

THE PARENTING BEHAVIORS OF PARENTS WITH INFANTS IN NEONATAL INTENSIVE CARE UNITS AND THE EFFECT OF INVASIVE PROCEDURES

COMPORTAMENTELE PARENTALE ALE PĂRINȚILOR CU SUGARI ÎN UNITĂȚILE DE TERAPIE INTENSIVĂ NEONATALĂ ȘI EFECTUL PROCEDURILOR INVAZIVE

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Abstract

Objective: To determine the parenting behaviors of parents with infants in neonatal intensive care units and the effect of invasive procedures on their parenting behaviors.

Methods: This analytical, cross-sectional study was conducted with 250 parents whose infants were admitted to the neonatal intensive care unit. The data were collected using an introductory information form and the Postpartum Parenting Behavior Scale (PPBS). The data were evaluated using descriptive statistics, the Mann-Whitney U test and the Kruskal-Wallis test.

Results: The mothers' mean PPBS score was 3.76 ± 1.86 , and the fathers' was 2.98 ± 1.79 . Having a nuclear family positively affected the mothers' parenting behavior, and newborn weight, length and head circumference affected it negatively. Having a baby with vascular access from invasive procedures positively affected the parenting behavior of both parents, whereas having a baby with an umbilical vein catheter or an endotracheal tube affected it negatively.

Conclusions: The parents had moderate levels of parenting behavior, and the mothers had more positive parenting behavior than the fathers. Having a baby with vascular access positively affected parenting behavior, but having a baby with an umbilical vein catheter or an endotracheal tube affected it negatively.

Rezumat*:

Obiectiv: Studiul își propune să determine comportamentele parentale ale părinților cu sugari în unitățile de terapie intensivă neonatală și efectul procedurilor invazive asupra comportamentelor parentale.

Metode: Acest studiu analitic, în secțiune transversală, a fost realizat cu 250 de părinți ai căror copii au fost internați în unitatea de terapie intensivă neonatală. Datele au fost colectate folosind un formular informativ introductiv și Scala de comportament parental postpartum (PPBS). Datele au fost evaluate folosind statistici descriptive, testul Mann-Whitney U și testul Kruskal-Wallis.

Rezultate: Scorul mediu al PPBS al mamelor a fost $3,76 \pm 1,86$, iar tații au fost $2,98 \pm 1,79$. Comportamentul parental al mamelor este afectat pozitiv de familie și negativ de greutatea, lungimea și circumferința capului nou-născutului. A avea un copil cu acces vascular pentru proceduri invazive afectează în mod pozitiv comportamentul parental al ambilor părinți, în timp ce un copil cu un cateter venei ombilicale sau un tub endotraheal îi afectează negativ.

Concluzii: Comportamentul parental este modificat moderat pentru ambii părinți, iar mamele au avut un comportament parental mai pozitiv decât tații. A avea un copil cu acces vascular a afectat pozitiv comportamentul parental, dar faptul că un bebeluș cu un cateter venei ombilicale sau un tub endotraheal i-a afectat negativ.

Key-words: *parenting behavior, intensive care, neonatal, invasive procedures*

Cuvinte cheie: *comportament parental, terapie intensivă, proceduri neonatale, invazive*

Introduction

Parenting is a critical social factor in child development, and it involves many psychological concepts, cultural norms and thoughts (Shah et al., 2016; Treyvaud et al., 2016; Neel, Stark, & Maitre, 2018). It is increasingly accepted as an almost universal

determinant of social, economic and health outcomes (O'Connell, Davis, & Bauer, 2015). Parenting behavior affects infants' development in the physical, cognitive, behavioral and social domains. Effective parenting behavior contributes to infants' healthy development by preventing many negative childhood issues.

Some of the results of positive parenting behavior include less child abuse, neglect, aggressive and hyperactive behavior, more academic success and better chronic disease management (O'Connell et al., 2015; Moniz et al., 2016; Spittle, & Treyvaud, 2016; Crowell, Keluskar, & Gorecki, 2019).

