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Comparing Parents' Experiences of Contact with Their Preterm Infants in NICUs in Türkiye Before, During, and After the COVID-19 Pandemic: A Cross-Sectional Study

COVID-19 Pandemisinde Yenidoğan Yoğun Bakım Ünitesinde Prematüre Bebeği Yatan Ebeveynlerin Deneyimlerinin Pandemi Öncesi ve Sonrası ile Karşılaştırılması: Kesitsel Çalışma

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This study was presented as poster presentation at the 31st National Neonatology Congress between April 24-28, 2024 in Antalya, Türkiye.

ABSTRACT Objective: This study aims to compare parents' experiences of family-centred developmental care with their preterm infants in neonatal intensive care units (NICUs) in Türkiye before, during, and after the COVID-19 pandemic's "Normalization Period" (July 2021). Material and Methods: A cross-sectional study was conducted among parents of preterm infants who received care in NICUs across Türkiye. Participants were recruited via social media, parent support groups, and NICU referrals. Data were collected through a 61-item online questionnaire. Parental visitation frequency and duration, timing of first physical contact, permission and timing for kangaroo mother care (KMC), and parental involvement in infant care were compared across the three periods. Statistical significance was assessed using chi-square tests. **Results:** A total of 688 parents participated. Only 9.1% could visit their infants as frequently as they wished, 16.3% could touch their infants within the first day, and 4.8% could perform KMC within the first day. During the pandemic, visitation, physical contact, and KMC rates significantly declined. After the Normalization Period, the percentage of parents unable to visit, touch, or perform KMC returned to pre-pandemic levels. However, the proportion of parents who could visit without restrictions, touch their baby within the first day, and frequently perform KMC remained at pandemic levels. **Conclusion:** While some aspects of parental contact in NICUs recovered after the lifting of COVID-19 restrictions, full restoration to pre-pandemic levels was not achieved. This highlights the need for policies ensuring unrestricted parental involvement in NICUs to promote optimal infant development and family-centered care.

Keywords: Premature birth; COVID-19; neonatal intensive care unit; kangaroo mother care; family-centered developmental care

ÖZET Amaç: Bu çalışma, Türkiye'de koronavirüs hastalığı-2019 (COVID-19) pandemisinden önce, pandemi sırasında ve Temmuz 2021'de ilan edilen "Normalleşme Dönemi" sonrasında prematüre bebek ebeveynlerinin yenidoğan yoğun bakım ünitelerinde (YYBÜ) aile merkezli gelişimsel bakım deneyimlerini karşılaştırmayı amaçlamaktadır. **Gereç ve Yöntemler:** Türkiye genelindeki YYBÜ'lerde tedavi gören prematüre bebeklerin ebeveynlerini içeren kesitsel bir çalışma gerçekleştirilmiştir. Katılımcılar sosyal medya, ebeveyn destek grupları ve YYBÜ yönlendirmeleri yoluyla çalışmaya dahil edilmiştir. Veriler, 61 sorudan oluşan çevrim içi bir anket ile toplanmıştır. Ebeveyn ziyaret sıklığı ve süresi, bebekle ilk fiziksel temas zamanı, kanguru anne bakımı (KAB) yapma izni ve süresi ile ebeveynlerin bakım sürecine katılımı üç dönem arasında karşılaştırılmıştır. İstatistiksel anlamlılık ki-kare testleri ile değerlendirilmiştir. **Bulgular:** Çalışmaya toplam 688 ebeveyn katılmıştır. Katılımcıların yalnızca %9,1'i bebeklerini istedikleri sıklıkta ziyaret edebilmiş, %16,3'ü ilk gün içinde bebeklerine dokunabilmiş ve %4,8'i ilk gün içinde KAB uygulayabilmiştir. Pandemi sırasında ziyaret sıklığı, fiziksel temas ve KAB oranları anlamlı şekilde azalmıştır. Normalleşme Dönemi sonrasında, bebeklerini ziyaret edemeyen, dokunamayan veya KAB yapamayan ebeveynlerin oranı pandemi öncesindeki seviyelere dönmüştür. Ancak, bebeklerini kısıtlama olmaksızın ziyaret edebilen, ilk gün içinde dokunabilen ve sık KAB uygulayabilen ebeveynlerin oranı pandemideki seviyelerde kalmıştır. **Sonuç:** COVID-19 kısıtlamalarının kaldırılmasının ardından YYBÜ'lerde ebeveyn temasının bazı yönleri iyileşmiş olsa da, pandemi öncesi seviyelere tam dönüş sağlanamamıştır. Bu durum, prematüre bebeklerin optimal gelişimini desteklemek ve aile merkezli bakımın sürekliliğini sağlamak için ebeveynlerin YYBÜ'lerde kesintisiz katılımını garanti eden politikaların gerekliliğini ortaya koymaktadır.

