Effects of Counselling and Sole Reflexology on Fatigue in Pregnant Women: A Randomized Clinical Trial

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ABSTRACT

Introduction: Increase of fatigue may lead to problems during pregnancy, delivery and post delivery. Sole reflexology is the application of pressure to areas on the feet. Reflexology is generally relaxing and may be an effective way to alleviate fatigue and stress.

Aim: To investigate the effect of counselling and sole reflexology on fatigue in pregnant women, referred to the medical centers of Hamadan city, Iran.

Materials and Methods: This study was a randomized clinical trial with three groups - Group A (counselling and reflexology), Group B (reflexology) and Group C (control) with pre and post intervention. A total of forty two pregnant women were selected for each group. Measurement tool was a 30 question standard checklist for fatigue assessment. For all three groups, an explanatory session was held to get their written consents and conduct a pretest. The intervention included five education sessions, twice a week about reflexology in the form of counselling and sole reflexology. The groups were assessed immediately after intervention.

Data were analysed using IBM SPSS Statistics 20.0. To analyse the data, descriptive statistics, t test and ANOVA with repeated measures were used.

Results: In group A and group B, the mean score of fatigue severity after the intervention demonstrated a significant decrease ($p<0.05$); furthermore, after intervention, a significant difference was observed between the control and experimental groups in terms of fatigue severity ($p<0.01$).

Conclusion: Based on the results of this study, counselling and sole reflexology significantly decreased fatigue in pregnant women. It is hoped that the results of this study can be used by all treatment groups and midwives for controlling and providing midwifery cares for pregnant women.

INTRODUCTION

Pregnancy and delivery are very important events in a women´s life cycle. Pregnancy is considered as a stressful experience which is accompanied by extensive physical and mental change [1-4]. Fatigue is a usual symptom during pregnancy. Fatigue during pregnancy is very common, especially during the early and late stages of pregnancy, the mechanism of which is not fully known [5-7]. The cause of fatigue during pregnancy is progesterone, which is produced rapidly in pregnancy. The body changes the way it processes food and nutrients, causing more stress and fatigue [8-12]. Fatigue occurs as a result of the energy imbalance in body and incoordination of the energy supply and demand. Fatigue and the lack of energy are frequently reported during pregnancy and postpartum periods [13,14]. Fatigue is a major problem among the pregnant women and can increase chances of cesarean delivery [15-17]. Sole Reflexology is a complementary, non invasive and alternative treatment. In recent years, some researches have been conducted on the non pharmacological methods of intervention [18,19].

The reflexology theory is based on the principle that energy flows through vertical zones across the body from foot toward head [20].

Reflexology during pregnancy is a wonderful complementary choice for prenatal care. It is a healthy way to reduce stress and promote overall wellness. Massage relieves discomforts, such as backaches, stiff neck, leg cramps, headaches and edema. In addition, massage in pregnant women reduces stress on weight bearing joints, encourages blood and lymph circulation, helps to relax nervous tension which aids in better sleep and can help relieve depression or anxiety caused by hormonal changes [21-24].

Counselling is rendered by professionals who counsel people especially on personal problems and difficulties [25-31]. This study aimed to investigate the effect of sole reflexology and counselling on fatigue in nulliparous women of Hamadan city, Iran.

MATERIALS AND METHODS

This randomized clinical trial was conducted among 126 pregnant women, referred to health care centers. Eight clinics were selected randomly from four geographic regions of Hamadan city, Iran. The recruitment took place between January 2016 and March 2016. They were allocated randomly into three, 42 member groups. Group A (Counselling and reflexology), Group B (Reflexology) and Group C (Control). Sample size was estimated based on a previous study by

$$n = \frac{(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta})^2 (\sigma_1^2 + \sigma_2^2)}{d^2}$$

according to the following formula [2].

The level of significance was set at 5% ($\alpha=0.05$), while the power of the study ($1-\beta$) was set at 80%. Participants were randomized by using allocation concealment which prepared a computer generated list (www.randomization.com). An investigator who had not been involved in testing or the delivery of the intervention prepared the randomization assignments.

The studied samples were selected with the following inclusion criteria: Primigravida (18-35 years), single foetus and gestational age 19-29 weeks of pregnancy, abscence of psychological disorders morbidity, abscence of obstetric problems (such as anemia, diabetes, thyroid, pre-eclampsia, bleeding, premature rupture of membranes, etc.,), and abscence of critical situations in the family. Exclusion criteria included any problems in pregnancy during the study and unwillingness to continue cooperation.

