



## Slow-Stroke Back Massage Intervention for Relieving Postpartum Fatigue in Primiparous Mothers after a Natural Delivery: A Randomized Clinical Trial in Zabol

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### Authors' contributions

This work was carried out in collaboration between all authors. Author ZM designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors AA and AR managed the analyses of the study. Authors FFM, FS and NH managed the literature searches. All authors read and approved the final manuscript.

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### ABSTRACT

**Introduction:** Fatigue is one of the most prevalent phenomenon reported by post-partum mothers and have various effects on their physical, emotional and cognitive aspects. Back massage relaxation techniques are one of the most important non-pharmacological interventions to prevent and control postpartum-related fatigue. This study aims to evaluate the relieving effect of slow stroke back massage on post-partum fatigue in primiparous mothers after a natural delivery.

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**Materials and Methods:** This randomized clinical interaction was consist of a convenience sample of 100 primiparous mothers who had a normal, spontaneous vaginal delivery, selected by census method and randomly divided into two groups, control (50) and intervention (50). The data collecting tool was included Individual demography and fatigue severity questionnaire. After completing questionnaires by the units, slow stroke back massage was performed for 6 sessions. And after the end of the sixth session, fatigue severity of intervention group patients and control group were measured again Data were analyzed using Independent t-Test, Chi-squared test, Fisher exact test, two-way ANOVA with repeated measures and Bonferroni test.

**Results:** The arithmetic mean and standard deviation of fatigue severity were  $48.25 \pm 7.46$  in control group, (before the intervention) and  $51.15 \pm 9.61$  in intervention group, that shows there is no statistically significant difference between the two groups ( $P < 0/001$ ). After performing the massage process, the fatigue severity mean was  $47.25 \pm 8.32$  in the control group and  $40.32 \pm 13.98$  in the interaction group and the difference was statistically significant ( $P < 0/ 000$ ).

**Conclusion:** According to results slow stroke back massage is an effective nursing and midwifery intervention to relieve postpartum fatigue in primiparous mothers after a natural delivery. The results of this study can be used in decision-making and planning for this group as well.

*Keywords: Stroke massage; fatigue; postpartum; primiparous mothers; natural delivery.*

## 1. BACKGROUND

Fatigue is one of the most prevalent phenomenon reported by post-partum mothers. In general, the literature describes fatigue as a state in which an individual lacks energy and feels weary. Fatigue is defined as a subjective multidimensional phenomenon with physical, behavioral, and psychological components [1]. Kellum [2] described four categories of fatigue: normal, pathophysiologic, situational, and psychological. Depending upon the situation, each category of fatigue may be a factor in postpartum fatigue. For example, prolonged or unusual physical exertion creates normal fatigue; anemia creates pathophysiologic fatigue; relationship stress or family crisis creates situational fatigue; and anxiety creates psychological fatigue [3]. Child birth is an stressful and significant transitive event of life especially for primiparous mothers [4]. It is accepted that mothers experience fatigue for various reasons during pregnancy and post-delivery. For mothers postpartum days are the greatest period of vulnerability [5], in this period mothers also face with various psychological changes. It can be anxious to adjust with these changes [6]. On the other hand conforming to the new life and accepting maternal responsibilities can be stressful an anxious [7]. The postpartum period is a critical time, during which mothers may feel very fatigued, exhausted, and anxious. Tulman and Fawcett [8] report that 72% of vaginally delivered women reported loss of energy in the postpartum period. Fatigue is a multidimensional concept, understanding different aspects of fatigue will

help nurses and midwives for better planning and implementation of strategies to relieve fatigue in patients [9]. There are many methods, that nurses or midwives can help their patients improve their health. Massage therapy is one of the most popular alternative and complementary therapy that is used in nursing and midwifery field, easy to implement, safe, non-invasive and relatively cheap [10]. In the case of massage the slow stroke back massage is reported to be a simple technique, inexpensive, rapid, non-invasive and non-drug nursing and midwifery interventions [11]. Massage influences central nervous system and releases B central analgesic substances such as endorphin and enkephalin, which prevent P substance (neurotransmitter) release, reduce sympathetic system stimulations and increase parasympathetic system stimulations; as a result heartbeat and respiration rate diminishes. Massage can reduce levels of hydrocortisone, adrenaline and nor adrenaline. Moreover, regular stimulation and touching elevate blood circulation in lymphatic drainage which causes a change in heartbeat and blood pressure [12]. Some studies showed that massage has beneficial effects on visceral activity that is caused by a change in physiological indicators and also massage can balances these indicators [13]. Using complementary medicine in taking care of mothers can reduce medical interventions and their side effects on the infants [14]. Moreover following massage, smooth and skeletal muscles are relaxed and following that capillary volume is increased and blood pressure is lowered [15]. Reducing activity of sympathetic nervous system after child birth creates

relaxation which prevents postpartum depression and grief and enhances the emotional bond between mother and infant [16].

