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Stress and Perception of Nurse Support in Parents Whose Babies are Hospitalized in the Neonatal Intensive Care Unit

Yenidoğan Yoğunbakım Ünitesinde Bebeği Yatan Anne- Babalarda Stres Durumu ve Hemşire Destek Algısı

Serap KAYNAK [1] **Songül DURAN** [2]

[1] *Assist. Prof., Department of Nursing, Balıkesir University Faculty of Health, Department of Child Health Nursing, Balıkesir*

[2] *Assoc. Prof., Izmir Demokrasi University, Health Services Vocational College, Izmir*

Sorumlu yazar / Corresponding author

Serap KAYNAK

serapkaynk@gmail.com

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ABSTRACT

Aim: *The aim of this study is to determine the stress status and nurse-parent support perception in parents whose babies are in the neonatal intensive care unit.*

Material and Method*: This research is of descriptive type. 127 parents whose babies were in the neonatal intensive care unit constituted the sample of the study. Data were collected with Parent Information Form, the Parental Stressor Scale: Neonatal Intensive Care Unit (PSS: NICU) and the Nurse Parent Support Tool (NPST).*

Results: *The stress level of the parents was found to be 3.24 ± 1.21 and the NPST score was 3.65 ± 0.82. Those who live in the same city as the neonatal intensive care unit and who have a baby boy, and those whose babies receive respiratory support were found to have a higher parental role alterations mean subscale score. As the education level of the father decreased, the support for respect and quality caregiving scores increased. Perceived nursing support increased in parents of breastfed and formula-fed babies.*

Conclusion: *It was determined that there was a positive relationship between the stress level perceived by parents and the perception of nurse support. Nursing support should be given to all parents admitted to the NICU.*

Keywords: *Parents, Nurse Support, Newborn, Stress*

ÖZET

Amaç: *Bu çalışmanın amacı, yenidoğan yoğun bakım ünitesinde bebeği yatan anne ve babalarda stres durumu ve hemşire ebeveyn destek algısının belirlenmesidir.*

Gereç ve Yöntem: *Bu araştırma tanımlayıcı tiptedir. Bebeği yenidoğan yoğun bakım ünitesinde yatan 127 anne ve baba araştırmanın örneklemini oluşturmuştur. Araştırma verileri, aile tanılama bilgi formu, YYBÜ Anne-Baba Stres Ölçeği ve Hemşire Ebeveyn Destek Ölçeği (NPST) ile elde edilmiştir.*

Bulgular: *Ebeveynlerin stres düzeyi 3.24 ± 1.21, NPST puanı 3.65 ± 0.82'dır. Yenidoğan yoğun bakım ünitesinin bulunduğu şehirde yaşayan, erkek bebek sahibi olan ve bebeği solunum desteği alan kişilerin ebeveyn rol değişimi alt ölçek puanının daha yüksek olduğu, babanın eğitim düzeyi azaldıkça saygı ve kaliteli bakım verme desteği puanlarının arttığı, anne sütüyle beslenen ve mamayla beslenen bebeklerin ebeveynlerinde algılanan hemşirelik desteğinin yüksek olduğu bulunmuştur.*

Sonuç: *Ebeveynlerin algıladıkları stres düzeyi ile hemşire desteği algısı arasında pozitif bir ilişki olduğu belirlenmiştir. Yenidoğan yoğunbakım ünitesinde bebeği yatan tüm ebeveynlere hemşire desteği verilmelidir.*

Anahtar Kelimeler*: Ebeveyn, Hemşire Desteği, Yenidoğan, Stres*

INTRODUCTION

Many newborns in the world are treated in neonatal intensive care unit (NICU)s for various reasons. This is a very difficult and complex process for both the newborn and the family (Aftyka et al., 2017). A premature birth or a newborn with health problems and being treated in NICU creates stress for parents. Parental stress is associated with infant health, changes in parenting role, and feelings of grief (Hagen, Iversen, Nesset, Orner, & Svindseth,2019).