There are very important reasons that interfere with parent-infant interaction and postpartum parenting behavior. Stressful life experiences can affect parenting behavior. When a baby is considered to be at risk, admitted to a neonatal intensive care unit and exposed to invasive procedures, it is a stressful situation that can be seen as a family crisis (Erdeve, Atasay, Arsan, & Türmen, 2008; Horwitz, & Neiderhiser, 2015). Even short-term hospitalization of babies, regardless of the severity of the disease, is traumatic for families (Hollywood, & Hollywood, 2011; Özyazıcıoğlu, & Tüfekçi, 2009). NICUs are scary places far from parents' dreams and wishes for their babies. NICUs have a physical environment with some barriers to family presence and participation in baby care, including incubators that isolate infants, and many scary invasive procedures, tools, and noises. The devices keep parents away from their babies, and the infant seems weaker due to their dependence on high technology machines. The parents feel helpless because they cannot control the devices and are less likely to participate in caring for their babies. These issues can adversely affect the relationship between parents and their babies (Erdeve et al., 2008; Hollywood, & Hollywood, 2011; Özyazıcıoğlu, & Tüfekçi, 2009).

Environmental factors such as gestational age, perinatal factors and parenthood also affect the healthy neurobehavioral development of newborns at risk (Spittle, & Treyvaud, 2016). Therefore, it is vital to support their parents' positive and effective parenting behavior. However, there is one key caveat: initial diagnoses must be correct to recommend, plan and finance ways of improving parenting behavior (O'Connell et al., 2015).

Early identification of parenting behavior may contribute to planning interventions for families at risk in order for their newborns to maintain quality and healthy relationships with their parents in subsequent periods (Britton,

Gronwaldt, & Britton, 2001). Parenting behaviors can be changed and improved (O'Connell et al., 2015; Moniz et al., 2016). Therefore, it is very important to evaluate the postpartum parenting behavior of both mothers and fathers whose babies are admitted to neonatal intensive care units, and to determine the invasive procedures that may affect parenting behavior. This study may contribute to preventing negative infant and parental outcomes. Most studies of parenting focus on the mother-child connection, and only a few examine father-child relations (Hollywood, & Hollywood, 2011; Fegran, Helseth, & Fagermoen, 2008; Rilling, & Mascaro, 2017; Han, & Chae, 2016). It is very important that this study provides information about fathers' parenting behaviors. This study may also provide more objective data than parents' self-reporting data because their parenting behavior was observed and evaluated by the nurse researcher (Sussman, 2016). There is no evidence about a very important factor, which is how invasive procedures affect parenting behavior. The study may significantly contribute to the literature because no other study that examines the postpartum parenting behavior of both mothers and fathers with newborns at risk in NICUs and the effect of invasive procedures on their parenting behaviors.

Materials and Methods

This is an analytical, cross-sectional study. This study was conducted in Aydın, a developed large city in the Aegean region of western Turkey. The Aydın Adnan Menderes University Research and Application Hospital where the study was conducted is the city's only university hospital. It has two NICUs (one level-3 and one level-2) and three mother-infant bonding rooms. There are 12 incubators in the level-3 NICU and 16 incubators in the level-2 NICU, including those in the mother-infant bonding rooms.

Sample

The study population consisted of the parents of babies who were admitted to the NICUs of the Adnan Menderes University Research and Application Hospital from December 2012 to December 2013. Using STATCALC software, the sample size was

calculated to be 125 under the following conditions: a study population of 321, a 95% confidence interval, a 5% (0.05) type-1 error level, a design effect of 1.0 and a cluster of 1.0. A total of 250 parents (125 mothers and 125 fathers) were included in the study, including only the mothers of some of the babies, only the fathers of some babies and both parents of some babies. A total of 156 babies were included in the sample. No parents refused to participate in the study. The inclusion criteria for the parents were: having completed at least primary school, being at least 18 years old, not being in psychological treatment and having a baby with no congenital anomalies.

Data Collection Tools

The data were collected using a parent-infant introductory information form and the Postpartum Parenting Behavior Scale (PPBS).

