

The Effects of Quince Seed Jelly and Human Milk on Nipple Fissures During Early Postpartum**

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ABSTRACT:

Purpose: In experimental studies, it has been reported that the jelly made from the quince seed is effective in healing wounds and has no side effects or contraindications. This study was conducted to determine the effect of quince seed jelly and human milk, respectively, used in the early postpartum period, on nipple fissures.

Material and Methods: The research was a randomised controlled study. In total, 426 mothers who met the research criteria were selected for the study, which was conducted at the obstetrics and gynaecology department of two hospitals between 2015–2017 in Sivas city of Turkey. The 426 mothers were distributed equally into three groups (n=142 per group): the human milk, quince seed jelly and the control group. Mothers in the intervention groups applied quince seed jelly and human milk, respectively, on their nipples and areola after every breastfeeding. All mothers were evaluated for nipple fissures on the 1st, 3rd, 7th, and 10th days postpartum.

Results: Mothers with the highest number of problems in the first 10 days postpartum belonged to the control group (61.3%-62%), followed by the human milk group (19%), whereas, the quince seed group experienced the least problems (2.8%-5.6%, p<0.05). Nipple pains and fissures were most common in the mothers assigned to the control group.

Conclusion: Mothers who applied either quince seed jelly or human milk to their nipples and areolas after each breastfeeding, compared to a control group, were less likely to have either nipple fissures or nipple pain during the first 10 days postpartum.

Keywords: Early postpartum; human milk; nipple fissures; quince seed jelly; women

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INTRODUCTION

Human milk is a unique food that fully supports the development of the baby (the protection and development of the immune system, etc.), (Cangol & Sahin, 2014; Italianer et al., 2020; Kucuk & Gocmen, 2012). During the breastfeeding period, infants can experience various difficulties in receiving only human milk for six months due to problems caused by the mother or the infant (Tanriverdi et al., 2014; Unsur et al., 2014). The most common issue related to breastfeeding is nipple fissures (Cangol & Sahin,

2014; Fraser & Cullen, 2008). Nipple fissures have many causes (e.g., incorrect breastfeeding technique, incorrect breast hygiene) (Carlander et al., 2010; Gozukara, 2014). In the first weeks postpartum, nipple fissures are seen in 15-41% (Kirlek & Balkaya, 2013) and 58% (Buck et al., 2014) of the mothers who breastfeed. Nipple fissures occurring in the first 1-2 weeks of the breastfeeding period (i.e. early postpartum period) may cause mothers to cease breastfeeding (Cangol & Sahin, 2014; Fraser & Cullen, 2008; Unsur et al., 2014). In

the literature, the use of complementary and alternative therapies to increase human milk and to maintain breastfeeding is of particular interest in the postpartum period (Bazzano et al., 2016; Birdee et al., 2014; Esfahani et al., 2015). It is known that the proper breastfeeding position is taught and ointments that contain vitamins A, D and E, such as baby oil or vaseline, are applied locally, to prevent nipple fissures (Magalhaes et al., 2009; Salarfard et al., 2020). The WHO (2020) recommend that breastfeeding mothers should keep their nipples clean and dry. The studies suggest safe, effective, inexpensive and natural methods (human milk, olive oil, hot tea, keeping the breast dry, etc.) for nipple fissures instead of pharmacological agents, such as cream, ointment, oil (lanolin, aloe vera, etc.), lotion or moisturiser (Atan & Sirin, 2012; Bazzano et al., 2016; Kirlek & Balkaya, 2013). Nonetheless, controversy surrounds the effect of quince (*cydonia oblonga*) seed as an alternative strategy to prevent nipple fissures (Hemmati et al., 2012; Jouki et al., 2014; Tamri et al., 2014). Quince seed is a valuable source of health benefits owing to its antioxidant, anti-microbial and anti-ulcerative properties (Deng et al., 2020; Fromm et al., 2012; Hemmati et al., 2012). Quince seed contains cydonine, phenolic compounds, organic acids, free amino acids and pectin (Aghmiuni et al., 2020; Jouki et al., 2014; Magalhaes et al., 2009). In various studies, it has been reported that the jelly made from the quince seed is effective in healing wounds (attributed to the antioxidants, which increased fibroblast activity and collagen production, facilitated the formation of granulation tissue and increased blood circulation, etc.) and has no side effects or contraindications (Aghmiuni et al., 2020; Ghafourian et al., 2015; Hemmati et al., 2012; Tamri et al., 2014; Toppo & Pawar, 2015; Vamsi et al., 2014). Currently, no literature studies exist on the effect of quince seed jelly in preventing nipple fissures, whereas, the impacts of human milk have been evaluated (Kirlek & Balkaya, 2013).

