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The Effect of Breastfeeding Training on Timely Initiation of Breastfeeding in a Baby-Friendly Hospital in Turkey

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ABSTRACT:
Purpose: Although it is known that timely initiation of breastfeeding (TIB) has beneficial effects on newborn and maternal health as well as increasing exclusive breastfeeding for first 6 months, global and regional desired TIB rates have not been reached yet. This study aimed to evaluate the effect of the "Neonatal Baby Service" (NBS) on TIB.
Material and Methods: The descriptive and cross-sectional study was carried out at NBS and obstetrics and gynecology service (OGS) of Aksaray University Training and Research Hospital in Turkey between September 01 and December 31, 2021. A total of 486 newborns who were born between 32-40 weeks, weighed over 2000 g and were not separated from their mothers during the first 2 hours were included in the study.
Results: TIB rate was found 80.5% (n=391). TIB rate were found to be significant as 83.1% (n=296) in the NBS, and 73.1% (n=95) in the OGS (p=0.013). When breastfeeding problem were analysed, it was found to be 46.9% in OGS and 28.9% in the NBS (p<0.001). TIB rates in newborns (92.6%) born by normal vaginal mode were significantly higher than the other groups (p<0.001). The rate of skin-skin contact (SSC) in 0-30 minutes was found to be remarkable as 59.6% in the NBS and 33.8% in the OGS (p<0.001).
Conclusions: It was shown that the NBS service, which only focuses on newborns during the period from delivery to discharge in the hospital, increases the rates of SCC and TIB.
Keywords: *Timely initiation of breastfeeding (TIB); Skin-skin contact (SSC); Exclusive breastfeeding; Early initiation; Breastfeeding problem*

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INTRODUCTION

Breast milk is undoubtedly the main nutrient that protects newborns/infants from infections such as gastrointestinal and pulmonary infections and also mortality, strengthens their immune systems, provides the relationship between mother as well as ensures healthy growth and development of newborn/infants from birth (Yalcin et al., 2021). World Health Organization (WHO) recommends that exclusive breastfeeding for the first 6 months, and should be continued with complementary feeding after the 6th month, at the age of 2 and beyond (Demirtas and Erdal, 2020; Yalcin et al., 2021). It is recommended that breastfeeding, which is beneficial for both maternal and newborn health, should start within half an hour or at the latest within an hour after birth that is timely initiation of breastfeeding (TIB) (UNICEF, 2016).

TIB is one of the factors affecting exclusive breastfeeding for the first 6 months, and it also reduces neonatal deaths (Yalcin et al., 2021; Demirtas and Yalcin, 2022). In studies comparing TIB with breastfeeding after 24 hours, it was found that the risk of death increased by 2 to 2.4-fold in newborns who started breastfeeding late (Smith et al., 2017; Teshale and Tesema, 2021). Despite these

vital advantages of TIB, only around 42-45% of newborns globally can benefit from TIB practice. TIB ratios were determined between 40-45% in Central Africa, East Asia, Pacific and South Asia regions, 49% in Latin America and Caribbean, and 59% in southern and eastern Africa (UNICEF, 2016). TIB ratios in Turkey are stated as 49.9% and 71% in the 2013 and 2018 report of the Turkish Demographic and Health Survey (TDHS), respectively (HÜNEE, 2014; HÜNEE, 2019). TIB and breastfeeding rates of Turkey have been increased by the 10 steps to successful breastfeeding and the International Code of Marketing of Breastmilk Substitutes program, which are the main two component of Baby-Friendly Health Facilities (BFHF) Program (Çaylan et al., 2019).

The majority of the care and follow-up of the newborns who are not admitted to the neonatal intensive care unit in Turkey is carried out by midwives/nurses working in the obstetrics and gynecology service (OGS). Neonatal baby service (NBS) departments that deal only with the care and follow-up of newborns are located in a few centres around the country. In this current study, the effect of the "Neonatal Baby Service" established to make the BFHF program more successful at Aksaray University Training and Research Hospital, which has a newborn-friendly hospital certificate, on the TIB will be investigated.