The Parent-Infant Introductory Information Form

This form was prepared by the researchers to gather information about mothers, fathers and babies. It has 33 questions: 12 questions about socio-demographic characteristics such as age, duration of marriage, education level, employment status, health insurance, family type and income level; 6 questions about pregnancy issues, and number of pregnancies and deliveries; 5 questions about thoughts about babies and spouses, and 10 questions about the babies' gender, measurements, type of treatment and type of tools and equipment used in the treatment.

The Postpartum Parenting Behavior Scale (PPBS)

This scale was developed by Britton et al. (2001) to assess parenting behavior in the postpartum period when parents meet first their babies. The scale can only be administered to parents in the first minutes after birth. The inter-rater reliability of the scale was 0.91, and the Cronbach's alpha (α) internal consistency reliability coefficient was 0.64 (Britton, Gronwaldt, & Britton, 2001). The Turkish version of the scale was created by doing a language and content validity study (Çalışır, Karaçam, Akgül, & Kurnaz, 2009).

Although the original scale has 7 items,

the Turkish version of the scale has 6 items because the validity study's item analysis determined the second item had insufficient discriminatory power. The Turkish version has 6 yes/no items: close contact, affectionate touching, examining the baby, affectionate talking, positive comments and happiness. The inter-observer consistency coefficient was 0.97 for the total scale score and varied between 0.88 and 0.97 for each item, and the reliability coefficients were between 0.80-0.83. The scale's validity (convergent validity) was examined by calculating the Pearson's correlation coefficients and the inter-observer correlations for the total scale score and varied from 0.85 to 0.93 (Çalışır et al., 2009).

In this study, the Cronbach's alpha values were 0.73 for the mothers and 0.71 for the fathers, indicating that the scale is a reliable tool for evaluating the parenting behaviors of parents with infants in neonatal intensive care units.

Data Collection

This study was conducted with parents whose infants were admitted to neonatal intensive care units. Whether the parents met the inclusion criteria was determined using information in the hospital files. They were informed about the study, and their written consent was obtained. When the parents met their baby for the first time, they were allowed to stay together for 10 minutes, and their parenting behaviors were recorded using the PPBS. The parent-infant introductory information form was completed in 5-10 minutes in face-to-face interviews. All data collection was carried out by the researcher, a neonatal intensive care nurse.

Data Analysis

The data were analyzed using SPSS. The Kolmogorov-Smirnov test was used to determine whether the data were parametric. Since the Kolmogorov-Smirnov Z test yields a significance level of less than 0.05 ($p < 0.05$), nonparametric test methods were used. The data were evaluated using descriptive statistics, the Mann-Whitney U test and the Kruskal-Wallis test. P values < 0.05 were considered statistically significant.

Ethical Considerations

Approval for this study was obtained from the Adnan Menderes University Faculty of Medicine Non-Interventional Research Ethics Committee (protocol number 2014/481). Institutional permission was obtained from the head physician of the Adnan Menderes University Research and Training Hospital. Written informed consent was obtained from the

parents who agreed to participate.

Results

A total of 250 parents (125 mothers and 125 fathers) participated in this study. The mothers' mean age was 28.5±6.2, and the fathers' mean age was 32.3±6.0 years. Table 1 shows the distribution of the parents' other socio-demographic characteristics.

