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Original Research Article

The Effect of educational program for new mothers about infant abdominal massage and foot reflexology for decreasing colic at Najran City

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Abstract

Infant abdominal massage and foot reflexology is part of a growing trend in a complementary therapy and is accepted as one of the tools for relieving colic.
Purpose: **The purpose of this study was assessing new mother's knowledge, practice, and attitude towards infant massage and foot reflexology, planning and implementing the education program according to new mothers' needs, evaluating the improvement of new mother's knowledge, practice, and attitude after program implementations.**
Design: **A quasi-experimental design was used in this study**
Setting**: The study was conducted at the outpatient clinic of University Hospital in Najran at Saudi Arabia.**
Sample: **Convenience sample from sixty-two new mothers with infant age from one to four months of age suffering from colic.**
Tool: **Data was collected through three tools were used. 1-Structured interviewing sheet: It had two parts: a- Socio-demographic characteristic of the new mothers and their infant b- An interviewing questionnaire to assess new mother's knowledge 2- An observation checklist to assess new mother's practice. 3-Likert scale to assess attitude of new mothers toward infant abdominal massage and foot reflexology.**
Results**: The majority of new mother's post program was improved their knowledge, practice and attitude. A statistically significant positive correlation was found between total scores of knowledge, practice, and attitude of new mothers with their age, education level and working.**
Conclusion: **The study was concluded that the educational program for new mothers improved their knowledge, practice, and attitude towards infant abdominal massage and foot reflexology in decreasing the infant colic.**
Recommendation: **Based on the study results it is recommended to importance of continuing educational program for new mothers regard infant abdominal massage and foot reflexology as complementary therapy to decrease infant colic.**

Keywords: Infant abdominal massage- foot reflexology- new mothers- colic – education program

INTRODUCTION

Infant abdominal massage is complementary and alternative treatment for infants and has been practiced globally. It is a way of comforting skin inputs and nourishment for the healthy development of mind, body, and spirit. It is an ancient skill that was practiced centuries ago in most of the world, especially in Asia, and

had being rediscovered as an effective means of comforting an infant (Field, 2004). Since the 1990s, mothers, and family medicine doctors have been eager to learn more about infant abdominal massage and seeking information by enrolling in classes across the nation (White-Traut, 2004., Jeon, 2003).

Reflexology is a reliable, noninvasive treatment method that is performed a form of foot massage designed to harmonize bodily functions and triggering the natural healing and relaxing effect related to physical problems. The theory of proprioceptive nervous receptors states that a connection exists between the areas of the feet and the body organs and that reflexing the feet affects the organs (Cottle, J., (2015., Stephenson, et al., 2000). Reflexology enables endorphin and encephalin release by stimulating the pituitary gland through the pressure and massage performed on reflex points on hands and feet (Koc and Gozen., 2015).

Infants cannot express verbally their emotions regarding pain, it is important for mothers to assess behaviors of infants through objective data to assess the colic pain effectively as crying, changes in body movements, and facial expressions (Wang, et al., 2008., Wilhelm, 2009). Excessive crying in infant is defined as crying that starts in the first weeks of life, the infants first three months, and which continuous for more than three hours every a day for at least three days a week, lasting at least three weeks, it usually occurs in the afternoon and evening for no apparent reason and is uncontrollable. Colic starts in the second week and reaches their height in the sixth week. The unexplained crying episodes can continue 4-6 months of age; the causes of colic are still largely unknown but appear to be multifactorial. Four Possible factors include cow's milk/soy protein allergy/intolerance, problems in the gastrointestinal system, parent–child relationship difficulties and immaturity of the central nervous system (Cetinkaya and basbakkal, 2012, Cheng, et al., 2011, field, et al., 2010, Kulkarni, et al., 2010).