Anahtar Kelimeler: Prematüre doğum; COVID-19; yenidoğan yoğun bakım ünitesi; kanguru anne bakımı; aile merkezli gelişimsel bakım

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Preterm birth, defined as delivery before 37 weeks of gestation, is a leading cause of infant mortality and morbidity.[1] It affects approximately 10% of all pregnancies globally, translating to more than 15 million babies born prematurely each year.[2] Republic of Türkiye Ministry of Health reports preterm birth rates in Türkiye as 11.1% of all live births in 2019, 11.0% in 2020, 12.2% in 2021, and 12.9% in 2022.[3] Preterm infants often face immediate health challenges due to underdeveloped organ systems, making them susceptible to respiratory distress, infections, and other complications.[4,5] Additionally, preterm birth can have long-term consequences, affecting cognitive, motor, and socioemotional development.[6]

Skin-to-skin contact, kangaroo mother care (KMC) and parental involvement in the care of the preterm infant (e.g. nappy changing, feeding, temperature taking) in NICUs facilitate bonding between parents and their premature infants, contributing to improved developmental and physiological outcomes.[7,8] KMC involves placing the infant in direct skin-to-skin contact with the parent, promoting thermal regulation, breastfeeding, and emotional bonding. This practice has demonstrated numerous benefits, including enhanced weight gain, improved sleep patterns, and a reduced risk of infection.[9]

On November 15, 2022, World Health Organization published *WHO Recommendations for care of the preterm or low-birth-weight infant*, an updated guideline on the care of preterm infants.[10] The strong recommendations with high certainty include KMC as routine care for all preterm infants, that KMC should be given for 8-24 hours per day and that it should be started as soon as possible after birth. In addition, family involvement in the routine care of preterm infants in health-care facilities is recommended.[10]

Coronovirus disease-19 (COVID-19), an infectious disease caused by the severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) virus, was first identified in Wuhan, China, in December 2019 before quickly spreading worldwide. The first case in Türkiye was announced on March 11, 2020.[11] On April 11-12, the first lockdown was initiated for 31 municipalities of Türkiye.[11] Various measures were taken throughout the pandemic to prevent the spread of the virus, such as cancelling flights, curfews, switching to distance education, temporarily closing cafes and restaurants, and cancelling public events. The "Normalization Period" was announced on July 1, 2021, marking the end of all curfews and lockdowns, reopening of cafes and restaurants and the resuming of public events.[11]

The COVID-19 pandemic and related restrictions presented a significant challenge to the provision of infant and family-centered developmental care in NICUs, as demonstrated by several studies. A large cross-sectional survey study with 2103 participants from 56 countries reported that twenty-six percent of the mothers and forty-four percent of the fathers were not allowed to be present with their infant receiving intensive care during the pandemic, and that twenty-one percent of the respondents indicated that skin-to-skin contact or KMC were not initiated at all during the time of their hospital stay.[12] Lower rates of parental visits, skin-to-skin contact and developmental care practices in the NICUs were demonstrated to be correlated with the severity of the COVID-19 restrictions in the region.[12] Country-specific findings of this multinational survey were also published, Türkiye being the largest contributor to the study with 357 participants.[13] Forty-nine percent of the respondents in Türkiye were not allowed to be present with their baby, fifty-five percent were not allowed to touch their baby in the incubator and seventy-two percent were not allowed to do KMC with their infant during the pandemic. These rates were much higher than the mean of the 56 countries in the study and Türkiye had the second lowest rates of presence with the newborn and skin-to-skin contact after China.[13] A smaller multinational cross-sectional study with 96 participants from 22 countries illustrated that family presence was restricted in 83% of the units, and participation in infant care was restricted in 32% of the units during the pandemic.[14] Restrictions to families were not affected by geographic infection rates or developmental care education of health care professionals.[14] Another retrospective single-center study, which analyzed the records of 129 infants, demonstrated that families had

reduced rates of visitation and less engagement in developmental care activities in the COVID-19 period than in a similar period the year prior.[15] The study also compared the spring vs summer/fall periods of the 2020 pandemic year, as the family visitation rules were more liberalized in the later period, and found that the impacts of the pandemic on developmental care were not short lived nor limited to the beginning of the pandemic when more restrictive visitation policies were in place.[15]

Existing literature reports a decline in the parental visits, skin-to-skin contact and developmental care practices in NICUs during the pandemic globally, and for Türkiye.[12-15] However, no studies that explore changes in neonatal care after the gradual reduction and resolution of COVID-19 restrictions were encountered in the literature. This study explores the degree to which the provision of infant and family-centered neonatal care was disrupted during the pandemic, and whether it has returned to pre-pandemic levels after the government-declared Normalization Period in Türkiye, which has witnessed a significant reduction in COVID-19 related restrictions in the nation.