Parents are happy to have a living baby; however, they may experience constant fear that the baby will not survive, will have a disability, or will experience some complications (Brødsgaard, Pedersen, Larsen, & Weis,2019). Parents of preterm infants hospitalized in the neonatal intensive care unit experience higher levels of depression, anxiety, and acute stress disorder symptoms compared to parents of full-term infants (Garfield, Simon, Rutsohn, & Lee,2018; Okito et al., 2022). In addition, being separated from the baby hinders the attachment relationship between parents and the baby. Families may feel hopeless because their babies are in the neonatal unit (Berman et al., 2019). The noisy environment and changing dark-light cycles in the intensive care unit, seeing babies attached to tubes and medical devices, and the fragile appearance of preterm babies are an additional source of distress for both mothers and fathers (Caporali et al., 2020). In addition to the medical treatment needs of babies, parents also need support in this process (Brødsgaard et al., 2019).

It is known that parents need healthcare personnel who can provide emotional support in this process (Lorié et al., 2021). Identifying and meeting parental needs in the NICU is an important factor in achieving the best outcomes for newborns and their families (Govindaswamy et al., 2019). Nurses are in the best position to support the parents whose babies are hospitalized in NICU (Ong et al., 2019). They play a critical role in communicating with parents, providing education about the care of their preterm infants, and initiating breastfeeding support (Lake et al., 2020). By strengthening the communication between the mother and the baby, nurses can provide the mother's participation in the care and facilitate the mother-infant bonding by massaging or feeding the baby (Fernández Medina et al., 2018). Nurses should determine the factors that increase the stress of parents, take the necessary precautions, and provide the necessary information (Çekin & Turan, 2018). Effective communication between mothers and nurses increases mothers' confidence and enables the mother to participate in her baby's care. This is beneficial for the long-term health of the mother and baby (Horwood, Haskins, Luthuli, & McKerrow, 2019).

One systematic review study showed that parent education and psychosocial support programs focusing on infant development, parent-infant relationship and parent outcomes can be beneficial for parents' well-being and mother-child relationship (Treyvaud, Spittle, Anderson, & O'Brien, 2019). Immediate and personalized support for parents should be prioritized to reduce parental stress after the birth of at-risk infants and to support parents' emotional well-being and newborn neurodevelopmental outcomes (Caporali et al., 2020). In addition, not preparing the mothers for discharge and not providing the necessary emotional and social support before the baby is discharged can cause many problems for the families after discharge (Gupta et al., 2019). In a study, families reported that they could not receive emotional support during the hospitalization process, fathers were not given the opportunity to be involved in the process, they did not feel valued as a member of the care team, and they did not have a say in the decisions regarding the care of the baby (Dien, Benzies, Zanoni, & Kurilova, 2022).

The support that nurses may give to families starts with birth and continues until discharge from the neonatal intensive care unit and even after discharge. Thanks to the care given by the nurses by putting the family at the center, the health of the newborn improves and recovery is accelerated, and it can be ensured that the family can get through this process more easily and with minimum stress by encouraging the participation of the family in the care of the newborn. The present study aimed to identify the stress level and perceived nurse support of families who have a baby in the neonatal intensive care unit. For this purpose, answers to the following research questions were sought:

Research Questions

1. Does it related to each other the stress level and perceived nurse support of families who have a baby in the neonatal intensive care unit?
2. Do parents' sociodemographic characteristics

affect stress level and nurse support perception?

MATERIAL AND METHODS

Study Design

The study is a descriptive cross-sectional study. Data were collected from a City Hospital neonatal intensive care unit between April and September 2022. Parents whose babies were hospitalized in the 30-bed NICU were invited to participate in the study.

Study Population and Sample

Both mothers and fathers were included in the study, as each person may have different perceptions about their experience. Based on the prevalence value obtained from the study conducted to determine the nurse-parental support perception of the parents whose children were hospitalized in NICU (Mortensen et al., 2015), the sample size of the study was determined as 127 with 26% prevalence, 5% margin of error, and 80% confidence interval for the unknown target population using the OpenEpi program.

The inclusion criteria were being 18 years of age or older, having a baby in intensive care for at least 24 hours, being able and willing to give informed consent, and being able to communicate. The exclusion criteria were being unwilling to participate in the study and not completing the data collection tools appropriately.