Data collection instruments: the first part included demographic information; the second part included a fatigue assessment standard checklist which contained 30 questions ranked based on a 5-point Likert scale (0 to 4, total score from 0 to 120). In this questionnaire, the score of 0-40, 41-80 and 81-120 was considered mild, moderate and severe fatigue, respectively [6].

The intervention included five 30-45 minutes education sessions about sole reflexology and counselling. The training sessions were held twice a week for five weeks. Each session included a combination of lectures, group discussion, questions and answers and power point displays. Educational pamphlets were also distributed to the participants during the last session. Three groups were assessed immediately after intervention (end of five weeks).

The control group did not receive any training and filled the questionnaires at the beginning and at the end of five weeks.

Data were analysed using IBM SPSS Statistics 20.0, descriptive statistics, independent-sample t-test, and ANOVA with repeated measures was used. A $p < 0.05$ was considered to be significant.

For all three groups, an explanatory session was held to get their written consents and conduct a pretest. The intervention to the groups was performed as follows:

In Group A (counselling and reflexology), in addition to the routine pregnancy cares, the intervention was conducted in five weeks, so that the first 15 minutes of each session were allocated to counselling, and then the sole reflexology technique was applied individually. The content of the sessions included the following: 1) decreasing the house work; 2) the best sleeping position during pregnancy and enough rest during the day; 3) proper nutrition during pregnancy, using a healthy diet including vegetables, fruits, cereals, whole meal bread, low fat dairy, lean meats without fat; 4) body water maintenance, expressing the benefits of drinking enough water; 5) light exercises such as walking, swimming and wearing comfortable shoes and clothes, avoiding stress and mental worries. Three expert investigators performed sole reflexology. Sole reflexology steps were as follows: the subject was asked to lie relaxed on the examination table in a quiet and light room, and close her eyes; then, after a gentle sole massage, the heel was kept in with the left hand while bending and unbending it from ankle by applying pressure to foot palm. Next, the thumb was used to apply direct pressure to Solar Plexus point. This was done for 30 minutes on both feet. The subject was asked to drink liquids 24-48 hour after each session.

In Group-B (reflexology), in addition to the routine prenatal care, the subjects received individually the reflexology technique for five weeks.

In Group-C (control), the subjects received only routine prenatal care. After five weeks, the fatigue determination scale was filled in again by all three groups.

The study was approved by the Ethical Committee of Hamadan University of Medical Sciences (approval number: IR. UMSHA. REC.1394.214). The trial was registered with the Iranian registry of clinical trials (IRCT201508156888N11).

RESULTS

[Table/Fig-1] demonstrates demographic and medical characteristics of participants. The three groups were similar at baseline. Kolmogorov-Smirnov test demonstrated that no significant differences were found between the groups in terms of age, parity, gestational age, income, pre pregnancy weight height and BMI (p> 0.05).

Mean fatigue during pregnancy before intervention in participants was 1.22±0.60 in Group-A (counselling and reflexology), 1.25±0.66 in Group-B (reflexology) and 1.29±0.51 in Group-C (control). No significant differences between the mean scores of fatigue during pregnancy were observed among the three groups before the intervention (p>0.05) [Table/Fig-2].

Variable	Group	Mean± SD	F	p-value
Age (years)	Counseling and Reflexology	26.04±6.70	0.69	0.50
	Reflexology	27.28±3.45		
	Control	25.85±7.28		
Parity	Counseling and Reflexology	2.07±0.34	0.45	0.63
	Reflexology	2.02±0.15		
	Control	2.07±0.26		
Gestational age (weeks)	Counseling and Reflexology	23.92±7.11	0.44	0.64
	Reflexology	24.33±6.30		
	Control	25.16±4.73		
Income (Toman)	Counseling and Reflexology	1.45±0.59	0.0	1.00
	Reflexology	1.45±0.59		
	Control	1.45±0.50		
Pre-Pregnancy Weight (kg)	Counseling and Reflexology	63.11±9.56	0.03	0.97
	Reflexology	62.54±12.56		
	Control	62.90±9.92		
Height (cm)	Counseling and Reflexology	161.90±7.43	0.19	0.82
	Reflexology	160.95±7.48		
	Control	190.92±9.39		
BMI (kg /m²)	Counseling and Reflexology	2.14±0.37	0.53	0.59
	Reflexology	1.87±0.83		
	Control	2±0.0		

[Table/Fig-1]: Baseline characteristics and clinical data of the study population (42 in each group).

