



FOOT REFLEXOLOGY ON FATIGUE, QUALITY OF SLEEP & QUALITY OF LIFE AMONG PRIMI POST-CAESAREAN MOTHERS - A PILOT STUDY

Nursing

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ABSTRACT

Aim: The aim of the study was to evaluate the effectiveness of foot reflexology on the levels of fatigue, quality of sleep, and quality of life among primi post-caesarean mothers. **Design:** Experimental design (pre-test and post-test only) was used in the study. **Methods:** The samples were selected by using a simple random sampling technique by adopting the lottery method (without replacement) at the Sapra Multispecialty Hospital, Haryana. The data was collected by using a self-structured questionnaire on the Fatigue Severity Scale (FSS), the Groningen Sleep Quality Scale (GSQS), and the World Health Organization Quality of Life Scale (WHO-QOL-100). The foot reflexology was performed among primi post-caesarean mothers in the experimental group for 30 minutes (15 minutes on each foot) twice a day for 5 consecutive days in the morning at 10 am and in the evening at 3.30 pm, whereas the control group received routine postnatal care. **Results:** The obtained paired 't' value of fatigue, quality of sleep, quality of life (11.56), (5.75), (5.01) in the experimental group, and (4.14), (2.44), (2.44) in the control group which indicates there were significant changes in fatigue, quality of sleep, and quality of life in the experimental group, and there was no association between demographic variables like age, sex, qualification, experience, and source of knowledge ($p < 0.05$), along with the obtained post-test correlation, which shows a negative correlation between fatigue and sleep and a positive correlation between the quality of sleep and quality of life in the experimental group. **Conclusion:** The results showed that foot reflexology reduced the level of fatigue and improved the quality of sleep and quality of life among primi post-caesarean mothers in the experimental group, which will help the nurses implement it in the hospitals.

KEYWORDS

Foot reflexology, Fatigue, Life, Primi, Post-caesarean, Quality, Sleep

INTRODUCTION

Postpartum fatigue (PPF) has been defined rather variably and generally includes a decreased capacity for physical and mental activity after childbirth, a persistent lack of energy, impairments in concentration, and attention not easily relieved by rest or sleep⁽¹⁾. The subjective fatigue can be assessed by using the Piper's Fatigue Self-Report Scale (1998), Lee's Visual Analog Scale for Fatigue (1991), and Fatigue Severity Scale (FSS) (1989)⁽²⁾.

Sleep is a basic and biological need. Sleep enhances daytime functioning. Sleep is a significant factor in a person's quality of life. The average sleep for healthy adults is 7 to 9 hours at night⁽³⁾. The subjective sleep quality can be assessed by Visual Analogue Scales, Pittsburgh Sleep Quality Index (1989), Richard Campbell Sleep Questionnaire (2000), and Groningen Sleep Quality Scale (GSQS) (1988)⁽⁴⁾.

The World Health Organization (WHO) describes QOL as "an individual's perception of their position in life within the context of the culture and value systems during which they live and concerning their goals, standards, expectations, and concerns"⁽⁵⁾. The quality of life can be assessed by using the Quality of Life Scale (John Flanagan, 1970), the World Health Organization Quality of Life instrument (WHO, 2012), Brunnsviksen Brief Quality of life scale (2016)⁽⁶⁾.

Reflexology is the application of pressure techniques to the hands and feet to affect a specific part of the body. These techniques activate pressure receptors, resulting in a relaxing reaction in the body. Reflexology encourages good health by encouraging people to relax, alleviate discomfort, prevent illness and improve their overall quality of life.⁽⁷⁾

Natsuko Kojima Kyoko Asazawa (2020) reported the survey that 83.4% of postnatal mothers found that fatigue was significantly higher for mothers with longer postpartum days compared to shorter postpartum days⁽⁸⁾.

Borge Sivertsen, Mari Hysing, Signe K. Dorheim, Malin Eberhard-Gran (2015) concluded that the prevalence of insomnia at 60% in the first two time periods and remained 41% at 2nd year postpartum. The average sleep duration was 7 hours 16 minutes, 6 hours 31 minutes, and 6 hours 52 minutes for the three-time periods⁽⁹⁾.

Based on the results of the counseling and sole reflexology, significantly decreased fatigue in 42 pregnant women in Hamadan's medical centers. It is hoped that the results of the study can be used by

all treatment groups and midwives for controlling and providing midwifery care for pregnant women (Fatemeh Shobeiri et al., 2017)⁽¹⁰⁾.

Statement of the problem:

An experimental study to evaluate the effectiveness of foot reflexology on level of fatigue, quality of sleep & quality of life among primi post-caesarean mothers in Haryana.