MATERIAL AND METHODS

ETHICS

This study complies with the Declaration of Helsinki and was performed according to ethics committee approval of Üsküdar University Non-Interventional Research Ethics Committee date: March 30, 2023, no: 61351342/MART 2023-41. Informed consent was obtained from all participants included in the study.

STUDY DESIGN AND PARTICIPANTS

This cross-sectional survey study was conducted to compare parents' experiences on the provision of family-centered care in the NICUs before the pandemic, during the pandemic and after the Normalization Period in Türkiye. Eligible participants were those who were 18 years or older, had a preterm infant (gestational age <37 weeks) that received care in a NICU in Türkiye, and were able to provide informed consent. Individuals that started the questionnaire but declined participation, did not meet the inclusion criteria, or did not complete the survey were excluded from the study.

RECRUITMENT AND DATA COLLECTION

Participants were recruited through multiple channels, including social media platforms, parent support groups, and NICU staff referrals, to ensure a diverse participant pool. An online questionnaire with 61 questions was developed and distributed using Qualtrics, a secure web-based platform. The questionnaire included four sections on: 1) demographic information, 2) details on the preterm birth and the infant, 3) NICU experiences (visitation, contact, KMC, participation in care) and 4) the COVID-19 related restrictions.

VARIABLES

The dependent variables in this study are: the frequency and duration of NICU visits (how often and for how long parents were allowed to visit their babies), how soon after birth parents were able to touch their babies, whether parents were permitted to do kangaroo mother care (KMC), how soon after birth parents were allowed to do KMC, the frequency and duration of KMC, and to what extent parents could take part in the care of their babies in the NICUs.

The independent variable in this study is the time period in which the preterm infant received care in the NICU, categorized into three groups: before the pandemic, during the pandemic, and after the start of the Normalization Period on July 1, 2021.

DATA ANALYSIS

The data were analyzed using the SPSS 24.0 (IBM, Armonk, NY, ABD) statistical software.

Descriptive statistics (percentage, frequency, mean, standard deviation, minimum, and maximum) were used to characterize the study population. Baseline characteristics of participants were summarized, including demographics, details of the preterm birth and details of the NICU stay.

To determine whether July 2021, the beginning of the government-declared Normalization Period in Türkiye, was a meaningful cut-off date for the reduction of COVID-19 related restrictions in the country; comparative analyses were conducted between

the "Pandemic" and the "Normalization Period" groups. Chi-square tests were used to assess the statistical significance among the two groups regarding the participants' subjective answers on the COVID-19 related restrictions in the respective time periods. Statistical significance was set at $p<0.05$.

To explore whether there were statistically significant differences in parents' experiences regarding family-centered neonatal care across the three independent groups, Pearson chi-square test was employed for all categorical variables; namely the frequency and duration of NICU visits, how soon after birth parents were able to touch their babies, whether parents were permitted to do KMC, how soon after birth parents were allowed to do KMC, the frequency and duration of KMC, and to what extent parents could take part in the care of their babies in the NICUs. Statistical significance was set at $p<0.05$.

RESULTS

PARTICIPATION RATE AND BASELINE CHARACTERISTICS

In total, n=1163 participants started the questionnaire. Among them, n=14 declined participation, n=39 did not meet the inclusion criteria, and n=422 did not complete the survey and were excluded from the total set. The remaining n=688 participants were included in the study. The participants were recruited from 50 different cities out of 81 cities in Türkiye.

Baseline characteristics of participants in the total set (n=688) are shown in Table 1. The majority of participants were the mother of the preterm infant (n=670; 97.4%), and married (n=681; 99.0%). Most participants were between the ages 30-34 (n=270; 39.2%), followed closely by 25-29 (n=180; 26.2%) and 35-39 (n=180; 26.2%).

The gestational age at birth was 32-33 weeks for most infants (n=157; 22.8%), followed closely by 30-31 weeks (n=142; 20.6%) and 28-29 weeks (n=131; 19.0%). The majority of the infants received intensive care in the NICUs for over 5 weeks (n=426; 61.9%), most of them being in private hospitals (n=378; 54.9%). The infants of most participants received intensive care after July 2021, during the government-declared Normalization Period for the COVID-19 pandemic in Türkiye (n=374; 54.4%). Around a quarter received intensive care during the pandemic between March 2020 and July 2021 (n=165; 24.0%), followed closely by those that received care before the COVID-19 pandemic (n=149; 21.6%).

