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POPULATIONS AT RISK ACROSS THE LIFESPAN–PROGRAM EVALUATIONS

Effects of a home follow-up program in Turkey for urban mothers of premature babies

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[Correction added on 10 January 2020, after first online publication: the author's academic credential has been changed from 'MD' to 'MSc'.]

Abstract

Objective: To examine the effects of a home follow-up program in Turkey on care problems, anxiety, and depression levels of mothers after the birth of a premature baby.

Methods: A semi-experimental study with a pretest–posttest control group design. Eighty premature newborns and their mothers were included in the study. Nursing care was given to mothers and babies in the study group through a total of four home visits on weeks 1, 2, 3, and days 40–42 in Kırıkkale, Turkey guided by the Nursing Diagnosis System and Nursing Interventions Classification (NIC) system of the North American Nursing Diagnosis Association (NANDA). Data were collected from a sociodemographics form, home care needs evaluation form, Edinburgh Postpartum Depression Scale, and State Anxiety Inventory.

Results: There were no significant differences between groups for nursing diagnoses at baseline, while the study group resulted in significantly fewer problems on days 40–42, compared to the control group. Mothers had a comparatively lower depression and state anxiety risk in the study group compared to the control group.

Conclusions: Providing home-based nursing care for preterm mothers and babies during the first 40–42 days has the potential to decrease postnatal care problems, including maternal depression and state anxiety levels.

KEYWORDS
anxiety, baby care, depression, home follow-up, premature infant

1 | BACKGROUND

The experience of premature delivery, and the subsequent need for care in a newborn intensive care unit, is generally perceived as traumatic and a possible cause of psychological distress among mothers (Arslan & Turgut, 2013; Bağcı & Altuntuğ, 2016; Horwitz et al., 2015; Zelkowitz, Papageorgiou, Bardin, & Wang, 2009). Mothers may experience depression and anxiety around the appearance and health of their infant, difficulties experienced while receiving care, feelings of guilt regarding a premature birth, and concerns for the infant's prognosis (Melnyk, Crean, Feinstein, & Fairbanks, 2008; Premji et al., 2018). In a systematic review performed by Özcan and colleagues, one of the most prevalent risk factor for postnatal depression was determined as gestational week and postnatal depression was higher among mothers who had premature babies as compared to full-term mothers (Özcan, Boyacıoğlu, & Dinç, 2017; Vigod, Villegas, Dennis, & Ross, 2010). More recent studies examining factors related to anxiety and depression, showed that mothers' self-confidence and stress regarding care for their infant significantly affected their moods (Falah-Hassani, Shiri, & Dennis, 2016; Field, 2018).

Premature babies' transition from the hospital to home, along with their home care, involves multidimensional and complex

processes. These processes are best accommodated by evaluating each newborn and family's individual requirements through appropriate nursing care (Lopez, Anderson, & Feutchinger, 2012). Nurses are responsible for evaluating parents' ability to care for their infant within the home environment while facilitating postdelivery adaptation. Supporting mothers of premature babies enhances the quality of care provided to babies and positively influences mothers' coping and psychosocial well-being (Galeano & Carvajal, 2016).

Although most mothers and their infants around the world receive some type of postnatal care (McPherson & Hodgins, 2018), the nature and frequency of this care varies significantly. In Turkey, there is no public or private home monitoring system provided for newborn babies, nor is there any special service for home care provided to such mothers. Babies discharged from hospital are referred to neonatal outpatient clinic physical evaluation visits during for day 7, 15 and 30. No data are available about hospitalization of mothers and newborns during the postnatal period or information about postdischarge care received at home (Republic of Turkey Ministry of Health, 2016). This is especially problematic for mothers with premature babies, who often have issues with home care.

Nursing care is effective for maintaining a baby's health while also helping to increase parents' knowledge, skills, and self-confidence regarding care. Nurses can help to minimize the stress and anxiety parents experience during the transition to the home, and reduce the baby's morbidity and mortality risk. (Boykova & Kenner, 2012; Sassa, Gaiva, Higarashi, & Marcon, 2014). The present study assessed the effects of a home-based nursing care program on postnatal care problems, anxiety and depression among Turkish women with premature babies.

