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ORIGINAL ARTICLE

Knowledge and Anxiety Levels of Mothers of Children Aged 0–36 Months About Their Children's Development

0–36 Aylık Çocukların Annelerinin Çocuklarının Gelişimi Hakkındaki Bilgi ve Kaygı Düzeyleri

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Abstract

Introduction: It is critical for mothers of children aged 0–36 months to understand the exact timing of their children's developmental stage. This study aimed to determine the mothers' knowledge and anxiety levels regarding the development of their children aged 0- to 36-month-old as well as the relationship between them.

Methods: This descriptive-correlational study was conducted with 139 mothers who applied to the pediatric outpatient clinics of a training and research hospital in a province in the Central Anatolia Region (February 2021–October 2022), agreed to participate in the study, and had children between the ages of 0 and 36 months. The data were collected through the "Mother–Child Information Form," "The Caregiver Knowledge of Child Development Inventory (CKCDI)," and "Beck Anxiety Inventory (BAI)."

Results: The mothers had a moderate level of knowledge about child development with a CKCDI score average of 20.07±6.37, and their anxiety level was mild with a BAI score average of 11.31±9.46. The difference between the average CKCDI scores of the mothers according to their educational status, employment status, and the number of children they have was found to be significant ($p<0.05$).

Discussion and Conclusion: The mothers of children aged 0–36 months exhibited low anxiety and moderate level of awareness about child development. Given that the level of knowledge of mothers regarding their children's development was below expectations in this study, pediatric nurses were advised to conduct informational sessions and one-on-one education programs to increase the mothers' understanding of their children's development and lessen their anxiety.

Keywords: Anxiety; Growth-development; Knowledge level; Mother; Pediatric nurse

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In addition to nutrition, environmental factors, and the quality of care given, a mother's level of understanding about child development is critical for the development of a child between 0–36 months.[1] As a mother provides for her child's needs, her quality of care is crucial for her child's healthy growth and development.[2] Children form their first line of communication with their mother and learn to use the concept of movement that comes with physical development to communicate their needs.[3] The capacity to demonstrate age-appropriate abilities in physical, cognitive, social-emotional, motor, and language development domains is used to assess the development of a child. The mother's level of knowledge directly impacts the physical, cognitive, motor, social-emotional, and language development areas of the children as well as the environment she creates and the timely and accurate provision of care she provides.[4] The correct stimuli provided by the mother support her to child development.[1] Although children attempt to discover, learn, and adapt to their environment with rapid growth and development, the social environment in which they are raised affects their development.[5] To identify growth and developmental issues in children early in life, mothers should have knowledge about the development of their children.[1]

Mothers desire the best possible growth and development for their children; however, they bear an immense responsibility for this. In addition to raising children personally, mothers should be well-informed about their children.[6] However, in addition to maternal responsibilities, motherhood alters a woman's body, hormones, biochemistry, and psychology.[7] The physical changes in the woman, the emotions elicited by hormones, the experience of parenthood, and the difficulties the mother encountered in supporting her child are all factors that contribute to anxiety. Although anxiety is a common emotional state during this period, it should not have a detrimental impact on a mother's day-to-day responsibilities or her interactions with her child.[8] Many studies have shown that high maternal anxiety negatively affects the mother–child relationship and therefore the child's growth and development,[9,10] highlighting the importance of determining the mother's anxiety level and implementing the necessary approaches. Given the essential role that mothers play in supporting their children's long-term health outcomes and life potential, assessing the mother's anxiety level is important for mothers and future generations.[11]

Particularly in the months following childbirth, practices such as information sharing, counseling, and easing the mother's worries all help the mother build self-confidence in her ability to adjust to motherhood and take care of the child during this period of constant emotional change.[12] Numerous aspects, such as accepting and embracing the child, adjusting to the role of motherhood, understanding the child's healthy growth and development, and providing for them, affect mothers' anxiety levels.[13] Previous studies have indicated that mothers who hold greater knowledge of child development experience reduced levels of stress.[14,15] Knowledge, social support, cognitive behavioral techniques, and other strategies that help ease mothers' anxiety and distress regarding child care and development are among the things that contribute to their feeling of competence in those fields. Nurses are responsible for implementing these strategies.[16] To create the right role model and social support, mothers need to be supported by pediatric nurses.[15] According to Ceylan et al.[15] in 2019 and Şayık et al.[17] in 2020, nursing interventions should be planned by pediatric nurses to ensure that the mother is able to care for the child, to inform her about the child's developmental stages, to support the child in areas where they feel inadequate or have questions, to explain that anxiety is a normal emotion, and to help the mother manage her anxiety if it is elevated.