MATERIAL and METHODS

Purpose and Type of the Study

This study was conducted to determine the effect of quince seed jelly and human milk, respectively, used

in the early postpartum period, on nipple fissures. The study was a three-armed randomised controlled research. Official permissions were obtained from the institutions, approval from the ethics committee (2014/466) The study was registered retrospectively on 2 Sept 2020 (after completion of the trial) at clinicaltrials.gov (trial number NCT04536597).

Sampling and Participant

The research was conducted at the obstetrics and gynaecology departments of two hospitals in Sivas city of Turkey. The sample size used in this study was calculated using power analysis (R 3.3.2). The population of the research consisted of births delivered at a university hospital (for caesarean section - 3rd level health institution) and a state hospital (for vaginal birth - 2nd level health institution). In the previous year (2014), a total of 2110 primiparous women gave birth, of which, 679 (32.2%) were delivered by caesarean section. In the postpartum period, the rate of nipple fissures observed is 15% in the reference study (Kirlek & Balkaya, 2013). 426 the primiparous mothers were planned to be included in the study, taking into account the parameters of $\alpha=0.43$ the effect size, $\alpha=0.05$ first type error level and $\beta=0.20$ second type error level, 0.80 test power. Of 426 mothers, 284 mothers created the intervention group ($n=142$ in the human milk group; $n=142$ in the quince seed jelly group), and 142 mothers formed the control group. At the same time, the distribution of the 426 mothers was stratified according to the ratio of those who gave birth via caesarean section (epidural anaesthesia) (32.2%) and the ratio of those who gave standard vaginal birth (67.8%), so that the number of mothers who delivered by caesarean section was equal to 45 (caesarean birth $n: 45$, standard vaginal birth $n: 97$) in each group.

Mothers who accepted to participate and met the research criteria (e.g., primiparous, age over 19 years, having no health problems affecting the breastfeeding and nipple) were assigned to one of three groups. The mothers in the sample were numbered. For this, a systematic sampling method was used, in which mother number 1 was assigned to the first group, mother number 2 to the second group and mother number 3 to the third group.

Repeatedly, mother number 4 was assigned to the first group, mother number 5 to the second group, mother number 6 to the third group. This process continued until the number of samples was completed. Interventions to be made in groups 1, 2 and 3 were also established by the drawing lots method (Figure 1).

Data Collection Tools

Data were collected using various forms, including a Personal Information Form, which records sociodemographic characteristics; a Breast Care and Correct Breastfeeding Technique Control Form, which determines proper breast care and

breastfeeding practices; a Breast Hygiene Questionnaire, to assess practices for breast hygiene; a Breast Care Monitoring Form, which questions breast care in the last 24 h, and a Satisfaction Question Form, which identifies the mothers' opinions about the method applied. The forms, which were based on the literature, were prepared and filled by the researcher (Fraser & Cullen, 2008; Carlander et al., 2010; Gozukara, 2014; Hemmati et al., 2012; Jouki et al., 2014; Kirlek & Balkaya, 2013). Each form was completed with the mother at the hospital or by visiting each house and using the face-to-face interviewing technique by the researcher (Figure 2).