The researchers collaborated with the nurses working in the specified NICU to identify suitable participants and to reach participants after their visit. The researchers informed the participants about the purpose and significance of the research in detail. The participants filled out the scales themselves. It took about 15-20 minutes for the participants to fill out the scales.

Data Collection Tools

Data were collected using the Parent form, Nurse Parent Support Tool (NPST) and the Parental Stressor Scale: Neonatal Intensive Care Unit (PSS: NICU).

Personal information form: The form was developed by the researchers based on the literature. It includes questions aimed at determining the socio-demographic characteristics of the parents, such as the age of the mother and father, educational status, employment status, place of residence, and questions about the baby such as the week of birth, weight, mode of delivery, and the respiratory and nutritional status of the newborn. In addition, the form includes questions about how often mothers and fathers want to visit their babies, whether they can meet the nurse, whether they can participate in the care process of their babies, and whether they can meet with families with similar problems.

Parental Stressor Scale: Neonatal Intensive Care Unit (PSS:NICU): The scale, which was developed by Miles et al. (1993) (Miles et al., 1999). The items in the scale are rated on a five-point Likert-type scale from 1 (not at all stressful) to 5 (extremely stressful). The scale consists of three subscales: Sights and Sounds of the Unit (α: 0.80), Infant Behavior and Appearance (α: 0.92), and Parental Role Alterations (α: 0.90). Higher scores from the scale indicates higher stress levels. The Turkish validity and reliability study of the scale was carried out by Turan and Başbakkal (2006). The factor analysis to test the construct validity of the scale was performed with Principal Components Analysis Varimax rotation. The analysis revealed that Factor 1 (13 items), factor 2 (10 items) and factor 3 (6 items) (Turan & Başbakkal, 2006). The Cronbach's alpha of this study of the scale was found to be 0.98.

Nurse Parent Support Tool (NPST): The scale was developed by Miles et al. (1999) to assess the parental support of nurses. The Turkish validity and reliability study of the scale was conducted by Yiğit et al. (2017). The scale consists of 21 items rated on a five-point Likert type scale from (1) Almost never to (5) always. The items are grouped under four subscales: Information and Communication Support (9 items), Emotional Support (3 items), Support for Respect (4 items), and Quality Caregiving (5 items) (Miles et al., 1999). The lowest score that can be obtained from the scale is 21, and the highest score is 105. High scores indicate that the support given by the nurse to the parent is high. The Cronbach's alpha of the Turkish version of the scale was found to be 0.87 (Yiğit, Uysal, Alıcı, Binay, & Esenay, 2017). The Cronbach's alpha of this study of the scale was found to be 0.95.

Ethical Considerations

The study was approved by the Balıkesir University Clinical Research Ethics Committee (Date: 07.08.2019 and Approval Number: 2019/98). All participants signed the informed consent form containing information about the research, including its aims, potential risks, and

benefits.

Data Analysis

Descriptive statistics, number and percentage, and mean ± standard deviation and minimum-maximum values for the variables determined by measurement were calculated using the SPSS package program. The t-test was used to compare quantitative continuous data between two independent groups, and the ANOVA test was performed to compare quantitative continuous data between more than two independent groups. Pearson correlation analysis was conducted for the continuous variables of the study.

RESULTS

The socio-demographic characteristics of the participants are given in Table 1. 42.5% of the mothers and 44.9% of the fathers are high school graduates and 77.2% of them live in the city where the NICU is located. 57.5% of the infants were born by cesarean section, and 58.5% of the infants are female. 20.5 % of the infants had respiration support with incubator oxygen. 57.5 % of the infants were fed with breast milk. 82.7 % of the parents participated in the care of the infant and 40.9 % visited their baby twice a week. 46.5 % of the infants were taken to the intensive care unit as soon as they were born (Table 1).