There was a statistically significant difference between participants' experiences on the COVID-19 related restrictions before and after the Normalization Period, declared in July 2021 (Table 2). Therefore, this date was determined to be a meaningful cut-off for the reduction of COVID-19 restrictions in the country.

PRESENCE WITH THE NEWBORN RECEIVING SPECIAL/INTENSIVE CARE

In total, 42.7% of participants (n=294) were allowed to visit their newborn in the NICUs once a week or less, with 7.3% of parents (n=50) reporting that they were not allowed to visit their newborn at all. Only 9.1% of parents (n=63) reported that they were allowed to visit their newborn whenever they wished. The majority of the parents were allowed to stay with their infant for up to 15 minutes during each visit or not at all (n=528; 76.7%). Only 7 participants (n=7; 1.0%) stated that they could stay with their baby as long as they wished. Both the frequency ($p<0.001$) and duration ($p<0.001$) of parents' NICU visits depended significantly on the time period in which the infant received intensive care (Table 3). The percentage of the respondents stating that they could visit their infant without restriction was significantly higher in the pre-pandemic group (n=23; 15.4%), compared to the pandemic (n=11; 6.7%) and Normalization Period (n=29; 7.8%). Similarly, more respondents could visit their infants once a day before the pandemic (n=93; 62.4%), compared to the pandemic (n=63; 38.2%) and the Normalization Period (n=175; 46.8%). In contrast, the percentage of participants that were not allowed to visit their infants in the NICU was relatively low before the pandemic (n=3; 2%) and during the Normalization Period (n=14; 3.7%), but was comparatively much higher during the pandemic (n=33; 20%).

TABLE 1: Baseline characteristics of participants (n=688).

		n	%
Respondent's relation to the infant	Mother	670	97.4
	Father	18	2.6
Marital status of respondent	Married	681	99.0
	Not married	7	1.0
Age of respondent (years)	20-24	45	6.5
	25-29	180	26.2
	30-34	270	39.2
	35-39	180	26.2
	40-44	13	1.9
Educational status of respondent	Primary	10	1.5
	Lower secondary	32	4.7
	Upper secondary	151	21.9
	Tertiary	412	59.9
	Postgraduate education	83	12.1
Employment status of respondent	Employed	325	47.2
	Unemployed	363	52.8
Income of respondent	Not sufficient	43	6.3
	Partially sufficient	334	48.5
	Sufficient	311	45.2
Total number of children of respondent	1	382	55.5
	2	232	33.7
	3	65	9.4
	4+	9	1.3
Multiple pregnancy (twins, triplets etc.)	Yes	128	18.6
	No	560	81.4
Birth mode	Vaginal birth	71	10.3
	C-section	584	84.9
	Both (e.g. in case of multiple pregnancy)	33	4.8
Gestational age at birth (weeks)	<24	8	1.2
	24-25	55	8.0
	26-27	125	18.2
	28-29	131	19.0
	30-31	142	20.6
	32-33	157	22.8
	34-35	61	8.9
	36-37	9	1.3
Birth weight of the baby (grams)	<1000	208	30.2
	1000-1499	238	34.6
	1500-2499	232	33.7
	>2500	10	1.5
Duration of special/ intensive care (weeks)	<1	11	1.6
	1-3	99	14.4
	>3-5	152	22.1
	>5	426	61.9
Type of hospital in which the infant received intensive care	State Hospital	19	2.8
	Research&Training Hospital	119	17.3
	Private Hospital	378	54.9
	City Hospital	43	6.3
	University Hospital	129	18.8
When the infant received intensive care	Pre-pandemic	149	21.6
	Pandemic	165	24.0
	Normalization Period	374	54.4

TABLE 2: Comparison of coronavirus disease-2019 (COVID-19) related restrictions during the pandemic and the Normalization Period.

	Pandemic n (%)	Normalization Period n (%)	p value
COVID-19 related restrictions around the time of baby's birth			
No major concern	11 (6.7)	166 (44.4)	
Precautions	19 (11.5)	117 (31.3)	
Social distancing	35 (21.2)	68 (18.2)	**<0.001***
Lockdown	63 (38.2)	15 (4.0)	
Quarantine	37 (22.4)	8 (2.1)	

*Pearson chi-square test, p<0.05 statistically significant.

