



ORIGINAL RESEARCH

The Effect of Training Provided to Mothers on Their Non-Functional Practices and Maternal Self-Efficacy in Preventing Early Childhood Diarrhea

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Abstract

Objective: This study was carried out to examine the effects of education on “Non-Functional Practices and Prevention of Early Childhood Diarrhea” on non-functional practices of mothers for child care and maternal self-efficacy in preventing early childhood diarrhea.

Materials-Methods: The research was carried out as a pretest-posttest quasi-experimental model with a control group. The sample of the study consisted of mothers who met the research criteria and had at least one child between the ages of 0-5 who applied to 5 Family Health Centers in the city center of Erzincan in Turkey between the dates of the research. The study was completed with a total of 128 mothers (64 in the control group, 64 in the experimental group).

Results: It was found that mothers' mean scores from the maternal self-efficacy scale for preventing early childhood diarrhea after training were higher than before training. After the training given, it was determined that there was a general decrease in the non-functional practices of mothers for child care.

Conclusions: It was concluded that the education given reduced the non-functional practices for child care and increased maternal self-efficacy for prevent early childhood diarrhea.

Keywords: Childhood, Diarrhea, Nursing, Self-Efficacy

INTRODUCTION

Diarrhea is one of the most prominent causes of mortality and morbidity in infants and children in developing countries¹⁻³. According to the World Health Organization (WHO) diarrhea is the second most common cause of mortality among children under the age of five and it is responsible for the deaths of approximately 525,000 children every year⁴. According to the 2019 data from the Turkish Statistical Institute, diarrhea was found in 28.7% of children in the 0-6 age group⁵.

The most important reason that diarrhea is fatal is having a lack of the knowledge about how to protect against it, and the wrong information or a lack of knowledge about how to treat it⁶. The incidence of diarrhea, which is a fundamental cause of infant mortality in Turkey, might be decreased through health education and teaching about protective measures¹. Nurses play an important role in advising families how to prevent diarrhea (for

example, through child nutrition, fluid intake, hygiene, vaccinations) and giving training on how to protect children^{1,7}. Studies have shown that mothers' knowledge about diarrhea increased after they had been educated⁸⁻¹¹. Self-confidence or Self-efficacy has a positive effect on an individual's knowledge¹².

Training is required in order to increase individuals' self-efficacy, and training programs should include the basic elements necessary to increase' self-efficacy¹³. A study reported that positive changes occurred in the beliefs and practices of expectant mothers at the end of the training, which included transferring information supporting correct practices regarding pregnancy, birth, puerperium and infant care¹¹. Non-functional beliefs and practices involve unchanging and permanent forms of behavior, which emerge during childhood and are repeated throughout life^{14, 15}.



A baby may find itself in a non-functional environment from the moment it is born¹⁴. Some studies reported that waiting for three azans (the call to prayer in Islam) before breastfeeding the newborn, swaddling of the infant, salting of the infant's skin, and not giving colostrum to the baby are unhealthy practices¹⁶⁻²⁴. These postnatal traditions are harmful to both mothers and babies, prolong the healing process for both of them, and may even cause their death²¹. Some studies determined that educating mothers about non-functional practices increased their levels of knowledge about this topic^{11, 25, 26}. Nurses should be aware of the traditional practices in the society and play an active role in eliminating the harmful ones of traditional practices²¹.

We found that studies on the effect of education on maternal self-Efficacy for prevent early childhood diarrhea are limited. It is expected that the results of this study may contribute to the helping to prevent non-functional practices, and increase maternal self-efficacy in preventing early childhood diarrhea.

MATERIALS AND METHODS

Research type

This study was performed to examine the effects of education on "Non-Functional Practices and Prevention of Early Childhood Diarrhea" on non-functional practices of mothers for child care and maternal self-efficacy in preventing early childhood diarrhea. The study was a quasi-experimental pretest-posttest design.

The research hypotheses were as follows;

H1: Training given to mothers about "Non-Functional Practices and Prevention of Early Childhood Diarrhea" increases maternal self-efficacy in preventing early childhood diarrhea.