		PPBS Score				
Parental Characteristics	n	Median	IR (25-75)	KW/U	p	
Social Security	Yes	220	3.0	2.0-5.0	-/2930.5	0.314
	No	30	3.0	1.0-5.0		
Mother's Family Type	Extended family	26	4.0	1.0-4.0	-/952.5	0.039
	Nuclear family	99	5.0	2.0-5.0		
Father's Family Type	Extended family	26	3.0	2.0-5.0	-/1275.5	0.381
	Nuclear family	99	3.0	2.0-5.0		
Duration of Marriage	5 years or less	148	3.0	2.0-5.0	0.717/-	0.699
	6-10 years	78	3.0	2.0-5.0		
	11 years or more	24	3.0	2.0-5.0		
Occupation	Civil Servant	32	3.0	2.0-5.0	2.216/-	0.483
	Worker	50	3.0	2.0-5.0		
	Self-employed	54	4.0	2.0-5.0		
	Unemployed/Other	114	3.0	2.0-5.0		
Education Level	Primary school	72	3.0	1.0-5.0	1.328/-	0.661
	Middle school	68	3.0	2.0-5.0		
	High school	42	3.0	2.0-5.0		
	University	68	3.0	1.0-5.0		
Income Level	Less income than expenditures	57	3.0	2.0-5.0	0.214/-	0.898
	Income equal to expenditures	154	3.0	1.0-5.0		
	More income than expenditures	39	3.0	2.0-5.0		
Place of Residence	Provincial center	103	3.0	2.0-5.0	0.369/-	0.832
	District center	114	3.0	1.0-5.0		
	Village	33	3.0	2.0-5.0		
Number of Living Children	1	116	3.0	2.0-5.0	0.905/-	0.824
	2	56	3.0	1.0-5.0		
	3 or more	58	3.0	2.0-5.0		
Marital Relationship	Very good	135	3.0	1.0-5.0	0.511/-	0.681
	Good	101	3.0	2.0-5.0		
	Moderate or poor	14	4.0	2.0-5.0		
Planned Pregnancy for Mother	Yes	113	4.0	2.0-5.0	-/595.0	0.480
	No	12	4.0	2.0-6.0		
Planned Pregnancy for Father	Yes	115	3.0	1.0-5.0	-/394.0	0.095
	No	10	1.0	1.0-3.0		
Baby of the Desired Gender	Yes	208	3.0	2.0-5.0	-/4108.5	0.539
	No	42	3.0	2.0-5.0		

Table 1. Comparison of Postpartum Parenting Behavior Scale Scores and Parental Characteristics

A total of 156 infants were included in this study. Since both parents of some of the infants were included, the data represented 250 parents. Table 2 shows the infants' demographic characteristics. Prematurity is the most common reason why the newborns were admitted to the neonatal intensive care unit (71.8%), followed by respiratory system diseases (32.7%), prenatal issues (19.9%), multiple births (7.1%), neurological system diseases (6.4%), maldevelopment (5.8%), cardiological system diseases and malnutrition (2.6%), and blood diseases (1.3%). The percentages of the infants' invasive procedures were: orogastric catheters (OC), (59.6%), vascular access (59.0%), mechanical ventilators (55.1%), nasal cannulas (34.0%), umbilical vein catheters (UVC) (21.8%), endotracheal tubes (ETT) (21.2%), phototherapy (FT) and eye bands (14.1%). All the babies (100%) had heat probes and pulse oximetry.

Evaluation of the Parents' Postpartum Parenting Behavior Scale Scores

The mothers' mean PPBS score was 3.76±1.86 (min=0, max=6), and the fathers' mean PPBS score was 2.98±1.79 (min=0, max=6). The mothers' mean PPBS score was higher (U=5910.5; p=0.001). The PPBS scores

of both parents were compared with their social security, duration of marriage, occupation, education level, income level, place of residence, number of children, marital relationships, having a planned pregnancy and having a baby of the desired gender. These characteristics were found to not affect their PPBS scores. However, the mothers who were living with nuclear families had significantly higher PPBS scores than those who were living with extended families (p=0.039) (Table1).

Comparison of PPBS Scores and the Infants' Characteristics

There were no statistically significant differences in the parents' mean PPBS scores by baby gender and gestational age (gender: p=0.718, GA: p=0.060). However, there were statistically significant differences in the parents' mean PPBS scores by birth weight, length and head circumference (BW: p=0.050, BL: p <0.001, BHC: p=0.017). Bonferroni corrections were used to determine sources of the differences. The parents of infants with birth weights of 1,999 g, the parents of infants with birth lengths of 34 cm or less, and the parents of infants with birth head circumferences of 24 cm or less all had lower PPBS scores (Table 2).