CONTACT WITH THE NEWBORN IN THE NICU AND KMC

In total, only 16.3% (n=112) of parents reported that they were allowed to touch their infant right after birth or within the first day. Only 4.8% (n=33) were allowed to give kangaroo care to their infant right after birth or within the first day. Around a quarter of parents (n=154; 22.4%) weren't allowed to touch their baby at all until discharge, and almost half of all parents (n=293; 42.6%) reported that kangaroo care wasn't permitted in the NICUs. The time until first touch (p<0.001), and the possibility of KMC in the NICU (p<0.001) both depended significantly on the time period in which the infant received intensive care. Significantly more parents stated that they weren't allowed to touch their baby at all until discharge during the pandemic (n=62; 37.6%), compared to pre-pandemic (n=19; 12.8%) and Normalization Period (n=68; 18.2%). Similarly, more parents reported that kangaroo care wasn't possible/permitted in their NICUs during the pandemic (n=93; 56.4%), compared to pre-pandemic (n=53; 35.6%) and Normalization Period (n=147; 39.3%). No significant difference was observed in the time until parents were allowed to do KMC after birth (p=0.073).

The frequency (p<0.001) and duration (p<0.001) of KMC also depended significantly on the time period in which the infant received intensive care. In total, only 4.7% of all parents (n=32) were allowed to do KMC as often as they wished, and around a quarter (n=168, 24.4%) were allowed once a day or more. Over half of the respondents (n=397, 57.7%) stated

TABLE 3: Comparison of presence and contact with the newborn receiving special/intensive care (n=688).

	Pre-pandemic n (%)	Pandemic n (%)	Normalization Period n (%)	p value
How often were you allowed to visit your baby at the hospital?				
No restriction	23 (15.4)	11 (6.7)	29 (7.8)	
Once a day	93 (62.4)	63 (38.2)	175 (46.8)	
Once a week	27 (18.1)	42 (25.5)	130 (34.8)	**<0.001***
Less than once a week	3 (2)	16 (9.7)	26 (7)	
Not allowed	3 (2)	33 (20)	14 (3.7)	
How long were you allowed to stay with your baby per visit?				
No restriction	3 (2)	1 (0.6)	3 (0.8)	
>3 hours but not unlimited	1 (0.7)	1 (0.6)	3 (0.8)	
1-3 hours	5 (3.4)	2 (1.2)	1 (0.3)	
15-60 minutes	30 (20.1)	30 (18.2)	80 (21.4)	**<0.001***
Up to 15 minutes	104 (69.8)	81 (49.1)	258 (69)	
Not allowed	6 (4)	50 (30.3)	29 (7.8)	
How soon after birth were you allowed to touch your baby?				
Right after birth	15 (10.1)	9 (5.5)	27 (7.2)	
Within first day	16 (10.7)	13 (7.9)	32 (8.6)	
Within first week	32 (21.5)	30 (18.2)	61 (16.3)	
After over a week	66 (44.3)	50 (30.3)	183 (48.9)	**<0.001***
Never until discharge (if baby is discharged from NICU)	19 (12.8)	62 (37.6)	68 (18.2)	
Never (if baby is still in NICU)	1 (0.7)	1 (0.6)	3 (0.8)	
Was it possible / permitted for mothers and/or fathers to do KMC in the NICU?				
Yes	96 (64.4)	72 (43.6)	227 (60.7)	**<0.001***
No	53 (35.6)	93 (56.4)	147 (39.3)	
When was the first time you or your partner were allowed to do KMC with your baby?				
Right after birth	1 (0.7)	2 (1.2)	9 (2.4)	
Within first day	6 (4)	4 (2.4)	11 (2.9)	
Within first week	12 (8.1)	13 (7.9)	23 (6.1)	
After a week	12 (8.1)	10 (6.1)	31 (8.3)	
After two weeks	11 (7.4)	11 (6.7)	36 (9.6)	0.073*
After three weeks or more	55 (36.9)	42 (25.5)	137 (36.6)	
Never until discharge (if baby is discharged from NICU)	51 (34.2)	80 (48.5)	117 (31.3)	
Never (if baby is still in NICU)	1 (0.7)	3 (1.8)	10 (2.7)	
How often were you or your partner were allowed to do KMC with your baby?				
No restriction	15 (10.1)	5 (3)	12 (3.2)	
2-3 times a day	17 (11.4)	6 (3.6)	24 (6.4)	
Once a day	23 (15.4)	26 (15.8)	72 (19.3)	
1-6 times a week	18 (12.1)	8 (4.8)	65 (17.4)	**<0.001***
< once a week	20 (13.4)	29 (17.6)	63 (16.8)	
Never until discharge (if baby is discharged from NICU)	54 (36.2)	87 (52.7)	128 (34.2)	
Never (if baby is still in NICU)	2 (1.3)	4 (2.4)	10 (2.7)	
For how long were you or your partner allowed to perform KMC with your baby at each time?				
<8 hours	1 (0.7)	1 (0.6)	0 (0)	
3-8 hours	0 (0)	0 (0)	1 (0.3)	
1-3 hours	2 (1.4)	2 (1.2)	6 (1.6)	
31-60 minutes	13 (8.8)	7 (4.2)	34 (9.1)	
15-30 minutes	42 (28.4)	41 (24.8)	117 (31.4)	**0.020***
<15 minutes	37 (25)	25 (15.2)	82 (22.0)	
Never until discharge (if baby is discharged from NICU)	52 (35.1)	85 (51.5)	121 (32.4)	
Never (if baby is still in NICU)	1 (0.7)	4 (2.4)	12 (3.2)	
Did medical/nursing staff involve you in the care of your baby (e.g. nappy changing, feeding, temperature taking)?				
Yes, to a high degree	30 (20.1)	13 (7.9)	48 (12.8)	
Yes, to some degree	49 (32.9)	38 (23)	108 (28.9)	**0.003***
No, not at all	64 (43.0)	97 (58.8)	184 (49.2)	
No knowledge of this possibility	6 (4.0)	17 (10.3)	34 (9.1)	

