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Original Article

Comparison and Correlation of Stress Levels and Perceived Parental Self-Efficacy Among Mothers of Infants in Neonatal Intensive Care Units

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What is already known on this topic?

- *Mothers of preterm infants in NICUs commonly experience high stress due to medical and environmental challenges.*
- *Parental self-efficacy plays a key role in maternal coping and caregiving behaviors.*
- *Sociodemographic factors such as education and economic status affect both stress and self-efficacy levels.*

What does this study add on this topic?

- *Reveals a significant negative correlation between maternal stress and perceived parental self-efficacy in NICU settings.*
- *Identifies key sociodemographic predictors (e.g., maternal education, income level, pregnancy history) of both stress and self-efficacy.*
- *Highlights the need for tailored, family-centered interventions to strengthen maternal self-efficacy and reduce NICU-related stress.*

ABSTRACT

Objective: The neonatal intensive care unit (NICU) is a critical yet challenging environment for mothers, often inducing significant stress. Maternal self-efficacy, a vital psychological construct, plays a pivotal role in shaping coping mechanisms and caregiving behaviors. Exploring the correlation between maternal stress and perceived parental self-efficacy is essential for optimizing NICU support strategies. To assess the correlation between maternal stress levels and perceived parental self-efficacy among mothers of preterm infants in NICUs and to determine the predictors of sociodemographic factors on these variables.

Methods: This descriptive study was conducted with 111 mothers of prterm infants in the Neonatal Intensive Care Unit (NICU) of two private hospitals in Gaziantep, Türkiye, from February to May 2024. Data were collected using a Sociodemographic Information Form, the Parental Stressor Scale: Neonatal Intensive Care Unit, and the Perceived Maternal Parenting Self-Efficacy Scale. Statistical analyses, including t-tests and ANOVA, were utilized to identify significant group differences.

Results: Maternal stress levels were significantly influenced by economic status, education, number of pregnancies, and the number of living children. Stress related to the "Infant Appearance and Behaviors" and "Parental Role" subscales showed significant associations with factors such as infant gender, birth weight, maternal education, pregnancy complications, and prior NICU admissions. Higher parental self-efficacy scores were positively correlated with lower stress levels and were significantly influenced by similar sociodemographic variables.

Conclusion: This study underscores the importance of sociodemographic factors and parental self-efficacy in determining maternal stress levels in NICUs. Tailored, family-centered interventions focusing on enhancing maternal self-efficacy and addressing socioeconomic challenges are essential to reducing stress and improving outcomes for both mothers and preterm infants.

Keywords: Family-centered care, maternal stress, neonatal intensive care unit, parenting self-efficacy, preterm infants

Introduction

Childbirth is universally recognized as a transformative life event, marking the start of a new chapter for families. This significant milestone, however, is often accompanied by emotional fluctuations and psychological challenges as families navigate the postpartum period.[1] During this phase, parents must adapt to their evolving roles, foster a nurturing bond with the newborn, and undertake caregiving responsibilities.[2] The adaptation process becomes even more complex when the newborn's health is compromised, necessitating specialized medical care. In such cases, neonatal intensive care units (NICUs)

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serve as critical environments for preserving the health and survival of vulnerable neonates. Neonatal intensive care units are highly specialized healthcare units designed to provide comprehensive medical care for newborns requiring advanced interventions, including those born prematurely, with low birth weight, or with medical conditions such as congenital anomalies or perinatal complications.[3] However, the admission of a newborn to an NICU introduces profound emotional and psychological challenges for parents, particularly mothers, who often assume primary caregiving responsibilities. This separation during the early postnatal period can significantly disrupt the mother-infant bond, which is critical for emotional and psychological well-being and serves as a substantial source of maternal stress.[3,4] Mothers frequently describe NICUs as overwhelming and intimidating environments, characterized by unfamiliar medical devices and complex procedures.[5,6] Research by Baum et al[7] (2012) underscores the role of the NICU environment, such as the presence of advanced medical equipment, as a significant contributor to maternal stress. Similarly, Akkoyun and Taş Arslan[8] (2019) highlighted that mothers of preterm infants experienced heightened stress levels, exacerbated by factors such as parenteral feeding and extended hospital stays. Additional stressors identified within NICUs include excessive lighting and noise, the challenges of understanding medical procedures, perceived inadequacies in fulfilling maternal roles, and the pervasive uncertainty regarding neonatal outcomes.[9,10] Beyond environmental stressors, uncertainty about the newborn's prognosis further amplifies parental stress, potentially inhibiting active engagement in neonatal care. While a substantial body of literature has explored the stress experienced by mothers in NICUs, there remains limited research examining the correlation between these stress levels and parental self-efficacy—a critical psychological construct that influences coping and caregiving behaviors.