2 | METHODS

2.1 | Design and sample

A semi-experimental design, including a pretest and posttest control group, was employed to assess four home-based nursing care visits provided by one of the researchers (a pediatric nurse with experience in a newborn intensive care unit and home care for children with chronic diseases). The program was based in a hospital that provides services for several cities, including both rural and urban areas.

Participants were mothers and babies delivered before 37 weeks in a university hospital in Kırıkkale, Turkey. Ninety-four babies were born before 37 weeks during the study period: June 1, 2015–July 1, 2016. The inclusion criteria that were used are as follows: primiparous, delivered before 37 weeks of gestation, no disease that could affect postnatal care, no hearing/speaking disability, a 5-min Apgar score >7, normal postnatal examination, and hospital discharge within 24 hr of birth. Exclusion criteria included mothers who had any disease condition, medical physical/mental problems at follow-up, a history of medication use during the prenatal period, or a baby who underwent resuscitation during delivery or had a congenital malformation.

Sample size and power were evaluated with a post hoc power analysis (PASS Version 11.0): 0.93 for postnatal depression and 0.98 for anxiety.

2.2 | Measures

2.2.1 | Sociodemographic data

Twenty demographic questions were completed by the participants.

2.2.2 | Mothers' needs at home

Forty two items, based on the literature, questioned whether mothers felt prepared to care for their baby; care categories included feeding, bathing, and diaper changes (Çavuşoğlu, 2019; Doğum Sonu Bakım Yönetim Rehberi, 2014). Two neonatology experts and two newborn nurses assessed content validity index to be acceptable for all items (between 0.81 and 1.00) (Davis, 1992).

2.2.3 | Edinburgh postnatal depression scale

This scale was developed by Cox, Holden, and Sagovsky (1987) and later adapted into Turkish (Engindeniz, Küey, & Kültür, 1996). The measure was self-rated on a 4-point Likert-type (0–3 points) scale including 10 items asking individuals to rate their depression symptoms during the previous week. Total scores range from 0–30. The cutoff for determining depression risk is 12–13 in the Turkish version. Internal consistency (Cronbach's alpha) was 0.87 for the original scale (Cox et al., 1987) and 0.79 for the Turkish version (Engindeniz et al., 1996). Cronbach's alpha for the present sample was 0.87.

2.2.4 | The Spielberg State Anxiety Inventory

The State Anxiety Inventory was developed by Spielberger (1970) and was adapted into Turkish by Öner and Le Compte (1998). The measure includes 20 items that are self-rated on a 4-point Likert-type scale for determining current anxiety levels. Total scores range from 20–80: "no anxiety" = 0–19 points, "mild anxiety" = 20–39 points, "moderate anxiety" = 40–59 points, and "severe anxiety" = 60–80 points. The cutoff for determining risk for anxiety is ≥40 (Dennis, Coghlan, & Vigod, 2013). The Cronbach's alpha for the Turkish version of the scale was 0.93 (Öner & Le Compte, 1998). The Cronbach's alpha for the present sample was 0.94.

2.2.5 | Infant physical evaluation

At each follow-up, infants were physically examined including their body temperature, pulse rate, respiration rate, blood pressure, peripheral saturation, height, body weight, and head circumference. A sphygmomanometer, stethoscope, tympanic thermometer, baby scale, height gauge, and measuring tape were used for this purpose.

2.2.6 | Nursing diagnoses

At the home follow-up visits, an experienced pediatric nurse evaluated problems encountered by the mother and completed a nursing diagnosis form using the NANDA nursing diagnostic system, and nursing activities were planned using the NIC nursing interventions taxonomy (NANDA International, 2014). A nursing care plan using the nursing interventions classification taxonomy was prepared for each mother and her baby based on these evaluations.

Data collection and all home visits were conducted by the first author. Nursing diagnoses were determined by the first and second authors together according to the data collected by the first author. All mothers in the study group received four regular visits from the first author.