H2: Training given to mothers about "Non-Functional Practices and Prevention of Early Childhood Diarrhea" reduces their non-functional child care practices.

Research population and sample selection

The population of the study consisted of mothers who had at least one child between the ages of 0-5 who applied to any of the five Family Health Centers (FHCs) included in the study between March 01, 2017 and June 30, 2017. The sample of the study consisted of 140 mothers (70 in the experimental group and 70 in the control group) who were selected using a random sampling method, met the inclusion criteria and agreed to participate in the research. Because 6 mothers wanted to withdraw from the study and 6 mothers declared that they would not participate in the next

interviews, the study was completed with 64 experimental and 64 control groups. By conducting this research with 128 total participants (64 in each group), it was determined that 80% power would be reached at a 0.05 significance level with a 95 % confidence interval.

In order for the mothers included in the control and experimental groups not to affect each other in the training to be given, first the mothers in the control group and then the mothers in the experimental group were included in the study. Following the collection of the study data, the control group was given a training booklet.

The criteria for the mothers participating in the research were as follows:

- Having at least one child aged between 0 and 5.
- Not having a mental health problem or any other problem that might prevent her from understanding the scale.
- Willing to communicate and agreeing to participate in the research.
- Being older than 18.

Data collection tools

Question form

This form was created with reference to the relevant literature^{6, 7, 21}. This form consists of 17 questions about the characteristics of participants, questions related to diarrhea, and their domestic hygiene conditions.

The maternal self-efficacy scale for preventing early childhood diarrhea

This scale was developed by Joventino et al. (2013) in order to prevent early childhood diarrhea²⁷. It was adapted into Turkish by Bekar and Arıkan^{28, 29}. In the Turkish version, the 12th and 14th items of the original scale were excluded because their item-total score correlation was low. The scale used in this research consists of 22 items and a three-factor structure.

In the scale, each item scores between 1 and 5 points depending on the answers given. The total score obtainable from the scale thus ranges from 22 to 110. Total scores which are less than or equal to 96 (< 25th percentile) show low self-efficacy, total scores between 97 and 101 (25th percentile– 50th percentile) demonstrate medium self-efficacy, and total scores higher than or equal to 102 (> 50th percentile) show high self-efficacy. The three factors of the scale are as follows:

1st Factor: this factor consists of nine items in total (items 4, 5, 6, 9, 13, 15, 17, and 21) and is named "Personal Hygiene".



2nd Factor: this factor consists of nine items in total (items 1, 2, 3, 7, 8, 10, 11, 12, and 22) and is named “Child-Oriented Hygienic Behaviours”.

3rd Factor: this factor consists of five items in total (items 14, 16, 18, 19, and 20) is named “General Hygienic Behaviours”^{28, 29}.

In this study, the Cronbach’s α coefficient of the scale was determined to be 0.74.

Survey of non-functional child care practices

This survey was prepared in accordance with the literature and consists of 13 questions to determine non-functional practices related to child care^{14, 16, 30-32}. The measurability and intelligibility of the survey were evaluated by three experts. The questions are answered with either “yes” or “no”. “Yes” and “no” answers from the mothers indicate their non-functional practices or positive functional practices, respectively.

Training tools

Training booklet

The training booklet was prepared in accordance with the literature^{7, 16-18, 20, 21}. The information contained in the booklet is as follows; what diarrhea is, what can be done at home to treat diarrhea, oral fluid treatment (ORS), the situations that require the child to be taken to the hospital, what to do to protect the child from diarrhea, clean drinking water and other water sources, nutritional recommendations for infants, nutritional recommendations for preschool children, factors that lead to food contamination and impair food safety, ways to ensure food safety, personal hygiene, food hygiene, and the effects of vinegar and traditional practices.

Data collection

The FHCs were visited on five days during the week, and the mothers who met the research criteria and consented to participate in the research were included in the study. The study was first conducted with the control group and then subsequently with the experimental group. In the first interview, information about the study was given to the mothers and the pretest data were collected. Immediately afterwards, only the mothers in the experimental group were given training on “Non-Functional Practices and Prevention of Early Childhood Diarrhea”.