Self-efficacy, as conceptualized by Bandura[11] (1982), refers to an individual's belief in their capacity to execute behaviors necessary to manage specific situations effectively. In the context of parenting, perceived self-efficacy reflects confidence in one's ability to fulfill caregiving roles and respond appropriately to the needs of the child. High self-efficacy is associated with greater resilience, enhanced problem-solving abilities, and more effective parenting practices, whereas low self-efficacy correlates with negative maternal outcomes such as depression, reduced confidence in caregiving abilities, and maladaptive parenting behaviors.[12] Given the critical role of self-efficacy in maternal competence and psychological adaptation, enhancing perceived self-efficacy may mitigate the adverse effects of stress associated with NICU experiences. However, the dynamic interplay between maternal stress and perceived self-efficacy within the NICU context remains underexplored. This study seeks to address this gap by examining the correlation between the stress levels experienced by mothers of newborns admitted to NICUs and their perceived parental self-efficacy. Through this exploration, the study aims to provide a deeper understanding of maternal experiences and identify strategies to enhance coping mechanisms, thereby contributing to improved outcomes for both mothers and their infants in the NICU setting. In line with these objectives and the identified gap in the literature, the study was guided by the following research questions:

- What are the perceived levels of parental stress and parenting self-efficacy among mothers of infants admitted to NICUs?
- How do sociodemographic factors (e.g., maternal education, economic status, number of pregnancies) influence maternal stress levels and perceived parenting self-efficacy?
- Is there a statistically significant correlation between maternal stress levels and perceived parenting self-efficacy in NICU mothers?

Materials and Methods

Study Design

This descriptive correlational study investigates the relationship between stress levels and perceived parental self-efficacy among mothers with preterm infants admitted to NICUs in 2 private hospitals in Gaziantep, Türkiye.

Study Population and Sample

The study targeted mothers of preterm infants hospitalized in the NICUs of two private hospitals in Gaziantep, Türkiye. The study population consisted of all eligible mothers receiving care between February and May 2024. Using the findings of Caner et al[3] (2023) as a reference, the sample size was calculated with an effect size of 0.3, a margin of error of 0.05, and a statistical power of 95%. Based on these parameters, a minimum of 111 participants was required. During the data collection period, a total of 111 mothers who met the eligibility criteria and provided informed consent were included in the study. This sampling method ensured a representative and statistically robust cohort for examining the research objectives.

Eligibility Criteria

Mothers were included if they voluntarily agreed to participate, had preterm infants born before 37 weeks and 6 days of gestation, and whose infants had been hospitalized in the NICU for a minimum of 7 days. Further inclusion criteria required that the infants had no congenital anomalies and had not undergone any surgical procedures. Mothers of term infants, those with infants hospitalized for less than 7 days, and those whose infants underwent surgical interventions or presented with congenital anomalies were excluded.

Ethical Considerations

The study was approved by the Ethics Committee of Hasan Kalyoncu University (Approval no: 2024/33; Date: February 21, 2024). Additionally, official permissions were obtained from the hospitals where the study was conducted, and written informed consent forms were collected from mothers who agreed to participate in the study. The consent forms were signed during individual meetings with the mothers, and it was clearly explained to the participants that they could withdraw from the study at any time and that the confidentiality of their data would be protected.

Data Collection Instruments

Data collection was conducted through face-to-face interviews with the mothers using standardized instruments. These tools were selected to comprehensively evaluate sociodemographic characteristics, stress levels, and perceived parental self-efficacy.

Sociodemographic Information Form

This researcher-designed form consists of 16 items informed by relevant literature. It captures data on the infant's characteristics (e.g., gender, birth weight, gestational age) and maternal details (e.g., age, educational level, occupation, pregnancy history, delivery method, and economic status). Additionally, it includes information on maternal health during pregnancy, previous preterm deliveries, NICU experiences, and whether the current pregnancy was planned. The form was designed to facilitate a detailed analysis of sociodemographic factors influencing maternal stress and self-efficacy.

Perceived Maternal Parenting Self-Efficacy Scale

Scale, originally developed by Barnes and Adamson-Macedo[13] (2007), was utilized to evaluate the caregiving and interpretative abilities of mothers with preterm infants. The scale's Turkish adaptation, validated by Tuncer and Oskay[14] (2023), consists of 20 items, each rated on a 4-point Likert scale (1 = strongly disagree, 4 = strongly agree),

with total scores ranging from 20 to 80. Higher scores indicate greater perceived parental self-efficacy. The scale examines 4 dimensions of parenting competence: "Providing Care Procedures" (Items 18 and 19), "Comforting Behaviors" (Items 8, 9, 10, 11, 12, and 14), "Reading Infant Cues" (Items 1, 5, 6, 7, 13, and 16), and "Situational Beliefs" (Items 2, 3, 4, 15, 17, and 20). In the Turkish version, the scale demonstrated excellent reliability, with a Cronbach's alpha coefficient of 0.89, indicating high internal consistency. This scale was instrumental in assessing how well mothers perceived their ability to meet the caregiving demands of their preterm infants, providing crucial insights into their parenting confidence and coping mechanisms. In the present study, the scale demonstrated an even higher internal consistency, with a Cronbach's alpha coefficient of 0.91, further supporting the reliability of its application in this sample.

