



Breastfeeding problems and interventions performed on problems: systematic review based on studies made in Turkey

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Abstract

To determine the breastfeeding problems encountered in the postpartum period and effect of interventions done in relation to the problems based on breastfeeding studies in Turkey. This study is a systematic review and was conducted by performing a scan of the Turkish and English literature over the period October 2016-February 2017. The study included 27 articles and seven theses, which were published in 2000-2015 in Turkey and published in 2008-2017. Data are presented tabulating and the aggregate percentages were calculated for some data showing common characteristics. A total of 6736 parents and 592 babies were included in these studies. As a result of the combined percentage calculation based on the data of cross-sectional and case-control studies, the most frequently reported problems were having breastfeeding problem (24.5%), mother's milk deficiency/worry about milk deficiency/thinking her baby is not

satisfied/baby's inadequate weight gain (15.7%), lack of knowledge and experience about breastfeeding/need for education and support (17.8%). Again, these studies showed that women stated the problems about have flat/depressed/small nipple (7.7%), pain/sensitivity (3.9%), swelling/fullness/ engorgement (10.8%), redness (28.8%), crack/wound/bleeding (26.1%) and mastitis (5.6%). Methods of prenatal education/counselling/motivation/follow-up, strong motivation, proactive lactation management and social support, moist warm application, using of breast milk and olive oil and using of breast shield and feeding with container and pacifier using have been reported to be effective in the experimental/quasi-experimental and case report studies included in this systematic review. This study showed that women experienced a lot problem with breastfeeding and that more prenatal education/counselling/monitoring was used in reducing problems.

Keywords: Breastfeeding, care, midwifery, mother's milk, nursing, postpartum period

Introduction

Breastfeeding is the best method for maternal health and the healthy growth and development of babies. The World Health Organization recommends that babies should be exclusively breastfed in the first six months of life (1). However, some problems that develop in the early postpartum period affect sucking and breastfeeding negatively in this period (2-4). Therefore, the rapid detection and resolution of breastfeeding problems encountered in the postpartum period is essential for maternal and infant health.

The Turkey Demographic and Health Survey reported that the rate of exclusive breastfeeding was 58% in the first two months of life and 10% in the 4th-5th months, although the proportion of babies who were breastfed during any period of life was substantially high in 2013 (5). There are many individual and cultural factors that influence breastfeeding babies. These factors have been reported to include womens' education, employment status, sociocultural properties, concerns related to body image, psychological status, support received from healthcare workers, and decisions and desire for breastfeeding (6-8). Studies have suggested that especially the mother's knowledge about breastfeeding and

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self-confidence, and the nursing technique used influenced the experience of breastfeeding problems and breastfeeding time (9, 10).

In the literature, it has been reported that there are some methods directed to individuals or groups that can be useful for the prevention and resolution of breastfeeding problems. These methods include providing education for mothers in the issues of breast care, correct nursing, techniques for increasing lactation, manual milking and storing milk, if necessary, and giving support to increase self-confidence (7, 11, 12). In addition, some studies mention use of creams, breastmilk and olive oil for nipples with the objective of preventing cracks and accelerating healing of cracks by enabling nipples to remain soft (13, 14). Again, it has been reported that the method of proactive lactation, which is defined as providing persistent help and support for the resolution of the mother's individual problems, may also be used (15).

Breastfeeding problems that develop in the postpartum period have been proposed as an important condition that negatively influences exclusive breastfeeding and the breastfeeding period (11, 16). Some regional studies related to this issue have been conducted in our country. However, the extent and efficiency of the data obtained in these studies should be demonstrated wholly reflecting our cultural characteristics. The data obtained may contribute to studies directed to reducing breastfeeding problems and to increasing exclusive breastfeeding of babies.

The aim of the survey and the survey questions

In this systematic review, it was aimed to specify breastfeeding problems encountered in the postpartum period and the effect of the interventions related to these problems based on the results of the studies conducted in Turkey. The questions targeted to be answered in the survey are as follows: What are the breastfeeding problems encountered in the postpartum period? What are the interventions performed in order to reduce/prevent/solve breastfeeding problems?

Material and Methods

In this study, which is a systematic review, the PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Checklist) was used in preparing the systematic review protocol and in writing the article (17). The Turkish test of this checklist is available (18).

Screening strategy

In this study, the Turkish and English literature between October 2016 and February 2017 were searched using the following search engines: Google Akademik (<http://scholar.google.com.tr>), PubMed, Ulusal Tez Merkezi (https://tez.yok.gov.tr/Ulusal_TezMerkezi/tarama.jsp), Dergi Park, Ulakbim and Türk Medline. The following key words were used for search: “*emzirme ya/ya da anne sütü (breastfeeding and/or mother milk)*”. A total of 34 studies that were conducted between 2000 and 2015 and published between 2008 and 2017 in Turkey and reported breastfeeding problems and solution methods, were included in this systematic review.