MATERIAL and METHODS

Study design

The descriptive and cross-sectional study was carried out between September 01 and December 31, 2021 at Aksaray University Training and Research Hospital in Turkey. The study was planned to cover between November-December period after the NBS was established, and September-October period when OGS that serves both newborns and mothers.

The NBS department was planned to work with 24/7 duty to be responsible for all stages of the newborn (such as breast-feeding, skin-to-skin contact, breastfeeding problems, newborn heel prick test (Guthrie test), critical congenital heart disease screening, newborn follow-up) from the birth of the newborn to the discharge from the hospital. The nurses who will start their duties here received theoretical and practical training on WHO's breastfeeding recommendations and practices (WHO, 2020) during a 10-day program.

Study sample

The newborns who were born between 32-40 weeks gestational age, over the 2000 g and who were not separated from their mothers for more than 2 hours due to any condition or illness were included in the study. Newborns born with a weight of less than 2000 g, born before 32 weeks, hospitalized in the neonatal intensive care unit in the first 2 hours were not included in the study. Newborns of mothers who were taken into surgery/medical intervention after birth due to the mother's existing illness, had to be separated from their newborn for the first 2 hours due to health conditions were not included in the study. In addition, the newborns of mothers who refused to care of the newborn were not included in the study.

The study was carried out on a total of 486 newborns, including 356 newborns cared for by the NBS and 130 newborns cared for by the OGS. A total of 163 newborns, including 138 newborns in the OGS as well as 25 newborns in the NBS whose file information was missing or could not be found, and whose anamnesis and demographic information were not fully entered, were excluded from the study.

Data Collection

The study data were examined based on the newborn and mother information contained in the patient file form prepared for the NBS. The information of the newborns in the OGS was taken from the newborn information form contained in the mother's file. The age of the mother, gravida, whether she had a disease condition (Gestational Diabetes Mellitus/ Diabetes Mellitus (GDM/DM), Preeclampsia, Hypertension (HT)), the delivery mode (caesarean (C/S), normal vaginal) were asked. About the newborn, gestation week, birth weight, sex, small for gestational age (SGA), large for gestational age (LGA), diabetic mother newborn (DMB) and hypoglycaemia status were questioned.

Regarding breastfeeding, when the newborn was breastfed (which 0-30 minute, 30-60 minute, and

after 60 minute); the state of giving/not giving formula and if the formula was given to the newborn why is given; whether breastfeeding is successful, if not, why not (nipple problems, the newborn's health condition, empty breast, insufficient human milk (HM), the status of the newborn's illness, the mother's drug use and desire to breastfeed skin-to-skin contact (SSC) status (0-30 minute, 30-60 minute, and after 60 minute) were questioned.

We used the APGAR and LATCH score. The APGAR score is used within the neonatal resuscitation program and provides the evaluation of the newborn at the 1st and 5th minutes. The Apgar score includes the newborn's colour, heart rate, reflexes, muscle tone and respiratory rate. Each item is scored as 0 (zero), 1 or 2. Latch assessment tool has been developed to objectively diagnose breastfeeding, detect breastfeeding problems, plan breastfeeding education and create the same language for health professionals. LATCH stands for the English expressions of these steps. These evaluation steps are ''L=Latch on breast'', ''A=Audible swallowing'', ''T=Type of nipple'', ''C=Comfort of the mother regarding the breast and nipple (Comfort breast/nipple)'' is expressed as ''H= Hold the baby position''. Items in the scale are scored as 0-1-2. The highest score that can be obtained from the scale is 10, and the lowest score is 0 (Jensen et al., 1994).

Ethics

This study has been carried out in accordance with the Code of Ethics of the World Medical Association. This survey was approved by ethical committee of Aksaray University (Number: 2022 / 01-12).