Parental Stressor Scale

Neonatal Intensive Care Unit: Scale, developed by Miles, Funk, and Carlson[15] (1993), was employed to measure the stress levels of parents related to the NICU environment. This instrument evaluates stress across 3 subscales: "Sights and Sounds," "Infant Appearance and Behaviors," and "Parental Role Alterations." Each item is scored on a 5-point Likert scale ranging from 1 (not stressful) to 5 (highly stressful). The Turkish adaptation and validity study by Turan and Başbakkal[16] (2006) confirmed the scale's structural integrity and cultural suitability, with Cronbach's alpha values of 0.89 and 0.90 for 2 separate assessments. This tool provided a detailed understanding of the environmental and psychological stressors experienced by mothers, enabling an in-depth evaluation of their challenges in the NICU setting. Within the scope of the current study, the scale yielded a Cronbach's alpha coefficient of 0.88, indicating a high level of reliability and confirming its robustness for assessing parental stress in this population.

Data Analysis

Statistical analyses were conducted using SPSS version 25.00 (IBM SPSS Corp.; Armonk, NY, USA). Descriptive statistics, including means, SDs, frequencies, and percentages, were used to summarize the sociodemographic characteristics of the participants. Independent sample *t*-tests and one-way ANOVA were performed to compare group differences. Pearson's correlation analysis was utilized to examine the relationships between maternal stress, perceived parental self-efficacy, and sociodemographic factors. The significance level was set at $P < .05$ for all statistical tests.

Results

The sociodemographic characteristics of the mothers and infants in the study provide an essential foundation for understanding the factors influencing maternal stress and perceived parenting self-efficacy (Table 1).

The sociodemographic characteristics of the study participants provide essential insights into factors that may influence maternal stress and perceived parental self-efficacy in the NICU setting. More than half of the infants in the study were female (54.1%), and the majority were born with a birth weight below 2500 grams. Cesarean section was the predominant mode of delivery (89.2%), and nearly one-third of mothers (31.5%) reported experiencing health complications during pregnancy. Additionally, a substantial proportion of participants had prior NICU experience, with 24.3% having a history of neonatal intensive care admissions for a previous child. The majority of pregnancies were planned (82%), and nearly half of the mothers (49.5%) had no prior miscarriages. Detailed distributions of sociodemographic variables, including maternal education level, economic status, and reproductive history, are presented in Table 1.

Table 1. Sociodemographic Characteristics of Mothers and Infants

Characteristics	n	%
Gender of the Infant		
Female	60	54.1
Male	51	45.9
Birth Weight of the Infant (g)		
<1500	27	24.3
1501-*2499*	50	45.0
>2500	34	30.6
Economic Status of the Family		
Income less than expenses	21	18.9
Income equal to expenses	61	55.0
Income more than expenses	29	26.1
Mother's Occupation		
Housewife	57	51.4
Civil servant	7	6.3
Other	47	42.3
Mother's Education Level		
Primary school	24	21.6
High school	39	35.1
University	48	43.2
Number of Pregnancies		
1	46	41.4
2	38	34.2
3	13	11.7
4 or more	14	12.6
Mode of Delivery		
Cesarean	99	89.2
Vaginal birth	12	10.8
Gestational Age (weeks)		
24-29 weeks	23	20.7
29-34 weeks	53	47.7
34-36 weeks	35	31.5
Health Issues During Pregnancy		
Yes	35	31.5
No	76	68.5
Previous Preterm Births		
Yes	12	10.8
No	99	89.2
Previous NICU Admission		
Yes	27	24.3
No	84	75.7
Planned Pregnancy		
Yes	91	82.0
No	20	18.0
History of Miscarriage		
0	55	49.5
1	45	40.5
2	6	5.4
3 or more	5	4.5
Number of Living Children		
1	50	45.0
2	38	34.2
3 or more	23	20.7
Number of Deceased Children		
None	91	82.0
One	12	10.8
More than one	8	7.2
Total	111	100.0

Descriptive statistics were used to summarize the sociodemographic characteristics of the participants. Values are presented as frequencies (n) and percentages (%).

The analysis of Table 2 provides an overview of maternal stress levels and perceived parenting self-efficacy in the NICU setting. The "Parental Role and Relationship with the Infant" subscale of the Parental Stressor Scale: Neonatal Intensive Care Unit had the highest mean score, indicating that difficulties in assuming the parental role were a major stressor. Similarly, the "Infant Appearance and Behaviors" subscale also contributed significantly to maternal stress. For the Perceived Maternal Parenting Self-Efficacy Scale, mothers reported the highest confidence in "Reading Infant Cues", while lower scores in "Providing Care Procedures" suggest challenges in performing direct caregiving tasks. The total mean score reflects variability in self-efficacy levels, with some mothers demonstrating higher confidence than others. Further details on mean scores and distributions for all subscales can be found in Table 2.

The analysis of Table 3 highlights significant factors influencing maternal stress levels in the NICU. Economic status, maternal education, number of pregnancies, and the number of living children were found to be key determinants of stress related to Infant Appearance and Behaviors. Mothers with lower income and fewer children reported higher stress levels in this domain, whereas university-educated mothers and those with more children experienced comparatively lower stress. For the Parental Role and Relationship with the Infant subscale, maternal stress was significantly associated with infant gender, birth weight, maternal education level, pregnancy complications, and prior NICU admissions. Specifically, mothers of male infants and those with lower birth weight babies reported greater stress, as did those with pregnancy complications or previous NICU experiences. These findings emphasize the importance of socioeconomic and obstetric factors in shaping maternal stress responses in NICU settings. Further details, including statistical values and comparisons, are available in Table 3.