In pediatric, to be able to use essential oils safety, as well as know which are the most appropriate ways of applying them including frequency of application for infant. It is recommended that essential oil be diluted in vegetable oil, cream, gel, or water. Lavender oil has sedative, antispasmodic and anticolic properties. As a result of these properties, oil might able to relive the symptoms of pain, colic, distention. Almond oil is very good for massage, it is naturally rich in vitamin E and vitamin D, which keeps the skin healthy and supple (Hanson, 2013., Ozata, 2006., McNeilly, 2004., Buckle, 2003).

Significant of the study

Infantile colic can, moreover, lead to needless hospitalizations, problems in the mother–infant relationship, and mistreatment of the infant. Colic can be effectively treated by teaching new mothers more effective responses to their infant's crying. Studies in Europe found abdominal massage to be effective in reducing the symptoms of colic (Williams, 2006). Some of the studies which have investigated massage as a treatment have used essential oils (Mondkar, et al., 2005). In addition educational program is important for new mothers which improve their experience to deal with infant colic.

The aim of the study

1. Assessing new mother's knowledge, practice, and attitude towards infant massage and foot reflexology.
2. Planning and implementing the education program according to new mothers' needs
3. Evaluating the improvement of new mothers knowledge, practice and attitude after program.

Research hypothesis

1. The new mothers after participant in educational program knowledge, practice and attitude towards infant abdominal massage and foot reflexology will improved
2- The infants who received abdominal massage and foot reflexology will free or decrease from their colic.

SUBJECT AND METHODS

Design: A quasi-experimental design was utilized in this study.

Setting*:* The study was conducted at the out-patient clinic of Neonatal at Maternal and Children Hospital in Najran at Saudi Arabia

Sample: Convenience sample from sixty-two new mothers and their infants from high, medium and low socioeconomic. The infants were between one to four months of age with a gestational age from 38 to 42 weeks and normal growth and development; they weighted between 2500 and 4000 g at birth and all exhibited the signs of colic, that is crying at least three hours a day and for more than 3 days a week. The data was collected through six months period started by August 2017 and finished at January 2018.

Tools: Data pertinent to the study were collected, utilizing the following three tools.

1) Pre/post interviewing questionnaire sheet for the new mother's: It was developed by researcher based on current National and International an extensive review of literature and consists of two parts:

Part one: Socio demographic data related new mothers and their infant.
Part two: knowledge of new mothers about infant abdominal massage and foot reflexology.

Scoring system: The total scores were 20 degree those who obtained <60 were considered having unsatisfactory knowledge, While those who obtained > 60 was considered having satisfactory knowledge.

2) *Pre/post an observational checklist sheet for the new mothers practice:* to assess the new mothers practice related infant abdominal massage and foot reflexology, which included 17 items checked.

Scoring system

Observation checklist sheet was 34 degree each item in checklist was scored as: two degree for each step that done and one for each step that incomplete and zero for each step that not done. Scoring system translated in results into adequate and inadequate done, adequately done include steps that done and in adequately done include steps that not done. Scores > 60% was graded as adequate level of skills. Scores < 60 were graded as inadequate of new mother's skills.

N.B: Observation checklist filled by researchers.

Tool three: Likert attitude scale to assess pre/post attitude of mother towards infant abdominal massage and foot reflexology, designed by researchers which include 9 items, three degree for each step that relevant and two for each step that indifferent and one for irrelevant. Scoring system translated in results into positive attitude if the score > 75% and indifferent if the score > 60 and scores < 45 were negative attitude.

Study Procedure: Preparatory phase

Study was applied after an official approval for data collection was obtained from outpatient director of University Hospital at Najran. Tools were developed by the researchers after reviewing the related literature. Tools were tested for content clarity and validity by a jury of (3) experts in the field of the study (two professional staff, and one expert in statistics) and the necessary modifications were done. The total sample was divided into 10 subgroups include from 6 to 7 new mothers.

Pilot study

A pilot study was carried out on 10% (6 mother and 6 infants) of the study sample to test tools for clarity, applicability and the time required for filling in the tools. Data obtained from the pilot study was analyzed and accordingly the necessary modifications on the study tools were done; those who participated in the pilot study were excluded from the main study sample.

