European Journal of Integrative Medicine 17 (2018) 72–78

Contents lists available at ScienceDirect

European Journal of Integrative Medicine

journal homepage: www.elsevier.com/locate/eujim

Research paper

The effect of foot reflexology massage on breast milk volume of mothers with premature infants: A randomized controlled trial

Parisa Mirzaie[a], Sakineh Mohammad-Alizadeh-Charandabi[b,*], Sakineh Goljarian[c], Mojgan Mirghafourvand[d], Mohammad Bager Hoseinie[e]

[a] Students' Research Committee, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Iran
[b] Social Determinants of Health Research Center, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Iran
[c] Faculty of Rehabilitation, Tabriz University of Medical Sciences, Tabriz, Iran
[d] Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Iran
[e] Children Health Research Centre, Tabriz University of Medical Sciences, Iran

ARTICLE INFO

Keywords:
Reflexology
Breast milk
Breastfeeding
Premature
Randomised controlled trial

ABSTRACT

Introduction: Limited evidence suggests some beneficial effects of reflexology on breast milk supply. This study aimed to determine effect of foot reflexology on breast milk volume of mothers with premature infants.
Methods: Nursing mothers who had not initiated breastfeeding and had premature infants aged 7–54 days and gestational age of 28–34 weeks, were randomly assigned into two groups. In both groups, foot massage was done once daily for seven days, 10 min for each foot including general massage of foot soles for the first 5 min. For the second 5 min, massage was for breast, pituitary and solar plexus related areas in the intervention and for unrelated areas in the control group.
Results: One out of 37 mothers in each group received the massage only on the first day. Outcomes were assessed in all mothers on days 1, 4 and 7 following intervention. In the intervention group compared with control group, there was greater increase in milk volume expressed following massage on the 7th day [median (Q1, Q3) 7 mL (4.5, 10) vs. 1 (−1, 2), $P < 0.001$], and in daily milk volume on 4th [14 (3.5, 55) vs. 3 (−3, 25), $P = 0.020$] and 7th day [38 (9, 107.5) vs. 5 (−3, 16), $P < 0.001$]. No statistically significant differences were found on the other time-points ($p > 0.05$).
Conclusions: The results show positive effect of foot reflexology on increasing breast milk of premature infants' mothers. Therefore, this preliminary study suggests that foot reflexology could be utilized by breastfeeding mothers, particularly considering its simplicity, high acceptance and no reported side effects.

1. Introduction

The world health organization recommends that premature infants should be fed with mothers' own milk [1]. Human milk is vitally beneficial for this highly vulnerable population, including reduced rates of mortality, necrotizing enter colitis, severe infections and retinopathy of prematurity, and improved mental development [1,2]. In those cases in which neonate is separated from mother in the first days of life due to prematurity and direct breastfeeding is not possible, significant reduction may occur in milk supply. Problems such as stress, fatigue, and poor nutrition in such mothers intensify the reduction of milk supply [3,4]. Therefore, it is necessary to support such mothers in improving milk production.

The most widely used therapeutics methods to increase breast milk supply are mechanical and pharmacological methods [3–5]. Along with some benefits, the methods have some disadvantages such as need for cleaning and daily sterilization of lactation aids to prevent bacterial contamination [3]. Also, some side effects of the medicines have been reported [3,4,6]. Therefore, it seems that non-mechanical and non-pharmacological management methods are preferable to these kinds of treatments [7].

One of the non-pharmacological and non-mechanical methods is reflexology, a branch of alternative and complementary medicine [8]. Reflexology is based on the belief that feet, hands and ears are minor maps of the entire body organs and applying appropriate pressure on the points which are specific for each organ creates a balance in different systems of the body and reduces tension and stress [9].

There are some studies examining effect of reflexology in various fields, such as depression [9–11], stress [11,12], anxiety [13,14], fatigue [15] and sleep quality [15,16] However, in search of the

* Corresponding author.
E-mail addresses: alizades@tbzmed.ac.ir, mhammadalizadehs@gmail.com (S. Mohammad-Alizadeh-Charandabi).

https://doi.org/10.1016/j.eujim.2017.11.010
Received 21 July 2017; Received in revised form 20 November 2017; Accepted 21 November 2017