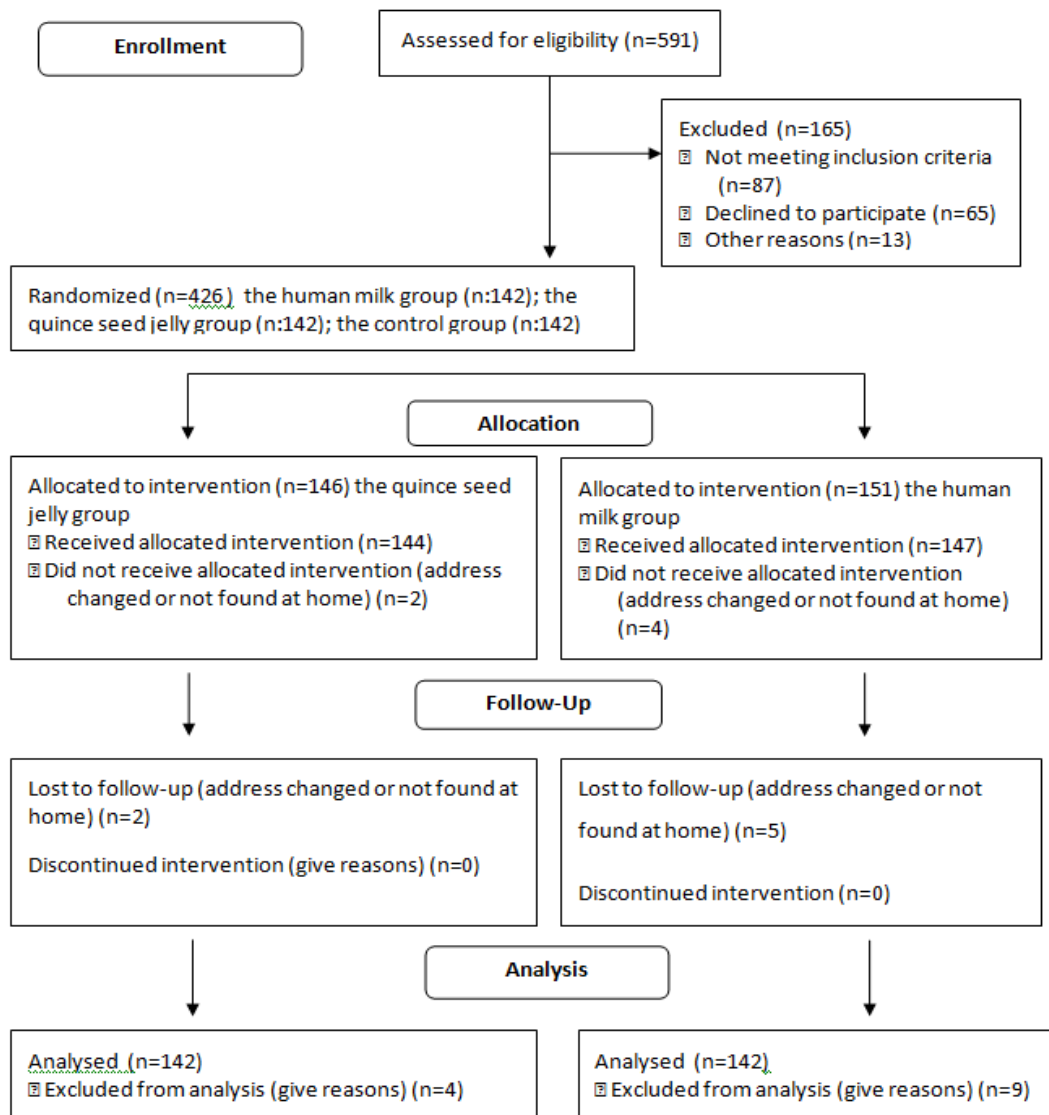


Figure 1. CONSORT Diagram

1st, 3rd, 7th and 10th days: 1st, 2nd, 3rd and 4th interview

1st group: Human milk	2nd group: Quince seed jelly	3rd group: Control
Informed Consent Form (1st day)	Informed Consent Form (1st day)	Informed Consent Form (1st day)
Personal Information Form (1st day)	Personal Information Form (1st day)	Personal Information Form (1st day)
Breast Care and Proper Breastfeeding Technique Control Form (1st, 3rd, 7th days)	Breast Care and Proper Breastfeeding Technique Control Form (1st, 3rd, 7th days)	Breast Care and Proper Breastfeeding Technique Control Form (1st, 3rd, 7th days)
Breast Hygiene Questionnaire (1st, 3rd, 7th and 10th days)	Breast Hygiene Questionnaire (1st, 3rd, 7th and 10th days)	Breast Hygiene Questionnaire (1st, 3rd, 7th and 10th days)
Breast Care Monitoring Form (3rd, 7th and 10th days)	Breast Care Monitoring Form (3rd, 7th and 10th days)	Breast Care Monitoring Form (3rd, 7th and 10th days)
Human Milk Application Steps (1st, 3rd and 7th days)	Quince Seed Jelly Application Steps (1st, 3rd and 7th days)	
Satisfaction Question Form (10th day)	Satisfaction Question Form (10th day)	Satisfaction Question Form (10th day)
It was evaluated whether problems such as nipple fissures and nipple pain developed in the groups during the first 10 days postpartum		

Figure 2. Flowchart of the Data Collection Process

Personal Information Form

This form was filled during the first interview at the hospital. It comprised seventeen questions and included those related to sociodemographic characteristics of the mothers and information about pregnancy, childbirth and postpartum.

Breast Care And Proper Breastfeeding Technique Control Form

This form, which consisted of four questions about breast care and sixteen questions about proper breastfeeding technique was completed on the 1st day postpartum at the hospital, on the 3rd day at the hospital or by visiting the home, and on the 7th day by home visit.