The purpose of education is to prevent children from having diarrhea, to apply the right practices when they have diarrhea, to strengthen the self-efficacy of mothers on these issues, and to be aware of and prevent non-functional beliefs and practices of mothers. The trainings were carried out

individually. The training took approximately 30-45 minutes. Direct instruction, question-answer and discussion training methods were used. The education given to the mothers was explained by showing them from the training booklet. Training was provided in line with the content of the training booklet.

In the second interview, 2 weeks after the first interview with the mothers in the experimental group; questions were asked about non-functional practices and diarrhea, feedback was received, missing information was reinforced, questions asked by mothers were answered, and a training booklet was given.

One week after the second interview, the posttest were collected in the third interview. Pretest and Posttest data were collected by using “the Question Form”, “the Survey of Non-functional Child Care Practices”, and “the Maternal Self-Efficacy Scale for Preventing Early Childhood Diarrhea” for mothers in the experimental and control groups.

During the study, a total of 3 interviews were conducted with the mothers in the experimental group, one in the FHC and 2 in a home visit, and 1 time training was given and general reminders were made by asking questions about education once. A total of 2 interviews were conducted with the mothers in the control group, one in the FHC and the other in a home visit. No intervention was performed on the mothers in the control group. After the collection of the study data was completed, the training booklet was distributed to the mothers in the control group.

Statistical analysis

SPSS for Windows 22.00 software programs were used to analyse the data. The Shapiro–Wilk test, the descriptive statistics, the McNemar test, the Chi-square test, and the Wilcoxon test were used. $p < 0.05$ was considered statistically significant.

Ethical considerations

Ethical approval was obtained from the Ethics Committee of the University (Number: 2016/06/5, date: 17.06.2016) and official permission was obtained from the relevant institution. Parents of the children who met the inclusion criteria were informed of the aim of the study and then their questions were answered and their verbal and written consent was obtained.

RESULTS

When we examined the socio-demographic findings of the children and their family in the experimental group, 67.1% of the mothers were 31 years and older and 65.5% of the fathers were in the 31-40 age



group. 50% of children are girls and 48.4% of families have two children. 78.1% of mothers are housewives and 42.2% of fathers are civil servants. 34.4% of the mothers had high school education, and 46.8% of the fathers had a university education or higher. While 78.1% of the mothers are not working, all of the fathers are working. The income of 59.4% of the families is equal to their expenses. When we examined the socio-demographic findings of the children and their family in the control group, 56.2% of the mothers were 31 years and older, 64.1% of the fathers were in the 31-40 age group. 53.1% of children are girls and 32.8% of families have two children. It was determined that 76.6% of

the mothers were housewives and 35.9% of the fathers were self-employed. 28.1% of mothers had high school education, 28.1% had university education or higher, and 39.1% of fathers had high school education. While 76.6% of the mothers are not working, all of the fathers are working. The income of 56.3% of the families is equal to their expenses.

Table 1 compares the practices and behaviors related to diarrhea and hygiene of children and their mothers in the control and experimental groups. With respect to all the variables, the control and experimental groups were found to be similar ($p > 0.05$).

Table 1. Comparison of practices and behavior of children and mothers in the control and experimental groups regarding diarrhea and hygiene.