Specification and selection of the studies

Research articles and theses with cross-sectional, experimental/quasi-experimental, case-control, case presentation, and cohort designs, which had been conducted in Turkey and published in Turkish and English reporting the breastfeeding problems encountered in the postpartum period and the influence of interventions related to these problems, were included in this study. The details of article selection are shown in Figure 1.

In this systematic review, the specification and selection of studies were realized independently by two investigators. When differences of opinion occurred in relation with any study, consensus was achieved through discussion. Twenty-seven articles and seven theses were included in the assessment after selection was performed according to title, abstract, and full text.

Evaluation of the methodologic quality of the study

The methodologic quality of the articles included in this systematic review was evaluated by the secondary investigator and checked by the primary investigator. In this study, STROBE (“The Strengthening the Reporting of Observational Studies in Epidemiology”) (19) was used to evaluate the quality of observational studies (descriptive, cross-sectional, cohort and case-control) and “Critical Appraisal Skills Programme: Quality Appraisal Criteria for RTC Evidence” (CASP) was used to evaluate experimental and quasi-experimental studies (http://www.healthknowledge.org.uk/sites/default/files/documents/interactivel/fae/rct/CASP_11_Questions_for_an_RCT_with_HealthKnowledge_logo.pdf). The STROBE statement is a checklist composed of 22 articles, which indicate the parts to be written in an article during preparation of observational research articles. A Turkish version of the STROBE statement is available (20). CASP is a form composed of 10 articles

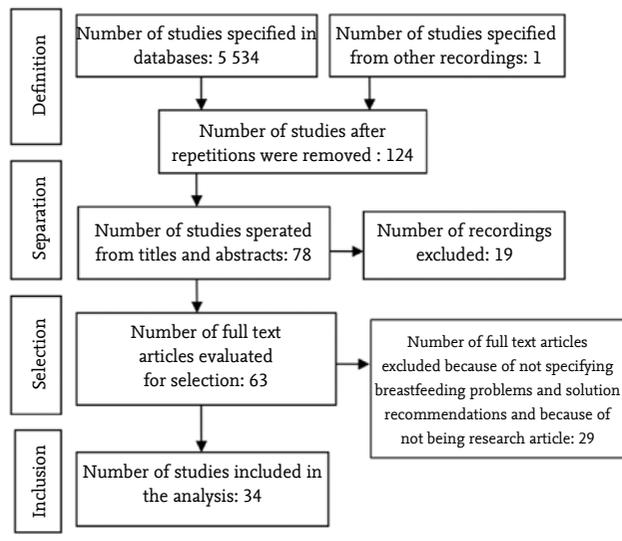


Figure 1. Selection and inclusion process of the studies

and its Turkish text was prepared and used in this study. Quality assessment was made for two studies that were case reports. Quality assessment results for the articles can be obtained from the primary author, if requested.

Extraction and analysis of the data

A data extraction tool developed by the investigators was used to obtain the study data. With this data extraction tool, data related to the methods of the studies included in this systematic review, search methods, sample sizes, site and year of the studies, mean age, breast and breastfeeding problems experienced in the postpartum period, frequency of the problems, and the influence of the interventions related to these problems, could be obtained. The process of data extraction was performed by the secondary investigator independently and checked by the primary investigator.

Statistical Analysis

A meta-analysis could not be performed because the data obtained were not homogeneous and they were presented in tables. However, a combined percentage calculation was made in relation to some results reported commonly in the studies included in this systematic review.

Results

Search results

As a result of screening, 5534 records were reached initially. Sixty-three articles were reached as a result of the examination performed according to title, abstract, and full text, respectively. The data extraction process was performed with 34 studies after removing recurrent re-

ords, examinations according to inclusion criteria, and inclusion of additional studies. Explanations related to the selection of the articles are shown in Figure 1.

Methodologic quality assessment results

When the reporting qualities of the observational studies were evaluated over 22 points using the 22-article STROBE, the mean score was found as 16.8 (range, 14-21). In the assessment of the experimental/quasi-experimental studies using CASP, the mean score was found as 9.0 (range, 7-10).

Characteristics of the studies

A total of 34 studies related to breastfeeding problems experienced in the postnatal period and solution methods that were conducted in Turkey and published in English (15) and in Turkish (19) were included in this systematic review. It was observed that 16 of the studies were cross-sectional, 14 were experimental/quasi-experimental, two were case-control studies, and two were case reports. Twenty-seven articles and seven theses conducted between 2000 and 2015 and published between 2008 and 2017 were included in the study. The mean time period between the collection of data and the time when the data were published was 2.5 years in the studies. However, the year when the data were collected was not reported in six of the studies. A total of 6736 parents and 592 babies were included in the studies. The studies were conducted in 16 different provinces and seven different regions of Turkey; most studies were conducted in the Egean region (nine studies), the Marmara region (eight studies), and Middle Anatolia (nine studies). It was observed that the data were collected in the field in nine studies and in hospitals in 25 studies. It was found that the sample size of the studies ranged between 1 and 1080 and the time when the data were collected ranged between 0 and 60 months (Table 1, 2).