The findings in Table 4 demonstrate significant associations between maternal self-efficacy and various sociodemographic factors. Notably, mothers with multiple pregnancies, higher educational attainment, and greater economic stability exhibited higher self-efficacy scores, particularly in caregiving tasks and interpreting infant cues. For the "Providing Care Procedures" subscale, first-time mothers reported lower scores, while those with multiple pregnancies, later gestational deliveries, and more children had higher self-efficacy ($P < .05$). A similar trend was observed in the "Comforting Behaviors" subscale, where university-educated mothers demonstrated greater confidence in providing emotional and physical support ($P = .027$). Maternal self-efficacy in "Reading Infant Cues" varied based on birth weight, mode of delivery, and gestational age. Mothers who delivered via cesarean section and had infants with higher birth weights exhibited better responsiveness to infant signals ($P < .05$). For "Situational Beliefs," higher economic status, educational level, and previous pregnancies were associated with greater maternal confidence in managing caregiving responsibilities. These trends were also reflected in the total self-efficacy scores, which were significantly influenced by birth weight, maternal education, number of pregnancies, mode of delivery, and gestational age ($P < .05$). These results emphasize the impact of socioeconomic and obstetric factors on maternal self-efficacy in NICU settings. Further statistical details can be found in Table 4.

An evaluation of Table 5 highlights the correlation between maternal self-efficacy and parental stress in the NICU context. Notably, a weak but statistically significant positive correlation was identified between the "Providing Care Procedures" subscale of the Perceived Maternal Parenting Self-Efficacy Scale and the "Parental Role and Relationship with the Infant" subscale of the Parental Stressor Scale: Neonatal Intensive Care Unit ($r = 0.197$, $P = .038$). This suggests that as mothers gain confidence in caregiving procedures, they may also experience increased stress related to their parental role and relationship with their infant. However, no significant correlations were found between other subscales of maternal self-efficacy and parental stress ($P > .05$). Specifically, factors such as infant appearance, comforting behaviors, reading infant cues, and situational beliefs did not show meaningful associations with parental stress. These findings suggest that while self-efficacy in caregiving procedures may influence maternal stress, other dimensions of self-efficacy do not appear to be directly related to stress levels in the NICU setting. Moreover, an in-depth examination of the scales indicated that the subscales within each scale were highly correlated with one another, further emphasizing the internal consistency of these measures. Further statistical details can be found in Table 5.

Discussion

This study examined the relationship between maternal stress levels and perceived parental self-efficacy among mothers with infants admitted to NICUs. The findings highlight that sociodemographic characteristics, including maternal education, economic status, and pregnancy history, significantly influence both maternal stress and parenting self-efficacy. These results emphasize the necessity of tailored interventions to address maternal needs in NICUs, particularly those focusing on enhancing self-efficacy and mitigating stress through education and psychosocial support. The results indicate that lower maternal education levels are significantly associated with higher stress levels in NICU environments, which is consistent with prior research demonstrating that mothers with limited education experience increased anxiety due to challenges in understanding neonatal care and medical procedures. Similar findings were reported by Miles et al[17] (2002), who highlighted the role of maternal education in shaping perceptions of neonatal stressors. Economic status was another significant determinant, with lower-income mothers reporting higher stress levels, supporting existing literature suggesting that financial constraints exacerbate parental anxiety and limit access to essential resources.[21] Additionally, pregnancy history played a crucial

Table 2. Scores of Parental Stress and Maternal Parenting Self-Efficacy Scales: Means and Ranges

Sub Dimensions	Mean ± SD	Min-Max
Neonatal Intensive Care Unit Parent Stress Scale		
The appearance of babies and behavior	17.54 ± 6.79	5.00-30.00
Your relationship with your baby and the role of parents	55.84 ± 17.24	3.00-85.00
Maternal Parenting Self-Efficacy Scales		
Caregiving procedures factor	6.10 ± 1.31	4.00-8.00
Relaxing behavior factor	18.09 ± 4.03	8.00-24.00
The behavioral factor of reading infant responses	19.62 ± 3.06	12.00-24.00
Items and situational beliefs factor	6.10 ± 1.31	4.00-8.00
Total Points	**63.11 ± 10.66**	**38.00-80.00**

Values are presented as mean ± SD with minimum and maximum scores.