Studies[14,17,18] have indicated that mothers with children who do not show healthy development have high anxiety levels. In the study conducted by Şahinöz and Bütün Ayhan[12] in 2020, it was reported that mothers with high knowledge about their children's developmental period had lower anxiety levels. Considering the importance of mothers' knowledge of their children's developmental characteristics and their anxiety levels, no study examining the relationship between the knowledge and anxiety levels of mothers with 0–36 month-old children regarding their children's development was found in national and international literature review. This study aimed to determine the mothers' knowledge and anxiety levels regarding their 0- to 36-month-old children's development and the relationship between them.

Materials and Methods

This is a descriptive-correlational study. The study was carried out in the pediatric outpatient clinics of Hitit University Erol Olçok Training and Research Hospital located in a province in the Central Anatolia Region (Feb 2021–Oct 2022). The study's population comprised all mothers with children between the ages of 0 and 36 months who applied between February 2021 and October 2022 to the pediatric outpatient clinics of Hitit University Erol Olçok

Training and Research Hospital in a province in the Central Anatolia Region. All mothers who could be reached from the population between the study dates were included. A power analysis was performed using G*Power (v3.1.9) to determine the sample size. The power of the study is expressed as 1-β (β = Type II error probability), and in general, studies should have 80% power. A pilot study was conducted with 20 mothers at the beginning of the study. According to the mothers' anxiety level (effect size 0.29), 120 mothers were required to obtain a 95% confidence interval at the α = 0.05 level. Considering data losses and considering the possibility of missing or inconsistent survey responses, the study was completed with 139 mothers.

The inclusion criteria of this study was as follows: having a child between the ages of 0 and 36 months during the study period, applying to the pediatric polyclinic of the hospital where the study was conducted, being open to communication, not having any neurological issues, having no hearing or speech impairments, and volunteering to participate. Mothers who declined to participate were excluded from the study.

Data were collected using the "Mother–Child Information Form," "The Caregiver Knowledge of Child Development Inventory (CKCDI)," and "Beck Anxiety Inventory (BAI).

Mother-Child Information Form

This form, which was developed based on expert opinions in line with the literature,[19,20] includes questions about mothers with children 0–36 months and certain descriptive characteristics of their children (age, gender, and educational status).

The Caregiver Knowledge of Child Development Inventory (CKCDI)

Ertem et al.[21] developed the CKCDI in 2007 and conducted validity and reliability studies to assess mothers' knowledge of infancy and early childhood development, as well as development support. This scale, which has 20 items, was calculated using Cronbach Alpha, with an internal consistency was found to be 0.61. In the present study, the scale's Cronbach Alpha coefficient was 0.66. Ertem et al.[21] developed a scale in two stages. In the first step, a form was created to determine caregiver knowledge based on age and support for basic developmental abilities. In the second stage, this form was applied to two studies and one field research in Türkiye. The scale consists of 20 items, of which 10 are about developmental skills and the other 10 are about stimuli to support developmental skills. Seven of these items are about mental and social-emotional development in young children, 6 about mental and social-emotional development in young children, 6 about motor skills, and 1 about the level of knowledge and measures taken by parents against household accidents.[12]

When the scale was employed in this study, the "International Guide for Monitoring Child Development" was used as a reference, and the age range of the items was determined based on expert consensus. When analyzing the scale, the parent's response is scored as two points if it falls within the correct age range, one point if it is one month above or below the correct age range, and zero points if it falls outside of the acceptable age range. The findings ranged from 0 to 40, with higher scores indicating greater caregiver knowledge.[12,21]

Beck Anxiety Inventory (BAI)

Beck et al. established the BAI in 1988 with the goal of determining the frequency of anxiety symptoms experienced by individuals and measuring anxiety. Ulusoy [22] conducted a Turkish validity and reliability study on this scale in 1993, and the Cronbach's alpha score was 0.92. The Cronbach's alpha coefficient of the scale was 0.89. The scale comprises 21 four-point Likert-type items. Each item was scored between 0 and 3, with the lowest score being 0 and the highest score being 63. The option "minimal" is 0 points; "mild" is 1 point; "moderate" is 2 points; and "severe" is 3 points. After the 21 questions were marked, the scores were summed. Scores may range 0–7 points = minimal anxiety, 8–15 points = mild anxiety, 16–25 points = moderate anxiety, 26–63 points = severe anxiety.