Breast Hygiene Questionnaire

This survey contained six questions about the frequency of washing hands before breastfeeding, cleaning the nipples, etc. The form was filled after observations made on the 1st day postpartum at the

hospital, on the 3rd day at the hospital or by visiting the home, and on the 7th and 10th days during the home visits.

Breast Care Monitoring Form

There were ten questions in this form, whether she continued breastfeeding, what problems (e.g., nipple fissures) occurred in the breasts in the last 24 hours, etc. This form was used for the primary outcomes of study. The form was filled on the 3rd day postpartum at the hospital or by visiting the home, and on the 7th and 10th days during the home visits by the researcher. If any of the mothers in all three groups developed a nipple fissure, they were directed to the health institution and recorded that they developed a nipple fissure, and the application was terminated in these mothers.

Satisfaction Question Form

This form ascertained the satisfaction from the breast care practice, using four questions. The

satisfaction question form was filled on the 10th day postpartum, during the home visit.

Data Collection

The data were collected by the researcher between 15.10.2015 and 10.05.2017. Written informed consent was obtained in person at the time of enrolment in the study. Upon mothers first meeting at the hospital, their written consent was obtained. The Personal Information Form (first interview), Breast Care and Correct Breastfeeding Technique Control Form (first, second, third interview), Breast Hygiene Questionnaire (first, second, third, fourth interview), the Breast Care Monitoring Form (second, third, fourth interview) and the Satisfaction Questionnaire (fourth interview) were administered to the mothers, and their answers were recorded.