Characteristics	Variable	n	Median	IR (25-75)	KW/U	p	Bon. Lev.
Gender	Female	97	2.0	1.0-5.0	-7220.5	0.718	-
	Male	153	3.0	2.0-5.0			
Age (week)	27 weeks or less	66	2.0	1.0-5.0	5.620/-	0.060	-
	28-33 weeks	107	3.0	1.0-5.0			
	34 weeks or more	77	3.0	2.0-6.0			
Birth Weight	1999 gr or less	134	1.0	1.0-2.0	7.792/-	0.050	1-2
	2000-2499 g	30	4.0	2.0-6.0			1-3
	2500-2999 g	55	2.0	2.0-5.0			1-4
	3000 gr or more	31	3.0	2.0-6.0			
Birth Length	34 cm or less	46	1.0	1.0-3.0	19.520/-	<0.001	1-2
	35-39 cm	42	4.0	2.0-4.0			1-3
	40-44 cm	65	5.0	2.0-5.0			1-4
	45 cm or more	97	4.0	2.0-5.0			
Birth Head Circumference	24 cm or less	37	1.0	2.0-3.0	8.192/-	0.017	1-2
	25-29 cm	82	3.0	2.0-5.0			1-3
	30 cm or more	131	3.0	2.0-6.0			

Table 2. Comparison of Postpartum Parenting Behavior Scale Scores and the Infants' Characteristics

Comparison of the Parents' Mean PPBS Scores and the Infants' Invasive Procedures

The parents of infants with OG, nasal cannulas, FT eye bands and mechanical

ventilation had similar parenting behavior scores (OG: p=0.126, nasal cannula: p=0.758, FT eye band: p=0.232, mechanical ventilation: p=0.056) (Table 3).

Invasive Procedures		PPBS Score				
		n	Median	IR (25-75)	U	p
OG	Yes	96	1.0	0.0-0.0	6551.5	0.126
	No	154	1.0	1.0-2.0		
Vascular access	Yes	104	1.0	1.0-3.0	6181.0	0.011
	No	146	1.0	2.0-4.0		
UVC	Yes	189	1.0	2.0-5.0	4132.0	0.001
	No	61	0.0	1.0-2.0		
Nasal cannula	Yes	164	0.0	1.0-2.0	6887.0	0.758
	No	86	1.0	2.0-4.0		
ETT	Yes	199	2.0	2.0-4.0	3381.0	<0.001
	No	51	1.0	1.0-3.0		
FT Eye Band	Yes	214	0.0	1.0-3.0	3378.5	0.232
	No	36	1.0	2.0-4.0		
Mechanical ventilation	Yes	141	1.0	2.0-4.0	6607.0	0.056
	No	109	0.0	1.0-3.0		

Table 3. Comparison of the Parents' Mean Postpartum Parenting Behavior Scale Scores and the Infants' Invasive Procedures

The parents of infants with vascular access had higher parenting behavior scores than parents of infants without vascular access. The parents of infants with UVC and ETT had higher parenting behavior scores than the parents of infants without UVC and ETT (vascular access: $p=0.011$, UVC: $p=0.001$, ETT: $p<0.001$) (Table3).

Discussion

This study was conducted to determine the postpartum parenting behavior of parents with infants in neonatal intensive care units and the effect of invasive procedures on their parenting behaviors. The parents had moderate levels of postpartum parenting behavior, but the mothers had higher levels of postpartum parenting behavior than the fathers. The parents of infants with vascular access had more positive parenting behaviors than those of infants without vascular access, and the parents of infants with UVC and ETT had more negative parenting behaviors than those of infants without UVC and ETT.