Implementing phase

All the new mothers were completed the pretest, attended the educational session and finished the posttest questionnaire. The education program was implemented 6 months; it was carried out in 5 sessions; 3 sessions for theory and 2 sessions for practice. The duration of each session was about 45 minutes for each subgroup.

Three theoretical sessions about the following

1- Definition and uses of infant massage, essential oil and importance, symptoms of colic and duration (5 minutes).
2-Definition, uses and time of reflexology (5 minutes)
3-Attitudes and believes of mother related to infant abdominal massage and foot reflexology (5 minutes).

Two clinical sessions

1-Technique of infant abdominal massage (15 minutes).
2- Technique of foot reflexology (15 minutes).

Procedure

At the beginning of each session, the researchers started by summary about topics, and taking into consideration using simple and clear language to suite the new mother's level of education. Different teaching methods were used including small group discussion, lectures, brainstorming. The teaching aids used were brochures, videos, colored posters, and laptop screen show, all the topics were presented in the form of power point presentation.
-Clinical sessions were started first with discussion to assess newmother's feedback about the procedure. Researchers provided teaching material as videos about the procedure to help mothers during demonstrating it; videos were presented before and after demonstration time.
- The researchers were told the new mothers to use a solution of 1 drop of lavender oil mixed in 20 mL of almond oil, to start the abdominal massage within 1–2 min of the onset of the colic attack and shown how to perform the abdominal massage, which was to last between 5 and 15 min. The solution was prepared by the

Table 1. Socio - demographic data of infant

Items	No	%
-Age		
Birth-2months	51	82.3
≥4 months	11	17.7
Mean ± SD	**2.5±1.33**	
-Gender		
male	38	61.3
female	24	38.7
Gestational age		
38-40 weeks	21	33.8
≥42 weeks	41	66.1
Mean ± SD	40.15±2.24	
Weight		
2.5-3.5kg	13	21
3.5-4.5kg	41	66.1
4.5-5.5 kg	8	12.9
Mean ± SD	**4.15±2.24**	
Sleeping pattern		
calm	0	0
intermittent	62	100
Cry pattern		
3h/day	29	46.8
4h/day	33	53.2
Mean ± SD	**3.45±6.09**	
Times of colic and distention		
3 times	24	38.7
4-5 times	38	61.3
Mean ± SD	**3.36±3.08**	

researchers using a standard dropper to add one drop of lavender oil to 20 cc almond oil bottles; it was given to mothers with needleless injectors so that they could measure out 1 cc easily. Use of the solution was limited to 1 cc per day. Reflexology was performed starting on the toes of one foot down to the heel; the same process was performed on the other foot. Reflexology was performed for 15 minutes. The abdominal massage and Reflexology was first demonstrated by the researchers on a dummy infant, after which the mothers were able to develop their massage technique through practice on the dummy. The mothers were also given a booklet prepared by the researchers containing all the information provided during the training. - An open channel communication was achieved between researchers and mothers to ensure understanding, answer any question and to verify information and practical skills given.

Evaluation phase

The education program was evaluated through post test; by using the same tool of pretest forms that were conducted immediately after implementation of program, by comparing the change in mother' knowledge, practice and attitude.

Ethical approval

Permission for voluntary participation was obtained from new mothers and the nature and purpose of the study was explained

STATISTICS ANALYSIS

Data analysis was done using SPSS 20.0 application (Statistical package for social science). Qualitative data described by number and percent, paired T-test used to compare between pre-test and post-test.