Mothers who individually applied human milk and quince seed jelly were given training on how to apply the treatment and informed that reapplication was required after each breastfeeding. Mothers in the groups who used human milk and quince seed jelly, respectively, were re-informed about the practices and reapplied (second, third interview). The quince seed jelly prepared by the researcher was given to the mothers (first, second, third interview) and the interview was terminated. The interviews were completed in 15–20 min, including the training. Any kind of application that the mothers in the control group did for the nipple fissures were recorded on the 1st, 3rd, 7th and 10th days postpartum, by the researcher. It was evaluated whether problems such as nipple fissures and nipple pain developed in the groups during the first 10 days postpartum (Figure 2).

Interventions

Application of quince seed jelly: Quince seed jelly, prepared using only the seed of the quince by the researcher, was given to the mothers belonging to this group. Briefly, 3 g (2–3 pieces) of quince seeds are placed in 100 mL water and heated to boiling for 10 min. The prepared jelly was used for 3 days, immediately after cooling and was stored by the woman in the refrigerator (1-3 degrees), (Baytop, 1999; Tanker & Tanker, 1991).

On the 1st day postpartum, the researcher provided

the mothers with practical training at the hospital, regarding the application of quince seed jelly to the nipple and areola and leaving it to dry. Jelly removed from refrigerator when applied to nipple and areola. This training was repeated on the 3rd, 7th and 10th days by visiting each house and using the face-to-face interviewing technique, to ensure that the mothers followed it precisely. The training process was completed in 5–10 min, including questions and answers. Every 3-4 days (days 1, 3, 7 and 10), quince seed jelly prepared by the researcher was given to the mothers to continue applying, according to the procedure. The mothers were asked to apply it after every breastfeeding.

Human milk application: Mothers in this group received practical training, conducted by the researcher on the 1st day postpartum at the hospital, on applying a few drops of their human milk to the nipples and areola after each breastfeeding and leaving it to dry. This training lasted 5–10 min. The human milk application of mothers in this group was recorded on the 1st, 3rd, 7th and 10th days, by the researcher.

Statistical Analysis

The homogeneity of the distribution in the groups and the similarity of the variances were evaluated using the Levene's test. The normal distribution suitability of the variables was examined by the Kolmogorov–Smirnov test. One-way analysis of variance (ANOVA) was used to compare three or more groups with normal distribution suitability of the variables. Kruskal–Wallis's H test was used in the comparison of three or more groups with no normal distribution suitability. The Chi-square and exact tests were performed in the analysis of group distributions in categorical variables. Descriptive statistics were expressed as mean \pm standard deviation (SD), median (min-max) and n (%). Statistical significance was accepted at $p < 0.05$. The SPSS 23.0 package was used throughout the data analysis.

Ethical Approval

Each stage of the research was conducted in accordance with ethical principles. Written

permission was obtained from the ethics committee (dated 01.08.2014, no. 2014/466) and from the institutions (dated 13.11.2014, no. 75723911/044-464) before the application. Mothers who approved the informed consent form were included in the study. Written permissions of mothers who participated in the research voluntarily were taken after consent forms were read. If any of the mothers in all three groups developed a nipple fissure, they were directed to the health institution and recorded that they developed a nipple fissure, and the application was terminated in these mothers.

RESULTS

In the groups, sociodemographic (educational status etc.), pregnancy and birth (primiparous, etc.), correct breastfeeding technique, proper breast care, monitoring and hygiene characteristics were

homogeneously distributed. Appropriate breast care and applications (e.g., washing hands before breastfeeding) related to breast, as well as accurate breastfeeding technique (e.g., while breastfeeding, most of the areola in the mouth), were strictly applied in the groups, from the 1st to 10th day postpartum. Participants in the control group applied the olive oil, creams (Lansinoh, etc.) for the prevention the nipple fissures and pain relief (39.4%), ($p < 0.05$).

The majority of the mothers in the study provided only human milk as the first food and as the food in the first 24 h postpartum, breastfeeding in the first 30 min after birth, and then breastfeeding at 1–2 h intervals while maintaining an average of 5-20 min breastfeeding duration. The average birth weight of the infants in the groups was 3100–3200 g ($p > 0.05$) (Table 1).