The PSS-NICU mean score of the parents was found to be 3.24 ± 1.21. The mean score for the sights and sounds subscale was 3.65 ± 0.78. The mean score for the infant behavior and appearance subscale was 2.49 ± 1.81, and the mean score for the parental role alterations subscale was 3.46 ± 1.61. The mean NPST score was found to be 3.65 ± 0.82. The mean score for the information and communication support subscale was 3.68 ± 0.82; the mean score for the emotional support subscale was 3.65 ± 0.84; and the mean scores for the support for respect and quality caregiving subscales were 3.7 ± 0.97 and 3.56 ± 1.01, respectively (Table 2).

Table 3 shows the mean PSS-NICU and subscale scores of the parents according to their socio-demographic characteristics. Those living in the same city with the NICU were found to have a statistically significantly higher parental role alterations mean score than those living in a different place than the city where the intensive care unit is located. Mother who finished high school were found to have higher levels of relationship with the baby and parental role

Table 1. Socio-Demographic Characteristics of The Participants (n=127)

Characteristics	n	%
Mother's education		
Primary/secondary school	25	19.7
High school	54	42.5
Bachelor's degree and above	48	37.8
Father's education		
Primary/secondary school	23	18.1
High school	57	44.9
Bachelor's degree and above	47	37
Mother's place of residence		
The same city as the hospital where the neonatal intensive care unit is located	98	77.2
A city different from the hospital where the neonatal intensive care unit is located	29	22.8
Father's place of residence		
The same city as the hospital where the neonatal intensive care unit is located	98	77.2
A city different from the hospital where the neonatal intensive care unit is located	29	22.8
Delivery mode		
Vaginal	54	42.5
CIS	73	57.5
Infant's gender		
Girl	74	58.5
Boy	53	41.7
Infant's respiration		
Ventilator/Incubator oxygen	26	20.5
Spontaneous	101	79.5
Infant's feeding mode		
Breast milk	73	57.5
TPN/probe	20	15.7
Breast milk + formula	34	26.8
Participation in infant's care		
Yes	105	82.7
No	22	17.3
Communicating with a family with a similar experience		
Yes	101	79.5
No	26	20.5
Frequency of visiting the infant at hospital		
Whenever wished	49	38.6
Three times a week	26	20.5
Twice a week	52	40.9
Admission to the NICU immediately after birth		
Yes	59	46.5
No	68	53.5

Table 2. Mean PSS: NICU and NPST Scores of The Parents

Scales	Mean	Std. Deviation	Minimum	Maximum
PSS: NICU Total	3.24	1.21	0.26	5
Sights and Sounds	2.49	1.81	0	5
Infant Behavior and Appearance	3.46	1.61	0	5
Parental Role Alterations	3.77	1.33	0	5
NPST	3.65	0.82	1.57	5
Information and Communication Support	3.68	0.82	1.56	5
Emotional Support	3.65	0.84	1.33	5
Support for Respect	3.71	0.97	1.25	5
Quality Caregiving	3.56	1.01	1	5

PSS: NICU (Parental Stressor Scale: Neonatal Intensive Care Unit), NPST (Nurse Parent Support Tool)

Table 3. Comparison of the PSS: NICU Score According to the Socio-Demographic Characteristics of the Parents