Statistical analysis

In this study we analysed the data with the SPSS v. 22.0 (IBM, USA) program. The Shapiro–Wilk test was performed to determine the distribution patterns of the variables. Categorical variables were presented as number or percentages. The relationship between two quantitative parametric variables was evaluated with Pearson correlation. The student's t test was used to compare continuous variables between the two groups, as appropriate. The Chi-square test was used in group comparisons of nominal variables. Binary logistic regression analyses test was used for the comparison of data. A p value of less than 0.05 was considered as statistically significant.

Results

Of the total 486 newborns evaluated in the study, 73.3% (n=356) of them received their first care from the NBS and 26.7% (n=130) in the OGS. The mean age of the mothers was 26 ± 5.4 years. It was the first pregnancy of 25.7% (n=125) of the mothers, the second pregnancy of 30% (n=146), the third pregnancy %26.7 (n=130) and the fourth and more pregnancy %17.5 (n=85). Of the newborns included in the study, 54.7% (n=266) were male and 45.3% (n=220) were female and other information of newborn and mother is summarized in Table 1.

There was no significant difference between the maternal age, number of pregnancies and gestational week between NBS and OGS groups (p=0.459, 0.084, 0.390, respectively). LATCH score was found to be significant as 9.1 ± 1.1 in the NBS group and 7.5 ± 0.99 in the other group (p<0.001) and similarly in 1. and 5. minute APGAR scores was found significant in both groups (p=0.022, p=0.012, respectively). When we evaluated in terms of service units, the rate of SSC in 0-30 minutes was found to be significant as 59.6% (n=212) in the NBS and 33.8% (n=44) in the other service (p<0.001). In addition, from the point of view of breastfeeding problems faced by mothers, 33.7% of mothers (n=164) encountered breastfeeding problems and this situation was evaluated between the two services, it was found remarkable that the breastfeeding problem rate in the OGS was 46.9% (n=61) and in the NBS was 28.9% (n=103) (p<0.001) (Table 2).

40.7% (n=198) of the newborns in the study were breastfed within the first half hour; the rate of starting breastfeeding within 0-30 minutes was found to be significant as 46.6% in the NBS and 24.6% in the gynecology obstetric service (p<0.001). In this study TIB rate in the study was 80.5% (n=391). When we examined at the TIB rate were found to be significant as 83.1% (n=296) in the NBS, and 73.1% (n=95) in the other service (p=0.013). TIB rates according to the mode of delivery were examined, it was found that 92.6% (n=239) of newborns born by

normal vaginal way were breastfed within the first hour, and this rate was 63.2% in planned C/S and 68.1% in emergency C/S groups. (p<0.001) (Table 3).

When the factors (mother's illness status, the mode of delivery, 1th and 5th minute APGAR score, number of pregnancies and service departments) affecting the TIB are examined by binary logistic regression analysis, the service group, the mother's illness status, gestational week, the mode of delivery and 1th minute APGAR score was found to be effective (p<0.001, p=0.002, p<0.001, p<0.001, p=0.006, respectively) (Table 4).

Table 1. Sociodemographic information and general characteristics of participants

Features	Subgroups	Number	%
Mother's illness status	Healthy	368	75.7
	GDM/DM*	55	11.3
	Preeclampsia	43	8.8
	HT	20	4.1
Delivery mode	Normal vaginal	258	53.1
	Planned C/S	68	14
	Emergency C/S	160	32.9
Gestational week classification	37-40 week	351	72.2
	34-36 week	124	25.5
	32-33 week	11	2.3
Gender	Male	266	54.7
	Female	220	45.3
Service Group	NBS[¥]	356	73.3
	OGS[£]	130	26.7
Gravida	1	125	25.7
	2	146	30
	3	130	26.7
	≥4	85	17.5
Starting Breastfeeding	0-30 minute	198	40.7
	30-60 minute	193	39.7
	60 minute and beyond	95	19.5
SCC[π]	0-30 minute	256	52.7
	30-60 minute	145	29.8
	60 minute and beyond	85	17.5
Starting Formula	Yes	149	30.7
	No	337	69.3
Breastfeeding Problem	Yes	164	33.7
	No	322	66.3
Breastfeeding Problem Cause	Nipple problems	58	11.9
	Dry breast/Insufficient HM[β]	14	2.9
	Drugs used by mother	5	1.1
	Newborn's disease	31	6.4
	Mother reluctant	56	11.5
	No	322	66.3
Feature	**Mean ± Std. Deviation**	**Min-Max**	
Age (year)	26.7 ± 5.41	16-41	
Gestational week (week)	37.6 ± 2.2	26-41	
Birth weight (g)	3182 ± 516	2030-4390	
1st minute APGAR	8.85 ± 0.82	4-10	
5th minute APGAR	9.79 ± 0.51	7-10	
LATCH score	8.67 ± 1.31	5-10	