Table 1. Distribution of mother and infant postpartum characteristics (N = 426)

Some postpartum Related Characteristics		Groups (n=142)						χ ² p
		Control n(%)		Human milk n(%)		Quince seed n(%)		
First nutrition of baby	Human milk	114	(80.3)	124	(87.3)	119	(83.8)	4.376 0.357
	Baby formula	25	(17.6)	18	(12.7)	21	(14.8)	
	Sugared water	3	(2.1)	0	(0.0)	2	(1.4)	
Bab’s nutrition in the first 24 h	Only human milk	100	(70.4)	116	(81.7)	104	(73.2)	11.102 0.156
	Human and cow milk	25	(17.6)	21	(14.8)	30	(21.1)	
	hHHuman milk and baby formula	17	(11.9)	5	(3.5)	8	(5.6)	
Timing of first breastfeed	First half an hour	90	(63.4)	71	(50.0)	73	(51.4)	8.623 0.071
	First 1-2 hours	36	(25.4)	58	(40.8)	53	(37.3)	
	First 3-4 hours	16	(11.3)	13	(9.2)	16	(11.3)	
Frequency of breastfeeding	with 1-2 hours intervals	119	(83.8)	127	(89.4)	127	(89.4)	2.758 0.252
	with 3-4 hours intervals	23	(16.2)	15	(10.6)	15	(10.6)	
Average breastfeeding duration	5-10 minutes	64	(45.1)	70	(49.3)	66	(46.5)	0.871 0.929
	11-20 minutes	51	(35.9)	45	(31.7)	51	(35.9)	
	21-30 minutes	27	(19.0)	27	(19.0)	25	(17.6)	
Birth weight		Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	
		3182,4±362,8	3214,8±339,2	3188,0±380,2	3188,0±380,2	3188,0±380,2	3188,0±380,2	0,675

Chi-Square test; Exact test; Anova; $\alpha: 0.05$

On the 10th day after birth, 62.0% (n=88) of the control group, 19.0% (n=27) of the human milk group and 2.8% (n=4) of the quince seed jelly group developed nipple pain and fissure in the breasts ($p < 0.05$). Within the first 10 days postpartum, the group with the most problems (nipple pain and

fissure) was the control group while the least problems occurred in the quince seed group. From the 1st to 10th day postpartum, the nipple fissure was observed in 28.2% - 31.0% of the control group and 0.08% - 0.09% of the human milk group whereas, no nipple fissure transpired in the quince seed jelly

group ($p < 0.05$) (Table 2). There was a significant difference in the mothers' satisfaction from the breast care practices ($p < 0.05$) among the groups, being highest in the quince seed (100%), followed by human milk (93.0%) groups, respectively. Mothers in the intervention groups

(quince seed, human milk) were satisfied with the practices because they prevented nipple fissures and decreased nipple pain. All of the mothers in the quince seed group (100%) stated that they would recommend this practice to other mothers (Table 3).

Table 2. Distribution of problems occurring after breast care application according to interview days (N = 426)

		Groups (n=142)			χ^2 p	
Problems Occurring in Breast	Day of Life	Control n(%)	Human milk n(%)	Quince seed n(%)		
Problems occurring in breast	3rd day	Occurred	87(61.3)	27(19.0)	8(5.6)	119.814
		Not occurred	55(38.7)	115(81.0)	134(94.4)	0.001*
	7th day	Occurred	87(61.3)	27(19.0)	7(4.9)	120.049
		Not occurred	55(38.7)	115(81.0)	135(95.1)	0.001*
	10th day	Occurred	88(62.0)	27(19.0)	4(2.8)	131.836
		Not occurred	54(38.0)	115(81.0)	138(97.2)	0.001*
Occurring problem	3rd day	Nipple pain	46(32.4)	12(0.08)	6(0.04)	9.861
		Nipple fissure	40(28.2)	12(0.08)	0(0.0)	0.043*
		Breast fullness	1(0.01)	3(0.02)	2(0.01)	
	7th day	Nipple pain	42(29.6)	12(0.08)	4(0.03)	18.317
		Nipple fissure	42(29.6)	12(0.08)	0(0.0)	0.001*
		Breast fullness	3(0.02)	3(0.02)	3(0.02)	
	10th day	Nipple pain	40(28.2)	11(0.08)	1(0.01)	
		Nipple fissure	44(31.0)	13(0.09)	0(0.0)	30.013
		Breast fullness	3(0.02)	3(0.02)	3(0.02)	0.001*
		Bleeding nipple	1(0.01)	0(0.0)	0(0.0)	