Breastfeeding problems observed in the postpartum period

The data of observational studies demonstrated that women mentioned numerous breastfeeding problems. As a result of combined percentage calculation, 24.5% of the women reported that they experienced breastfeeding problems. The women frequently reported the following breastfeeding problems: lack of maternal knowledge of breastfeeding technique/inadequate information and experience/need for education and assistance (17.8%), inadequate breastmilk/concern for inadequate breastmilk/thought that the baby was not satiated adequately/inadequate weight gain of the baby (15.7%).

Table 1. Characteristics of the observational studies included in the systematic review

Authors (year)	Study design	Data collection tool	City	Year in which the study was conducted	Study field	Sample size	Mean maternal age, year (SD)	Screening time	Basic findings
Tokat et al. 2015 (31)	Cross-sectional	Questionnaire, ESDF and BSF	İzmir	2010	Hospital	334	25.6±5.1	The first 24 hours	With breastfeeding problems; 101 (30.2%) Breastfeeding problems: - Failure of sucking by the baby: 72 (21.6%) - Nipple problems: 24 (7.2%) - Insufficient breastmilk: 6 (1.8)
Yeşildal et al. 2008 (39)	Cross-sectional	Questionnaire	Düzce	2006	Hospital	158	26.58±5.47	0-24 months	Discontinuing breastfeeding before six months: 21 (13.3%) Reasons for discontinuance: - Insufficient breastmilk /scantiness of breastmilk: 9 (5.7%) - Lack of sucking by the baby: 3 (1.9%) - Becoming pregnant again: 2 (1.3%) - Maternal illness /Maternal malnutrition / maternal use of drugs: 3 (1.9%) - Difficulty in breastfeeding techniques: 2 (1.3%) - Maternal preference for formula: 2 (1.3%)
Karaçam 2008 (40)	Cross-sectional	Questionnaire	Ankara	--	Field	514	26.21±5.20	1-5 months	Early start of solid foods: 244 (47.5%) Reasons: - Cesarean section: 72 (14.0%) - Frequent crying: 82 (16.0%) - Difficulty in pacifying the baby: 104 (20.2%)
Karaçam et al. 2010 (41)	Case-control	Questionnaire	Aydın	2006-2007	Hospital	314	27.08±4.44	1 – 3 days	Breastfeeding problems; - Difficulty in sucking: 31 (9.9%) - Premature delivery: 3 (1.0%) - Insufficient breastmilk: 1 (0.3%) - Inability to suck because of cleft palate: 3 (1.0%) - Cracked nipple: 1 (0.3%)
Cihan and Karaçam 2017 (42)	Cross-sectional	Questionnaire	Aydın	2015	Hospital	202	27.08±6.09	1-11 days	With breastfeeding problem: 45 (22.3%) Problems; - Cracked nipple: 17 (8.4%) - Deficient knowledge: 9 (4.5%) - Scantiness of breastmilk: 7 (3.5%) - Dented nipple: 8 (4.0%) - Preterm baby: 4 (2.0%)
Şencan et al. 2013 (43)	Cross-sectional	Questionnaire	Ankara	2006-2007	Hospital	196	30.0±4.3	24-48-month babies	Problems; - Lack of experience: 50 (25.5%) - Flat-dented nipple: 21 (10.7%) - Cracks-wounds in nipple: 105 (53.6%) - Mastitis: 14 (7.1%) - Small, weak baby: 21 (10.7%) - Delayed feeding: 6 (3.1%) - Lack of education/assistance: 17 (8.7%) - Lack of appropriate environment for breastfeeding outside home: 40 (20.4%)

Table 1. Characteristics of the observational studies included in the systematic review (Continued)

