The Effect of Educational Program for New Mothers about Infant Abdominal Massage and Foot Reflexology for Decreasing Colic at Najran City

Awad Mohammed Al Qahtani, PhD\textsuperscript{a} and Howaida Moawad Ahmed, PhD\textsuperscript{b}

\textsuperscript{a}Family Medicine, Najran University, Najran, Saudi Arabia; \textsuperscript{b}Pediatric Nursing, Najran University, Najran, Saudi Arabia

ABSTRACT

As part of an emerging movement in complementary therapy, the practice of infant foot reflexology and abdominal massage is gaining widespread acceptance as a therapeutic approach to the relief of infantile colic. The objective of the current research is to offer an evaluation of knowledge, attitudes and practice amongst new mothers in relation to infant massage and reflexology. Specifically, the intention is to apply any insights gained to the establishment of appropriate educational programmes in line with the requirements of new mothers. This is to be achieved through the appraisal of any perceived improvements in the knowledge, attitudes and practices of new mothers following the completion of any programme. A quasi-experimental design is adopted in this research and applied in the setting of the outpatient clinic at the University Hospital in Najran, Saudi Arabia. A convenience sample, comprising sixty-two new mothers, all of whom have infants ranging in age from one month to four months. All the infants experience colic. The first instrument employed in this research comprises a structured interview wherein interviewees are presented with a two-part sheet. Section one is devoted to the obtaining of socio-demographic data regarding the mothers and the infants, whilst section two consists of a questionnaire devoted to gauging the level of knowledge of new mothers. The second research instrument is an observation checklist aimed at evaluating the practical skills of new mothers, whereas the third research tool employed in this study is a Likert scale which judges the attitudes of new mothers toward foot reflexology and abdominal massage. The findings of the research reveal that most new mothers demonstrated improvements to their attitudes, knowledge, and practice following the programme. Specifically, there was found to be statistically significant correlation between the age, educational level, and work experience of new mothers and their scores for attitudes, knowledge, and practices. Hence, it was possible to conclude that educational programmes for new mothers can augment their knowledge, refine their practices and improve their attitudes in respect of abdominal massage and foot reflexology as a means of treating colic in infants. Thus, the authors recommend that educational programmes constitute a significant means by which abdominal massage and foot reflexology can be promoted as a therapy for the treatment of colic.
Introduction

As an alternative or complementary therapy, infant abdominal massage is a practice which is recognized across the globe. It works through a process of comforting input and sustenance which offers not simply physical benefits, but also spiritual and emotional ones too. This practice has a long, international history and is often associated with Asia. In more recent times it has been revived as an efficacious approach to the relief of infant abdominal discomfort (Field, 2002; Lee, 2006; Mainous, 2002; Steptoe, 2002). Specifically, since the 1990s both parent and medical practitioners have expressed increasing awareness of the benefits of this practice and have sought to acquire expertise in this field through the participation in relevant training programmes (Bond, 2002; Field, 2002; Jeon, 2003; White-Traut, 2004).

In essence, reflexology describes the noninvasive practice of foot massage or the application of pressure to this area based upon the premise that this can act to harmonize the body’s functions and to thereby induce a process of natural healing and wellbeing. Adopting the model of proprioceptive nervous receptors, reflexology is predicated upon the presumption that there exists a pathway which links specific areas of the feet to other areas of the body. Thus, by manipulating areas of the foot it is possible to derive benefit in corresponding regions of the body (Sinclair, 2010). This is deemed to result from a release of endorphins and encephalin via the stimulation of the pituitary gland as a result of manipulation of either the hands or the feet (Koç & Gözen, 2015).

Since infants lack the capacity to express feeling such as pain in any verbal form, it is crucial that mothers are able to effectively monitor their infants through the application of objective information in order to determine whether their infants are experiencing any colic-related discomfort. Such information includes crying, body movements, and facial expressions (Onozawa et al., 2001; White-Traut, 2004). Extreme crying refers to a prolonged and intense form of crying which commences within the first three months of life, persists for a minimum of three weeks, and has no immediately discernible cause. Typically, this crying occurs during the afternoon, commences during the second week and can persist up to the age of between four and six months. The origins of colic remain largely disputed and somewhat obscure but may well be linked to multiple causes. Dairy or soy milk protein intolerance, gastrointestinal issues, immaturity in the central nervous systems of some infants, and parent-child relationship issues have all been postulated as possible reasons for the occurrence of colic (Çetinkaya & Başbakkal, 2012).