2.3 | Intervention

Mothers and their babies were visited at the hospital within the first 24 hr postdelivery. The first mother was assigned to the control group by using a toss-up method; subsequent mothers and their babies were assigned to study and control groups, respectively.

For both intervention and control groups, the sociodemographic data collection form, needs evaluation form, Edinburgh Postnatal Depression Scale, Spielberg State Anxiety Inventory, and infants' physical examinations were completed. Nursing interventions were identified according to the NIC in accordance with nursing diagnoses that were generated.

For the intervention group, four home follow-ups were performed for the study group at weeks 1, 2, 3, and days 40–42. Each home follow-up lasted approximately 40–60 min. At each home follow-up, problems experienced by the mother in terms of postnatal (along with subsequent) care requirements, were re-evaluated. Care was also provided during the home follow-ups. Any problems detected during the visits were addressed immediately. Basic care skills (e.g., changing diapers, diaper rash care, skin care, bathing, dressing, etc.) were performed with mothers to promote appropriate skills. At the end of the fourth visit, days 40–42, final data collection occurred.

For the control group, no other care was provided outside of what was offered at the hospital. A visit for final data collection occurred between days 40–42.

2.4 | Ethical considerations

Ethical approval was obtained from the ethics committee of the authors' university, and written authorization was granted from the hospital. All mothers provided written informed consent. This study complied with the ethical rules for human experimentation that are stated in the Declaration of Helsinki. The mothers included in the control group only received routine training at the hospital; however, any questions they had at the hospital were answered. After data collection, between days 40–42, nursing care was given to women in the control group as per their needs.

2.5 | Analytic strategy

Data were analyzed using SPSS (version 22.0). Descriptive statistics are given as numbers and percentages (%) for the identified variables and as means ± standard deviations (*SD*) and median and minimum–maximum (min–max) values for the main variables of interest. Differences between the study and control groups concerning sociodemographic characteristics were compared using chi-square and Mann-Whitney U tests. Chi-square tests were also used to assess differences between the study and control groups concerning nursing diagnoses within the first 24 hr and at days 40–42 postdischarge. Mann–Whitney *U* tests were also used to assess differences between postnatal depression and anxiety levels.

3 | RESULTS

3.1 | Participant characteristics

Of the 94 eligible mothers, 13 did not wish to participate, and one mother moved out of the city after the first home follow-up. Thus, the final sample included 80 mothers and their babies. Forty mothers were enrolled in each group (study and control). Table 1 presents mothers' and babies' demographic data. No significant demographic differences were identified between the groups.

3.2 | Nursing diagnoses

There were no significant differences between the study and control groups concerning nursing diagnoses identified within the first 24 hr at the hospital. At days 40–42 postdischarge, significant differences were observed for several diagnoses, with the study group having significant fewer problems with ineffective feeding ($p < .001$),impaired parenting ($p = .005$), caregiver role strain ($p < .001$), sleep pattern disturbance ($p = .023$), anxiety ($p = .006$), fatigue ($p = .019$), lack of leisure activities ($p = .022$), ineffective coping ($p < .001$), deficient knowledge ($p < .001$) and dysfunctional family processes ($p < .001$). Moreover, a diagnosis of impaired skin integrity (on nipples) was added as a difference observed in the control group (Table 2).

When nursing diagnoses for infants were examined, no significant differences were found within the first 24 hr. During days 40–42 postdischarge, significant differences were observed for several diagnoses, with the study group having significant fewer problems with impaired skin integrity (diaper dermatitis) ($p = .003$), disrupted oral mucous membrane ($p = .041$), imbalanced nutrition ($p = .041$), acute pain (colic) ($p = .034$), disorganized infant behavior ($p = .024$), sleep pattern disturbance ($p = .027$), infection (umbilical cord) ($p = .041$), risk for imbalanced body temperature ($p = .041$), risk for trauma ($p < .001$), and risk for aspiration ($p < .001$) (Table 3).