There are studies of parenting behaviors in mothers with full-term pregnancies and healthy babies. Britton et al. (2001) reported a maternal mean PPBS score of 4.92 ± 1.63 and Özkan et al. (2016) reported a score of 3.20 ± 1.95 . Another study of fathers' parenting behaviors reported a mean PPBS score of 3.11 ± 2.03 (Özkan,

Çelebioğlu, Üst, & Kurudirek, 2016). Britton et al. (2001) used the original 7-item scale, while the other studies used the 6-item Turkish version scale, and there seems to be a slight difference between the mean scores they reported. Overall, the mean PPBS scores obtained in these studies indicate moderate levels of parenting behavior, but suggest that fathers have lower levels of postpartum parenting behavior than mothers. This study found a mean PPBS score of 3.76 ± 1.86 for mothers and 2.98 ± 1.79 for fathers ($p < 0.05$). It is noteworthy that, although the parents with newborns at risk who were admitted to NICUs constituted a special sample, this study's results are similar to those in the literature. There are studies in the literature that compare the parenting behaviors of only parents with preterm babies and those with full-term babies, but they do not compare the parenting behaviors of parents with all kinds of newborns at risk. They also used data collection tools other than the PPBS and evaluated parenting behavior at one month and six months after the birth, not just in the first meeting of parents and babies after birth. The studies reported no significant differences between the parenting behaviors of parents with preterm babies and parents with full-term babies, and suggested that parenting behavior is influenced by negative and unrealistic parental preconceptions rather than prematurity (Hoffenkamp, Braeken, Hall,

Tooten, Vingerhoets, & Van Bakel, 2015; Hall, Hoffenkamp, Tooten, Braeken, Vingerhoets, & Van Bakel, 2015). This may be why this study's results regarding the parenting behavior of parents with infants at risk in NICUs are similar to those of studies of the parenting behavior of parents with infants who were born healthy.

A number of studies have reported that invasive procedures cause negative emotions in parents (Evcili, Yurtsal, Cesur, & Nurdan, 2017; Mccarthy, et al., 2017; Sarıkaya Karabudak, Ak, & Başbakkal, 2010). However, this study's results are very important because there are no studies of the postpartum parenting behavior of parents with infants in NICUs and the effect of invasive procedures on parenting behavior. The parents of infants with vascular access had more positive parenting behaviors than those of infants without vascular access ($p < 0.05$). This may be because the parents were familiar with vascular access or expected that their babies could receive treatment through vascular access in the NICU. The preparation and explanation done by healthcare professionals before the parents met their babies may have created expectations and readied the parents for the meeting. In addition, the feeling of trust due to treatment of the baby may have comforted the parents. The parents of infants without ETT and UVC had more positive parenting behaviors than those of infants with ETT and UVC ($p < 0.05$). This may be because these invasive procedures and devices may have caused negative emotions in the parents, making them perceive the health condition of their babies as more serious and precarious. These invasive procedures and devices may have caused them to abstain from touching and hugging their babies, thus preventing them from making close contact with their babies. Having a baby with orogastric catheter, nasal cannula, phototherapy eye band or mechanical ventilator did not adversely affect parenting behavior ($p > 0.05$). This result may be because the presence of these less invasive medical procedures on their babies may have not been perceived as a serious problem by the parents, or the babies with these medical procedures may have had better general health condition than other babies.

The reason having a baby with mechanical ventilation did not affect parenting behavior

may be that the parents may have not been familiar with mechanical ventilators and may have evaluated the health of their babies only by observing ETT or nasal cannulas, the parts of mechanical ventilators placed on the babies. It was previously discussed that lack of having a baby with ETT affected parenting behavior adversely, but having a baby with a nasal cannula did not. This study's results will significantly contribute to the literature because there are no studies that examine parenting behavior and invasive procedures with newborns at risk.

This study's results suggest that fathers should be emphasized as parents as much as mothers, and that a family-centered care approach should be adopted. Health professionals should provide more support to parents whose infants are smaller than normal, healthy newborns and are admitted to NICUs, and also to parents of infants with invasive devices such as UVC and ETT, by encouraging them to interact with their babies and exhibit more positive parenting behaviors. They should plan special approaches to do so.

This study's results represent its sample and cannot be generalized to the entire population. It may be advisable to conduct further studies using larger samples and parents with newborns who are exposed to different invasive procedures.

This study has some strengths and weaknesses. The observation used to collect the research data may have ensured an objective data collection process because data based on the parents' own statements (self-reported data) may be more subjective. However, if the parents thought that they were being monitored, this may have affected their parenting behaviors. The fact that data were collected by only one researcher may have increased its reliability.