Slow stroke back massage is, in fact, the gentle movement of the skin so that the hands slide over the skin and don't move the Deep muscles [17]. Stroke massage is applicable in the whole body. Massage usually starts from posterior parts of the body [18]. Slow stroke back massage is slow, rhythmic and gentle movements of hands on the patient's back with a speed of 60 movements in a minute and it takes about 20 minutes. Movements used in this type of massage is a type of surface stroke that cause quite sensational effects and has very beneficial effects on patients relaxation [19].

Considering the benefits of massage therapy and fatigue in postpartum period of primiparous mothers who had their first natural delivery and also the lack of studies on slow stroke back massage in these cases. This study aims to evaluate the relieving effect of slow stroke back massage on post-partum fatigue in primiparous mothers after a natural delivery.

## 2. MATERIALS AND METHODS

This randomized clinical interaction consisted of a convenience sample of 100 primiparous mothers who had a normal, spontaneous vaginal delivery (NSVD) and the criteria for entry into the study, referred to Amir Al Momenin hospital (Zabol, Iran) in 2016 (August). The inclusion criteria were as follows: being primiparous with a healthy baby deliver, had a normal spontaneous vaginal delivery (NSVD), age of 18 - 45 years, willingness to participate in research, no history of reflexology in the last 6 months, ability to read and write, acceptable ability of listening and speaking to answer the questions, and breastfeeding while they are in the hospital, having a degree of fatigue, a minimum score of fatigue between (10 to 37) based on fatigue questionnaires. The exclusion criteria included a history of chronic diseases, addiction, known mental health problems, facing a disaster in the last 6 months in their lives or their relatives' lives, infertility and the presence of any ulcer, infection or illness that would avert massage. The method of sampling was convenience. The mothers were randomly allocated to two groups: intervention (n = 50) and control (n = 50), then the fatigue severity was determine using the demographic questionnaire and fatigue questionnaire. The reflexology procedures and duration of the

program explained to each participants of intervention group and massage was performed by a trained researcher in sitting position, during 24 hours, one sessions every 4 hours (6 sessions totally). The duration of each massage session was twenty minutes. To prevent the effects of postpartum fatigue and insomnia on the outcome of the study, the intervention was performed in the first 24 hours after the childbirth [20].

After that the mother's room was switched with a quiet and comfortable room that had a proper temperature and soft light without any environmental distractions. After that mother's vital signs were measured and recorded by the researcher including blood pressure from left arm, heart rate using a radial pulse touch for one minute, respiration rate using observation of expansion and contraction of the chest for one minute, and body temperature using oral thermometer for 3 minutes. In intervention group the researcher performed the massage using the slow stroke back massage method for 20 minutes in a sitting position; and in control group the researcher performed a thorough measuring and recording of mother's vital signs as the same as interaction group but the slow stroke back massage wasn't performed for this group. Slow stroke back massage performed by the researcher using odorless Vaseline oil, so that to preserve the smell of the mother which is an important stimulant for the infant [21] and a necessitation to keep the emotional bond between mother and infant [22]. In order to analyze data, for all quantitative variables in both groups the normality test was taken to examine normal distribution.

The data collection sources were: demographic questionnaire and delivery data, the Rhoten Fatigue Scale was utilized to assess the level of fatigue. In this study after explaining some of the research points, the demographic data collected including age, education level, Location, occupation, blood group. The Rhoten Fatigue Scale was used by Rhoten to assess fatigue in postpartum pations. It is a single-item subjective rating scale used to quantify the patient's fatigue on a 0 to 10 Likert-type scale, ranging from not tired (0) to total exhaustion (10) [23]. In this study, after completion of this scale based on the scores achieved in each question, the number of questions were combined and classified in one of these categories mild fatigue (10 to 37), average fatigue (38 to 68) and severe fatigue (69 to 100).

This tool is one of the best known and functional fatigue scale that is useful to measure the intensity of fatigue. This scale used in most medical research and now used in Australia, Britain, Canada, France, Germany, Spain, New Zealand, Switzerland, Taiwan and America. The reliability of this tool has been confirmed by the alpha coefficient of 94%, 88%, 91% and 83% in many studies by Rasooli [24], Zakeri Moghaddam [25], and Tarbiat Modarres University faculty members. The Content validity is confirmed in studies of Zakeri Moghaddam, Schneider, Bonner, Ghafari [25,26,27,28].

## 2.1 Slow Stroke Back Massage

The massage was given by the researcher as following: first the patient sits on edge of bed leaning her head on a pillow, in second step the shoulders of the patient are held by both hands of the researcher and at the same time the thumbs are put in the base of the skull in both sides and small rotational movements are done up the neck. Third is to stroke surface the base of the skull to the sacrum using palm of one hand and repeat the procedure on the other side of the spine using the other hand's palm, while at this the first hand moves to the base of the skull. In the fourth step the hands are put at two sides of the neck under ears and strokes are exerted downward on clavicle bones exactly on the scapula by using thumbs. This is repeated several times. In the fifth step thumbs are put at either side of the spine near shoulders and moved down to the waist; sixth, palms are placed in either side of the neck and regular and sweeping strokes are exerted down to the neck, all over the shoulder and downward to the spine. All movements of this pattern were repeated in the given order in 20 minutes [29]. The fatigue questionnaires were filled up after the sixth session in both interaction and control groups. After completing the scale and according to patient fatigue scores, fatigue classified in mild, moderate and severe degrees. Data were analyzed using Independent t-Test, Chi-squared test, Fisher exact test, two-way ANOVA with repeated measures and Bonferroni test.

