, mothers were encouraged to consume one cup of lavender tea after inhaling its fragrance, one hour before bedtime for two weeks (Chen & Chen, 2015); give the Wide Awake Parenting (WAP) intervention workbook, which discusses fatigue and offers tips and actions for keeping and replenishing energy. Professionally-Led Telephone Support performed one home visit, and three telephone calls. Self-Directed Written: women were asked to read the booklet and work through the activities over a 4-week period (Giallo et al., 2014). One study performed intervention in 3 weeks at maternity center stay, exercise intensity gradually increased over the 60 minutes program through three phases. Women participate in at least 6 exercise program session (Pilates, yoga movements and music) during 3 weeks (Ko et al., 2008).

C. Outcome variables

Indicators of outcome variables in the study included levels of postpartum fatigue, levels of postnatal depression, stress, anxiety and postpartum sleep quality (PSQS). All studies measured levels of postpartum fatigue, however, their measurement tools varied. Two of the studies used Postpartum Fatigue Scale (PFS); 2 used Fatigue Severity Scale (FSS) and add Fatigue Assessment Scale (FAS); 4 studies used tools different such as: Fatigue VAS (visual analog scale) scale; Fatigue Continuum Form scores (FCF); Multidimensional Fatigue Inventory (MFI-20) and Fatigue Symptom Checklist (FSC). Three studies assessed levels of postnatal depression, stress, anxiety using Edinburgh Postnatal Depression Scale (EPDS), Depression Anxiety and Stress Scale–21 (DASS-21), Perceived Stress Scale (PSS). 2 studies assessed levels of postpartum sleep using Postpartum Sleep Quality Scale (PSQS). 1 study had assess self-care behavior and other 1 study assessed Postpartum Bonding Questionnaire (PBQ).

D. Levels of postpartum fatigue

There are three exercise programs included Aerobic gymnastic exercise DVD, Pilates home exercises and Low-intensity exercise program (Pilates, yoga movements and music), however, different intervention in times and measurement tools varied. But, three of these result had significant decrease in levels of postpartum fatigue. Furthermore, only Aerobic gymnastic exercise DVD also had significant improve stress and postpartum sleep quality (Yang and Chen, 2017). Three interventions took place during the hospitalization stay included Lavender oil aroma, a footbath along with postnatal care and slow stroke back massage. The results of these interventions had significant decrease in fatigue. Besides, Lavender oil aroma could significant decrease in perineal pain, physical pain and distress scores (Vaziri et al., 2017). The professionally-led telephone support and self-directed written intervention, only the professionally-led telephone support had significantly decrease in fatigue and also had significantly decrease depression, anxiety, stress and significantly higher self-care behavior (Giallo et al., 2014). Finally, inhaling lavender's aroma and drinking lavender tea significantly improved postpartum fatigue and also had a significant decrease in depression, improvement in postpartum sleep quality, and postpartum bonding. However, the benefits of lavender tea only lasted for two weeks. After four weeks, the intervention had no significant changes in all of the outcomes (Chen & Chen, 2015).

3.2. Discussion

This review aimed to synthesize the effectiveness of intervention strategies used to reduce postpartum fatigue. Eight studies were conducted in four different countries, and eight different intervention methods were used. All studies are in English and are high quality (modify Jadad scale). All studies measured levels of postpartum fatigue, although, their measurement tools varied (PFS, fatigue VAS scale, FCF, FSC, FAS, MFI-20, FSC) but it has high reliability and validity (Ashrafinia et al., 2015; Chen & Chen, 2015; Choi & Song, 2017; Giallo et al., 2014; Ko et al., 2008; Moradi et al., 2016; Vaziri et al., 2017; Yang & Chen, 2018). The analysis showed that most of the interventions were relatively homogeneous, which reduced the levels of postpartum fatigue. The findings included lavender oil aroma perform after delivery; a footbath along with postnatal care and slow stroke back massage perform during hospitalization stay and after discharge at home could perform both of aerobic gymnastic exercise DVD and the professionally-led telephone support: all with the main objective of decreasing postpartum fatigue.

The finding is an intervention for aerobic gymnastic exercise DVDs performed six weeks after childbirth and instructed to engage for three months, at least three times (15 minutes per segment) per week. The level of postpartum fatigue was assessed at 4 weeks and 12 weeks (Yang & Chen, 2018). The measurement instruments used commonly in 8 articles to measure the level of fatigue included Postpartum Fatigue Scale (PFS) and Fatigue Severity Scale (FSC). The results of aerobic gymnastic exercise DVDs not only had a significant decrease in levels of postpartum fatigue but also significantly reduced stress and improved postpartum sleep quality.

Discussion on time, intervention started at 6 weeks after childbirth in this time because at this time the adaptation of the postpartum period has been completed, and the organs of the body return to their pre-pregnancy state (Ospina Romero et al., 2012). About one-third (31%) of women may develop depression, and about three-quarters (72%) experience moderate to severe fatigue at 6 weeks after delivery. The risk of postpartum depression was 5 and 8 times higher in mothers with high (83%) and severe (56%) fatigue, respectively (Rouhi et al., 2011), and when performed during 12 weeks at the same time, was found to be the most predictive of fatigue (Bakker et al., 2014). Furthermore, it reduced stress, improved postpartum sleep quality, and was more effective in reducing postpartum fatigue (Yang & Chen, 2018).

Another intervention is to give postpartum women the Wide Awake Parenting (WAP) intervention workbook, which discusses fatigue and offers tips and actions for keeping and replenishing energy. Then, professionally-led telephone support is performed during one home visit and three telephone calls during the 12-week intervention (Giallo et al., 2014). This intervention had not only decrease in fatigue but also decrease depression, anxiety, and stress, it means as more as effective in improve postpartum fatigue with the same in time was found the most factors on predictive of postpartum fatigue.

The remaining interventions used to intervention in short time: hospitalization stay, 4, 8 week while at week 12 postpartum were found the most factors on predictive of fatigue. These findings can combine each other to become an intervention strategy for postpartum women at different moments during postpartum period include: immediately after birth, hospital stay and at home.

Our review's strength is the thorough analysis of data pertaining to intervention content, elements, and delivery methods, as well as the analysis of the interventions in light of the use of the Jadad scale, the most commonly used scale globally to evaluate the methodological quality of the studies. The studies showed differences in times of interventions, content, and long-term and short-term effects of the intervention. The general point of all of the studies is that the interventions were created to lower the levels of postpartum fatigue.

The intervention used Aerobic gymnastic exercise DVD, and professionally-led telephone support are the strategy intervention effectively in this systematic review. However, there is still insufficient evidence to issue recommendations in our search process. Therefore, we suggested meta-analysis with the comorbidity of interventions as the primary outcome variable for further research to explore their effectiveness on postpartum fatigue women.

Limitations; We only encountered English-language articles at the review level, which might have reduced the number of available studies. In addition, we searched the literature using a variety of sources to collect data for the study. We can't be certain that we had all of the pertinent research because we didn't hire a health sciences librarian to create the search strategy for gathering literature.

4. Conclusion

Although there is excellent heterogeneity at the time of intervention for postpartum women due to different types of intervention, in this review, we identified that midwives, nurses, and health professionals could be involved in the intervention strategies with women to reduce postpartum fatigue in different times such as after delivery, during hospitalization stay and at home. We provide evidence for the intervention strategies' effectiveness, including an Aerobic gymnastic exercise DVD and professionally-led telephone support that could perform at home with the primary objective of decreasing postpartum fatigue.

Conflicts of Interest

The authors declare no conflicts of interest

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