Ethical Considerations

The Non-Interventional Research Ethics Committee of Hitit University approved the research (approval number: 2020-112, date: 05.11.2020), and the Health Directorate of the province where the research was conducted provided written consent (07.12.2020/83369068). Prior to the research, the mothers were informed about the objective of the study and what they are needed to accomplish, and a written consent was obtained.

Data Collection Process

The researcher acquired the study data through direct interviews using the Mother–Child Information Form, CKCDI, and BAI. The researcher conducted interviews with mothers who met the inclusion criteria in a quiet and appropriate setting at a children's clinic. During the interview, after the mothers were given the appropriate instructions concerning the Mother–Child Information Form, CKCDI,

and BAI, the nurse asked the mothers questions and filled in the responses. Data were gathered in about 20–30 min total, with the mother–child information form requiring an average of 5–10 min to complete, the CKCDI taking 10–15 min, and the BAI taking 5–10 min.

Statistical Analyses

The Statistical Package for Social Sciences (Version 22.0, SPSS Inc., Chicago, IL, USA; License: Hitit University) was used for the statistical analyses of the data obtained in this study. Descriptive statistics were presented as either mean and standard deviation or median (min–max), depending on the distribution assumptions for continuous variables obtained from the questionnaires and scales. The frequency distributions of the categorical data are presented as numbers and percentages. To compare scale scores between two independent groups based on descriptive characteristics, the t-test or Mann Whitney U test were used, depending on the data distribution. For comparing scale scores among more than two independent groups, either one-way analysis of variance (ANOVA) or the Kruskal-Wallis test was employed depending on the data distribution. Pearson correlation analysis was used to study the link between the numerical variables obtained using the descriptive information form and scales, and Spearman correlation analysis was used for data that did not fit a normal distribution. All statistical comparisons were performed using a significance level of $p<0.05$.

Results

Of the 139 mothers with children aged 0–36 months participating in the study, 49.6% were under the age of 29 and 3.6% were over the age of 40. Of the mothers, 38.8% had primary school education, 74.1% were unemployed, 53.2% had an income equal to their expenses, and 38.9% had an income less than their expenses. Moreover, 78.4% of the mothers had a nuclear family and 70.5% had a planned pregnancy. The study included 60.4% male children, with 48.9% aged 25–36 months, and an average age of 22.41±10.13.

When the distribution of the mean scores the mothers received from the CKCDI and BAI (Table 1) was examined, the lowest score was 2, the highest score was 36, and the total mean score of the CKCDI was 20.07±6.37. The lowest score that received by the mothers received from the BAI was 0, the highest score was 45, and the total mean score of the BAI was 11.31±9.46.

Table 2 presents the findings regarding the comparison of CKCDI and BAI score averages according to the descriptive characteristics of the mothers in the study. The average CKCDI score of the mothers with primary school education was 16.11±4.98, that of the mothers with high school education was 20.50±4.69, that of the mothers with undergraduate and graduate education was 24.44±6.23, and the difference between the average score was significant ($p<0.001$). The average CKCDI score of the mothers who were employed was 23.72±6.42, and that of the mothers who were unemployed was 18.80±5.86, and the difference between the average scores was significant ($p<0.001$). The mean CKCDI score of mothers with one child was 22.24±5.82, 19.20±7.13 for those with two or three children, 18.57±5.52 for those with three or more children, and the difference between the mean scores was significant ($p<0.05$).

Table 1. Distribution of mothers' CKCDI and BAI mean scores

	Mean±SD	Median (Min–Max)	Kolmogorov-Smirnov p
CKCDI	20.07±6.37	20 (2–36)	0.200
BAI	11.31±9.46	8 (0–45)	<0.001

CKCDI: The Caregiver Knowledge of Child Development Inventory; BAI: Beck Anxiety Inventory; SD: Standard deviation.

The difference between the mean CKCDI and BAI mean scores of the mothers in the study according to the gender and month of pregnancy was not statistically significant ($p>0.05$; Table 3).

The mothers' CKCDI and BAI total scores were found to have a low level, negative relationship ($r=-0.082$). There was no statistically significant association between the CKCDI and BAI total scores ($p=0.340$).