Authors (year)	Study design	Data collection tool	Year in which the study was conducted	City	Study field	Sample size	Mean maternal age, year (SD)	Screening time	Basic findings
Göneç and Vural 2015 (44)	Case-control	Questionnaire LATCH	2008-2009	Ankara	Hospital	80	18-35 years	The first 24 hours	- Redness in nipple: 23 (28.8%) - Pain in nipple: 12 (15.0%)
Yılmazbaş et al. 2015 (45)	Cross-sectional	Questionnaire İstanbul	2013	İstanbul	Hospital	205	28.7±4.5	6-24 months	Problems developing in the first six months; - Mastitis / wound in nipple: 3 (1.5%) - Insufficient breastmilk: 61 (29.8%) - Inadequate weight gain: 13 (6.3%) - Drying up of breastmilk: 16 (7.8%) - Quitting of sucking by the baby: 11 (5.4%) - Inability to hold the nipple by the baby: 3 (1.5%) - Pregnancy in mother: 2 (1.0%) - Breastmilk jaundice: 1 (0.5%)
Akyüz et al. 2007 (46)	Cross-sectional	Questionnaire	2000	Ankara	Hospital	120	27.0± 4.68	-	Cracked nipple: 62 (51.7%)
Şahin et al. 2013 (24)	Cross-sectional	Questionnaire	--	Kayseri	TSM ASM	500	29.8±5.3	24-60 months	- Painful and cracked nipple; 230 (46.0%) - Concern for insufficient breastmilk: 171 (34.2%) - Excessive milk secretion complicating breastfeeding: 149 (29.8%) - Flat and dented nipple: 58 (11.6%) - Mastitis: 46 (9.2%) - Excessive fullness in breast: 45 (9.0%) - Obstructed ducts: 41 (8.2%)
Taş Arslan and Yeniterzi 2013 (47)	Cross-sectional	Questionnaire	2011	Konya	Hospital	100 mothers 100 fathers	Mother: 27.43±5.94 Father: 30.94±5.74	32-37-week preterm babies	Experiencing problems in breastfeeding: 28 (28.0%) Problems; - Inability of the baby to latch on the breast fully: 7 (7.0%) - Small nipple: 6 (6.0%) - Baby become tired and sleeps: 15 (15.0%)
Çatak et al. 2012 (48)	Cross-sectional	Questionnaire	2009-2010	Burdur	ASM	1080	--	0-18 months	Quitting breastfeeding: 232 (21.5%) Reasons for quitting breastfeeding; - Insufficient breastmilk; 98 (9.1%) - Rejection by the baby: 94 (8.7%) - Becoming pregnant: 20 (1.9%) - Nipple/breast problem 17 (1.6%) - Baby is ill/weak: 16 (1.5%) - Mother is ill/weak: 10 (0.9%) - Thinking that it is time to quit; 9 (0.8%) - Going back to work: 4 (0.4%)
Eskiobzkurt 2008 (49)	Cross-sectional	Questionnaire	2007	İstanbul	Hospital	300 mothers	--	1-3 rd day	With breastfeeding problem: 37 (12.3%) Problems; - Pain and swelling: 12 (4.0%) - Insufficient breastmilk / thinking that baby was not satiated: 30 (10.0%) - Inadequate sucking by the baby: 16 (5.3%) - Difficulty in breastfeeding after cesarean section: 7 (2.3%) - Not knowing how to hold baby while breastfeeding: 12 (4.0%)

Table 1. Characteristics of the observational studies included in the systematic review (Continued)

Authors (year)	Study design	Data collection tool	City	Year in which the study was conducted	Study field	Sample size	Mean maternal age, year (SD)	Screening time	Basic findings
Bağlar 2008 (50)	Cross-sectional	Questionnaire, Kocaeli LATCH, Breastfeeding monitoring card	Kocaeli	2007	Hospital	80 mothers	30.60±4.06	0-6 months	Problems; Flat/dented nipple: 11 (13.8%) Cracked nipple: 19 (23.8%)
Ünalın et al. 2008 (51)	Cross-sectional	Questionnaire	İstanbul	2006	AÇSM	358	28.35±5.24	0-12 months	Reasons for starting solid foods early; - Insufficiency of breastmilk / crying of baby: 158 (44.1%) - Thinking that it is time to start solid foods: 5 (1.4%) - Lack of weight gain: 22 (6.2%) - Social pressure: 12 (3.4%) - Health problem in mother or infant: 11 (3.1%) - Rejection of sucking by the baby: 7 (2.0%) - Going back to work: 4 (1.1%) - Considering formula as convenience: 1 (0.3%)
Bülbül et al. 2012 (52)	Cross-sectional	Questionnaire	İstanbul	2011-2012	Healthy child outpatient clinic	200	28±5.5	24 months	Reasons for starting solid foods early; - Insufficient breastmilk: 67 (33.5%) - Insufficient weight gain: 22 (11.0%) - Thinking that it is time to start solid foods: 15 (7.5%) - Mother's going back to work: 11 (5.5%) - Twin babies: 4 (2.0%) - Mother's becoming pregnant: 1 (0.5%) - Mother's becoming ill: 2 (0.5%)
Bolat et al. 2011 (53)	Cross-sectional	Questionnaire	İstanbul	2009	Healthy child outpatient clinic	246	28.5 (17-43)	0-6 months	Reasons for starting solid foods early; - Late initiation of breastfeeding: 61 (24.8%) - Lack of breastfeeding education during pregnancy: 72 (29.3%) - Preterm delivery: 14 (5.7%)
İnce et al. 2010 (54)	Cross-sectional	Questionnaire	Ankara Kayseri	2009	Healthy child outpatient clinic	285	28.5±5.5	2 weeks - 3 months	With breastfeeding problem: 88 (31.0%) Problems with nursing; - Inability to latch on to breast: 39 (13.7%) - Scantiness of breastmilk: 25 (8.8%) - Cracked nipple: 9 (3.2%) - Inability to suck well on the first day: 6 (2.1%) - Latching on to a single breast: 3 (1.1%) - Mastitis: 3 (1.1%) - Collection of breastmilk in breast: 2 (0.7%) - Dented nipple: 1 (0.4%)