METHODOLOGY

Design: Experimental design that is pre-test post-test only design was adopted to assess the effect of foot reflexology on level of fatigue, quality of sleep, and quality of life in primi post-caesarean mothers admitted in Sapra Multispecialty Hospital, Haryana.

Variables:

The foot reflexology was the independent variable, while the level of fatigue, quality of sleep & quality of life was the dependent variables.

Samples:

The samples for this analysis were selected by using a simple random sampling technique by adopting the lottery method (without replacement). The inclusion criteria were that women who were single-tone mothers, naturally conceived, undergoing elective cesarean section, be admitted till the 6th post-caesarean day, and willing to participate. Post-anesthesia complications, locomotor disabilities, or multiple pregnancies, sedative use history, use of any other complementary therapies, whose babies died during the cesarean section, whose babies were nursed in the Neonatal Intensive Care Unit (NICU) and who were not available for data collection are the exclusive criteria.

Description of the Tools:

The following are the instruments (Hindi language) were used in this study.

Section A: consist of clinical variables such as BMI category, hemoglobin levels, fertility treatments, types of cesarean section, history of sedatives, the baby is with mother or Neonatal Intensive Care Unit (NICU), newborn's gender, any immediate post-caesarean complications,

Section B: consist of socio-demographic variables such as age, education, religion, residence, occupation, diet, monthly income, type of family, menstrual history, any history of bad habits, family support for looking after the baby, frequency of mother waking up during the night, sleeping hours of the baby in a day, exposed to any alternative

and complementary medicine.

Section C: The following three self-structured scales were used in the study after getting a copy clearance certificate from the respective publishing company.

(i) Fatigue Severity Scale (FSS) developed by Krupp et al. (1989) consists of 9 items with a 07-point Likert scale.

ii) Meijman TF et al. (1988) developed the Groningen Sleep Quality Scale (GSQS). The scale consists of 15 items, and the respondent is asked to circle either a true or false statement. The first question doesn't count towards the total score. 1 point for if the answer is "true" for questions 2,3,4,5,6,7,9,11,13,14,15, and 1 point for if the answer is "false" for questions 8, 10, or 12.

iii) WHO-QOL-100 (World Health Organization Quality of Life Scale). It is a self-reported measure comprised of a 100-item survey with a 05-point Likert scale. The WHO-QOL-100 measures 6 domains such as physical health, psychological health, and independence, as well as social relationships, the environment, and spirituality. The total score is presented as a range between 100 and 500, where higher scores represent higher levels of quality of life. For the purpose of research, the investigator used the 30 questions from each domain: General questions = 03, Physical domain = 06, Psychological domain = 06, Level of independence = 06, Environmental domain = 05, Spiritual, religious, and personal beliefs = 04 questions.

Scoring procedure of the scales:

(i) The Fatigue Severity Scale (FSS) consists of 9 items with a 07-point Likert scale. The level of fatigue score was calculated by adding up all the answers and dividing them by nine as well as converted into a percentage, and the higher score indicates severe fatigue, and the total score was divided into the three categories of likely mild (<50%), moderate (51-75%), and severe (> 76%).

ii) The Groningen Sleep Quality Scale (GSQS) consists of 15 items. The maximum score of 14 points indicates poor sleep the night before. The quality of sleep score was calculated by adding up all the answers along with converting the score into percentages, and the higher the score indicates poor sleep the night before. The total score was divided into the three categories of likely good sleep quality (<50%), average sleep quality (51-75%), and poor sleep quality (> 76%).

iii) WHO-QOL-100 (World Health Organization Quality of Life Scale). The highest total score of 150 represents a good quality of life, and the lowest total score of 30 represents poor quality of life. The total score was converted to a percentage and classified as follows: poor quality of life (<50%), the average quality of life (51-75%), and good quality of life (> 76%).

Validity and Reliability:

The tool was validated by 13 experts, including three obstetrics and gynecology doctors and six obstetrical and gynecological nursing, one reflexologist, one epidemiologist, one statistician, and one each in Hindi and English. The instrument was finalized based on their modifications and recommendations. The reliability of the scale was checked by using Cranach's alpha. The reliability of the Fatigue Severity Scale (FSS), the Groningen Sleep Quality Scale (GSQS), and World Health Organization Quality of Life Scale (WHO-QOL-100) were showed excellent reliability ($r=0.84$), ($r=0.80$), and ($r=0.81$).