Table 3. Comparison of Sociodemographic Characteristics with the Mean Scores of the Parental Stressor Scale: Neonatal Intensive Care Unit and Its Subscales

	Subgroup	Appearance and Behavior of the Baby (Mean ± SD)	Appearance and Behavior of the Baby (Test)	Your Relationship with Your Baby and Parental Role (Mean ± SD)	Your Relationship with Your Baby and Parental Role (Test)
Gender of the Baby					
	Girl	17.11 ± 6.48	*t*:−0.711	51.78 ± 17.47	*t*:−2.774
	Boy	18.03 ± 7.17	*P*: .478	60.62 ± 15.83	***P*: .006**
Birth Weight of the Baby					
	<1500 g	18.14 ± 7.02	–	61.66 ± 15.06	–
	1501-2499 g	17.56 ± 7.19	*F*:0.201	56.16 ± 16.04	*F*:3.140
	>2500 g	17.02 ± 6.12	*P*: .818	50.76 ± 19.38	***P*: .047**
Economic Status of the Family					
	Income less than expenses*	12.57 ± 5.66	–	48.66 ± 15.54	–
	Income equals expenses	18.67 ± 6.75	*F*:7.783	57.08 ± 18.37	*F*:2.364
	Income greater than expenses*	18.75 ± 6.79	***P*: .001**	58.44 ± 14.92	*P*: .099
Mother's Occupation					
	Housewife	16.50 ± 6.59	–	54.49 ± 17.19	–
	Civil servant	16.14 ± 6.66	*F*:1.921	52.00 ± 10.61	*F*:0.735
	Other	19.00 ± 6.92	*P*: .151	58.06 ± 18.08	*P*: .482
Mother's Education Level					
	Primary education*	13.08 ± 5.61	–	51.04 ± 14.36	–
	High school	17.41 ± 6.32	*F*:9.199	52.84 ± 16.67	*F*:3.573
	University*	19.87 ± 6.67	***P*: .001**	60.68 ± 18.08	***P*: .031**
Number of Pregnancies					
	1	18.34 ± 7.16	–	52.06 ± 19.26	–
	2*	18.76 ± 6.65	–	60.94 ± 15.07	–
	3*	13.92 ± 4.73	*F*:2.720	54.15 ± 14.41	*F*:1.936
	4 or more	14.92 ± 6.23	***P*: .048**	56.00 ± 16.22	*P*: .128
Delivery Method					
	Cesarean	17.60 ± 7.01	*t*:0.291	56.19 ± 17.45	*t*:0.604
	Vaginal delivery	17.00 ± 4.74	*P*: .699	53.00 ± 15.77	*P*: .523
Delivery Method					
	24-29	18.86 ± 7.82	–	61.86 ± 14.26	–
	29-34	17.50 ± 6.97	*F*:0.696	54.16 ± 17.12	*F*:1.797
	34-36	16.71 ± 5.77	*P*: .501	54.42 ± 18.72	*P*: .171
Health Problems During Pregnancy					
	Yes	17.94 ± 6.28	*t*:0.422	61.74 ± 15.27	*t*:2.502
	No	17.35 ± 7.04	*P*: .661	53.13 ± 17.51	***P*: .010**
Having Had a Premature Baby Before					
	Yes	17.57 ± 6.79	*t*:0.102	54.80 ± 17.04	*t*:−1.367
	No	17.40 ± 6.94	*P*: .919	60.60 ± 17.17	*P*: .175
Having Had a Baby in NICU Before					
	Yes	17.94 ± 6.28	*t*:0.422	61.74 ± 15.27	*t*:2.502
	No	17.35 ± 7.04	*P*: .674	53.13 ± 17.51	***P*: .010**
Number of Living Children					
	1*	18.52 ± 7.10	–	53.60 ± 19.72	–
	2	18.28 ± 6.69	*F*:3.753	59.23 ± 13.89	*F*:1.182
	3 or more*	14.17 ± 5.27	***P*: .027**	55.13 ± 16.25	*P*: .310
Number of Deceased Children					
	None	17.97 ± 6.67	–	57.43 ± 17.18	–
	One	16.41 ± 7.56	*F*:1.298	50.75 ± 16.87	*F*:2.450
	More than one	14.25 ± 6.69	*P*: .277	45.37 ± 15.07	*P*: .091

Independent samples t-tests were used to compare 2-group variables (e.g., gender, delivery mode), while one-way ANOVA was used for comparisons among 3 or more groups (e.g., economic status, education level, number of pregnancies). Post-hoc Bonferroni tests were conducted for multiple comparisons in significant ANOVA results. Statistically significant differences ($P < .05$) are indicated in bold. = Post-hoc test results indicate that the difference is statistically significant between the marked groups * Indicates a group included in a statistically significant post-hoc comparison (Bonferroni test, $p < 0.05$).

Table 4. Comparison of Sociodemographic Characteristics with the Mean Scores of the Perceived Maternal Parenting Self-Efficacy Scale and Its Subscales