AÇSM: Center for maternal and infant health; ASM: Family health center; BSF: "Beast-feeding Self-Efficacy Form"; ESDF: Breastfeeding results assessment form; LATCH: Breastfeeding Identification Scale; TSM: Community Health Center

Table 2. Characteristics and results of the experimental studies and case reports included in the systematic review

Authors (years)	Study design	Data collection tool	City	Study Year	Study field	Sample size	Mean maternal age, years (SD)	Screening time	Intervention	Basic results
Çiftci and Arıkan 2011 (55)	Semi-experimental	Questionnaire S-TAI	Erzurum	2008-2009	Home	Education: 32 Control: 30	--	2.5, 3, 4, 5 and 6 th months	Nursing techniques education	Education reduced the level of maternal anxiety.
Yılmaz et al. 2014 (56)	Experimental	Questionnaire	Anakara	2006-2008	Hosp	Cup: 254 Feeding bottle: 268	Cup: 24.8±3.1 feeding bottle: 24.6±3.3	Preterms born at the 32-35 th weeks 3 and 6 th months	Feeding with cup	Feeding preterm babies with cup increased exclusive breastfeeding in the 3 rd and 6 th months.
Kaya 2016 (57)	Experimental	Questionnaire, LATCH	Erzurum	2013-2014	Hospital	Pacifier group n=34 Control n=36	Pacifier group: 32.19±1.51 weeks Control: 32.71±0.94 weeks	30-34 weeks preterm after 48 hours and before discharge	Use of pacifier	Use of pacifier improved sucking and shortened the time to switching to whole breastfeeding
Küçükkoğlu and Çelebioğlu 2014 (58)	Semi-experimental	Questionnaire, BSF, LATCH, AÖF	Erzurum	2010-2011	Hospital	Education: 42 Control: 43	--	1 and 5 th days 1-6 th months	Natural breast-feeding education	In low-birth- weight babies, education given to mother, increased self-confidence and breastfeeding success.
Karadağ 2008 (59)	Semi-experimental	Questionnaire	Kütahya	2007- 2008	ASM	Experiment: 50 Control: 50	--	3 rd trimester and postpartum 2 nd month	Education during pregnancy	Education given during pregnancy was effective in reducing postpartum breast problems (tenderness, fullness, pain and cracks).
Büyükkayacı 2010 (60)	Experimental	Questionnaire Self-care strenght scale	Çorum	2008 - 2009	House	140 women Experiment: 70 Control: 70	29.1±2.5	0-6 th weeks after cesarean section	Home care service	Home care service reduced breastfeeding problems observed between the 15 th and 42 nd days.
Ünsal Atan 2008 (13)	Experimental	Questionnaire, EGF and EIF	İzmir	2006 -2007	Hospital	Breastmilk: 35 - Hot damp application: 35 - tea compress: 35	22.4±3.29	0-14 days First encounter 0-20 hours 14 th day	Comparison of applications of breastmilk, moist hot and tea pads on breast	Moist hot tea and moist hot applications were more effective in reducing nipple problems compared with breastmilk application.
Ekşioğlu 2016 (61)	Experimental	Questionnaire, EÖYÖ and LATCH	İzmir	2013-2014	Hospital	Intervention n=111 Control: 109	Intervention: 29.11±5.26 Control: 28.04±5.23	0-6 months	Breastfeeding education	Increased the rate of exclusive breastfeeding in the first six months and maternal self-efficacy for nursing.

Table 2. Characteristics and results of the experimental studies and case reports included in the systematic review