RESULTS

Table 1 showed that the infant mean age and standard division was (2.5 ± 1.33) months, where about 61.3% was male. Meanwhile 66.1% of infant gestational age was ≥42 weeks with mean and standard division

Table 2. Socio demographic data of new mothers

Items	No	%
Mothers age		
-18-25y	11	17.7
- 30 y	26	41.9
-35y	23	37.1
-≥40y	2	3.2
Mean ± SD	**28.5±7.02**	
Level of education		
Secondary	32	51.6
University	30	48.4
Working		
yes	28	45.2
No	34	54.8

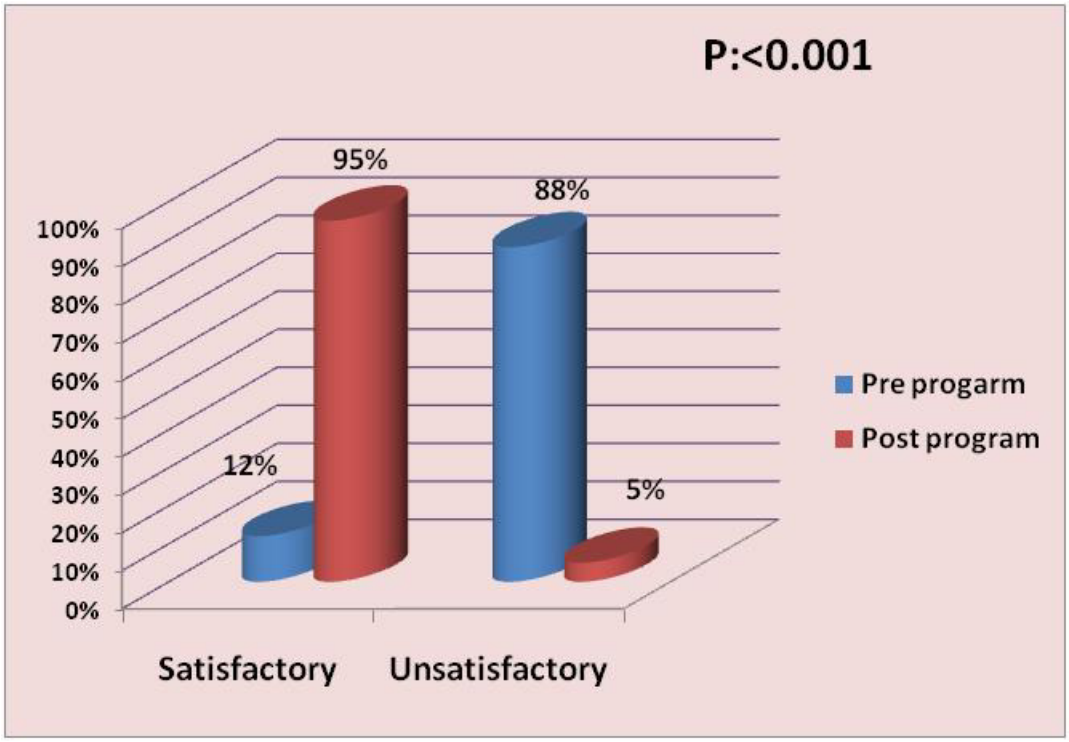

Figure 1. Total knowledge of new mother's related abdominal massage and foot reflexology pre and post program

40.15±2.24. In addition sleeping pattern 100% stated intermitted. Regarding cry pattern 53.2% stated 3-4h/day. According to time of colic 61.3% stated 4-5 frequency of colic and distention.

Table 2 evident that the mean age of mothers was (28.5±7.02), 51.6% of them were secondary education, 54.8% of them were not working .

Figure 1 illustrated that the majority of the new mothers post program had satisfactory knowledge and there was high significant statistically difference at P:<0.001.

Figure 2 showed that the majority of new mother post program had adequate practice and there were high statistically significant difference (P. value <0.01).

Figure 3 revealed that the majority of new mothers post program had positive attitude and there were high significant statistically difference (P. value <0.01*) .

Table 3 Evident that pre and post program there was a significant positive correlation between new mothers knowledge, practice and attitude p=<0.01*.