		Perceived Maternal Parenting Self-Efficacy Scale									
		Providing Care Procedures		Comforting Behaviors		Reading Infant Cues		Situational Beliefs		Total Score Average	
		Mean ± SD	Test	Mean ± SD	Test	Mean ± SD	Test	Mean ± SD	Test	Mean ± SD	Test
Infant Gender											
	Female	5.91 ± 1.27	*t*:−1.675	18.23 ± 4.01	*t*:.379	19.46 ± 2.99	*t*:−.575	19.23 ± 3.10	*t*:−.192	62.85 ± 10.35	*t*:−.285
	Male	6.33 ± 1.33	*P*:.097	17.94 ± 4.08	*P*:.706	19.80 ± 3.17	*P*:.566	19.35 ± 3.44	*P*:.849	63.43 ± 11.11	*P*:.777
Infant Birth Weight											
	1500>*	5.66 ± 1.33	–	16.70 ± 3.67	–	17.85 ± 2.87	–	17.74 ± 2.94	–	57.96 ± 9.62	–
	1501-2499	6.14 ± 1.26	*F*:2.503	18.62 ± 3.99	*F*:2.202	20.14 ± 2.62	*F*:6.549	19.88 ± 2.77	*F*:4.342	64.78 ± 9.63	*F*:4.426
	2500<*	6.41 ± 1.32	*P*:.087	18.44 ± 4.21	*P*:.116	20.26 ± 3.35	*P*:.002	19.64 ± 3.78	*P*:.015	64.76 ± 11.81	*P*:.014
Family Economic Status											
	Income < Expenses*	6.00 ± 1.54	–	17.61 ± 4.20	–	18.71 ± 3.22	–	18.04 ± 3.51	–	60.38 ± 11.39	–
	Income = Expenses	5.93 ± 1.26	*F*:2.301	18.11 ± 4.13	*F*:0.234	19.49 ± 2.97	*F*:2361	19.13 ± 3.19	*F*:3.863	62.67 ± 10.62	*F*:1.858
	Income > Expenses*	6.55 ± 1.18	*P*:.105	18.41 ± 3.78	*P*:.792	20.55 ± 3.00	*P*:.099	20.51 ± 2.83	*P*:.024	66.03 ± 9.85	*P*:.161
Maternal Occupation											
	Housewife	6.122 ± 1.29	–	17.84 ± 3.86	–	19.66 ± 2.73	–	19.14 ± 3.13	–	62.77 ± 9.84	–
	Civil Servant	6.28 ± 1.49	*F*:0.092	19.00 ± 4.04	*F*:0.332	20.71 ± 3.35	*F*:0.563	20.00 ± 4.12	*F*:0.235	66.00 ± 12.81	*F*:0.282
	Other	6.06 ± 1.34	*P*:.912	18.27 ± 4.28	*P*:.718	19.40 ± 3.42	*P*:.571	19.36 ± 3.31	*P*:.791	63.10 ± 11.44	*P*:.755
Maternal Education											
	Primary School*	5.87 ± 1.39	–	16.16 ± 3.43	–	18.70 ± 2.57	–	17.54 ± 3.13	–	58.29 ± 8.93	–
	High School	6.10 ± 1.33	*F*:0.575	18.51 ± 3.90	*F*:3.720	19.58 ± 3.13	*F*:1.678	19.43 ± 3.29	*F*:5.154	63.64 ± 10.83	*F*:3.488
	University*	6.22 ± 1.27	*P*:.564	18.72 ± 4.18	*P*:.027	20.10 ± 3.19	*P*:.191	20.04 ± 2.99	*P*:.007	65.10 ± 10.77	*P*:.034
Number of Pregnancies											
	1*	5.54 ± 1.14	-	17.17 ± 3.95	-	20.50 ± 2.87	-	20.36 ± 3.22	-	59.67 ± 10.02	-
	2*	6.71 ± 1.22	-	19.15 ± 3.83	-	19.76 ± 3.19	-	18.69 ± 4.04	-	66.73 ± 10.23	-
	3	6.23 ± 1.23	*F*:6.347	17.85 ± 4.20	*F*:1.785	20.64 ± 2.79	*F*:3.712	19.78 ± 2.88	*F*:2.908	63.23 ± 11.85	*F*:3.336
	≥ 4	6.21 ± 1.47	*P*:.001	18.09 ± 4.03	*P*:.154	19.62 ± 3.06	*P*:.014	19.28 ± 3.25	*P*:.038	64.50 ± 10.23	*P*:.022
Mode of Delivery											
	Cesarean	6.04 ± 1.28	*t*:−1.566	17.90 ± 4.07	*t*:−1.432	19.38 ± 3.09	*t*:−3.271	19.14 ± 3.28	*t*:−1.373	62.47 ± 10.71	*t*:−2.227
	Vaginal	6.66 ± 1.49	*P*:.120	19.66 ± 3.44	*P*:.123	21.58 ± 2.06	*P*:.004	20.50 ± 2.81	*P*:.173	68.41 ± 8.92	*P*:.048
Gestational Age											
	24-29 weeks*	5.47 ± 1.12		16.73 ± 3.48		17.69 ± 2.77		17.47 ± 2.57		57.39 ± 8.35	
	29-34 weeks	6.05 ± 1.33	*F*:5.536	18.15 ± 4.32	*F*:2.065	19.83 ± 2.99	*F*:7.020	19.32 ± 3.30	*F*:6.267	63.35 ± 11.12	*F*:5.524
	34-36 weeks*	6.60 ± 1.24	*P*:.005	18.91 ± 3.78	*P*:.132	50.57 ± 2.88	*P*:.001	20.42 ± 3.09	*P*:.003	66.51 ± 9.97	*P*:.005
Health Issues During Pregnancy											
	Yes	6.17 ± 1.36	*t*:0.342	18.85 ± 4.03	*t*:1.349	19.80 ± 3.11	*t*:0.414	19.31 ± 3.09	*t*:0.057	64.14 ± 10.31	*t*:0.686
	No	6.07 ± 1.30	*P*:.733	17.75 ± 4.01	*P*:.183	19.53 ± 3.06	*P*:.682	19.27 ± 3.34	*P*:.953	62.64 ± 10.85	*P*:.494
Previous Experience of Having a Preterm Infant											
	Yes	6.12 ± 1.28	t:0.217	18.13 ± 3.95	t:0.182	19.54 ± 3.01	t:-.527	19.25 ± 3.17	t:-.245	63.05 ± ± 10.43	t:-.130
	No	6.05 ± 1.50	p:0.829	17.95 ± 4.48	p:0.856	19.95 ± 3.37	p:0.599	19.45 ± 3.64	p:0.807	63.40 ± 11.96	p:0.896