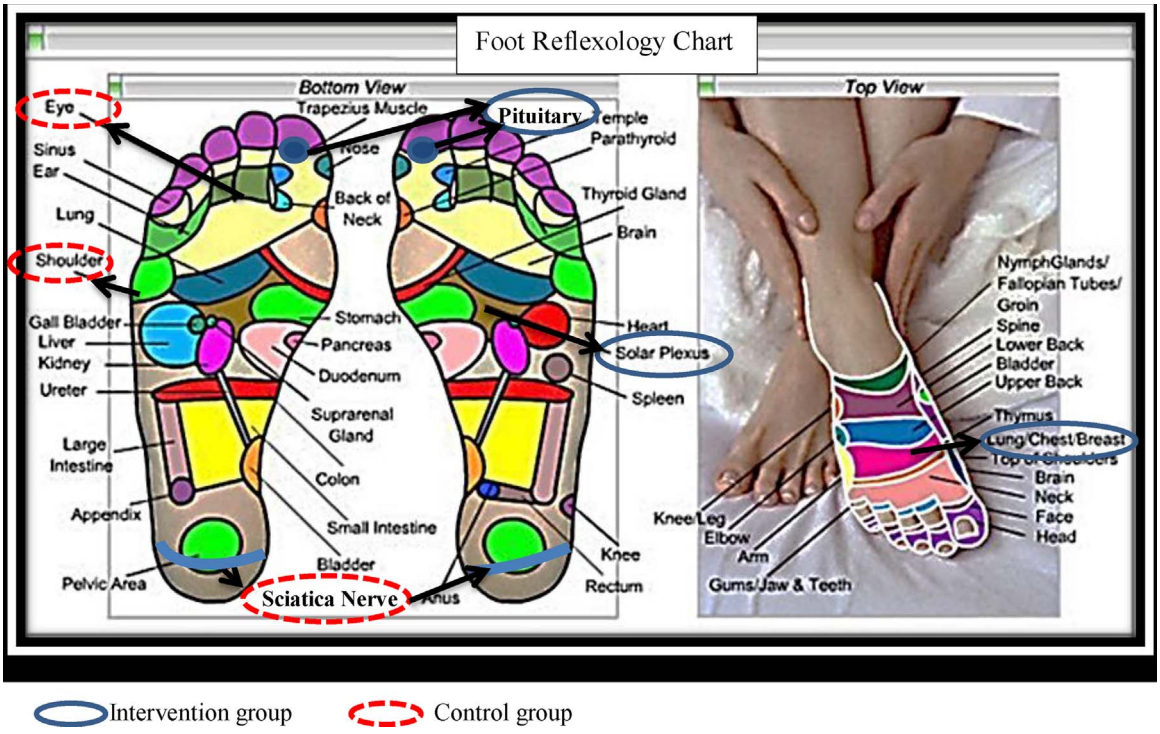

Fig. 1. Massage points in the intervention and control group.

databases, we found no study examining effect of reflexology on breast milk supply. Therefore, we aimed to assess whether foot reflexology could affect the volume of breast milk produced by mothers with premature infants.

2. Materials and methods

2.1. Study setting and sample recruitment

After receiving approval from the ethics committee of Tabriz University of Medical Sciences (No. 93159) and registration in the Iranian registry of clinical trials (IRCT201501073706N24), this randomized controlled trial was conducted on 74 women with premature infants aged 7–54 days who were born in the 28–34 weeks gestation and hospitalized in neonatal ward or neonatal intensive care unit (NICU) of two educational hospitals (AL-Zahra and Taleghani) in Tabriz. The women had not started direct breastfeeding to their babies. The hospitals, especially AL-Zahra hospital, are tertiary care hospitals. From all parts of north-west of the country (with about 10 million population), the most of premature neonates who need intensive care are referred to these hospitals.

Other inclusion criteria were: being motivated enough to breastfeed; more than 30% reduction in the amount of milk when compared with previous peak milk production (based on mother account) or inability to provide adequate breast milk to meet the nutritional needs of the infant; having a single child or twins.

Exclusion criteria were: being reluctant to attend hospital regularly during seven days to receive the intervention; the tendency to start using a remedy to increase breast milk production or change dosage of taking drugs (to increase the supply) within the seven days of intervention; having an absolute or relative contraindication for breastfeeding; having some health problems such as foot skin ulcers, mastitis, breast abscesses or unfavorable general condition; metabolic disorders of infant; illiteracy or low literacy of the mother and unwillingness to participate in the study.

2.2. Randomization and intervention

In this trial, there was no possibility of complete blinding, but participants and outcome assessors were unaware of the group assignment. Eligible women were randomized into intervention (refloxology) and control (sham) groups with 1:1 allocation ratio using a computer generated sequence. Randomisation was stratified by center, infant age (7-30 or 31-54 days) and number of infants (singleton or twin) restricted with randomly varying blocks of four to six.

The randomization sequence and allocation concealment were implemented using a central method, i.e. after obtaining written informed consent and collection of baseline data, participant specifications on the stratified factors were sent to a person not involved in the recruitment and data collection via SMS and that person would report the assignment group of the participant to the person applying intervention according to the profile. The consent form include an explanation about the study aim, objectives and method, as well as its possible benefits and side effects. However, in order to make participant blinding possible the reflexology points were not indicated. Before signing the consent form, participants were given some days to decide whether they want to participate into the study and if they want to have consultation with their relatives, especially husbands. However, if someone was certain about their decision to participate, they could sign the consent form immediately.

In both groups, foot massage was performed for seven days; once a day (about one and half hour after the previous milk expression) for 10 min per each foot (total 20 min). In both groups, the first 5 min of every 10 min massage was general massage for soles of the feet. The next 5 min in reflexology group was for massage and pressing breast related points (dorsal area of middle finger and between the thumb and ring finger), pituitary (middle thumb in the plantar area of the foot) and the solar plexus (in the plantar area located in the middle line between the front and middle parts, in the arch starting) and in the control group, the irrelevant points to breast milk supply including points relevant to shoulder (lateral area of foot closer to the little finger), eye (bottom of the second finger) and sciatica nerve (mid-heel) were massaged and pressed (Fig. 1).