Characteristics (n)	Sights and sounds	Infant behavior and appearance	Parental role alterations	PSS: NICU total
	Mean ± SD	**Mean ± SD**	**Mean ± SD**	**Mean ± SD**
Place where parents live				
Same city as the NICU (98)	2.60 ± 1.79	3.46 ± 1.65	3.98 ± 1.19	3.35 ± 1.15
Different city (29)	2.09 ± 1.87	3.47 ± 1.46	3.06 ± 1.56	2.87 ± 1.38
Statistical significance	t=1.333 p=0.185	t=-0.028 p=0.978	t=3.368 **p=0.001**	t=1.851 p=0.067
Mother's education				
Primary/secondary school (25)	2.80 ± 1.81	3.84 ± 1.55	3.82 ± 1.45	3.49 ± 1.22
High school (54)	2.61 ± 1.94	3.40 ± 1.65	4.19 ± 0.80	3.40 ± 1.14
Bachelor's degree and above (48)	2.18 ± 1.65	3.33 ± 1.58	3.26 ± 1.58	2.92 ± 1.25
Statistical significance	F=1.177 p=0.312	F=0.905 p=0.407	F=6.771 **p=0.002** 3<2	F=2.672 p=0.073
Father's education				
Primary/secondary school (23)	1.68 ± 1.87	2.72 ± 2.08	3.94 ± 1.28	2.78 ± 1.20
High school (57)	3.01 ± 1.71	3.76 ± 1.50	3.70 ± 1.56	3.49 ± 1.27
Bachelor's degree and above (47)	2.25 ± 1.75	3.45 ± 1.38	3.77 ± 1.05	3.16 ± 1.10
Statistical significance	F=5.302 **p=0.006** 1<2	F=3.516 **p=0.033** 1<2	F=0.255 p=0.775	F=3.016 p=0.053
Infant's gender				
Girl (74)	2.57 ± 1.76	3.66 ± 1.36	3.45 ± 1.49	3.23 ± 1.20
Boy (53)	2.37 ± 1.90	3.18 ± 1.88	4.20 ± 0.92	3.25 ± 1.25
Statistical significance	t=0.600 p=0.550	t=1.670 p=0.098	t=-3.239 **p=0.002**	t=-0.111 p=0.912
Infant's respiration				
Ventilator/Incubator oxygen (26)	2.98 ± 1.70	3.93 ± 1.57	4.44 ± 0.47	3.78 ± 1.05
Spontaneous (101)	2.36 ± 1.83	3.34 ± 1.60	3.59 ± 1.43	3.10 ± 1.22
Statistical significance	t=1.544 p=0.125	t=1.693 p=0.093	t=2.981 **p=0.003**	t=2.622 **p=0.010**

PSS: NICU (Parental Stressor Scale: Neonatal Intensive Care Unit)

alterations subscale mean score than those with a bachelor's degree or higher. Compared to primary or secondary school graduates, fathers who are high school graduates were found to have higher sights and sounds subscale mean score and infant behavior and appearance subscale mean score. Those with baby boys had a higher mean score on parental role alterations subscale than those with baby girls. The parents whose babies receive in-tube oxygen/ventilator respiratory support were found to have a higher parental role alterations mean score than the parents whose babies breathe spontaneously (Table 3).

Table 4 shows the comparison of the NPST mean scores of the participants according to their socio-demographic characteristics. The study revealed that the fathers who finished primary or secondary school had a statistically significantly higher mean score on the support for respect and quality caregiving subscales of the NPST than the fathers with bachelor's or a higher degree. The parents whose babies were fed with breast milk and formula were found to have higher information and communication support, support for respect, and quality caregiving mean scores compared to those whose babies were exclusively breastfed or fed only with TPN. In addition, the parents of infants born by normal delivery were found to have a higher information and communication support subscale mean score than the parents of babies born by cesarean section (Table 4).

Table 4. Comparison of the NPST Mean Score of the Participants According to Their Socio-Demographic Characteristics

Characteristics (n)	Information and Communication Support	Emotional Support	Support for Respect	Quality Caregiving	NPST Total
	Mean ±SD	Mean ± SD	Mean ±SD	Mean ± SD	Mean ± SD
Father's level of education					
Primary/secondary school (23)	3.91 ± 0.68	3.66 ± 0.94	4.05 ± 0.75	4.04 ± 0.91	3.91± 0.74
High school (57)	3.61 ± 0.88	3.70 ± 0.82	3.78 ± 0.93	3.52 ± 0.89	3.65± 0.79
Bachelor's degree and above (47)	3.65 ± 0.81	3.58 ± 0.82	3.46 ± 1.07	3.38 ± 1.13	3.52± 0.87
Statistical significance	F=1.141 p=0.323	F=0.264 p=0.768	F=2.959 **p=0.044** 3<1	F=3.426 **p=0.034** 3<1	F=1.852 p=0.161
Infant's feeding mode					
Breast milk (73)	3.61 ± 0.87	3.63 ± 0.87	3.56 ± 1.06	3.34 ± 1.14	3.53± 0.89
TPN (20)	3.23 ± 0.80	3.43 ± 1.00	3.37 ± 0.90	3.39 ± 0.76	3.35± 0.76
Breast milk+formula (34)	4.09 ± 0.49	3.81 ± 0.63	4.24 ± 0.53	4.14 ± 0.48	4.07± 0.46
Statistical significance	F=8.340 **p=0.000** 1<3, 2<3	F=1.324 p=0.270	F=7.840 **p=0.001** 1<3, 2<3	F=8.330 **p=0.000** 1<3, 2<3	F=7.089 **p=0.001** 1<3, 2<3
Delivery mode					
Vaginal	3.88 ± 0.75	3.81 ± 0.79	3.83 ± 0.80	3.66 ± 0.74	3.80 ±0.67
CIS	3.52 ± 0.84	3.52 ± 0.86	3.62 ± 1.08	3.49 ± 1.17	3.54± 0.90
Statistical significance	t=2.467 **p=0.015**	t=1.907 p=0.059	t=1.180 p=0.240	t=0.953 p=0.342	t=1.753 p=0.070