Authors (years)	Study design	Data collection tool	City	Study Year	Study field	Sample size	Mean maternal age, years (SD)	Screening time	Intervention	Basic results
Kirlek 2010 (14)	Experimental	Questionnaire, EGF, GKÖ	Aydın	2009 - 2010	Hospital	Experiment: 26 Control: 13	Olive oil 0-10 days	0-10 days	Use of olive oil	Use of breastmilk and olive oil were similarly effective for pain and cracks in nipple.
Demirci 2015 (62)	Experimental	Questionnaire, LATCH	Bursa	2013-2014	Hospital	80 mothers	27.26±4.18	The first 24 hours and 7 days	Use of breast shield	Use of breast shield in the postpartum period reduced development of cracks in nipples.
Geçkil et al. 2012 (63)	Experimental	Questionnaire	Adıyaman	2008-2009	ASM	42 Experiment 52 Control	Experiment: 29.52±5.71 Control: 28.03±5.30	0-7 months	Education for supporting breastfeeding, follow-up and motivation	Influenced positively exclusive breastfeeding, breastfeeding time and efficient maternal nursing behaviors.
Onbaşı et al. 2011 (64)	Experimental	Questionnaire	Edirne	--	Hospital	Education: 90 Control: 100	-- Women aged 17 years and above	Pregnant women presenting for delivery 6 th month after delivery	Education given for one time in the prenatal period	The rate of exclusive breastfeeding in the first six months was significantly higher in the education group.
Üstüner and Bodur 2009 (65)	Experimental	Questionnaire	Giresun	--	Hospital	Education and follow-up: 93 Control: 100	27.2±5.0 (17-44)	0-6 months	Monthly follow-up and intensifying breastfeeding education	This intervention increased the rate of exclusive breastfeeding in the first six months (follow-up: 21,5% and control: 9,0%) .
Aksu et al. 2011 (66)	Experimental	Questionnaire	Aydın	2008	House	Education/ support: 27 Control: 27	22.5+3.5 Control: 23.0+4.6	2 nd and 6 th months	Breastfeeding education and support given at home on the postpartum 3 rd day	This intervention increased exclusive breastfeeding in the first six months, breastfeeding time and breastfeeding knowledge.
Tetik et al. 2013 (67)	Case report	Case recording form	Ankara	--	Hospital	1	26 years	Male baby aged 8 weeks born at the 36 th week	Strong motivation	On the 4 th day of intervention, relaxation process was initiated and breastfeeding support method was discontinued in 8 days.
Yıkılmaz ve Wilson-Clay 2016 (15)	Case report	Case recording form	Denizli	--	Hospital	1	27 years	Baby born at the 38 th week with a birth weight of 2250g follow-up for 0-4 months	Proactive lactation management and social support	Mother who had nevus on nipple was enabled to breastfeed her baby in the first 4 months.

AÖF: Anthropometric measurement form; ASM: Family health center; BSF: "Beast-feeding Self-Efficacy Form"; EGF: Breastfeeding observation form; EIF: Breastfeeding follow-up form; EÖYÖ: Breastfeeding self-efficacy scale; GKÖ: Visual Comparison scale; LATCH: Breastfeeding Identification Scale; S-TAI: "State-trait anxiety inventory"

Table 3. Problems related to breastfeeding and their frequencies

Breastfeeding problems	Number of studies	Number of participants	Number of subjects	Combined %
Experience of breastfeeding problems	5	1221	299	24.5
Inadequate breastmilk /lack of breastmilk/concern related to inadequate breastmilk/thought that the baby is not satiated adequately/inadequate weight gain of the baby	12	4141	649	15.7
Inadequate sucking by the baby/rejection of sucking/lack of sleep/difficulty in sucking	9	3134	255	8.1
Lack of maternal knowledge related to breastfeeding technique/inadequate information and experience/ need for education and assistance	6	1284	229	17.8
Prematurity/inability to latch on to breast fully/small baby/weak baby/baby with health problem	9	2986	118	3.7
Nipple problems	3	1596	146	9.2
Pain/tenderness in the breasts	3	665	26	3.9
Swelling/fullness/engorgement	1	500	54	10.8
Erythema/temperature change in nipple	1	80	23	28.8
Fissure/wound/bleeding in nipple	7	1697	443	26.1
Mastitis	4	1186	66	5.6
Flat/indented/small nipple	6	1363	105	7.7
Excessive milk secretion	1	500	149	29.8
Obstructed mammary duct	1	500	41	8.2
Difficulty in breastfeeding after cesarean section	2	814	79	9.7
Delayed feeding/breastfeeding	3	624	73	11.7
Cleft palate	1	314	3	1.0
Inability to find an appropriate environment for breastfeeding outside home	1	196	40	20.4
Becoming pregnant	4	1643	25	1.5
Initiating solid food in the early stage (before the 6 th month)/thinking that it is time for solid food	5	2110	295	14.0
Mother's being ill/maternal use of medication	3	1438	14	1.0
Difficulty in pacifying the baby	1	514	104	20.2
Maternal preference for formula/considering solid food as convenience	2	516	3	0.6
The mother's going back to work	3	1638	19	1.2
Twin babies	1	200	4	2.0
Latching on to a single breast	1	285	3	1.1
Breastmilk jaundice	1	205	1	0.5

Again, it was found that women reported the following problems related to their breasts in these studies: redness/temperature change (28.8%), cracks/wound/bleeding (26.1%), swelling/fullness/engorgement (10.8%), flat/dented/small nipples (7.7%), pain/tenderness (3.9%), and mastitis (5.6%) (Table 3). The other problems reported are shown in Table 3.