Conclusion

The parents with newborns in the NICU had almost a moderate level of postpartum parenting behavior, and the mothers had more positive parenting behavior than the fathers. Being a mother with an extended family and having a baby with small physical size negatively affected parenting behavior. Having a baby with vascular access positively affected the

parenting behavior, but having a baby with an UVC or an ETT affected it negatively.

References:

- [1] Britton, H.L., Gronwaldt, V., & Britton, J.R. (2001). Maternal postpartum behaviors and mother-infant relationship during the first year of life. *The Journal Of Pediatrics*, 138 (6), 905-909. doi:10.1067/mpd.2001.113358.
- [2] Britton, H.L., Gronwaldt, V., & Britton, J.R. (2001). Maternal postpartum behavior and mother-infant relationship during the first of life. *The Journal of Pediatrics*, 138(6), 905-909. doi: 10.1067/mpd.2001.113358.
- [3] Çalıřır, H., Karaçam, Z., Akgül, F.A., & Kurnaz, D. (2009). Doğum sonrası ebeveynlik davranıřı ölçeğinin Türkçe formunun geçerliğı ve güvenilirliğı. *Atatürk Üniversitesi Hemřirelik Yüksekokulu Dergisi*, 12(1), 1-8. <https://dergipark.org.tr/download/article-file/29442>. Accessed in 2019 (Jun 17).
- [4] Crowell, J.A., Keluskar, J., & Gorecki, A. (2019). Parenting behavior and the development of children with autism spectrum disorder. *Comprehensive Psychiatry*, 90, 21-29.
- [5] Erdeve, Ö., Atasay, B., Arsan, S., & Türmen, T. (2008). Yenidoğın yoğın bakım ünitesinde yatıř deneyiminin aile ve prematüre bebek üzerine etkileri. *Çocuk Sağığı ve Hastalıkları Dergisi*, 51, 104-109. <http://www.cshd.org.tr/abstract.php?lang=en&id=297>
- [6] Evcili, F., Yurtsal, Z.B., Cesur, B., & Nurdan, K.A.Y.A. (2017). Yenidoğına uygulanan ağırlı iřlemlerin ebeveyn - bebek baėlanmasına etkisi. *GUSBD*, 6(1), 65-71. <https://dergipark.org.tr/download/article-file/371817>. Accessed in 2019 (Jun 17).
- [7] Fegran, L., Helseth, S., & Fagermoen, M.S. (2008). A comparison of mothers' and fathers' experiences of the attachment process in a neonatal intensive care unit. *Journal of Clinical Nursing*, 17, 810-816. doi: 10.1111/j.1365-2702.2007.02125.x.
- [8] Hall, R. A., Hoffenkamp, H. N., Tooten, A., Braeken, J., Vingerhoets, A. J., & van Bakel, H. J. (2015). The quality of parent-infant interaction in the first 2 years after full-term and preterm birth. *Parenting*, 15(4), 247-268. doi:10.1080/15295192.2015.1053333.
- [9] Han, S.Y., & Chae, S.M. (2016). Perceived parental stress and nursing support for fathers of high risk infants. *Child Health Nursing Research*. 22(3), 190-198. doi: 10.4094/chnr.2016.22.3.190.
- [10] Hoffenkamp, H. N., Braeken, J., Hall, R. A., Tooten, A., Vingerhoets, A. J., & van Bakel, H. J. (2015). Parenting in complex conditions: does preterm birth provide a context for the development of less optimal parental behavior?. *Journal of Pediatric Psychology*, 40(6), 559-571. doi: 10.1093/jpepsy/jsv007.
- [11] Hollywood, M., & Hollywood, E. (2011). The lived experiences of fathers of a premature baby on a neonatal intensive care unit. *Journal of Neonatal Nursing*, 17, 32-40. doi: 10.1111/jocn.12828.
- [12] Horwitz, B.N., & Neiderhiser, J.M. (Ed). (2015). *Gene-environment interplay in interpersonal relationships across the lifespan*. Springer Science Business Media New York, ISBN 978-1-4939-2923-8.
- [13] Mccarthy, M. L., Chaudoin, L. T., Mercurio, M. R., O'Brien, E. G., Bhargava, S., Cohen, S. Y. & Tiyyagura, G. (2017). Parents' Perspective on Trainees Performing Invasive Procedures: A Qualitative Evaluation. *Pediatric emergency care*. doi: 10.1097/PEC.0000000000001139.
- [14] Moniz, M. H., O'Connell, L. K., Kauffman, A. D., Singer, D. C., Clark, S. J., & Davis, M. M. (2016). Perinatal preparation for effective parenting behaviors: A nationally representative survey of patient attitudes and preferences. *Maternal and child health journal*, 20(2), 298-305. doi 10.1007/s10995-015-1829-4.
- [15] Neel, M.L.M., Stark, A.R., & Maitre, N.L. (2018). Parenting style impacts cognitive and behavioural outcomes of former preterm infants: a systematic review. *Child: Care, Health and Development*, 44(4), 507-515. doi: 10.1111/cch.12561.
- [16] O'Connell, L.K., Davis, M.M., & Bauer, N.S. (2015). Assessing parenting behaviors to improve child outcomes. *Pediatrics*, 135(2), 286-288. doi:10.1542/peds.2014-2497.
- [17] Özkan, H., Çelebiođlu, A., Üst, Z.D., & Kurudirek, F. (2016). Doğım sonu dönemde babaların ebeveynlik davranıřlarının incelenmesi. *Behcet Uz Çocuk Hast Derg*, 6(3), 191-196. doi: 10.5222/buchd.2016.191.
- [18] Özyazıcıođlu, N., & Tüfekçi, F.G. (2009). Yenidoğın yoğın bakım ünitesinde bebekleri bakım alan annelerin kaygı ve umutsuzluk düzeylerini etkileyen faktörlerin incelenmesi. *Atatürk Üniversitesi Hemřirelik Yüksekokulu Dergisi*, 12(4), 66-73. <http://e-dergi.atauni.edu.tr/ataunihem/article/view/1025000757/1025000742>. Accessed in 2019 (Jun 17).
- [19] Rilling, J.K., & Mascaró, J.S. (2017). The neurobiology of fatherhood. *Current Opinion*