The safe application of essential oils is essential in a pediatric context and requires specialist knowledge in relation to issues such as frequency of usage. It is particularly recommended that essential oils are appropriately diluted in base oils such as vegetable oils, or in creams, gels or even water. The sedating,
anti-spasmodic qualities of lavender oil render it especially suitable for the relief of symptoms associated with colic or abdominal pain and distention. Rich in vitamins E and D, almond oil is notably useful as a massage oil and possesses qualities which maintain suppleness and overall health in the skin (Aslan, 2016).

The significance of this study

Whilst infantile colic can lead to hospital admissions, it is an entirely manageable condition if the correct therapeutic response is pursued. Thus, it is important to instruct mothers in the appropriate techniques to manage extreme crying in their infants. Research in Europe has identified abdominal massage as an efficacious method of dealing with infantile colic (Wilhelm, 2009). In particular, certain studies have examined the beneficial impacts of incorporating essential oils within massage (Sankaranarayanan et al., 2005). Thus, appropriate programmes of education in these matters for new mothers are a valuable resource.

Principle objectives of the study

There are three primary goals in the current research. The first comprises an evaluation of the attitudes, knowledge and practices of new mothers in respect of infant massage and reflexology. A second aim constitutes the generation and implementation of an effective educational strategy which can be shaped to complement the needs of new mothers. Third, this study intend to assess the extent to which the attitudes, knowledge and practices of new mothers are impacted by the application of the educational programme.

Research hypothesis

This paper hypothesizes that attendance on an educational programme pertaining to infant abdominal massage and reflexology will result in improvements to the attitudes, knowledge and practices of new mothers.

Subjects and methodology

A quasi-experimental design has been adopted in the current study which has for its setting the outpatient clinic at the University Hospital in Najran, Saudi Arabia. Convenience sampling was selected for this research wherein sixty-two new mothers and their infants comprised the sample group. Subjects were from high, low and medium socioeconomic groups. Infant ages ranged from one month to four months at the commencement of the
study with gestational ages within the thirty-eight to forty-two-week range. All infants weighed between 2500 g and 4000 g at birth and were deemed to exhibit normal development and growth. In respect of their symptoms, the infants presented with patterns of crying which persisted for a minimum three hours per day in excess of three days per week. Data collection commenced in August 2017 and was completed in January 2018.

Research tools
The current study comprises three primary research instruments which were employed for the purposes of data collection. As regards the first tool, a two-part interview questionnaire was constructed to acquire relevant data from the sixty-two new mothers in the sample group. The first section in the questionnaire was constructed to gather data pertaining to the demographic traits of the new mothers and their infants. Section two was used to garner information relating to the knowledge of new mothers in respect of abdominal massage and reflexology. The scoring system employed rated scores less than sixty as unsatisfactory whereas score above sixty were deemed satisfactory.

The second research instrument comprises an observational checklist which was completed by the researchers. Each checklist contained items which were scored in accordance with thirty-four degrees. thus, for each completed step, two degrees were awarded whereas in instances where steps were not performed, one degree was awarded. Subsequently, the scores were translated to determine whether performances could be described as adequate or inadequate. Score below sixty equate to an inadequate level of skill whilst those above sixty were taken to describe an adequate demonstration of skill by a new mother.

The third research tool consists of a Likert scale which was utilized to measure maternal attitudes toward infant abdominal massage and reflexology. Specifically, it consists of a nine-point scale wherein each relevant step which is completed is awarded three points, each indifferent step two points and each irrelevant step is awarded one point. Scores were translated to reveal whether mothers possessed positive attitudes such that a score above seventy-five suggested they had a positive attitude, a score below forty-five indicated a negative attitude, and one between forty-five and sixty was indicative of indifference.

Ethical considerations
Prior to commencement of the study, ethical approval was sought and gained from the university’s ethical committee. In addition, oral consent was
required from all participants once the nature and intentions of the study had been outlined.

**Validity and reliability**

Three experts, comprising two professional staff members and one statistics expert, were used to adjudicate regarding the clarity of the contents of the research instruments and the overall validity. Amendments were subsequently conducted as required.

In addition, a pilot study was performed using 10% of the sample population in order to examine the reliability of the research instruments and to conduct a trial analysis of results.