| Variables | Experimental Group | | Control Group | | p^a | |
|---|---|----|---------------|----|-------|-------|
| | <i>n</i> | % | <i>n</i> | % | | |
| Presence of soap at home | Yes | 64 | 100 | 64 | 100 | - |
| | No | - | - | - | - | |
| Toilet type | Flush toilet | 8 | 12.5 | 7 | 10.9 | 0.164 |
| | Squatting toilet | 10 | 15.6 | 19 | 29.7 | |
| | Both | 46 | 71.9 | 38 | 59.4 | |
| Type of drinking water given to children | Boiled and cooled | 7 | 10.9 | 11 | 17.2 | 0.570 |
| | Bottled | 21 | 32.8 | 21 | 32.8 | |
| | Tap water | 36 | 56.3 | 32 | 50.0 | |
| Does the child currently have diarrhea? | Yes | 4 | 6.2 | 8 | 12.5 | 0.225 |
| | No | 60 | 93.8 | 56 | 87.5 | |
| Frequency of child having diarrhea | Never | 4 | 6.3 | 11 | 17.2 | 0.286 |
| | Once | 5 | 7.8 | 5 | 7.8 | |
| | Rarely (a maximum of twice a month) | 51 | 79.7 | 44 | 68.8 | |
| | Once or twice a month | 4 | 6.2 | 4 | 6.2 | |
| Practices when diarrhea occurs* | Consulting a doctor | 31 | 48.4 | 30 | 46.9 | 0.860 |
| | Regulating the diet | 35 | 54.7 | 34 | 53.1 | 0.860 |
| | Giving liquid/oral rehydration therapy or breastfeeding | 30 | 46.9 | 28 | 43.8 | 0.723 |
| | Practicing good hygiene | 3 | 4.7 | 1 | 1.6 | 0.310 |
| | Other practices** | 4 | 6.3 | 1 | 1.6 | 0.171 |

* More than one answer is given. These are the people who only answered "yes".

**Other practices=Feeding children with coffee mixed with lemon juice, lemon salt, coffee mixed with yogurt, dry coffee, giving children cola

^a= Chi-square test.

The difference between pretest and posttest scores of total scale and its subdimensions in experimental group was found to be statistically significant. The

mean scores in the posttest was significant higher than the mean scores in the pretest ($p < 0.001$; Table 2).



Table 2. Comparison of pretest and posttest mean scores of the mothers in the experimental group for the maternal self-efficacy scale for preventing early childhood diarrhea.

| Subdimensions/Scale | | <i>n</i> | Mean | SD | <i>p</i> ^a |
|------------------------------------|----------|----------|--------|------|-----------------------|
| Personal Hygiene | Pretest | 64 | 37.80 | 2.85 | 0.000* |
| | Posttest | 64 | 39.38 | 1.58 | |
| Child-Oriented Hygienic Behaviours | Pretest | 64 | 33.98 | 4.17 | 0.000* |
| | Posttest | 64 | 39.17 | 3.47 | |
| General Hygienic Behaviours | Pretest | 64 | 23.34 | 1.87 | 0.000* |
| | Posttest | 64 | 24.53 | 1.13 | |
| Total Scale | Pretest | 64 | 95.13 | 7.43 | 0.000* |
| | Posttest | 64 | 103.08 | 5.31 | |

**p* < 0.001

^a= Wilcoxon test

There was no significant difference between pretest and posttest scores of total scale and its

subdimensions in the control group (*p* > 0.05; Table 3).

Table 3. Comparison of pretest and posttest mean scores of the mothers in the control group for the maternal self-efficacy scale for preventing early childhood diarrhea

| Subdimensions/Scale | | <i>n</i> | Mean | SD | <i>p</i> ^a |
|------------------------------------|----------|----------|-------|------|-----------------------|
| Personal Hygiene | Pretest | 64 | 38.73 | 2.06 | 0.726 |
| | Posttest | 64 | 38.80 | 2.03 | |
| Child-Oriented Hygienic Behaviours | Pretest | 64 | 35.78 | 3.44 | 0.908 |
| | Posttest | 64 | 35.97 | 3.85 | |
| General Hygienic Behaviours | Pretest | 64 | 24.30 | 1.52 | 0.549 |
| | Posttest | 64 | 24.25 | 1.61 | |
| Total Scale | Pretest | 64 | 98.81 | 5.11 | 0.828 |
| | Posttest | 64 | 99.02 | 5.83 | |

^a= Wilcoxon test

Table 4 compares the pretest and posttest non-functional practices of the mothers in the control and experimental groups. The questions were framed in such a way that if a mother gave a “yes” answer, it means this mother follows incorrect (non-functional) practices.

There was a significant difference between the mean scores for the non-functional child care practices (except for practices related to diarrhea) of the mothers in the experimental group before and after the training (*p* < 0.05).

The difference between the mean scores for non-functional child care practices (excluding

breastfeeding practices) of the mothers in the control group before and after the training was not significant (*p* > 0.05; Table 4).