Description of the intervention

The researcher underwent a one-month training course in foot reflexology and was certified to practice. The pilot study was conducted in Sapra Multispecialty Hospital, Hisar, Haryana. The formal permission was obtained from the ethical committee of Desh Bhagat University Punjab and the Medical Director of the Sapra Multispecialty Hospital, Hisar, Haryana. The data collection was done from 06/12/2021 to 08/01/2022. The total sample was chosen for the pilot study was 20 (10 in the experimental and 10 control group). The researcher distributed a self-structured questionnaire to all primi post-cesarean mothers after the written consent and reminded them that their answers would be kept confidential. The participants were asked to respond honestly and completely. On the first day of the evening, demographic profile and pre-test level of fatigue with the Fatigue Severity Scale (FSS), quality of sleep with the Groningen Sleep Quality Scale (GSQS), and quality of life by the World Health

Organization Quality of Life Scale (WHO-QOL-100) was assessed in the both experimental and control groups. Foot reflexology was given to the primi post-cesarean mothers in the experimental group for 30 minutes (15 minutes on each foot) twice a day for 5 consecutive days in the morning at 10 am and evening at 3.30 pm, whereas the control group received routine postnatal care. The post-test level of fatigue, quality of sleep, and quality of life were assessed on the 6th day of post-cesarean day in both the experimental and control groups.

RESULTS

The data was computed using the International Business Machines (IBM) Statistical Package for the Social Sciences (SPSS) for Windows, Version 21. Frequency and percentage were used for clinical and demographic variables as well as paired and unpaired "t" tests were analyzed to find the effectiveness of foot reflexology on levels of fatigue, sleep quality, and quality of life. Chi-square analysis was performed to determine the association between fatigue level, sleep quality, and quality of life with selected demographic variables along with Pearson correlation coefficient post-test (r) was done to find out the relationship between the level of fatigue, quality of sleep, and quality of life in the experimental and control groups.

Regarding the results of the demographic variables, with regard to age, the majority of the primi post-cesarean mothers, 6 (60%) in the experimental and 7 (70%) in the control group, belonged to the age group of <25 years. With regard to education, the majority of the primi post-cesarean mothers were 6 (60%) belonged to the high school in the experimental group and graduated 6 (60%) in the control group. In terms of religion, the majority of the primi post-cesarean mothers 10 (100%) in both the experimental and control groups were Hindu. Regarding residence, the majority of the primi post-cesarean mothers were from urban areas 6 (60%) in the control group, and rural areas 6 (60%) in the experimental group. Regarding occupation, the majority of the primi post-cesarean mothers, 10 (100%), were homemakers in the experimental and 9 (90%) of them were in the control group. Regarding diet, the majority of the primi post-cesarean mothers, 10 (100%), were vegetarian in both the experimental and control groups. In terms of monthly income, the majority of primi post-cesarean mothers 5 (50%) were 5001-10,000 in the experimental group, and 6 (60%) of the were in > 10001 in the control group.

Regarding the type of family, the majority of the primi post-cesarean mothers, 10 (100%), were joint families in the experimental and 8 (80%) were from the control group. In terms of menstrual history, the majority of post-cesarean mothers, 6 (60%) in the experimental group and of 7 (70%) in the control group, had reached menarche between the ages of 14 to 16 years old, and 9 (90%) of them in the experimental group and 9 (90%) in the control group had regular menstrual cycles, and regarding the length of menstrual cycle majority of them, 6 (60%) in the experimental group and 8 (80%) in the control group had between 28 to 35 days. In regard to the nature of the menstrual flow, the majority of them had a moderate level of 7 (70%) in both the experimental and control groups. In terms of the duration of the menstruation, the majority of them had 4-5 days, with 4 (40%) in the experimental and 9 (90%) in the control group. In terms of bad habits, neither the experimental nor control groups had any history of drinking, smoking, or using smokeless tobacco. Regarding family support for looking after the baby, the majority of the primi post-cesarean mothers, 10 (100%), had availability in both the experimental and control groups. In terms of BMI (Body Mass Index), the majority of the primi post-cesarean mothers 8 (80%) experimental group and 10 (100%) in the control group were > 30 (obesity). In terms of hemoglobin levels, the majority of primi post-cesarean mothers 5 (50%) in the experimental group and 8 (80%) in the control group had 8 to 10 gm/dl. In terms of fertility treatments, neither the experimental nor control groups had any treatment for fertilization.

With regards to the history of sedatives, neither the experimental nor control groups had benzodiazepines and barbiturates. In terms of newborn gender, the majority of the primi post-cesarean mothers, 6 (60%), delivered male babies in both the experimental and control groups. In terms of the number of times a mother awoke during the night, the majority of primi post-cesarean mothers 5 (50%) in the experimental group had 4 times, and 5 (50%) had 3-4 times in the control group. With regards to the sleeping hours of a baby in a day, the majority of the babies had 14-17 hours of sleep in 5 (50%) in the experimental 4 (40%) control group.