NPST (Nurse Parent Support Tool)

Table 5. The correlation between Parental Stressor Scale: Neonatal Intensive Care Unit and Nurse Parent Support Tool

Variables		NPST Total
PSS-NICU	r	1
	p	**0.000**

**p<0.01; PSS-NICU (Parental Stressor Scale: Neonatal Intensive Care Unit), NPST (Nurse Parent Support Tool)

Table 5 shows the correlations of the Parental Stressor Scale: Neonatal Intensive Care Unit and Nurse Parent Support Tool total scores of the parents participating in the study are examined. It was determined that there was a positive relationship between the stress level perceived by parents and the perception of nurse support (Table 5).

DISCUSSION

This study aimed to determine the stress level and perceived nurse support of the parents whose babies were hospitalized in the neonatal intensive care unit, and the socio-demographic factors affecting these levels. The stress level of the parents was found to be 3.24 ± 1.21 and the NPST score was 3.65 ± 0.82. In this study, it was determined that there was a positive relationship between the stress level perceived by nurses and the perception of nursing support. Akkoyun and Taş Arslan (2019) found the PSS-NICU total mean score as 2.92 ± 0.72 and the NPST mean score as 3.85 ± 0.64 in parents of preterm infants (Akkoyun & Tas Arslan, 2019). Mariona et al. (2022) found the PSS-NICU mean score as 2.41 ± 1.03 and the NPST mean score as 3.67 ± 1.32 in mothers (Mariano et al., 2022). Keklikci et al. (2020) reported the PSS-NICU mean score as 3.51 ± 0.6 (Keklikçi, Dorum, Vatansever, 2020), and Çekin and Turan (2018) found it as 3.23 ± 0.98 (Çekin & Turan, 2018). Our findings coincide with those in the literature. Psycho-social and supportive nursing interventions to be provided for parents with babies in the NICU will positively affect the mental health of both the parent and the baby. With the education, support and involvement of the family in care, the family reaches the optimal health level (Lean, Rogers, Paul, & Gerstein, 2018). Family-centered education interventions that enable parents to be educated within the hospital reduce their distress (Sannino et al., 2016). Although family-centered care interventions have been shown to be effective in reducing parental stress and anxiety, these interventions are limited in clinical settings (Shudra, Papathanassoglou, & Reichert, 2022). It is recommended that healthcare professionals in the NICU address and identify stressors early and offer remedial counseling and psychotherapy interventions to parents to ensure a holistic family-centered approach.

Our study revealed that those living in the same city with the NICU had a statistically significantly higher parental role alterations mean score on PSS: NICU than those living in a different place than the city where the NICU is located. Kaya et al. (2022) found that the place of residence did not affect the stress of parents (Kaya, Kontaş, Cin, Gümüştekin, 2022). Pathak et al. reported that the place of residence of the parents was associated with coping with stress (Pathak, Dixit, Singh, Vijaywargiya, & Lal, 2022). It is thought that living in the city where the intensive care unit is located may be a relieving factor for parents. The short distance between the parents and the baby may affect the relationship with the baby positively. If the NICU is not close to the family's residence or public transportation, family's financial burden and/or stress increase. Mental health and mobile health interventions involving peer support and participation are recommended to reduce these symptoms (Shovers, Bachman, Popek, & Turchi, 2021). In particular, the support health professionals may provide to parents with transportation problems through web-based modules and enabling parents to see their babies through video calls can be effective in reducing stress levels.