*GDM/DM= Gestational Diabetes Mellitus/ Diabetes Mellitus, [¥]NBS=Neonatal Baby Service, [£]OGS= Obstetrics and Gynecology Service, [π]SCC= Skin-to-Skin Contact, [β]HM=Human Milk

Table 2. Evaluation of newborn, mother and breastfeeding characteristics between NBS and OGS

Features	Neonatal Baby Service (n=356)	Obstetrics and Gynecology service (n=130)	p
Mother's features n %			
Mother's illness status			
Healthy	263 (73.9)	105 (80.8)	
GDM/DM*	41 (11.5)	14 (10.8)	0.24
Preeclampsia	34 (9.6)	9 (6.9)	
HT	18 (5.1)	2 (1.5)	
Age	26.6 ± 5.45	27 ± 5.32	0.46
Gravida	2.37 ± 1.1	2.60 ± 0.88	0.084
Delivery mode			
Normal vaginal	191 (53.7)	67 (51.5)	
Planned C/S	47 (13.2)	21 (16.2)	0.707
Emergency C/S	118 (33.1)	42 (32.3)	
Newborn's features n %			
Gestational week			
37-40week	262 (73.6)	89 (68.5)	
36-34 week	87 (24.4)	37 (28.5)	0.479
32-33 week	7 (2)	4 (3.1)	
Gender			
Male	197 (55.3)	69 (53.1)	0.658
Female	159 (44.7)	61 (46.9)	
1st minute APGAR	8.92 ± 0.79	8.67 ± 1.18	**0.022**
5th minute APGAR	9.84 ± 0.43	9.68 ± 0.68	**0.012**
Breastfeeding Features n %			
LATCH score	9.1 ± 1.13	7.5 ± 0.99	**<0.001**
Breastfeeding problem			
Yes	103 (28.9)	61 (46.9)	**<0.001**
No	253 (71.1)	69 (53.1)	
Starting Formula			
Yes	91 (74.4)	58 (44.6)	**0.001**
No	265 (25.6)	72 (55.4)	
SGA[¥]/LGA[£]/Hypoglycemia			
Yes	53 (14.9)	33 (25.4)	**0.007**
No	303 (85.1)	97 (74.6)	
Starting Breastfeeding			
0-30 minute	166 (46.6)	32 (24.6)	
30-60 minute	130 (36.5)	63 (48.5)	**<0.001**
60 minute and beyond	60 (16.9)	35 (26.9)	
SCC[π]			
0-30 minute	212 (59.6)	44 (33.8)	
30-60 minute	93 (26.1)	52 (40)	**<0.001**
60 minute and beyond	51 (14.3)	34 (26.2)	

*GDM/DM= Gestational Diabetes Mellitus/ Diabetes Mellitus, [¥]SGA=Small Gestational Age, [£]LGA=Large Gestational Age, [π]SCC= Skin-to-Skin Contact