3.3 | Mothers' depression and anxiety levels

Differences between mothers' mean depression and anxiety scores by group were significant after the home follow-ups.

TABLE 1 Descriptive study and control group characteristics

Infant characteristics					
	Study group (n = 49)		Control group (n = 45)		
Characteristic	n	%	n	%	p
Number of infants					
Twin	18	36.7	10	22.2	.099
Single	31	63.7	35	77.7	
	$\bar{X} \pm SD$	Min–max	$\bar{X} \pm SD$	Min–max	
Birth week	34.65 ± 1.217	31–36	34.18 ± 1.211	32–36	.393
Birth weight (grams)	2,396.0 ± 362.5	1820–3175	2,444.4 ± 285.8	1920–3020	.229
Apgar score					
1st min	8.86 ± 1	7–10	8.47 ± 1	7–10	.546
5th min	9.06 ± 0.9	8–10	8.96 ± 0.9	7–10	.543
Mother characteristics					
	Study group (n = 40)		Control group (n = 40)		
Characteristic	$\bar{X} \pm SD$	Min–max	$\bar{X} \pm SD$	Min–max	p
Maternal age (years)	24.18 ± 4,3,674.367	18–41	24.30 ± 4.165	18–34	.858
	n	%	n	%	
Type of delivery					
Vaginal	8	20.0	13	32.5	.786
Cesarean	32	80.0	27	67.5	
Education level					
University	13	30.0	9	22.5	.924
High school	15	37.0	19	47.5	
Elementary school	13	32.5	12	30.0	
Regular follow-up during pregnancy					
Yes	16	40.0	9	22.5	.093
No	24	60.0	31	77.5	
Training during pregnancy					
Yes	4	10.0	5	12.5	.725
No	36	90.0	35	87.5	
Problems during pregnancy					
Yes	33	82.5	36	90.0	.763
No	7	17.5	4	10.0	
Any support for care					
Yes	24	60.0	26	65.00	.646
No	16	40.0	14	35.00	

Abbreviations: $\bar{X}$, mean scores; SD, standard deviation.

No significant depressive symptoms were observed among mothers in both groups within the first 24 hr for both depression and anxiety levels. Differences between mothers' mean depression and anxiety scores by group were significant after the home follow-ups; depression scores in the control group exceeded the 12-point cutoff at days 40–42 (Table 4). Mothers in the control group had moderate anxiety (40–59 points), while mothers in the study group had mild anxiety (20–39 points) within the first 24 hours. Anxiety levels were significantly higher among mothers in the control group ($\bar{X} \pm SD$ = 50.50 ± 9.99) on days 40–42 in comparison to the study group ($\bar{X} \pm SD$ = 44.63 ± 8.86) (p < .001) (Table 5).

4 | DISCUSSION

In this study of follow-up home care for new mothers and their babies, differences between the groups were observed in eight out of 10 nursing diagnoses for mothers. When nursing diagnoses for

TABLE 2 Nursing diagnoses for mothers within the first 24 hr and on days 40–42 (n = 40)

	First 24 hr					Days 40–42				
	Study group		Control group			Study group		Control group		
Nursing diagnoses	*n* (40)	%	*n* (40)	%	*p*	*n* (40)	%	*n* (40)	%	*p*
Ineffective feeding	40	100.0	40	100.0	1.000	2	5.0	22	55.0	**<.001**
Impaired parenting	1	2.5	3	7.5	.308	2	5.0	14	35.0	**.005**
Self-concept disturbance	0	0.0	1	2.5	.317	1	2.5	8	20.0	.079
Caregiver role strain	36	90.0	34	85.0	.502	3	7.5	28	70.0	**<.001**
Sleep pattern disturbance	4	10.0	2	5.0	.399	5	12.5	16	40.0	**.023**
Anxiety	0	0.0	2	5.0	.155	0	0.0	7	17.5	**.006**
Fatigue	6	15.0	7	17.5	.534	4	10.0	15	37.5	**.019**
Lack of leisure activities	0	0.0	0	0.0	1.000	0	0.0	5	12.5	**.022**
Ineffective coping	0	0.0	1	2.5	.317	0	0.0	17	42.5	**<.001**
Deficient knowledge	40	100.0	40	100.0	1.000	3	7.5	34	85.0	**<.001**
Dysfunctional family processes	0	0.0	0	0.0	1.000	0	0.0	16	40.0	**<.001**
Impaired skin integrity (nipples)	0	0.0	0	0.0	1.000	0	0.0	8	20.0	**.003**

Bold values are < 0.05.