Chi-Square test; Exact test; $\alpha: 0.05$; *The difference is statistically significant

Table 3. Distribution of mothers' satisfaction from breast care practises (N = 426)

		Groups (n=142)			χ^2 p
Satisfaction from Practises		Control n(%)	Human milk n(%)	Quince seed n(%)	
Satisfaction from the practise	Satisfied	80(56.3)	132(93.0)	142(100.0)	87.691
	Dissatisfied	62(43.7)	10(7.0)	0(0.0)	0.001*
The reason for being satisfied from practises	Decreased the pain	50(62.5)	67(47.2)	30(21.1)	41.177
	Prevented nipple fissure	10(12.5)	35(24.6)	38(26.8)	0.001*
	Both	20(25.0)	40(28.2)	74(52.1)	
The reason for being not satisfied from practises	Not decreased the pain and not prevented nipple fissure	62(43.7)	10(0.07)	0(0.0)	- -
Recommending the practise to other mothers	Recommending	75(52.8)	125(88.0)	142(100.0)	71.043
	Not recommending	67(47.2)	17(12.0)	0(0.0)	0.001*

Chi-Square test; Exact test; $\alpha: 0.05$; *The difference is statistically significant

DISCUSSION

Feeding human milk within the first days of life is important for establishing breastfeeding (Bostanci & Inal, 2015; Calik et al., 2017). Regular breast care is highly recommended to be conducted so that the feeding can continue smoothly after birth. Problems related to the breast (e.g., mastitis, nipple fissure) may arise in women who do not perform regular breast care (Atan & Sirin, 2012; Cangol & Sahin, 2014). In the prevention of nipple problems, the correct breastfeeding technique (the mother's proper holding of the baby to the breast, appropriate breastfeeding time and frequency) and breast care are favoured over creams, lotions, ointments and moisturisers (Atan & Sirin, 2012; Carlander et al., 2010; Gozukara, 2014). In women in the intervention group, breast problems were detected less frequently than in the control subjects. In the current research, proper breast care and applications related to breast hygiene, as well as breastfeeding technique increased in the groups from day 1 postpartum, with the given training. Nearly all of the participants in the groups carried out the practices (breastfeeding and breast care) correctly ($p>0.05$).

Infants may have some difficulties in taking only human milk in the first 6 months because of reasons originating from the mother or infant (Fraser & Cullen, 2008). Nipple fissure stands out among these reasons (Atan & Sirin, 2012; Cangol & Sahin, 2014; Fraser & Cullen, 2008; Kirlek & Balkaya, 2013). There are many reasons for nipple fissures (e.g., incorrect breastfeeding technique, care and hygiene, etc.) (Carlander et al., 2010; Gozukara, 2014). Nipple fissures often occur in the early postpartum period (Fraser & Cullen, 2008). Elucidating the exact cause of maternal breast infections is ongoing, but nipple fissure is the main risk factor (Kepekci et al., 2012). Cleaning the nipples before breastfeeding and proper breast hygiene practices performed by the mothers in our study (e.g., washing hands with soap before breastfeeding) were applied correctly and appropriately from the 1st to 10th day postpartum ($p>0.05$).