*Pearson chi-square test; **Fisher's exact test, p<0.05 statistically significant; NICU: Neonatal intensive care unit; KMC: Kangaroo mother care.

that they were allowed to do kangaroo care less than once a week or not at all. For most participants, the duration of kangaroo care was less than 15 minutes or not at all (n=419; 60.9%). When the frequency of kangaroo care is compared between time periods, the percentage of respondents that could do it as often as they wished was significantly higher before the pandemic (n=15; 10.1%), compared to the pandemic (n=5; 3%) and the Normalization Period (n=12; 3.2%). Similarly, the percentage of respondents that could do KMC 2-3 times a day was significantly higher before the pandemic (n=17; 11.4%), compared to the pandemic (n=6; 3.6%) and the Normalization Period (n=24; 6.4%). On the other hand, more respondents in the pandemic group (n=87; 52.7%) stated that they were never allowed to do kangaroo care in the hospital, compared to before the pandemic (n=54; 36.2%) and the Normalization Period (n=128; 34.2%). Also, more respondents in the pandemic group (n=87; 52.7%) stated that the duration of KMC was less than 15 minutes, compared to before the pandemic (n=54; 36.2%) and the Normalization Period (n=128; 34.2%).

Lastly, parents' involvement in the care of their baby in the NICU (p=0.003) also depended significantly on the time period in which the infant received intensive care. In total, over half of the respondents reported that they weren't included in the care of their baby at all (n=345; 50.1%), while only 13.2% (n=91) were included to a high degree and 28.3% (n=195) to some degree. The percentage of the respondents that were included in the care of their infant to a high degree was significantly higher in the pre-pandemic group (n=30; 20.1%), compared to the pandemic (n=13; 7.9%) and the Normalization Period (n=48; 12.8%). The percentage of the respondents that were not included in the care of their infant was significantly higher in the pandemic (n=97; 58.8%) and the Normalization Period (n=184; 49.2%), compared to before the pandemic (n=64; 43.0%).

DISCUSSION

INTERPRETATION OF FINDINGS

The study shows - in accordance with the existing literature-that the frequency and duration of parental visits, physical contact and KMC have significantly decreased during the COVID-19 pandemic. After the declaration of the Normalization Period in July 2021; the rate of the parents unable to visit, touch, or do KMC with their infants returned to pre-pandemic levels. However, the rate of the respondents with the most ideal conditions, who were allowed to visit their babies at least once a day, touch their babies right after birth or in the same day, or do kangaroo care as often as they wished or for as long as they wished, didn't increase back to the pre-pandemic levels in the Normalization Period.

MECHANISMS AND EXPLANATION

Many barriers against physical contact and KMC in NICUs have been described in the literature; summarized under the categories of buy-in and bonding, social support, medical concerns, health systems access, and context and cultural norms in one systematic review.[16] In addition to the known barriers, concerns about SARS-CoV-2 infection of infants, increased workload and burnout among healthcare workers, nationwide and institutional restrictions and quarantines, and a lack of evidence-based guidelines during the early stages of the pandemic might have contributed to the decreased rates of family involvement in neonatal care during the COVID-19 pandemic.[17] However, it has been demonstrated that the survival benefit of KMC far outweighs the risk of neonatal mortality due to COVID-19 infections.[18] Most countries have therefore introduced guidelines early in the pandemic for no restriction to parental access, skin-to-skin contact and breastfeeding in NICUs.[19,20]