TABLE 3 Nursing diagnoses for infants within the first 24 hr and on days 40–42

	First 24 hr					Days 40–42				
	Study group		Control group			Study group		Control group		
Nursing diagnoses	*n* (49)	%	*n* (45)	%	*p*	*n* (49)	%	*n* (45)	%	*p*
Impaired skin integrity (diaper dermatitis)	0	0.0	0	0.0	1.000	0	0.0	8	17.7	**.003**
Impaired skin integrity (conjunctivitis)	0	0.0	0	0.0	1.000	0	0.0	2	4.4	.155
Impaired skin integrity (dermatitis)	0	0.0	0	0.0	1.000	0	0.0	2	4.4	.155
Disrupted oral mucous membrane	0	0.0	0	0.0	1.000	0	0.0	4	8.8	**.041**
Imbalanced nutrition	0	0.0	0	0.0	1.000	0	0.0	4	8.8	**.041**
Constipation	0	0.0	0	0.0	1.000	0	0.0	2	4.4	.155
Diarrhea	0	0.0	0	0.0	1.000	0	0.0	2	4.4	.155
Hypothermia	0	0.0	0	0.0	1.000	0	0.0	1	2.2	.317
Hyperthermia	0	0.0	0	0.0	1.000	0	0.0	2	4.4	.155
Acute pain (colic)	0	0.0	0	0.0	1.000	4	8.1	14	31.1	**.034**
Disorganized infant behavior	0	0.0	0	0.0	1.000	3	6.1	11	24.4	**.024**
Sleep pattern disturbance	0	0.0	0	0.0	1.000	5	10.2	11	24.4	**.027**
Infection (umbilical cord)	40	100.0	40	100.0	1.000	0	0.0	4	8.8	**.041**
Risk for imbalanced body temperature	0	0.0	0	0.0	1.000	0	0.0	4	8.8	**.041**
Risk for trauma	0	0.0	0	0.0	1.000	0	0.0	17	37.7	**<.001**
Risk for aspiration	40	100.0	40	100.0	1.000	0	0.0	18	40.0	**<.001**

Bold values are < 0.05.

TABLE 4 Comparison of mothers' mean postnatal depression scores within the first 24 hr and on days 40–42

	Study group				Control group						
	n	$\bar{X} \pm SD$	SE	Min–max	*n*	$\bar{X} \pm SD$	SE	Min–max	U	Z	*p*
EPDS Pretest	40	9.08 ± 3.07	0.486	0–16	40	9.00 ± 3.72	0.588	0–17	749.500	−0.489	.625
EPDS Posttest	40	6.63 ± 4.09	0.648	0–15	40	12.68 ± 5.76	0.911	2–26	322.000	−4.611	**<.001**

Abbreviations: $\bar{X}$, mean scores; *SD*, standard deviation; SE, standard error; EPDS, Edinburg Postnatal Depression Scale.
Bold values are < 0.05.

TABLE 5 Comparison of mothers' mean state anxiety scores within the first 24 hr and on days 40–42

	Study group				Control group						
	n	$\bar{X} \pm SD$	SE	Min–max	*n*	$\bar{X} \pm SD$	SE	Min–max	U	Z	*p*
State anxiety pretest	40	42.93 ± 7.60	1.202	31–63	40	44.63 ± 8.86	1.402	30–64	714.500	−0.824	.410
State anxiety posttest	40	38.90 ± 6.93	1.096	30–59	40	50.50 ± 9.99	1.580	33–68	287.000	−4.945	**<.001**

Bold values are < 0.05.
Abbreviations: $\bar{X}$, mean scores; *SD*, standard deviation; SE, standard error.

infants were compared between groups, differences for all except dermatitis, conjunctivitis, diarrhea, constipation, hypothermia, and hyperthermia were significant. Thus, nursing care provided to the study group resulted in significantly fewer problems faced by primiparous mothers and their babies.