Solution interventions related to breastfeeding problems experienced in the postpartum period

In the experimental/quasi-experimental studies and case reports included in the systematic review, it

was reported that prenatal education/counselling/motivation/follow-up during pregnancy was efficient in reducing breastfeeding problems and in improving breastfeeding success; strong motivation, proactive lactation management, and social support were efficient in initiating the process of lactation; moist hot application and use of breastmilk, olive oil, and breast shields were efficient in reducing breast problems, and feeding with cups and use of pacifiers were efficient in increasing the success of breastfeeding and nursing in preterm babies (Table 4).

Table 4. Solution interventions related to breastfeeding problems

Solution initiatives/intervention	Number of studies	Number of participants
Prenatal/postnatal education/counselling/motivation/follow-up	9	1138
Humid hot application	1	105
Use of breast shield	1	80
Feeding preterm babies with cup	1	522
Use of pacifier in preterm babies	1	70
Use of breastmilk and olive oil	1	39
strong motivation (in initiation of the process of lactation)	1	1
Proactive lactation management and social support	1	1

Discussion

In this systematic review, it was observed that a significant portion of women (24.5%) experienced breastfeeding problems and these problems varied by maternal factors and factors related to breastmilk, baby, and breast. Again, this study showed that prenatal education/counselling/motivation/follow-up methods were efficient in reducing breastfeeding problems and in improving breastfeeding success. In addition, strong motivation, proactive lactation method and social support, moist hot application, and use of breast shields, feeding with cups and use of pacifiers were reported to be efficient in solving some specific problems. Although these results do not represent our country and cannot be generalized, they are important in terms of demonstrating important information covering many regions and provinces.

In this study, which was conducted based on the literature, it was observed that breastfeeding problems were substantially common in the postpartum period. Similar results have been reported in studies conducted in our country and other countries (21-25). These results show that breastfeeding problems should be strongly emphasized in terms of maternal and infant health.

In this systematic review, 12 studies showed that mothers had problems directed to the amount of breastmilk including "inadequate breastmilk/lack of breastmilk/concern for inadequate breastmilk/thought that the baby was not satiated adequately/inadequate weight gain." In addition, it was reported that some mothers initiated solid food/thought it was time for starting solid foods before the sixth month in five studies, and mothers preferred formula and perceived formula convenient in two studies. In a study conducted in this issue, Mekuria et al. (26) reported that a significant portion of mothers (18%) started solid foods in the early stage because they thought that breastmilk was inad-

equate and insufficient for the baby. Meedya et al. (27) reported that women's decision and feeling of self-efficacy were important in continuing breastfeeding. These results might indicate that healthcare workers should carefully evaluate this condition and take the necessary precautions because this could lead to early starting of solid foods.

In this systematic review, "lack of maternal knowledge of nursing technique/inadequate information and experience/need for education and assistance" were indicated as breastfeeding problems in six studies. In another study conducted in our country, the inability to reach midwives and nurses and inability to receive support for application were reported as breastfeeding problems (28). On the other hand, Swerts et al. (16) emphasized that nursing education and support was an important part of the role of midwives in the postpartum period. Yi et al. (29) showed that breastfeeding education increased maternal self-efficacy in this issue. These results are important in terms of emphasizing the midwives' and nurses' roles in nursing education, counselling, and support.

In nine of the studies included in this systematic review, it was found that some babies (approximately 4%) encountered problems related to breastfeeding including "inadequate sucking/rejecting sucking/ not sleeping/difficulty in pacifying/difficulty in sucking, prematurity/inability to latch on to the breast completely/small baby/weak baby/baby with health problems." According to these results, it can be stated that it is important and necessary for midwives and nurses to consider problems that are specific for individual babies.

In this systematic review, it was found that women commonly experienced preventable nipple problems including pain, tenderness, swelling, fullness, redness, temperature change, cracks, wounds, bleeding, and

mastitis. In addition, some women encountered structural problems related to breast including flat/indented/small nipples. In a study conducted in this issue, Mekuria and Edris (26) reported that solid foods were started in some babies (7%) in the early stage because of breast/nipple problems. These results show that studies involving preventive and early diagnostic and therapeutic approaches related to breast and nipple problems should be conducted.

Another problem indicated in this study was “*difficulty in breastfeeding after cesarean section.*” Similarly, İsik et al. (30) reported cesarean section negatively influenced the time of initiation of breastfeeding and the frequency of breastfeeding in their study in which they compared cesarean section and normal vaginal delivery. In another study, Tokat et al. (31) reported that women who underwent cesarean section experienced breastfeeding problems with a higher rate. Sutherland et al. (32) also reported that cesarean section influenced initiation of breastfeeding and breastfeeding success negatively. Tewabe (33) reported that cesarean section delayed initiation of breastfeeding. These results are valuable in terms of demonstrating that cesarean section influences infant nutrition and thus infant health negatively.