Regarding the level of fatigue out of 10 primi post-cesarean mothers in

the experimental group majority of them 8 (80%), had a severe level of fatigue in the pre-test, and in the post-test, 9 (90%) of them had mild levels of fatigue, whereas out of 10 in the control group 7 (70%) of them had a severe level of fatigue in the pre-test and post-test.

Regarding the quality of sleep, out of 10 primi post-caesarean mothers' experimental group, majority of them, 7 (70%), had poor sleep quality in the pre-test and post-test 9 (90%) of them had good sleep quality whereas out of 10 in the control group 6 (60%) had poor sleep quality in the pre-test and post-test.

Regarding the quality of life, out of 10 primi post-caesarean mothers in the experimental group majority of them 7 (70%) of them had a poor quality of life in the pre-test, and 6 (60%) of them had a good quality of life in the post-test whereas out of 10 in the control group 6 (60%) of them had a poor quality of life in the pre and post-test.

The obtained paired "t" value computed between the experimental regarding the level of fatigue (11.56), quality of sleep (5.75), and quality of life (5.01) was significant at the $p < 0.05$ level. Hence the alternative hypothesis H_1 was accepted.

The obtained unpaired "t" value computed between the experimental and control group regarding the level of fatigue (8.83), quality of sleep (6.52), and quality of life (4.21) was significant at the $p < 0.05$ level. Hence the alternative hypothesis H_2 was accepted.

With regard to the association, there was a significant association between the duration of menstruation in days and level of fatigue was 10.0 at the $p < 0.05$ level and quality of sleep were 10.0 at the $p < 0.05$ level among primi post-caesarean mothers in the control group.

The obtained post-test "r" value between the post-test level of fatigue and the quality of sleep was (-0.11) shows a very weak negative correlation in the experimental group and 0.46 very weak positive correlations in the control group and level of fatigue and the quality of life was (0.19) shows a very weak positive correlation in the experimental group and (-0.47) very weak negative correlations in the control group and the quality of sleep and quality of life was (0.38) shows the weak positive correlation in the experimental group and (-0.85) shows a weak negative correlation in the control group among primi post-caesarean mothers.

DISCUSSION

The aim of the study was to evaluate the effectiveness of foot reflexology on the levels of fatigue, quality of sleep, and quality of life among primi post-caesarean mothers. A similar study was conducted by S. Sarojini (2018) suggested that foot reflexology was successful in improving the quality of sleep among 30 primi post caesarian mothers in St. Joseph Colony, Puducherry. The findings of the study reveal that pre-test mean 13.73 with SD 3.24 and post-test mean 8.64 with SD 1.88. The 't' value was 7.39 significant at $p < 0.05^{(11)}$.

Fareideh Bastani et al. (2015) also supported the findings of the study by using foot reflexology on maternal post-caesarean fatigue with an intake of 99 post-caesarean mothers in Tehran. Three groups were divided equally; foot reflexology and leg massage were performed for 40 minutes for the intervention groups, and control groups received common post-caesarean care. After the foot reflexology, the experimental mean fatigue severity scores were significantly lower than the control group ($p < 0.001$). The reflexology intervention was more successful in minimizing fatigue than the control group (11/7±13/1), according to a comparison of mean fatigue scores between the intervention groups (23/22±3/4)⁽¹²⁾.

The results were supported by Nafiseh Khayamim, Parvin Bahadoran, Tayebbeh Mehrabi (2021) conducted research to investigate the relationship between fatigue and Stanford sleepiness with the general health of 190 mothers in the postpartum period in the health centers of Isfahan in 2014. The results showed that 5.3%, 59.5%, and 35.3% of subjects had mild, moderate, and severe fatigue, respectively. The statistical results indicated that there were significant relationships between fatigue ($P \leq 0.001$, $r = 0.52$) and Stanford sleepiness ($P = 0.04$, $r = 0.14$), and mothers' general health⁽¹³⁾.

ETHICAL CONSIDERATION

Permission was obtained from the Institutional Ethical Committee of

the Desh Bhagat University Punjab and Medical Director of the Sapra Multispecialty Hospital, Haryana. The aim and procedure of the study were explained to all the primi post-caesarean mothers, and the informed written consent of each mother was obtained before the data collection began. Their confidentiality and anonymity were maintained throughout the study, and participants participated willingly, with the right to withdraw from the study at any time without any consequences.

CONFLICT OF INTEREST

According to the authors, there are no conflicts of interest to disclose.

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Author contributions

The first author contributed to all stages of the research process, while the second author performed as a research guide and agreed with the content of the manuscript.

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