Mothers with a high school degree were found to have a higher level of relationship with the baby and higher parental role alterations mean score than those with undergraduate and higher degrees. Kaya et al. (2022) conducted a study with parents whose babies were hospitalized in NICU and found that as the education level of the parents increased, the stress levels also increased (Kaya et al., 2022). Another study revealed that the stress level of mothers did not change according to their education level (Akkoyun & Tas Arslan, 2019). Varma et al. (2019) reported higher levels of stress in mothers with higher education levels (Varma, Nimbalkar, Patel, & Phatak, 2019). It is thought that mothers with a high level of education may be more conscious about the techniques of spending more effective time with the baby, and thus they may have a higher score in the relationship with the baby subscale. Regardless of all these characteristics, it has been stated that all mothers need special attention, counseling and support, and that psychological counseling is effective in reducing the stress levels of mothers (Kumar & Mallick, 2020).

The present study further revealed that the fathers with a higher level of education obtained higher scores from the PSS-NICU scale sights and sounds subscale and infant behavior and appearance subscale. In their study, Kegler et al. (2019) identified the sights and sounds subscale

as the most stress-causing factor and stated that the child's need to use a ventilator and sudden noises from the alarms of the monitors cause stress for the parents (Kegler et al., 2019). Keklikci et al. (2020) found that the factor that causes the highest level of stress for families was the subscale of sights and sounds (Keklikçi et al., 2020). Different from our study, Malliarou et al. (2021) found that as the education level of the parents increased, the PSS-NICU sights and sounds subscale score decreased (Malliarou et al., 2021). While the increase in education level makes it easier for individuals to access information, the acquisition of unnecessary and incorrect information may cause families to worry more. For this reason, it is thought that families should be informed about the equipment and sounds in the intensive care unit by health professionals. Preliminary information about the baby's appearance can be effective in reducing the stress of parents. In their studies, Doğru and Tapan (2021) concluded that hospitalization training given to reduce the stress levels of parents with a premature baby in an internal medicine intensive care unit (IMICU) reduced the stress of parents (Doğru & Topan, 2021).

Our study revealed that when the baby is a boy, the relationship with the baby and the parental role alterations subscale score are affected positively. Another study reported that the gender of the baby does not affect parental stress (Kawafha, 2018). Soghier et al. (2020) also found higher rates of depressive symptoms in parents of female babies (Soghier et al., 2020). The study conducted by Ganguly et al. (2020) in India stated that the gender of the baby had no effect on parents' stress level (Ganguly, Patnaik, Sahoo, Pattanaik, & Sahu, 2020). The fact that the baby boy is seen as an individual who ensures the continuation of the lineage in Turkish culture may be effective in this result.

The PSS-NICU score was found to be higher in parents whose infants need ventilator/incubator oxygen support compared to those whose babies breathe spontaneously. Akkoyun and Taş Arslan (2019) found that the infant's breathing pattern did not affect the PSS-NICU score (Akkoyun & Tas Arslan, 2019). Another study reported that the PSS-NICU Infant Behavior and Appearance subscale score was associated with the severity of the baby's condition (Malliarou et al., 2021). One study conducted with mothers found that 23.33 % of the mothers who saw their baby breathing through a machine had moderate stress (Varghese, Mulani, & Hiremath, 2022). It is an expected finding that the stress level of parents whose baby receives respiratory support is high. Providing these parents with information about the baby's condition can have a positive effect on their stress levels.

In our study, fathers with primary or secondary school degree were found to have higher support for respect and quality caregiving subscale scores in the NPST than the fathers with a bachelor's or higher degree. Akkoyun and Taş Arslan (2019) found that the educational status of parents does not affect the NPST score (Akkoyun & Tas Arslan, 2019). Another study found that illiterate parents scored higher in the information and communication support subscale of the NPST compared to primary, high school, or college graduates (Akbulut & Uysal, 2022). The low level of education of the parents may have created the desire of nurses to help parents more. For this reason, nurses may have had a more instructive and respectful approach to parents.