**Study procedures**

**Preparatory phase**

All respondents who finished the pretesting stage were required to attend educational sessions. For this purpose, the sample group was sub-divided into ten discrete groups, each containing six new mothers. The researcher informed the participating mothers that they would receive rewards once they had successfully completed the programme. These benefits included free explanatory videos and almond oil packages supplied on condition that the mothers reported the effects of their application on their infants. The researcher also ensured that the mothers understood the virtues of alternative treatments and clarified issues regarding their use.

**Implementing phase**

The educational programme was conducted over a period of six months. It was divided into five forty-five-minute sessions, two of which were devoted to practice and three of which were allocated to theory. These theoretical sessions incorporated five-minute explanations devoted to the principal concepts in the study area, to wit: the nature and use of infant massage, the importance of essential oils, and the character of colic; the definition and application of reflexology; and the attitudes of new mothers to abdominal massage and reflexology. In contrast, the two clinical sessions involved fifteen-minute sessions devoted to abdominal massage techniques and reflexology techniques.
**Session procedure**

Each session commenced with a presentation of the essential aspects of the given topic. Straightforward language was applied to explain the subject matter clearly to the mothers in a manner appropriate for their specific level of education. A variety of teaching methods were used in these sessions, including brainstorming activities, group discussions, and lectures. A similarly broad range of educational resources was employed, such as videos, colorful posters, power point presentations, and leaflets. The clinical sessions also commenced with discussions in order to gauge mothers’ feedback regarding the procedures to be demonstrated. Video presentations were used both before and after practical demonstrations.

Specifically, researchers demonstrated how to create a solution of one drop of lavender oil combined with 20 mL of almond oil for use during an abdominal massage within one to two minutes of the start of an attack of colic. The massage in this instance was to last anywhere between five and fifteen minutes. Researchers prepared the massage oil mixture using a regular dropper in order to add the single drop of lavender oil to 20cc of the almond oil, after which all others were supplier with needle syringes to enable them to easily and accurately measure 1cc themselves. Furthermore, they were instructed to restrict usage to no more than 1cc per day. A dummy infant was utilized to demonstrate the reflexology technique which commenced in the toe region and traveled down to the heel area. The technique was applied for fifteen minutes before being reiterated on the other foot for an equivalent length of time. Following the practical demonstration, the new mothers attempted to replicate the procedure whilst the researcher observed and assessed their competence.

Researchers took steps to ensure that the lines of communication between themselves and the new mothers were healthy. In this way, it was possible to swiftly respond to any questions and to reinforce the practical skills and information, thereby raising the chances of a positive impact on the infants associated with this study.

**Evaluation phase**

Evaluation was primarily conducting using a process of posttesting whereby the same research tool that was applied prior to the educational sessions was reused after the programme’s completion. Thus, it was possible to make direct comparisons of both sets of results.

**Statistics analysis**

SPSS 20.0 (Statistical Package for the Social Sciences) was employed during the data analysis phase in the current study. Specifically, qualitative data was
described using numbers and percentages, and paired T-tests were performed for the purposes of comparing pretest and posttest results.

**Results**

The findings presented in **Table 1** indicate that the infant mean age and standard deviation equated to (2.5 ± 1.33) months where 1.3% of the infants were male. In addition, 66.1% of infants presented with a gestational age of ≥42 weeks with mean and standard deviation of 40.15 ± 2.24. All respondents reported an intermittent sleep pattern in their infants. The crying pattern for 53.2% of the infants was between three and four hours per day and 61.3% stated that there were between three and four instances of colic and stomach distention per day.

The evidence outlined in **Table 2** reveals that the mean ages of mothers in this study was (28.5 ± 7.02). In addition, this table shows that 54.8% of the mother were not currently in paid work and that 51.6% had achieved a secondary level of education at that time.