## 3. RESULTS

The collected data were analyzed by SPSS v.20. The final analysis was performed on characteristics of 100 participants that were divided into two groups of control and intervention. Their age varied from 29 to 40 years, 59% (n= 59) had full-time jobs, 58% (n=

58) had diploma or higher degree, Table 1 lists the characteristics of the participants. To synchronize the two groups before the intervention, Kolmogorov-Smirnov test was conducted. And data distribution was normal (sig=0/3). To describe the frequency of data, descriptive statistics was used and independent t-test, Chi-squared test, Fisher exact test, two-way ANOVA with repeated measures and Bonferroni test were used to compare data. The significance level for all tests was 0/05. Two-way analysis of variance with repeated measures showed that there is a significant difference between the fatigue mean of intervention and control groups at the end of the sixth session of massage therapy (P<0/001) (Table 2).

## 4. DISCUSSION

The first designed study was about back massages that shows these interventions are an effective part of nursing and midwifery intervention for relieving lumbar pain in post-partum women. This intervention study is showed that the majority of the units in the two groups had an average fatigue severity and the intensity of fatigue experienced by the intervention group was significantly lower than the control group. Similarly, Dion et al. [30] proved that BM therapy and neck and shoulder massage therapy are completely effective on LBP of patients who had undergone pleural effusion surgery, and their results showed a significant reduction in LBP in these patients. This study's findings are consistent with those of the Tulman and Fawcett [31] study in which 72% of women who vaginally delivered reported regaining their physical energy within the 6-week period. Unlike the results of present study, the results of a study on the effects of massage on fatigue in cancer patients did not show a significant decrease in fatigue severity immediately after the massage [32]. According to the results of the comparison of patients fatigue severity and patients fatigue reduction compared to pre-intervention we can say that reflexology is effective in reducing their fatigue. The reduction of fatigue in these mothers can be due to stimulation of parasympathetic nervous system by massage which leads to reduction of physiological indicators or even reduction of heartbeat, respiration rate and blood pressure. Holland [33] also stated that after massage therapy, mean blood pressure, heart rate and breathing counting were significantly decreased. The study found that massage therapy

**Table 1. Demographic characteristics of the mothers in both intervention and control groups**

Variable	Group	Intervention	Control
		The number (frequency %)	The number (frequency %)
Age	Under 30	45 (90%)	42 (84%)
	Above 30	5 (10%)	8 (16%)
Blood group	A	13 (26%)	14 (28%)
	B	11 (22%)	15 (30%)
	AB	17 (34%)	12 (24%)
	O	9 (18%)	9 (18%)
Education Level	non primary	14 (28%)	13 (26%)
	secondary	13 (26%)	15 (30%)
	tertiary	12 (24%)	10 (20%)
	Village	11 (22%)	12 (24%)
Location	City	20 (40%)	22 (44%)
	Homemaker	30 (60%)	28 (56%)
Occupation	Homemaker	17 (34%)	24 (48%)
	Full-time occupation	33 (66%)	26 (52%)

**Table 2. The mean and standard deviation of fatigue distribution in both intervention and control groups before and after intervention**

Fatigue severity	Intervention			Control			P-value
	Average	Standard deviation	p-value	Average	Standard deviation	p-value	
Before	51.15±9/61	9.61	0.000	48.25±7.46	7.46	0.599	0.165
After	40.32±13.98	13.98		47.25±8.32	8.32		0.000

\*Two-way analysis of variance with repeated measures

reduces fatigue and emotional comfort of patients. So we conclude the probable reason of this reduction in fatigue severity may be in relation with activating parasympathetic nervous system that can cause a general relaxation in body. Some other author like Butttagat et al. and also Braun [34], Schneider [35], weisbord [36] Ey [37], Kim [38], Liu [39] and murtagh [40] has been reported the reduction of fatigue frequency in hemodialysis patients. There could be some differences in behavioral factors, factors associated with treatment and personal characteristics of patients that cause the differences of fatigue severity in different studies [41].

## 5. CONCLUSION

This study results showed that massage improves the postpartum fatigue in primiparous mothers after a natural delivery and this phenomenon improves their quality of life. Many women and their families have little information about the effects of postpartum period and

particularly postpartum fatigue. Obviously by training about fatigue effects on these women and performing simple and achievable medical interventions such as slow stroke back massage can provide an effective, without side effects and cost-effectiveness way to prevent and relieve fatigue. The improvement of these complications enhance the quality of life for these women. 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 in these complications control.

## CONSENT

It is not applicable.

## ETHICAL CONSIDERATION

The proposal was approved by the ethics committee of Zabol University of Medical Sciences and the study was registered with the Iranian registry of clinical trials.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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