PRACTICAL IMPLICATIONS

Considering the many well-established and indispensable health and developmental benefits of skin-to-skin contact and KMC for preterm and LBW infants; the authors of this study urge unrestricted parental access, skin-to-skin contact and breastfeeding/bottle-feeding in all NICUs in Türkiye and around the world. The necessary interventions to achieve this gold standard may be determined by the existing literature or prospective research to be conducted on the barriers of family-centered care in NICUs. These interventions may include preparing

updated guidelines on family-centered developmental care during and beyond the COVID-19 pandemic, increasing the number of healthcare personnel equipped to provide family-centered care, providing an education program to healthcare personnel on practical guides to implement these standards in their units, providing the necessary infrastructure to implement these standards in the units (such as rooms for parent-infant bonding and breastfeeding), and equipping parents with the necessary knowledge and support to provide skin-to-skin contact and basic care in the NICUs.

LIMITATIONS

This study's reliance on self-reported data presents a risk of recall bias, as participants might not accurately remember their experiences in the NICU. The online recruitment method could introduce selection bias, as it might disproportionately attract parents who are more active on social media or engaged with parent support groups. The findings, primarily derived from a Turkish population, may not be universally applicable due to regional differences in healthcare systems and practices. The cross-sectional design might limit the ability to establish causality or observe changes in NICU practices and parental experiences over time. The study also does not account for all possible confounding variables that could influence parental experiences, such as socio-economic factors or the gestational age and birthweight of the infant.

CONCLUSION

This study demonstrates that, significantly more respondents were denied visiting their babies in the hospital, the duration of stay with the baby per visit was much lower, and the duration and frequency of skin-to-skin contact and KMC were significantly reduced during the COVID-19 pandemic, compared to pre-pandemic levels. After most pandemic restrictions were lifted in the Normalization Period, the percentage of respondents that were not allowed to visit their babies, touch their babies or do kangaroo care in the NICUs went back to the pre-pandemic levels. However, the percentage of respondents that were allowed to visit their babies without any restrictions or at least once a day, touch their babies right after birth or in the same day, or do kangaroo care as often as they wished or for as long as they wished - already a very small percentage of the participants before the pandemic - didn't significantly improve after the COVID-19 restrictions were lifted. These findings suggest that the most severe limitations on parents' presence and involvement in the NICUs went back to the pre-pandemic levels after the Normalization Period, but the rates of unrestricted family presence and involvement in the NICUs, early initiation of KMC, the practice of KMC over 8 hours a day, and family involvement in the routine care of preterm infants in health-care facilities (as recommended by WHO), which were already alarmingly rare in NICUs in Türkiye before the pandemic and decreased even further during the pandemic, were still in the pandemic levels after most COVID-19 restrictions had been lifted.[10]

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *İlknur Okay, Pırıl Okay;* ***Design:*** *İlknur Okay, Pırıl Okay;* ***Control/Supervision:*** *İlknur Okay, Pırıl Okay, Remziye Keskin, İdil Arasan Doğan;* ***Data Collection and/or Processing:*** *İlknur Okay, Pırıl Okay, Remziye Keskin, İdil Arasan Doğan;* ***Analysis and/or Interpretation:*** *İlknur Okay, Pırıl Okay, Remziye Keskin, İdil Arasan Doğan;* ***Literature Review:*** *İlknur Okay, Pırıl Okay, Remziye Keskin, İdil Arasan Doğan;* ***Writing the Article:*** *İlknur Okay, Pırıl Okay, Remziye Keskin, İdil Arasan Doğan;* ***Critical Review:*** *İlknur Okay, Pırıl Okay, Remziye Keskin, İdil Arasan Doğan;* ***References and Fundings:*** *İlknur Okay, Pırıl Okay, Remziye Keskin, İdil Arasan Doğan;* ***Materials:*** *İlknur Okay, Pırıl Okay, Remziye Keskin, İdil Arasan Doğan.*