The parents whose babies were breastfed and/or formula fed were found to have higher information and communication support, support for respect, and quality caregiving subscale scores than the parents of the babies who were exclusively breastfed or fed only with TPN. Akkoyun and Taş Arslan (2019) revealed that the way of feeding the baby did not affect the NPST score (Akkoyun & Tas Arslan, 2019). One study reported that the breastfeeding rates and the weight of the babies of families supported by nurses using the family integrated model differed significantly (Hei et al., 2021). Feeding the baby with breast milk and/or formula increased nurse support. At this point, parents may have needed to ask nurses more questions.

Our study further revealed that the information and communication support subscale score of the parents of babies born by normal delivery was higher than the parents of babies born by cesarean section. The studies conducted with families with babies hospitalized in the NICU reported that the mother's mode of delivery did not affect the perception of nurse support (Akkoyun & Tas Arslan, 2019; Mariano et al., 2022). The complication risk of cesarean delivery is higher than normal vaginal delivery. Psychological problems can be seen more frequently in the mother after cesarean section (Çuvalcı & Tüfekçi, 2021). The reason why the result of our study differs from the studies in the literature may be

related to the fact that women who gave birth normally feel themselves better, perceive the information about their babies better, and therefore feel more nurse support.

In conclusion, our findings may be a starting point for supporting families in the NICU. This study may help to increase the awareness of the health personnel working in the wards and to identify parents at serious risk as soon as possible. It is important to provide parents with stress and negative emotion management interventions after they leave the hospital (Ionio, Mascheroni, Colombo, Castoldi, & Lista, 2019). The parents of preterm and vulnerable infants should be trained and given adequate and clear instructions so that they could perform developmental care-related tasks. Healthcare professionals trained and experienced in mental health care and psychological screening for stress, depression and other forms of emotional distress should be employed to support the delivery of family-centered care in neonatal units (Griffiths, Spence, Loughran-Fowlds, & Westrup,2019).

Limitations

Conducting this study in a single hospital constitutes the limitation of the study. In addition, it is among the limitations that it is carried out only with parents. Other studies can hand with health workers. However, the results of the study are important and similar studies should be conducted. Nursing support should be given to all parents admitted to the clinic. Thus, the stress of parents can be reduced and both parents and babies may be healthy. It is important to train neonatal intensive care nurses in this regard. Ensuring communication between the baby and the parent, reducing the stress of the parents and providing information can be considered as important nursing interventions. It is important to provide regular training to the nurses working in these services. For healthy adults, it is necessary to raise healthy babies and for this to improve the relationship with the parent from the moment the baby is born.

CONCLUSION

The purpose of this study was to investigate the stress level and perceived nurse support of parents whose babies were hospitalized in the neonatal intensive care unit and the factors affecting these levels. As a result of our research, the relationship role score with the baby is high in parents who live in the same city as the NICU, have a male baby, and whose baby receives respiratory support. It was concluded that as the education level of the father decreases, the perception of respect and quality care from nurses increases, and the perception of nurse support in the parents of breastfed and formula-fed babies increases. The identification of stress level and perceived nurse support may help nurses develop strategies to minimize parental stress and improve their well-being. Our findings may also help NICU nurses become more aware of parental needs. Nurses working in these units may develop communication skills to establish a therapeutic relationship with parents, support them in their participation in the care of their babies, and answer parents' questions about their babies' health status, which can be effective in reducing parental stress. In addition, these findings may help nurses develop interventions to prepare parents to cope with new situations and to reduce the stress and psychological problems associated with their infants' admission to the NICU.

Ethics Committe Approval

Ethics committee approval was received for this study from the Balıkesir University Clinical Research Ethics Committee (Date: 07.08.2019, and Aproval Number: 2019/98).

Author Contributions

Idea/Concept: S.K, S.D.; Design: S.K, S.D.; Supervision/Consulting: S.K.; Analysis and/or Interpretation: S.D.; Literature Search: S.K.; Writing the Article: S.K, S.D.; Critical Review: S.K, S.D.

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Conflict of Interest

The authors have no conflict of interest to declare.

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