- In Psychology, 15, 26-32. doi: 10.1016/j.copsyc.2017.02.013.
- [20] Sarıkaya Karabudak, S., Ak, B., & Başbakkal, Z. (2010). Where must family members be during invasive procedures? Turk Arch Ped, 45(1), 53-60. https://www.journalagent.com/tpa/pdfs/TPA_45_1_53_60.pdf. Accessed in 2019 (July 03).
- [21] Shah, R., Kennedy, S., Clark, M.D., Bauer, S.C., & Schwartz, A. (2016). Primary care-based interventions to promote positive parenting behaviors: A meta-analysis. Pediatrics, 137(5). doi:10.1542/peds.2015-3393.
- [22] Spittle, A., & Treyvaud, K. (2016). The role of early developmental intervention to influence neurobehavioral outcomes of children born preterm. In Seminars in Perinatology, 40(8), 542-548. doi: 10.1053/j.semperi.2016.09.006.
- [23] Sussman, R. (2016). Observational methods: the first step in science. In: Research Methods for Environmental Psychology. Robert Gifford (Ed). John Wiley & Sons UK, 9-28. ISBN: 978-1-118-79533-0.
- [24] Treyvaud, K., Doyle, L. W., Lee, K. J., Ure, A., Inder, T.E., Hunt, R.W., & Anderson, P. (2016). Parenting behavior at 2 years predicts

schoolage performance at 7 years in very preterm children. Journal of Child Psychology and Psychiatry, 57(7), 814–821. doi: 10.1111/jcpp.12489.

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SKS. developed the concept. SKS, KA. designed the study. KA was involved in data collection or processing. SKS, KA. analyzed or interpreted the findings. SKS, KA critically reviewed the manuscript. The authors read and approved the final manuscript.

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