Various methods (e.g., vitamins, ointment, lotion, jelly, oil) exist to prevent the problems that may develop in the breast during the postpartum period (Fromm et al., 2012; Jouki et al., 2014). Nowadays,

human milk, olive oil and quince seed jelly are commonly used to prevent nipple fissures (Jouki et al., 2014; Tamri et al., 2014; Kirlek & Balkaya, 2013). Participants in the control group of our study mostly applied olive oil, creams (Lansinoh, Bepanthen, etc.) for the nipple fissures (39.4%). One randomized controlled trial demonstrated the superiority of olive oil over human milk in preventing nipple fissures (Cordero et al., 2015). Kirlek and Balkaya (2013) reported that the application of human milk decreased the nipple pain while olive oil decreased the possibility of nipple fissures occurring. Also, several studies have shown that the quince seed jelly promotes wound healing (Aghmiuni et al., 2020; Fromm et al., 2012; Ghafourian et al., 2015; Hemmati et al., 2012; Toppo & Pawar, 2015; Vamsi et al., 2014; Zhong et al., 2010). In Hemmati et al.'s (2012) work, quince seed jelly displayed a healing effect on skin lesions in rabbits (by inhibiting proteins synthesised by T-2 toxin, acting as plugs between the skin to prevent water evaporation, as antioxidants, as growth factors, by affecting fibroblast activities, facilitating the formation of granulation tissue, increasing blood circulation and, finally, by neutralising the dermal toxicity of the toxin).

In recent years, natural products have been widely used to improve health (Aghmiuni et al., 2020; Jouki et al., 2014; Tamri et al., 2014). Due to its antioxidant, anti-microbial and anti-ulcerative properties, as well as its softening and soothing effects on the skin, quince seed jelly is an important source to prevent nipple fissures (Aghmiuni et al., 2020; Ghafourian et al., 2015; Kawahara et al., 2017). In our study, mothers with the most problems in the first 10 days after birth belonged to the control group (61.3, 61.3 and 62% on the 3rd, 7th and 10th day, respectively). In contrast, the least problems arose in the quince seed jelly group (5.6, 4.9 and 2.8% on the 3rd, 7th and 10th day, respectively). Nipple fissures accounted for 46% - 50% of the individuals who developed a breast problem in the control group, during the first 10 days postpartum. During the same period, nipple fissures occurred in 0.08% - 0.09% of the mothers with a breast problem in the human milk group but were not seen in the quince seed jelly group. Sahin et al. (2013) reported that 34-96% of postpartum mothers had a painful nipple problem.

In our study, nipple pain was noticed in 40-46, 11-12, and 1-6 individuals in the control, human milk and quince seed groups, respectively, in the first 10 days after birth. Thus, the breast issue (nipple pain) disappeared most in the quince seed group, followed by the mothers who applied human milk. It can be said that the quince seed jelly is the most effective at preventing nipple fissures and human milk has a moderate benefit. Applications to prevent nipple pains and fissures (e.g., human milk, olive oil) may increase the level of satisfaction in mothers as in Kirlek and Balkaya's study (2013). In our study, the mothers in the intervention groups (quince seed jelly, human milk) were pleased with the practices because they prevented nipple fissures and decreased nipple pain. At the same time, the natural and low-cost quince seed jelly and human milk increased the satisfaction rate.

CONCLUSION

Human milk and quince seed jelly are effective in preventing nipple fissures and reducing nipple pain. Mothers who applied either quince seed jelly or human milk to their nipples and areolas after each breastfeeding, compared to a control group, were less likely to have either nipple fissures or nipple pain during the first 10 days postpartum. In line with these results, mothers may be advised to use quince seed jelly and human milk to prevent nipple fissures and reduce nipple pain in the early postpartum period.

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Conflict of Interest

The authors declare that there are no conflict of interests.

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