In a previous systematic review (Lopez et al., 2012), studies addressing the transfer of families with premature babies from the hospital to home were examined, and five common components were identified: maintaining communication with the family at home, making home visits, evaluating the baby's health and conditions at home, education, and inclusion of nurses in all of these processes. The final component was deemed most important. In our study, babies and mothers in the study group experienced significantly fewer problems compared to the control group. This finding supports the efficiency and necessity of nursing care and education, especially in premature delivery cases, where babies and mothers require special attention.

4.1 | Nursing diagnoses for mothers

Nursing diagnoses, including sleep pattern disturbances and fatigue, decreased by providing nursing care interventions for strengthening sleep, improving participation of the family in care, and supporting caregivers through home follow-ups. However, this was not same for all mothers in the study group.

In a study investigating problems and care needs among mothers, and the relationship between postnatal support and problems experienced at 9 months postdelivery, Yıldız and Küçükşahin (2011) found that issues concerning daily living activities, sleep, and rest were among the most commonly experienced by mothers. It was also reported that these problems were significantly less frequent among mothers who received postnatal professional support (Xie, He, Koszycki, Walker, & Wen, 2009), which is consistent with the present findings. Dysfunctional family processes have been observed among 30% of families with premature babies due to problematic caregiving, mothers' fatigue and sleep deprivation, and anxiety and ineffective coping strategies owing to a lack of knowledge when it comes to caring for a preterm infant. Inexperience and a baby's special care needs during the postnatal period may create feelings of inadequacy among mothers within a new domestic role; however, such problems can be mitigated within a few weeks postintervention. In the control group, the "dysfunctional family processes" diagnosis was observed in approximately 40% of families at the end of the study period, which was significantly greater compared to the study group.

4.2 | Nursing diagnoses for infants

In the study group, a risk for umbilical cord infection was addressed in nearly two-thirds of infants during the first week. However, this issue was eliminated by the second week owing to proper nursing care (i.e., keeping the umbilical cord dry and clean, using water and soap with a pH compatible with the skin, lack of contact with the diaper, keeping the cord outside the diaper, protecting the cord from urine and stool contamination, being careful while bathing, dressing, and cuddling the baby). At days 40–42, umbilical cord infection risk was identified among four babies in the control group. This difference between groups was significant. Colic was observed in 14.2% of babies in the study group, while disorganized infant behavior was observed in 6.1% during the first week. Increases in both diagnoses were observed during the second week at home follow-ups, and these problems were not completely

resolved for all babies during the subsequent follow-ups (although decreases were observed). These diagnoses significantly differed between the study and control groups. Sleep pattern disturbances decreased by the 4th week of follow-up nursing care, which also significantly differed between groups. During the first follow-up visit, aspiration and trauma risks were observed; however, these were resolved after two weeks of nursing care. At days 40–42, significant differences were observed between both groups. In the postpartum period, the mother may experience self-distrust and insecurity in the care of the baby because of the physical problems of their own, the unanticipated delivery of birth and the consequence of the family not being fully prepared for the new family member and the family's concerns about the baby's health condition. These results support the fact that in the newborn period, which is an adaptation period for both the family and the infant, it is necessary to provide qualified nursing care and education for the infant and the mother, which should be individualized according to the needs of the mothers and their babies after being discharged from the hospital (Galeano & Carvajal, 2016; Wittmann-Price, 2016; Yıldız & Küçükşahin, 2011).