Variable	Group	Severity of fatigue Mild	Moder-ate	Severe	Mean± SD	F	p-value[a]
Fatigue	A: Counseling and Reflexology	18(42.9)	20(47.6)	4(9.5)	1.22±0.60	1.12	0.88
	B: Reflexology	20(47.6)	17(40.5)	5(11.9)	1.25±0.66		
	C: Control	18(42.9)	21(50.0)	3(7.1)	1.29±0.51		

[Table/Fig-2]: Mean scores of fatigue during pregnancy before intervention in participants.
The values are presented as mean±SD;
[a] ANOVA test between groups; Statistical significance at p<0.05.

Variable	Group	Severity of fatigue Mild	Moder-ate	Severe	Mean± SD	F	p-value[a]
Fatigue	A: Counseling and Reflexology	34(81.0)	8(19.0)	0	0.62±0.41	14.39	<0.01
	B: Reflexology	28(66.7)	14(33.3)	0	0.82±0.40		
	C: Control	16(38.1)	23(54.8)	3(7.1)	1.15±0.54		

[Table/Fig-3]: Mean scores of fatigue during pregnancy after intervention in participants.
The values are presented as mean±SD;
[a] ANOVA test between groups; Statistical significance at p<0.05.

The results showed significant difference in the mean scores of the fatigue during pregnancy of women in the groups (A, B and C) after intervention (p<0.01) [Table/Fig-3].

Findings showed that in all subjects of the three groups (counseling and reflexology: 1.22±0.60, reflexology: 1.25±0.66 and control: 1.29±0.51) the observed pre-intervention fatigue severity was similar (p>0.05). The results showed significant difference between the mean scores of the fatigue during pregnancy of women in the groups before and after intervention (p<0.01) whereas no significant difference was observed in control group (p=0.14) [Table/Fig-4].

Findings of the present research showed that the counseling programs and performing reflexology simultaneously as well as performing this technique individually affected reduction in the fatigue severity and reduced the mean fatigue severity in pregnant women.

Variable	Group	Intervention	Mean± SD	t-test	p-value
Fatigue	A: Counseling and Reflexology	Pre-Test	1.22±0.60	6.46	<0.01
		Post-test	0.62±0.41		
	B: Reflexology	Pre-Test	1.25±0.66	3.84	<0.01
		Post-test	0.82±0.40		
	C: Control	Pre-Test	1.29±0.51	1.49	0.14
		Post-test	1.15±0.54		

[Table/Fig-4]: Mean scores of fatigue during pregnancy before and after intervention in participants.
The values are presented as mean ± SD;
t-test within groups, and p-values relate to the differences between groups at the end of the intervention; Statistical significance at p<0.05.

DISCUSSION

The mean scores of fatigue decreased significantly in the case groups after intervention. Wang MY et al reported a significant difference between general fatigue (p=0.015) and foot fatigue (p=0.007) before and after intervention [32]. Jang SH and Kim KH showed the effects of reflexology on stress, fatigue and blood circulation in premenopausal middle aged women. Their results showed that sole reflexology was effective in reducing the perceived stress and fatigue and helped blood circulation in middle aged premenopausal women [30].

Results of Pourghaznein T and Ghafari FA, showed that severity of fatigue in the third trimester of pregnancy in the two groups of employed and housewife women, had a significant difference and the severity of fatigue was higher in employed women [31]. In an exploratory study, Reeves N et al., examined fatigue in women in early pregnancy. Their results showed that a large part of the sample (90%) experienced fatigue and it had a significant effect on their ability to maintain their individual and social activities. Moreover, their results showed that the effect of education on reduction of fatigue in both experimental and control groups was the same [33]. In an investigation on the impact during-pregnancy trainings on fatigue in women, Hosseini Nasab SD et al., have reported that these trainings could reduce fatigue such that the trained women experienced less fatigue compared to the control group [28].

Results of Del Aram M and Soltanpour F indicated that counseling the women in the third trimester of pregnancy reduced their anxiety and fatigue. Counselling is recommended for reducing fatigue of the nulliparous women in late pregnancy [34]. Chou FH et al., examined the effects of the psychosocial factors related to nausea and vomiting on fatigue in early pregnancy. Results indicated that the symptoms of depression had the highest correlation with fatigue. Chi-square statistics showed that fatigue was significantly correlated with counselling [35]. Ridsdale L et al., reported that counseling the patients reduces their fatigue and psychological distress [36].

LIMITATION

The limitation of this study is its small sample size. We could not check the long term effects of the sole reflexology.

CONCLUSION

Sole reflexology and counseling can be used as a useful intervention to reduce fatigue. It is hoped that the results of this study can be used by all treatment groups and midwives for controlling and providing midwifery care for pregnant women.

Conflict of interest: The authors declare that they have no conflicts interest in this article.

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