**Table 3** reveals that the overall knowledge possessed by mothers on the important subject of essential oil and the symptoms of colic prior to the

| Table 1. Socio-demographic data of infants. |
|--------------------------------------------|
| Items                                      | No  | %   |
| Age                                        |     |     |
| Birth-2 months                             | 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                                     |     |     |
| 2.5–3.5 kg                                 | 13  | 21  |
| 3.5–4.5 kg                                 | 41  | 66.1|
| 4.5–5.5 kg                                 | 8   | 12.9|
| Mean ± SD                                  | 4.15 ± 2.24 |
| Sleep patterns                             |     |     |
| Calm                                       | 0   | 0   |
| Intermittent                               | 62  | 100 |
| Crying patterns                            |     |     |
| 3 h/day                                    | 29  | 46.8|
| 4 h/day                                    | 33  | 53.2|
| Mean ± SD                                  | 3.45 ± 6.09 |
| Number of instances of colic and distention|     |     |
| 3 times                                    | 24  | 38.7|
| 4-5 times                                  | 38  | 61.3|
| Mean ± SD                                  | 3.36 ± 3.08 |
programme was unsatisfactory at 88.7% and 85.5% respectively in comparison to the post-programme level of knowledge which was rated at 96.8% and 91.9%. In addition, whilst 79.0% of new mothers lacked a satisfactory level of confidence to perform abdominal massage and reflexology prior to the course, following the programme 88.7% possessed satisfactory levels of confidence. Overall, there were statistically significant differences between the pre and post course contexts for all the items related to the new mothers.

Thus, Table 4 demonstrates that more than half of new mothers acquire a positive outlook in respect of the application of abdominal massage and reflexology in the treatment of the infantile colic in respective of most of the variables.

The figures in Table 5 demonstrate the significant difference (P > .01) in maternal practices between the pre-programme period and the post-programme period. There were also comparable differences between these

### Table 2. Socio-demographic data of new mothers.

| Items             | No | %  |
|-------------------|----|----|
| Mothers age       |    |    |
| 18-25y            | 11 | 17.7|
| 30 y              | 26 | 41.9|
| 35 y              | 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|

### Table 3. New mother knowledge in relation to abdominal massage and foot reflexology pre and post programmes.

| Variables                                      | Pre-programme | Post-programme |
|------------------------------------------------|---------------|----------------|
|                                                 | Unsatisfactory| Satisfactory   |
| Definitions of infant massage                  | 40            | 22             | 7              | 11.3 | 55 | 88.7 | 1.12 | >0.05 |
| Indications of infant massage                  | 35            | 27             | 10             | 16.1 | 52 | 83.9 | 1.52 | >0.05 |
| The meaning of essential oil                    | 46            | 16             | 10             | 25.8 | 46 | 74.2 | 1.20 | >0.05 |
| The importance of essential oil                 | 55            | 7              | 2              | 3.2  | 60 | 96.8 | 7.07 | <0.005|
| Signs and symptoms of infant colic              | 52            | 10             | 12             | 19.4 | 50 | 80.6 | 4.54 | >0.05 |
| Onset of colic                                  | 53            | 9              | 5              | 8.1  | 57 | 91.9 | 12.00| <0.001|
| Definitions of foot reflexology                 | 55            | 7              | 8              | 12.9 | 54 | 87.1 | 19.00| <0.001|
| Indications of foot reflexology                 | 54            | 8              | 7              | 11.3 | 55 | 88.7 | 2.65 | >0.05 |

**Confidence levels in relation to the performance of infant massage and foot reflexology**

| Somewhat confident                             | 36            | 26             | 8              | 12.9 | 54 | 87.1 | 1.15 | >0.05 |
| Confident                                      | 49            | 11             | 7              | 11.3 | 55 | 88.7 | 1.26 | >0.05 |
periods in relation to awareness of the need to warm both the room and the hands, the importance of lying the infant on the floor, and the value of maintaining eye contact ($P > .05$).

The findings outlined in Table 6 reveal that there was a significant difference ($P > .01$) between the pre and post programme performance of new mothers as regards their ability to place their infants comfortably on massage mats, maintaining eye contact and applying the appropriate techniques beginning with the holding of the right foot in the right hand and then the left hand.

Figure 1 shows that most new mothers on the programme had increase their levels of satisfactory knowledge to a high of 95%, which represents a statistically significant difference at a level of $P > .001$.

Figure 2 shows that, following completion of the programme, most new mothers demonstrated adequate levels of practice (91%). There was a statistical difference between the pre and post-programme contexts with a significance level of $P > .001$.

The findings in Figure 3 illustrate that, in the post-programme context, most new mothers demonstrated positive attitudes toward abdominal massage and reflexology as a treatment for colic in their infants. There was a statistical difference between the pre and post-programme contexts with a significance level of $P > .001$.

The evidence in Table 7 indicates a significant positive correlation ($p \leq 0.01$) between new mothers’ knowledge, practice and attitudes in relation to pre and post-programme contexts.