4.3 | Mothers' depression and state anxiety

In Turkey, mean postnatal depression scores range from 9.8 to 10.4, and depression incidence rates vary from 6.5% to 48.3% (Boratav, Toker, & Küey, 2016; Kartal & Simsek, 2017). Similar results have been reported worldwide (Dennis et al., 2013; Field, 2018; Garfield et al., 2015; Helle et al., 2016). In prior studies investigating factors underlying anxiety and depression, maternal stress and self-confidence, state of breastfeeding, and baby care are key factors (Dennis et al., 2013; Field, 2018; Garfield et al., 2015).

In this study, maternal depression scores within the study group during the first 24 hr were similar to those in past studies; however, depression scores at the end of the study period were lower when compared to the control group and prior results, highlighting a potential area of effectiveness with the intervention. Support received may enable mothers to emotionally and cognitively cope with stress and anxiety more easily. Furthermore, individualized nursing care appeared to be effective in decreasing depression levels beyond the support provided for infant care. An increase in postnatal depression is often observed within the first 30 days; this is in keeping with prior studies showing that depression scores on days 40–42 were higher compared to the first 24 hr (Canário & Figueiredo, 2017; Welch et al., 2016). Therefore, follow-up interventions are especially recommended for women at risk for postpartum depression after preterm delivery (Canário & Figueiredo, 2017; Vigod et al., 2010; Welch et al., 2016).

Mothers' mean state anxiety scores also decreased after the follow-up visits in the study group, but scores increased among the control group. In some previous studies, mean state anxiety scores varied between 39 and 44 (Dennis et al., 2013; Field, 2018; Helle et al., 2016), which coincided with results obtained among our control-group mothers (Table 5) .

Among mothers with premature infants, state anxiety is often associated with feelings of guilt and concerns over the baby's appearance and condition (Falah-Hassani et al., 2016; Horwitz et al., 2015). Delivery-associated fatigue may also increase mothers' anxiety, especially primiparous mothers, due to being dependent on self-care following the delivery and lacking sufficient "alone" time (Bağcı & Altuntuğ, 2016). Here, mothers should be educated on effective coping strategies (Davidson, London, & Ladewig, 2015). In this study, state anxiety scores decreased after several weeks of at-home nursing interventions. This could partly be due to the fact that mothers were provided information on baby care, strategies for decreasing anxiety, means for strengthening coping methods, and supportive decision-making.

Late premature newborns were included in the present sample due to limitations with our inclusion criteria. In recent years, approximately 75% of all premature births are late term (Shapiro-Mendoza & Lackritz, 2012). Additionally, the health risks for these infants may be overlooked due to their appearance being similar to full-term newborns. Therefore, higher risk of mortality and morbidity that requires medical attention, increased health care needs after birth hospitalization leading to greater health care cost and the cost for postdischarge visits for late-term premature infants has become an emerging research area. The current findings and public heath impact of such preventive strategies, if replicated, could assist in further prevention efforts for neonatal health problems postdischarge.

4.4 | Study limitations

A few study limitations should be noted. First, one of the researchers was not blind to the experimental and control group assignment, which could lead to biases of nursing diagnoses. To address this issue, a second researcher was blind to group assignment when providing a diagnosis. Second, the present findings may not be generalizable to populations with different sociodemographic characteristics outside of Turkey. Thus, studies in other countries with diverse samples are necessary to corroborate the present findings.

5 | CONCLUSION

Turkey, and a significant majority of developing countries, does not have programs for monitoring preterm mothers and infants. Our results have implications for nursing care in Turkey and suggest that home visits could be important in reducing the depression and anxiety symptoms among mothers. Such services could be especially useful when provided with social security coverage.

We suggest four actions: mothers with premature babies should be supported postdischarge; home environments and caregiving skills should be evaluated; and mothers should be screened for depression and anxiety; mothers deemed at-risk should have their psychosocial needs appropriately addressed. Given that continuity of care is critical for decreasing maternal and infant mortality, especially among high-risk groups such as premature infants, follow-up nursing intervention programs are vital.

For future studies, we suggest to compare the efficacy of home visit programs of mothers with premature babies by the hospital health care providers who follow the baby from inception of him/her life or by public health agencies; to determine the strategies and to evaluate the effectiveness of various home monitoring programs and their costs.

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