Table 3. Analysed of the factors affecting the TIB rate

Features	TIB* 0-60 minute (n=391)	TIB 60 minute and beyond (n=95)	p
Service Group			
NBS[¥]	296 (83.1)	60 (16.9)	**0.013**
OGS[£]	95 (73.1)	35 (26.9)	
Delivery mode			
Normal vaginal	239 (92.6)	19 (7.4)	
Planned C/S	43 (63.2)	25 (36.8)	**<0.001**
Emergency C/S	109 (68.1)	51 (31.9)	
Gestational week			
37-40 week	316 (90)	35 (10)	
36-34 week	73 (58.9)	51 (41.1)	**<0.001**
32-33 week	2 (18.2)	9 (81.8)	
Gender			
Male	213 (80.1)	53 (19.9)	0.818
Female	178 (80.9)	42 (19.1)	
Skin-to-skin contact (SCC)			
0-30 minute	244 (95.3)	12 (4.7)	
30-60 minute	145 (100)	0 (0)	**<0.001**
60 minute and beyond	2 (2.4)	83 (97.6)	

*TIB= Timely Initiation of Breastfeedin (The data for 0-30 minutes and 30-60 minutes were combined). [¥]NBS=Neonatal Baby Service, [£]OGS= Obstetrics and Gynecology Service

Table 4. Logistic regression analysis of factors affecting TIB.

Variable	Regression Factor	Standard Error	p	Odds Ratio	95% CI
Service Group (NBS)	1.43	0.29	**<0.001**	4.18	2.36-7.38
Mother's disease (+)	-0.52	0.17	**0.002**	0.60	0.43-0.83
Gravida	-0.14	0.12	0.248	0.87	0.69-1.10
Gestational week	1.19	0.30	**<0.001**	3.28	1.82-5.90
Delivery mode	1.94	0.19	**<0.001**	6.93	4.72-10.18
Gender (male)	0.14	0.25	0.563	1.15	0.72-1.87
1st min. APGAR	-0.65	0.24	**0.006**	0.52	0.33-0.83
5th min. APGAR	0.05	0.37	0.902	1.05	0.50-2.18

DISCUSSION

In the current study, we found that our TIB rates were 80.5% in general and %83.1 in NBS (p=0.013). The most important result of our study was that we had a TIB rate of 92.6% in normal vaginal births and 93.7% in the NBS (p<0.001). Our SSC rate was 52.7% in the first half-hour, and while it was 59.6% in the NBS, we found this rate to be 33.8% in the OGS (p<0.001). The rate of breastfeeding problem was found in OGS was 46.9% (n=61) and in the NBS was 28.9% (p<0.001).

WHO emphasized TIB and made recommendations on its implementation, as well as classified early breastfeeding as poor (0-29%), fair (30-49%), good (50-89%) and very good (90-100%) (UNICEF, 2016; Demirtas and Erdal, 2020). Although the TIB rates highlighted by WHO vary globally and regionally, they are generally included in the poor and fair category. While the TIB rate is 32% in Iran, 23% in India, 8.5% in Pakistan, this rate is in the good

category with 71% in Turkey (WHO, 2020). In this study, we had a higher TIB rate of 83.1% in newborns in the NBS than globally and regionally (p=0.013). We attributed the increase in TIB rates in our clinic within the 2-month period to the presence of a unit that only deals/deals with newborns and the NBS team's sensitive approaches to TIB and breastfeeding.

The first few hours of the newborn after birth is a sensitive period that can affect the health of the newborn in the short and long term, and it is necessary to support the newborn during this period not only by providing physiological conditions, but also in a psychological and medical perspective (Demirtas and Yalcin, 2022, Yalcin et al., 2021). Ensuring a quality, at least one hour of SSC has positive effects for both the newborn and his/her mother. In addition to providing positive interaction with the newborn on the mother, SSC initiates the secretion of the hormone oxytocin, which provides the flow/secretion of human milk, creates the caregiving / protective behaviours of the mother and ensures the contraction of the uterus (Pohl et al. 2019). SSC also plays an important role in providing thermoregulation from hypothermia, which poses a risk to newborns in the first hours, physiological cardio-pulmonary stability and protection from hypoglycemia states (Alebel et al., 2017; Ionio et al., 2021, Demirtas and Erdal, 2020). It was found that postnatal stress and crying in newborns who were not treated with SSC after birth were 90% higher than those in babies with SSC (Christensson et al., 1995). SSC has effects on the creation and maintenance of microbiota, which is shown as a secondary brain and is an important factor of immunity, as well as on increasing cognitive capacity in later childhood years and affecting lifelong health status (Hendricks-Munoz et al., 2015). The SSC rate varies regionally and globally. In studies conducted on SCC, Allen et al. (2019) found it to be 70.4% in Australia, and Mukherjee et al. (2020) in India found it to be 62.2%. In our study, a total of 52.7% of newborns were SCC with the mother in the first 30 minutes and, we found that there was a significantly higher SCC rate in the NBS with 59.6% compared to the other group (p<0.001).