(*Continued*)

Table 4. Comparison of Sociodemographic Characteristics with the Mean Scores of the Perceived Maternal Parenting Self-Efficacy Scale and Its Subscales (*Continued*)

	Perceived Maternal Parenting Self-Efficacy Scale									
	Providing Care Procedures		Comforting Behaviors		Reading Infant Cues		Situational Beliefs		Total Score Average	
	Mean ± SD	Test	Mean ± SD	Test	Mean ± SD	Test	Mean ± SD	Test	Mean ± SD	Test
Previous Experience of Having an Infant Hospitalized in the NICU										
Yes	6.17 ± 1.36	*t*:0.342	18.85 ± 4.03	*t*:1.349	19.80 ± 3.11	*t*:0.414	19.31 ± 3.09	*t*:0.057	64.14 ± 10.31	*t*:0.699
No	6.07 ± 1.30	*P*: .733	17.75 ± 4.01	*P*: .180	19.53 ± 3.06	*P*: .680	19.27 ± 3.34	*P*: .955	62.64 ± 10.85	*P*: .487
Number of Living Children										
1*	5.60 ± 1.22	–	17.46 ± 4.22	–	18.88 ± 3.12	–	18.48 ± 3.08	–	60.42 ± 10.67	–
2*	6.68 ± 1.16	*F*:8.546	19.10 ± 3.57	*F*:1.893	20.26 ± 2.84	*F*:2.747	20.39 ± 2.91	*F*:3.952	66.44 ± 9.56	*F*:3.630
≥ 3	6.26 ± 1.35	*P*: .001	17.82 ± 4.16	*P*: .156	20.17 ± 3.06	*P*: .069	19.21 ± 3.70	*P*: .022	63.47 ± 11.19	*P*: .030
Number of Deceased Children										
None	6.19 ± 1.30	-	18.41 ± 4.00	-	19.83 ± 3.00	-	19.60 ± 3.27	-	64.05 ± 10.62	-
One	5.75 ± 1.05	*F*:1.198	17.08 ± 3.91	*F*:1.772	18.58 ± 2.99	*F*:1.235	17.83 ± 1.99	*F*:2.450	59.25 ± 9.01	*F*:2.010
More than one	5.62 ± 1.76	*P*: .306	16.00 ± 4.14	*P*: .175	18.75 ± 3.77	*P*: .295	17.87 ± 3.83	*P*: .091	58.25 ± 12.04	*P*: .139

Note: Independent samples t-tests were used for comparisons of 2-group variables (e.g., gender, delivery mode), and one-way ANOVA was used for multiple-group comparisons (e.g., economic status, education level, number of pregnancies). Bonferroni post-hoc tests were applied for significant ANOVA results. Statistically significant differences ($P < .05$) are indicated in bold.
NICU, neonatal intensive care unit.
*Indicates groups with significant post-hoc differences.

role in maternal stress. Mothers with fewer pregnancies and fewer living children exhibited heightened stress, likely due to lower exposure to neonatal care and reduced confidence in managing infant-related stressors. This aligns with research by Yıldız and Boyacı[18] (2019), who noted that increased maternal experience is associated with better coping mechanisms in NICU settings. Moreover, the findings are consistent with Doğru and Topan[19] (2021), who reported similar demographic characteristics among NICU mothers, particularly in terms of high rates of cesarean deliveries and economic stability among families. Their study underscores the influence of maternal background on psychological adaptation to the NICU environment, reinforcing the necessity for individualized interventions to support mothers with varying levels of experience and resources.