When the percentages of “yes” responses given to the same statement (except for practices related to the colostrum, constipate, diarrhea, burn, and wetting of the child) in the experimental and control were compared in the posttest, the result was significantly different (*p* < 0.05). When we examine non-functional application of cold sore, no one answered “yes” in both groups for the statement regarding the non-functional application of cold sore in the posttest.



Table 4. Comparison of pretest and posttest non-functional practices of the mothers in the control and experimental groups

| Items | | Group | | | | <i>p</i> ^a |
|---|-----------------------|--------------|------|--------------|------|-----------------------|
| | | Experimental | | Control | | |
| | | <i>n</i> | % | <i>n</i> | % | |
| 1. The mother's first milk (the colostrum) should not be given to the baby | Pretest | 11 | 17.2 | 7 | 10.9 | 0.309 |
| | Posttest | 3 | 4.7 | 7 | 10.9 | 0.188 |
| | <i>p</i> ^b | 0.008 | | 1.00 | | - |
| 2. The baby should wear yellow or should be washed the water with gold in it in order to prevent it from neonatal jaundice | Pretest | 19 | 29.7 | 23 | 35.9 | 0.451 |
| | Posttest | 6 | 9.4 | 20 | 31.3 | 0.002 |
| | <i>p</i> ^b | 0.000 | | 0.375 | | - |
| 3. It is beneficial for mothers to wait for three azans (call for prayer in Islam) before they breastfeeding their baby | Pretest | 38 | 59.4 | 35 | 54.7 | 0.592 |
| | Posttest | 11 | 17.2 | 28 | 43.8 | 0.001 |
| | <i>p</i> ^b | 0.000 | | 0.016 | | - |
| 4. Babies' skin should be salted in order to prevent the smell of sweat and nappy rash | Pretest | 17 | 26.6 | 16 | 25.0 | 0.840 |
| | Posttest | 3 | 4.7 | 13 | 20.3 | 0.008 |
| | <i>p</i> ^b | 0.000 | | 0.250 | | - |
| 5. Swaddling is necessary for shaping the hands and feet of babies properly and for babies to sleep comfortably | Pretest | 29 | 45.3 | 32 | 50.0 | 0.595 |
| | Posttest | 11 | 17.2 | 30 | 46.9 | 0.000 |
| | <i>p</i> ^b | 0.000 | | 0.625 | | - |
| 6. It is helpful to put wool, towel or newspaper around the back or chest of babies in order to stop them from coughing | Pretest | 39 | 60.9 | 40 | 62.5 | 0.856 |
| | Posttest | 16 | 25.0 | 36 | 56.3 | 0.000 |
| | <i>p</i> ^b | 0.000 | | 0.219 | | - |
| 7. When babies are constipated, it is necessary to put soap or olive oil in the anus and make them drink plant juice | Pretest | 26 | 40.6 | 25 | 39.1 | 0.857 |
| | Posttest | 10 | 15.6 | 18 | 28.1 | 0.087 |
| | <i>p</i> ^b | 0.000 | | 0.039 | | - |
| 8. When babies have diarrhea, they should be given soda or cola with aspirin, fed with dry coffee, and kept away from drinking water and breast milk | Pretest | 6 | 9.4 | 4 | 6.3 | 0.510 |
| | Posttest | 1 | 1.6 | 4 | 6.3 | 0.365 |
| | <i>p</i> ^b | 0.063 | | 1.00 | | - |
| 9. It is useful to hold the child upside down by its ankles, cover the child in warm soil, make the child drink boiled plant juice or scare the child when the child has wet itself | Pretest | 1 | 1.6 | 6 | 9.4 | 0.115 |
| | Posttest | 0 | 0 | 4 | 6.3 | 0.119 |
| | <i>p</i> ^b | - | | 0.625 | | - |
| 10. When the child's fever rises, the child's body should be massaged with a mixture of vinegar and water, and it should be wiped with cotton wetted with cologne | Pretest | 32 | 50.0 | 23 | 35.9 | 0.108 |
| | Posttest | 7 | 10.9 | 21 | 32.8 | 0.003 |
| | <i>p</i> ^b | 0.000 | | 0.774 | | - |
| 11. When the child has discomfort due to teething, a bread crust, green onion or leek should be given to the child so they can bite it | Pretest | 37 | 57.8 | 32 | 50.0 | 0.375 |
| | Posttest | 10 | 15.6 | 27 | 42.2 | 0.001 |
| | <i>p</i> ^b | 0.000 | | 0.180 | | - |
| 12. When a child has a cold sore, it is useful to apply red lipstick, or to apply a heated wooden spoon or a dirty glass cup to the cold sore | Pretest | 1 | 1.6 | 1 | 1.6 | 1.000 |
| | Posttest | - | - | - | - | - |
| | <i>p</i> ^b | - | | - | | - |
| 13. When a child has a burn, it is useful to put raw potatoes on the burned area, apply lavender oil, centaury oil, sesame oil, olive oil, or toothpaste | Pretest | 14 | 21.9 | 10 | 15.6 | 0.365 |
| | Posttest | 3 | 4.7 | 8 | 12.5 | 0.115 |
| | <i>p</i> ^b | 0.001 | | 0.500 | | - |