As can be seen from Table 8, there is a statistically significant correlation ($P > 0.001$) between new mothers’ knowledge, attitudes and practices and their respective ages, educational levels, and working lives in both pre and post-programme contexts.

### Discussion

As is evident from the current research, the knowledge of new mothers pertaining to the importance of essential oils and the symptoms of colic...
prior to the programme was unsatisfactory at a level of 79.0%. By the post-programme stage this had altered dramatically, such that the level of satisfactory knowledge had risen to 88.7%. Furthermore, for all knowledge-related items there existed a statistically significant different between the pre and post-programme contexts. These findings confirm existing research (Stephenson et al., 2000) which reports that reflexology can be employed to relieve distress and pain. Moreover, it has been observed (Sinclair, 2010) that the application to the abdomen of manual pressure can encourage bowel sounds, promote the movement of flatus, and stimulate bowel movements. Thus, abdominal massage is a valuable technique for encouraging vagal activity and gastric motility, alleviating tension in abdominal muscles, fostering motility in the muscles of the digestive tract, enhancing digestive secretions, and easing the digestive tract sphincters.

Table 5. A comparison of the practices of new mothers in respect of abdominal massage in both pre and post-programme contexts.

| Practice                                                                 | Pre program | Post program | T    | P     |
|--------------------------------------------------------------------------|-------------|--------------|------|-------|
| Ensure the room temperature is appropriate and then warm the hands by rubbing them together | 32 51.6     | 30 48.4      | 2.45 | >0.05 |
| Place the infant on the floor and maintain eye contact                    | 33 53.2     | 29 46.8      | 2.33 | >0.05 |
| Place a coin-sized drop of the lavender and almond oil mixture in the hands and rub the hands together to warm the oil | 50 80.6     | 12 19.4      | 7.21 | >0.01 |
| Lay the hands on the area just beneath the naval so as to target the infant’s bowels. | 40 64.5     | 22 35.5      | 8.56 | >0.01 |
| With palms face down and flat, gently stroke downwards using a circular motion, hand over hand, and moving in a clockwise direction. | 49 79        | 13 21        | 8.11 | >0.01 |
| 1. Perform a three-part stroke style known as I Love You! First, trace the letter I on infant’s left side. | 56 90.3     | 6 9.7        | 6.22 | >0.01 |
| 2. Next, trace the letter L starting on infant’s right side and traveling across the top of the tummy and then down the infant’s left side. | 55 88.7     | 7 11.3       | 3.44 | >0.01 |
| 3. Finally, draw an upside-down U.                                       | 45 72.6     | 17 27.4      | 9.14 | >0.01 |
| 4- Repeat this process and then finish by stroking downwards on the infant’s tummy using warm flat hands for a few moments. | 44 71        | 18 29        | 8.66 | >0.01 |
| The infant may release some air during this massage session. Ensure there is something underneath the infant in case of any accidents. | 50 80.2     | 12 19.8      | 11.02| >0.01 |
Table 6. A comparison of the practices of new mothers regarding reflexology in both the pre and post-programme contexts.

| Practice                                                                 | Pre program |          | Post program |          |
|--------------------------------------------------------------------------|-------------|----------|--------------|----------|
|                                                                          | Inadequate | Adequate | Inadequate | Adequate | T    | P     |
| Lie the infant on a comfortable massage mat and maintain eye contact      | 30          | 48.4     | 32          | 51.6     | 2    | 3.2   | 60    | 96.8    | 2.08  | >0.05 |
| Commence with the right foot, holding it first in your right hand and then in your left hand. | 56          | 90.3     | 6           | 9.7      | 6    | 9.7   | 56    | 90.3     | 3.22  | >0.05 |
| Move the thumb up and down the area of the entire heel.                  | 35          | 56.5     | 27          | 43.5     | 20   | 32.3  | 42    | 67.7     | 6.21  | >0.01 |
| Gently repeat this process 2–3 times.                                   | 37          | 59.7     | 25          | 40.3     | 15   | 24.2  | 47    | 75.8     | 5.44  | >0.01 |
| Apply moderate pressure, working from the outside to the inside of the foot. | 59          | 95.1     | 3           | 4.8      | 1    | 1.6   | 61    | 98.4     | 9.56  | >0.01 |
| Repeat these steps 2–3 times.                                           | 52          | 83.9     | 10          | 16.1     | 9    | 14.5  | 53    | 85.5     | 7.06  | >0.01 |
| Placing your thumb on the middle of infant’s foot (in the arch), circle gently in a clockwise direction. | 57          | 91.9     | 5           | 8.1      | 6    | 9.7   | 56    | 90.3     | 9.68  | >0.01 |

Figure 1. A comparison of the totality of new mothers’ knowledge regarding related abdominal massage and reflexology in both pre and post-programme contexts.