REFERENCES

1. Mitrogiannis I, Evangelou E, Efthymiou A, Kanavos T, Birbas E, Makrydimas G, et al. Risk factors for preterm birth: an umbrella review of meta-analyses of observational studies. BMC Med. 2023;21(1):494. [Crossref] [PubMed] [PMC]
2. Blencowe H, Cousens S, Chou D, Oestergaard M, Say L, Moller AB, et al; Born Too Soon Preterm Birth Action Group. Born too soon: the global epidemiology of 15 million preterm births. Reprod Health. 2013;10 Suppl 1(Suppl 1):S2. [Crossref] [PubMed] [PMC]
3. Republic of Türkiye Ministry of Health. Prematurity Rates in Live Births in Program Statistics. Cited: March 24, 2024. [Link]
4. Bulimba M, Cosmas J, Abdallah Y, Massawe A, Manji K. Early outcomes of preterm neonates with respiratory distress syndrome admitted at Muhimbili National Hospital, a prospective study. BMC Pediatr. 2022;22(1):731. [Crossref] [PubMed] [PMC]
5. Ohlin A, Björkman L, Serenius F, Schollin J, Källén K. Sepsis as a risk factor for neonatal morbidity in extremely preterm infants. Acta Paediatr. 2015;104(11):1070-6. [Crossref] [PubMed]
6. Morniroli D, Tiraferri V, Maiocco G, De Rose DU, Cresi F, Coscia A, et al. Beyond survival: the lasting effects of premature birth. Front Pediatr. 2023;11:1213243. [Crossref] [PubMed] [PMC]
7. Westrup B. Newborn Individualized Developmental Care and Assessment Program (NIDCAP) - family-centered developmentally supportive care. Early Hum Dev. 2007;83(7):443-9. [Crossref] [PubMed]
8. Soni R, Tscherning C. Family-centered and developmental care on the neonatal unit. Paediatr Child Health. 2021;31(1):18-23. [Crossref]
9. Jefferies AL; Canadian Paediatric Society, Fetus and Newborn Committee. Kangaroo care for the preterm infant and family. Paediatr Child Health. 2012;17(3):141-6. [Crossref] [PubMed] [PMC]
10. WHO. Recommendations for Care of the Preterm or Low Birth Weight Infant. Switzerland: World Health Organization; 2022.
11. Çalık Göçümlü B, Usul AS. Türkiye'nin Kovid-19 salgınıyla mücadelesinin 2 yılı. Anadolu Ajansi. March 10, 2022. Cited: March 24, 2024. Available from: [Link]
12. Kostenzer J, Hoffmann J, von Rosenstiel-Pulver C, Walsh A, Zimmermann LJI, Mader S; COVID-19 Zero Separation Collaborative Group. Neonatal care during the COVID-19 pandemic - a global survey of parents' experiences regarding infant and family-centred developmental care. EClinicalMedicine. 2021;39:101056. [Crossref] [PubMed] [PMC]
13. Kostenzer J, von Rosenstiel-Pulver C, Hoffmann J, Walsh A, Mader S, Zimmermann LJI; COVID-19 Zero Separation Collaborative Group. Parents' experiences regarding neonatal care during the COVID-19 pandemic: country-specific findings of a multinational survey. BMJ Open. 2022;12(4):e056856. [Crossref] [PubMed] [PMC]
14. Litmanovitz I, Silberstein D, Butler S, Vittner D. Care of hospitalized infants and their families during the COVID-19 pandemic: an international survey. Journal of Perinatology. 2021;41(5):981-7. [Crossref] [PubMed] [PMC]
15. Scala M, Marchman VA, Brignoni-Pérez E, Morales MC, Dubner SE, Travis KE. Impact of the COVID-19 pandemic on developmental care practices for infants born preterm. Early Hum Dev. 2021;163:105483. [Crossref] [PubMed] [PMC]
16. Chan GJ, Labar AS, Wall S, Atun R. Kangaroo mother care: a systematic review of barriers and enablers. Bull World Health Organ. 2016;94(2):130-41J. [Crossref] [PubMed] [PMC]
17. Coşkun Şimşek D, Günay U, Özarslan S. The impact of the COVID-19 pandemic on nursing care and nurses' work in a neonatal intensive care unit. J Pediatr Nurs. 2022;66:44-8. [Crossref] [PubMed] [PMC]
18. Minckas N, Medvedev MM, Adejuyigbe EA, Brotherton H, Chellani H, Estifanos AS, et al; COVID-19 Small and Sick Newborn Care Collaborative Group. Preterm care during the COVID-19 pandemic: A comparative risk analysis of neonatal deaths averted by kangaroo mother care versus mortality due to SARS-CoV-2 infection. EClinicalMedicine. 2021;33:100733. [Crossref] [PubMed] [PMC]
19. Lavizzari A, Klingenberg C, Profit J, Zupancic JAF, Davis AS, Mosca F, et al; International Neonatal COVID-19 Consortium. International comparison of guidelines for managing neonates at the early phase of the SARS-CoV-2 pandemic. Pediatr Res. 2021;89(4):940-51. [Crossref] [PubMed]
20. Erdeve Ö, Çetinkaya M, Baş AY, Narlı N, Duman N, Vural M, et al. The Turkish Neonatal Society proposal for the management of COVID-19 in the neonatal intensive care unit. Turk Pediatri Ars. 2020;55(2):86-92. [PubMed] [PMC]