^a= Chi-square test.

^b= McNemar test.

Note: It was expressed over the yes answer.



DISCUSSION

After the education, the self-efficacy of mothers in preventing early childhood diarrhea increased in this study. Joventino et al. (2017) found that training given to mothers about childhood diarrhea via video increased the self-efficacy of mothers in preventing childhood diarrhea³³. Another study found that educational interventions increased maternal self-efficacy to prevent childhood diarrhea³⁴. In their studies, Öztürk and Erci found that training about newborn care and postpartum period including the topics of the mothers' self-confidence and diarrhea increased the level of the mothers' self-confidence³⁵. The results of the current research are consistent with the aforementioned studies.

It was determined that the mother's non-functional child care practice information generally increased after the training, in this study. Therefore, it was concluded that non-functional child care practices generally decreased after the training. In the present study, it can be said that the mothers who received education acquired cognitive behaviors at a sufficient level. In studies consistent with our study, educating mothers about non-functional practices helped to increase their knowledge of non-functional practices^{11, 25, 26}.

When we examined the knowledge of mothers about the non-functional practice of diarrhea in this study, it was observed that the difference between the mean scores for all the non-functional child care practices in the experimental group before and after training was found to be significant except for "the practices regarding diarrhea". However, it was found that the percentage of the mothers in the experimental group who agreed with the statement that "When babies have diarrhea, they should be given soda or cola with aspirin, fed with dry coffee, and kept away from drinking water and breast milk" decreased after the education (1.6%) compared to the percentage before the education (9.4%). Studies

in the literature have revealed that although mothers have some correct beliefs about "childhood diarrhea and its management", they also have many misconceptions, such as keeping their children away from drinking water or breast milk, feeding them with a mixture of dry coffee and yoghurt, and giving them soda or cola with aspirin^{16, 22, 36}. Abdel-Aziz et al. (2016) reported that "health and diet education for diarrhea" was effective in the management of diarrhea in mothers⁸. Yalçın and Koçak (2013) found that there was an increase in the knowledge level of the mothers who were received training that includes conveying information supporting correct practices regarding pregnancy, birth, puerperium and infant care, and there was a positive change related to their non-functional practices¹¹. The results of the present study are consistent with the aforementioned studies.

CONCLUSION

The results of this research have indicated that after training had been given to the mothers, an increase was found in their self-efficacy in preventing early childhood diarrhea. In addition, it was determined that the mother's non-functional child care practices generally decreased after the training. In this study, it is seen that the education is given to mothers is effective. Recommendation can be made that that practices for increasing mothers' self-efficacy and knowledge should be increased through trainings in order to help mothers to manage their child's diarrhea successfully and effectively.

The limitations of the study

The study is limited to mothers who have at least one child between the ages of 0 and 5. Another limitation is that the study was conducted in a city.

Note: This study was produced from the PhD thesis.

Author contributions: All authors contributed.

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