Contemporary research in this field (Cruz et al., 2014) suggests that all mothers and infants experience benefits when infant massage is undertaken. Specifically, 55% of mothers from the manual course group and 70% from the manual-orientation group successfully completed the entire massage sequence on their infants ($p = .656$). Moreover, the majority of mother employed the massage techniques on at least one occasion each week (group manual-course: 95% and group manual-orientation: 90%, $p = .998$).
Approximately half the mothers proceeded to teach the massage techniques to other caregivers in their family groups (group manual-course: 50% and group manual-orientation: 60%; \( p = .750 \)).
Other research (Savino et al., 2006) has noted that German chamomile, lemon balm oil, and fennel all possess anti-spasmodic properties. The current study (Çetinkaya & Başbakkal, 2012) has emphasized the anti-spasmodic quality inherent in lavender oil. In addition, since massage is known to cause blood vessels to dilate in the dermis, this technique promotes the absorption of essential oils and additionally assists the circulation of blood in the body. It has also been shown (Huhtala et al., 2000; Yılmaz & Conk, 2009) that performing a fifteen-minute massage on an infant during colic paroxysms over a three-week period demonstrably reduces the duration of extreme crying episodes.

The present research has proven that most mothers can acquire satisfactory knowledge during an educational programme (95%) wherein a comparison with the pre-programme status quo produces a statistical difference with a significance level of $P > .001$. These finding are confirmatory of the contention (Koç & Gözen, 2015) offered that mothers grow to appreciate the benefits of abdominal massage and are willing to adopt its practice. All mothers experienced an improvement in their massage skills and considered its use to be beneficial for their infants. Once the educational programme has been completed, all participants were provided with an opportunity to express their feelings in relation to the massaging of their infants. Moreover, it was shown (Diego et al., 2009) both that the application...
of moderate pressure during massage significantly improved gastric motility and that infant massage encourages a healthy mother-infant interaction (Yılmaz & Conk, 2009) which can lead to permanent developmental benefits throughout the infant’s lifetime.

The current research has revealed that following completion of the educational programme, most new mothers (91%) had acquired adequate practical skills and that there was statistical difference between these levels and those exhibited in the pre-programme context with a significance level of \( P > .001 \). These findings accord with those (Oswalt & Biasini, 2011) which observe that post-programme massage is both highly efficacious and conducive of higher levels of self-esteem. Demonstrating ability to perform the massage on a real infant lead to greater positive feedback from the instructors. Moreover, it can be concluded (Porter, 2004) that the provision of infant massage programmes for parents offers benefits for both mothers and infants. Thus, it has been observed (Moreira et al., 2011) that the implementation of a daily massage routine combined with other regular activities, such a nappy changing and bathing, are demonstrably efficacious in the alleviation of colic.

This research has shown that there is a significant difference (p: value >0.01) between the massage skills demonstrated by mothers in the study post-programme attendance and that displayed prior to the massage course. Specifically, there were significant observable differences (\( P > .05 \)) in relation to laying infants on comfortable massage mats, maintaining eye contact, and commencing procedures correctly holding the right foot in the right hand and then in the left hand. Other research (Samuel & Ebenezer, 2013) has observed heart rates recorded at 81.2 ± 3.7 in an experimental group prior to the performance of an uncomfortable procedure which then decreased to 79.7 ± 3.4 following the procedure. In the control group, heart rates were recorded as 78.3 ± 3.8 before and 78.7 ± 3.9 (Koç & Gözen, 2015), thereby leading to the conclusion that reflexology comprises an efficacious way to reduce pain in infants.

**Conclusion**

To conclude, the education programme enhanced the knowledge, attitudes and practices of new mothers in relation to infant abdominal massage and reflexology as a means of alleviating colic-base pain.

**Recommendations**

The authors suggest that continued programmes of massage and reflexology training as a therapy for infantile colic is a course of action which offers multiple benefits to both mothers and infants.
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