Conditions that have negative effects on maternal health, such as uterocervical lacerations, bleeding during delivery, need for blood transfusion also have adverse effects on newborn breastfeeding and SSC (Lai et al., 2015). Tilahun et al. (2016) in their studies conducted in Ethiopia, it was found that the TIB rate was negatively affected by caesarean section in 86% of births (p<0.001). In Turkey, Oflu et al. (2022) in their TIB study, they showed that normal vaginal delivery was 5.03 times more effective (2.75-9.18 95% CI). In parallel with the literature, it was found that the breastfeeding rate, which is 92.6% in normal vaginal births, decreased in C/S (p<0.001). We thought that among the negative factors in the breastfeeding rate in C/S delivery births, the mother's general anesthesia, the cold operating room for the newborn's thermoregulation, the newborn's health status at the first moment, and the lack of professional nurses/midwives who are trained and practical in this field.

Breastfeeding, even if it is a physiological process, support may be required to initiate and continue breastfeeding. Nurses, who are the professional group who spend the most time with the patient in the professional health system, have positive effects on the initiation, maintenance and duration of breastfeeding (Britton et al., 2007; Swerts et al., 2016). As the workload of nurses and the number of patients they care for increases, the mistake rates they make also increase (Demirtas, 2021). Li et al. (2014) in their study, which examined the effect of hospital staff on breastfeeding in Alabama, they showed that there was a 2.1-fold increase (1.41-3.13 95% CI) in TIB rates in uncomplicated births because of trained staff. In the evaluation of the factors affecting the duration of TIB, we found that the NBS increased TIB by 2.36 times (2.36-7.38 95% CI), which was the most remarkable result in our study. Considering the responsibilities of nurses/midwives working in OGS in Turkey regarding both the newborn and the mother, we thought that they could not create enough time for each newborn for a situation such as breastfeeding and SSC that requires one-to-one support and effort. We believe that our breastfeeding and SSC rates have increased with the influence of trained and professional staff who work only newborn-oriented, with a reduced workload.

CONCLUSION

We found that our TIB rates were 80.5% in general and %83.1 in NBS (p=0.013). The most important result of our study was that we had a TIB rate of 92.6% in normal vaginal births and 93.7% in the NBS (p<0.001). We emphasize that TIB rates will be increased with a service with the status of NBS service in the current study. TIB, SSC and care of newborns who are not hospitalized in the neonatal intensive care unit, can only be increased with qualified and trained professional medical staff who are focused just only the newborn. In addition, with the professional care and follow-up that newborns will receive from the moment of birth, unnecessary formula use can also be reduced. Our study is a pioneering study for cohort and multicentre studies in this field.

LIMITATIONS

The study contained some limitations. This study had a prospective single-center design and included a relatively small sample size. Larger prospective studies are needed to confirm these findings, to determine the factors influencing TIB.

Conflict of Interest Statement

The authors declare no conflict of interest.

Authors Contributions

Conception and design of the research: MSD Acquisition of data: CK and MSD. Analysis and interpretation of data: CK. Statistical analysis: MSD. Drafting the manuscript: MSD, CK. Revision of manuscript for important intellectual content: CK and MSD. All authors read and approved the final manuscript

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