Table 4 Documented that, a statistical significant correlation between new mothers knowledge, practice

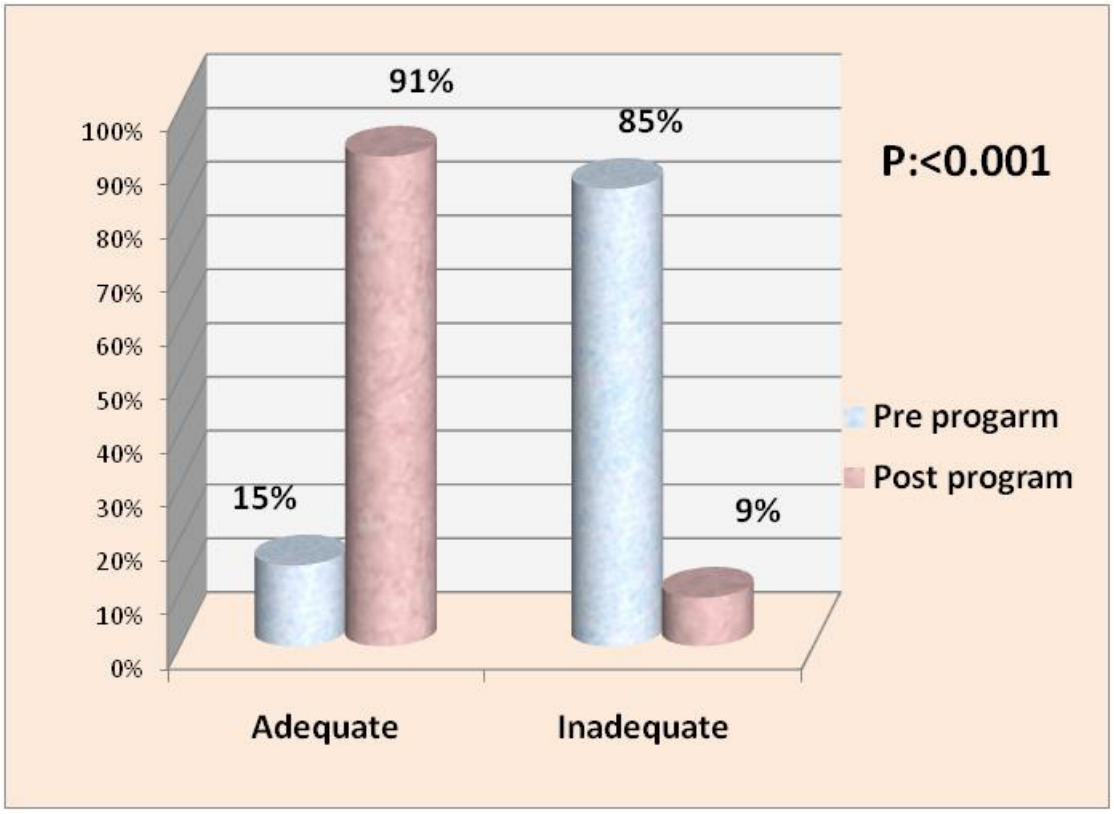

Figure 2. Total of the new mothers practice related abdominal massage and foot reflexology pre and post program