In this systematic review, it was reported that some babies (approximately 12%) “*were fed/breastfed in the late stage*” in three studies. In a similar study, it was reported that the site and mode of delivery (cesarean section), the baby’s and mother’s being ill and delayed secretion of breastmilk delayed initiation of breastfeeding (33). This should be considered in maternal care and follow-up in the postpartum period.

In this study, it was stated that three babies experienced sucking problems because of cleft palate. In another study, it was reported that cleft palate and cleft lip were very important problems influencing breastfeeding of babies and the possibility of development of malnutrition was high in these babies (34). These results show that special breastfeeding methods should be developed for these babies and parents should be supported in this issue.

In this systematic review, it was observed that some mothers (1%) did not breastfeed their babies because they were ill or they received medication in three studies. In a similar cross-sectional study conducted in Ethiopia, it was reported that mothers initiated breastfeeding in the late stage mostly (18%) because they were

ill (33). In another study, it was reported that mothers started feeding their babies with solid foods because they were weak and ill (8%) (26). These results are important in terms of demonstrating the importance of maternal health state in breastfeeding.

Another breastfeeding problem found in this systematic review is “*the mother’s going back to work.*” Mekuria and Edris (26) reported that mothers started solid foods in the early stage for some babies (28%) because of incompatibility with work. In this study, some mothers additionally reported that they encountered breastfeeding problems including “*inability to find appropriate nursing environment outside home, the baby’s sucking only a single breast, and breastmilk jaundice.*” These results demonstrate the necessity for special regulations, education, and counselling for working mothers.

In one study included in this systematic review, twin babies were indicated as a breastfeeding problem. In another study conducted in this issue, it was reported that the rate of exclusive breastfeeding in the first six months was very low in twin babies (35). According to these results, it can be stated that individual nursing counselling should be given to mothers with twin babies.

In this systematic review, it was observed that some mothers experienced breastfeeding problems because they became pregnant again in four studies. This result is valuable in terms of demonstrating that family planning counselling in the postpartum period is very important in the continuance of breastfeeding.

In this systematic review, it was found that the most commonly reported (in nine studies) solution initiatives/interventions related to breastfeeding problems were “*prenatal/postnatal education/counselling/motivation/follow-up.*” In a systematic review conducted in this issue, Nguyen et al. (36) examined interventions that were successful in helping exclusive breastfeeding for one or more months in women who became mothers for the first time. In this study, support given by the family (especially the father), friends and other individuals, nursing education, counselling and support provided by breastfeeding nurse, physician and woman-baby-child peer support groups, nursing counselling and community breastfeeding support groups, the Baby-Friend Hospital Program, enabling early skin-to-skin contact, and print media were reported to be efficient methods (36). In a Cochrane systematic review

conducted by Balogun et al. (12), it was reported that low quality evidence showing that nursing education given by healthcare professionals, nursing counselling given by individuals who were not healthcare professionals, and peer support were effective in increasing the rate of initiating breastfeeding was found. Other studies also emphasized that education and support given to mothers were important in successful breastfeeding (27, 37). On the other hand, Swerts et al. (16) reported that most midwives gave breastfeeding support as technical experts and preferred to give breastfeeding support, but encountered numerous obstacles in work environments in a systematic review. These results are important in terms of demonstrating the extent of the healthcare workers' duties and responsibilities.

In a study included in the systematic review, a solution intervention related to breastfeeding problems was indicated as “*feeding preterm babies with cups.*” In the Cochrane systematic review conducted with five studies including also this study, it was reported that feeding with cups was somewhat useful in terms of breastfeeding rates in the first six months in preterm babies, but there was no evidence related to term babies in this issue (38).

In this systematic review, it was also specified that methods including “*moist hot application, use of breast shields, use of pacifiers in preterm babies, use of breastmilk and olive oil, strong motivation (in initiating the process of lactation), proactive lactation management and social support*” were also used in solving breastfeeding problems. However, similar studies related to this issue could not be found in the literature.

Conclusion and Recommendations

In this study, it was concluded that women commonly experienced breastfeeding problems in the postpartum period, but solution approaches developed specifically for these problems were limited. The following recommendations can be made based on these results:

- Preventive precautions related to breastfeeding problems experienced frequently by mothers should be taken and individual solution methods related to these problems should be developed;
- Healthcare workers who serve in formal and non-formal health education should be sensitive in the issue of breastfeeding problems and solution recommendations and should involve these topics in the lessons they give;

- Healthcare managers should establish institutional politics to reduce breastfeeding problems, improve solution recommendations, and extend the scope of the service they give;
- Qualitative and observational studies, which could provide more comprehensive data in the issue of solution of breastfeeding problems, and new experimental studies in which special solution methods for different problems will be investigated should be conducted.

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