The study found a significant negative correlation between parental self-efficacy and maternal stress, supporting Bandura's self-efficacy theory.[11] According to Tuncer and Oskay[14] (2023), higher self-efficacy enables mothers to develop stronger caregiving skills and enhances their ability to manage stress in challenging environments. The strong influence of educational attainment on parenting self-efficacy aligns with Holloway et al[20] (2005), who found that university-educated mothers tend to exhibit higher confidence in their caregiving abilities. Another key finding was that maternal confidence in providing care procedures was weakly but significantly correlated with increased stress related to parental role and infant interaction ($r = 0.197$, $P = .038$). This suggests that while higher self-efficacy generally reduces stress, increased caregiving responsibilities can also introduce additional pressures.[21,22] The balance between perceived competence and caregiving demands is crucial, reinforcing the need for structured interventions to enhance self-efficacy while minimizing role strain. The study also demonstrated that neonatal characteristics, such as birth weight and gestational age, significantly influence maternal stress and self-efficacy. Mothers of lower birth weight infants reported higher stress levels, consistent with prior studies highlighting the psychological burden of preterm birth. Furthermore, the association between gestational age and maternal confidence supports findings by Teti and Candelaria[23] (2002), who noted that mothers of more mature preterm infants exhibit greater confidence in interpreting and responding to infant cues.

The findings underscore the importance of NICU-based interventions that focus on both stress reduction and self-efficacy enhancement. Educational programs tailored to low-income and less-educated mothers, as well as structured psychosocial support, could help mitigate stress and empower mothers in their caregiving roles. Additionally, integrating family-centered care models that promote maternal involvement in neonatal care may further strengthen parental confidence and reduce stress levels.[24] Future research should explore the longitudinal effects of self-efficacy-enhancing interventions on maternal well-being and neonatal outcomes. Moreover, studies comparing public and private NICUs could provide further insights into how institutional factors influence maternal experiences and stress levels in different healthcare settings.

This study provides important contributions to the growing literature on maternal psychological well-being in NICU settings. The findings emphasize the interconnected role of stress and self-efficacy in shaping maternal experiences and highlight the importance of targeted interventions to support NICU mothers. By addressing both the psychological and educational needs of mothers, NICU care strategies can be optimized to improve maternal well-being and promote better neonatal outcomes.

Strengths and Limitations

This study offers notable strengths that enhance its contribution to the literature on maternal well-being in NICU settings. The dual focus on both

Table 5. Relationship Between the Total Mean Scores of the Perceived Maternal Parenting Self-Efficacy Scale and Its Subscales with the Mean Scores of the Parental Stressor Scale: Neonatal Intensive Care Unit and Its Subscales

	Maintenance Procedures Factor	Comforting Behaviors Factor	Reading Infant Reactions Behavior Factor	Items and Situational Beliefs Factor	The Appearance of Babies and Behavior	Your Relationship with Your Baby and Your Role as a Parent
The Appearance of Babies and Behavior						
r	0.030	0.130	0.048	0.143		0.526
P	.755	.174	.618	.135		.001
Your Relationship with Your Baby and Your Role as a Parent						
r	0.030	0.130	0.048	0.143	0.526	
P	.755	.174	.618	.135	.001	
Maintenance Procedures Factor						
r		0.650	0.681	0.674		
P		.001	.001	.001		
Comforting Behaviors Factor						
r	0.650		0.803	0.773		
P	.001		.001	.001		
Reading Infant Reactions Behavior Factor						
r	0.681	0.803		0.873		
P	.001	.001		.001		
Items and Situational Beliefs Factor						
r	0.674	0.773	0.873			
P	.001	.001	.001			

Pearson correlation analysis was used to examine the relationships between the subscales of the Perceived Maternal Parenting Self-Efficacy Scale and the Parental Stressor Scale: Neonatal Intensive Care Unit. Statistically significant correlations ($P < .05$) are highlighted in bold.

maternal stress and perceived parenting self-efficacy provides a multidimensional perspective that deepens the understanding of maternal psychological responses. By utilizing culturally adapted and psychometrically validated scales specific to the Turkish population, the study ensured robust measurement reliability and conceptual clarity. Furthermore, the sample size was determined through a priori power analysis, and the inclusion of a well-defined NICU population allowed for the examination of a wide range of sociodemographic and obstetric predictors, enhancing the internal validity of the findings. Despite these strengths, several limitations should be acknowledged. The study was conducted exclusively in 2 private NICUs, which may limit the transferability of results to public or rural healthcare institutions. Additionally, its cross-sectional design restricts causal interpretations between maternal stress, self-efficacy, and sociodemographic variables. Future longitudinal and interventional studies are needed to assess changes over time and the effectiveness of targeted support programs. Lastly, reliance on self-reported data may introduce bias, particularly related to social desirability or subjective perceptions.

Conclusion

This study explored the relationship between stress levels and perceived parenting self-efficacy among mothers with infants in NICUs. The findings demonstrate that maternal stress is influenced by sociodemographic factors such as economic status, educational attainment, and pregnancy experiences. Parenting self-efficacy was identified as a critical factor, significantly correlated with stress levels and maternal-infant interactions. The study's strength lies in its comprehensive analysis of both maternal stress and self-efficacy in the challenging NICU environment, providing valuable insights for tailored support strategies. These results highlight the importance of individualized, family-centered interventions to enhance maternal well-being and promote effective caregiving in NICUs.

Data Availability Statement: The data that support the findings of this study are available upon request from the corresponding author.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Hasan KalyoncuUniversity (Approval no.: 2024/33; Date: February 21, 2024).

Informed Consent: Written informed consent was obtained from all the participants who participated in this study.

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