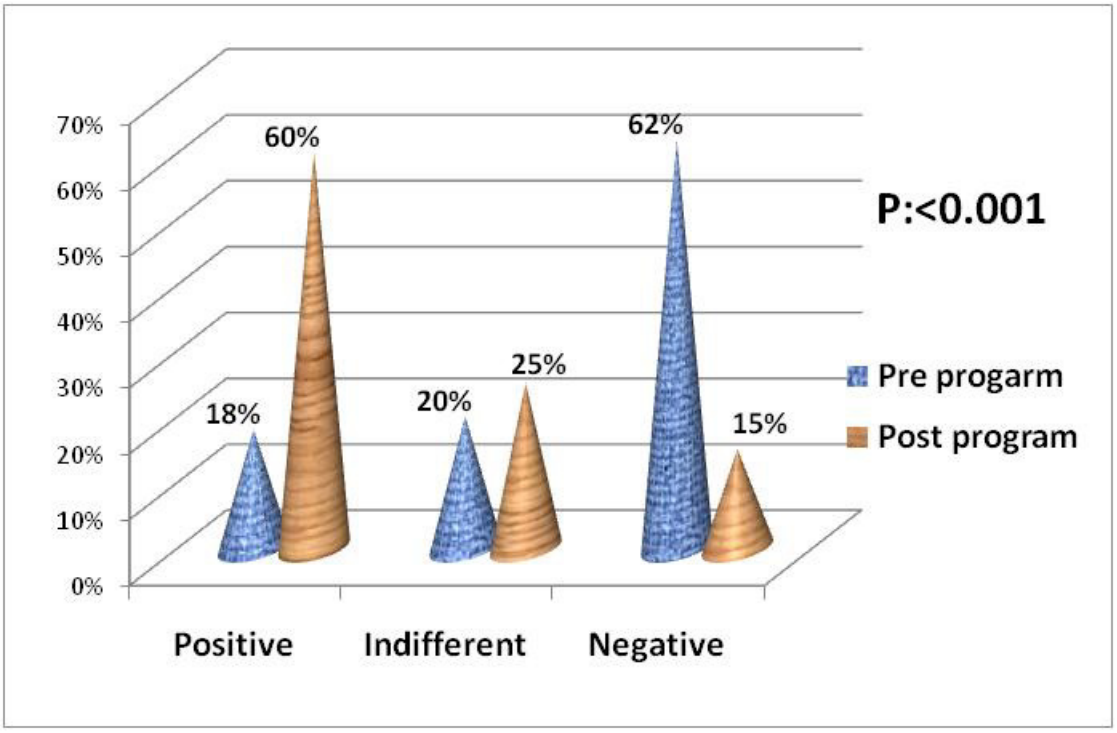

Figure 3. The total of new mother's attitude toward abdominal massage and foot reflexology pre and post program Indifferent

Table 3. Correlation between the total knowledge, practice and attitude scores of the new mothers about abdominal massage and foot reflexology pre and post program

Variables	Attitude pre program		Attitude post program	
	r	p	r	p
Knowledge pre program	0.39	<0.05*	-	-
Knowledge post program	-	-	0.55	<0.01*
Practice pre program	0.68	<0.01*	-	-
Practice post program	-	-	0.85	<0.001*

Table 4. Correlation coefficient between new mothers' knowledge, practice, attitude and their socio-demographic characteristics

Research variables	Age		Educational level		Working	
	Pre	Post	Pre	Post	Pre	Post
Knowledge						
r	0.53	0.88	0.36	0.39	0.3	0.9
p	<0.001**	<0.001**	0.4	<0.005**	<0.005**	<0.001**
Practice						
r	0.42	0.49	0.27	0.32	0.12	0.18
p	<0.05**	<0.05*	<0.001**	<0.001**	<0.05**	<0.001**
Attitude						
r	0.25	0.29	0.22	0.35	0.34	0.40
p	<0.5**	<0.05**	<0.001**	<0.001**	<0.05*	<0.05*

and attitude with their age, educational level and working pre program and post program at P:< 0.001.

DISCUSSION

The present study showed that post program, the highest percentage become satisfactory knowledge related to the items; importance of essential oil and onset of colic respectively. Also there was statistical significant difference between mothers knowledge pre and post program implementation in all items. This result matched with (Stephenson, 2000) who reported that reflexology used to decrease anxiety and pain, and performed anywhere, requires no special equipment and noninvasive procedure. In addition (Sinclair., 2010) who noted that manual pressure over the abdomen can stimulate bowel sounds, passage of flatus, and/or bowel movements. In addition found that abdominal massage in premature infants could measurably increase vagal activity and gastric motility. Also decreasing abdominal muscle tension, increasing motility of digestive tract muscles, increasing digestive secretions, and relaxing sphincters in the digestive tract. This result in the same line with (Marchetti, et al., 2014) who found all of the mother reported beneficial effects for them and for their infant. Every time mothers decided to massage their babies, fifty-five percent of group manual-course and 70% of group manual-orientation performed the complete sequence of massage(p=.656). Most mothers used the massage at least once a week (group manual-course: 95% and group manual-orientation: 90%, p = .998). About 50% of them taught the massage to another caregiver from the family (group manual-course: 50% and group manual-orientation: 60%; p = .750. This result matched with (Savino., 2005) which stated that other studies have reported German camomile, fennel and lemon balm oil to have an antispasmodic effect. Also (Cetinkaya and Basbakkal., 2012) found our study also drew on the antispasmodic effect of lavender oil. Furthermore, massage also causes the dilation of blood vessels in the dermis, allowing them to absorb essential oils and assist blood circulation. Also (Buckle., 2003) found that, performed abdominal massage on colicky infants for 15 min during colic paroxysms and continued massage for 3 weeks and weekly observations provided evidence that the infants' crying times decreased.

The current study notice illustrated that the majority of the new mothers post program had satisfactory knowledge and there was high significant statistically difference at P:<0.001. These results are consistent with (Lee., 2011) where stated that mothers became love to learn and implement abdominal massage program for their infant at the health district center perfect. All mothers in the program were improved their skills and felt the effects of infant massage. When the massage program was finished, all mothers in the experimental group had a chance to express their feeling after they massaged to their infant. Also (Diego, et al., 2009., Kulkarni, et al., 2010) demonstrated that infants receiving

moderate pressure massage showed increased gastric motility. In addition (Conk, 2006) reported that infants massage is physical evidence that promotes mother infant interaction and healthy relations, leading to positive effects on the infant's development throughout their life.

The finding of the present study shows that the majority of new mother post program had adequate practice and there were high statistically significant difference (P. value <0.01). This result matched with (O'Higgins et al., 2008; Oswalt and Biasini., 2011) which found that post education the mothers massage their infant, with high self efficacy and self-esteem , then Perform the massage on a real infant provided more positive affective and precise feedback from the instructors. In addition (Porter, 2004) suggest the Infant massage parenting enhancement program is effective for both mother and infant. Also (Moreira, et al., 2011) found that infant massage was performed every day by mothers with another task in the routine (e.g., after changing diapers or after the bath) were effective in relieve colic.

The present study revealed that there were high significant difference (p. value <0.01) between pre and post program in all new mother practice, also there were significant difference (p.value<0.05) between pre and post program as regard lay infant on comfortable massage mat and eye contact and begin right foot and hold in your right hand, then the left. In a study conducted by (Samuel and Ebenezer., 2013) where studied the effect of reflexology on adult pain , which reported the heart rates were 81.2 ± 3.7 in the experimental group before a painful procedure decreased to 79.7 ± 3.4 after procedure; on the other hand, the control group heart rates were 78.3±3.8 before procedure and 78.7 ± 3.9 after procedure. Also (Koc and Gozen., 2015) who found that the heart rates of infants in the reflexology group (136.43±9.93) were lower than the control group (148.50± 6.08). Therefore, it was determined that reflexology reduced heart rates and this finding supports the idea that reflexology is effective in relieving the pain experienced by infants.

CONCLUSION

The study was concluded that the education program improved new mother' knowledge, practice and attitude towards infant massage and foot reflexology.

RECOMMENDATION

Based on the study results it is recommended to
-Continuing training to improve new mothers knowledge, practices and attitude about infant abdominal massage and foot reflexology to relieve colic pain.
-It indicates that this form of treatment should be taken seriously as an effective treatment.
-Future research is needed to compare reflexology with other complementary/alternative therapies (e.g., massage, healing touch, relaxation response) for a cumulative effect.

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