Discussion

The mother's understanding of the child's developmental characteristics appropriate for her age enables her to provide appropriate care for the child's development, meet their needs correctly and on time, evaluate child development, identify problems early, and support the child.[23] However, the changes caused by the new baby in the mother's life, lack of knowledge about the baby's care, economic difficulties, changing roles within the family, and emotional problems brought on by the baby can cause stress and increase her anxiety level.[24] To prevent the mother's anxiety level from increasing or to reduce the anxiety level, there is a need for nursing approaches, such as informing the mother, and providing social support.[14–16] The implementation of nursing approaches is important for mothers to provide

Table 2. Comparison of CKCDI and BAI mean scores by mothers' descriptive characteristics

Descriptive characteristics	CKCDI			BAI		
	n (%)	Mean±SD	p	Mean±SD	Median (Min–Max)	p
Age			0.721[a]			0.148[a]
<29	69 (49.6)	20.28±5.94		12.75±9.80	10 (0–42)	
30–39	65 (46.8)	19.98±6.82		10.05±0.19	7 (0–45)	
>40	5 (3.6)	18.40±6.95		7.80±5.16	6 (1–13)	
Educational status			<**0.001**[b]			0.303[a]
Primary school	54 (38.8)	16.11±4.98		12.15±9.76	9 (0–45)	
High school	40 (28.8)	20.50±4.69		9.95±9.91	7 (1–42)	
Undergraduate and postgraduate	45 (32.4)	24.44±6.23		11.51±8.75	9 (0–30)	
Employment			<**0.001**[c]			0.825[d]
Employed	36 (25.9)	23.72±6.42		11.58±10.04	8 (0–38)	
Unemployed	103 (74.1)	18.80±5.86		11.21±9.30	8 (0–45)	
Income			0.353[b]			0.103[a]
Income less than expenses	54 (38.9)	19.22±6.47		13.26±10.69	9.5 (0–45)	
Income equal to expenses	74 (53.2)	20.42±6.20		9.30±7.54	7.5 (0–32)	
Income greater than expenses	11 (7.9)	21.91±6.90		15.27±12.12	14 (2–38)	
Family structure			0.300[c]			0.120[d]
Extended family	30 (21.6)	19.00±6.09		14.07±11.69	10 (0–45)	
Nuclear family	109 (78.4)	20.37±6.43		10.55±8.66	8 (0–38)	
Planned pregnancy			0.062[c]			0.563[d]
Planned	98 (70.5)	20.72±6.44		11.05±9.29	8 (0–42)	
Unplanned	41 (29.5)	18.51±5.98		11.93±9.96	9 (1–45)	
Number of children			**0.010**[b]			0.504[a]
1	49 (35.3)	22.24±5.82		12.20±9.52	9 (0–42)	
2	46 (33.1)	19.20±7.13		10.09±9.29	7.5 (0–45)	
3 and more	44 (31.6)	18.57±5.52		11.59±9.65	9 (0–38)	

a: Student's t-test; b: One-way ANOVA; c: Mann-Whitney U test; d: Kruskal Wallis test; CKCDI: The Caregiver Knowledge of Child Development Inventory; BAI: Beck Anxiety Inventory; SD: Standard deviation.

Table 3. Comparison of CKCDI and BAI mean scores by children's descriptive characteristics

Descriptive characteristics	CKCDI			BAI		
	n (%)	Mean±SD	p	Mean±SD	Median (Min–Max)	p
Gender			0.746[a]			0.943[a]
Female	55 (39.6)	19.85±5.88		11.78±10.64	8 (0–45)	
Male	84 (60.4)	20.21±6.69		11.00±8.66	8 (1–38)	
Months			0.339[b]			0.604[b]
0–12	34 (24.5)	21.08±6.15		12.92±10.91	8.5 (0–42)	
13–24	37 (26.6)	20.57±5.49		9.34±6.67	7 (0–25)	
25–36	68 (48.9)	19.28±6.86		11.47±9.80	9 (0–45)	

a: Mann-Whitney U test; b: Kruskal Wallis test; CKCDI: The Caregiver Knowledge of Child Development Inventory; BAI: Beck Anxiety Inventory; SD: Standard deviation.

care by knowing the growth and development of their children without affecting the growth and development of the child due to the anxiety that occurs because of the nature of motherhood.[14]

In this study, which was conducted to evaluate the knowledge and anxiety levels of mothers with children 0–36 months regarding the development of their children, CKCDI was used to determine the mothers' knowledge of

their children. Considering that the lowest score obtained from CKCDI is 0 and the highest score is 40, the mothers' knowledge levels regarding their children's development is at an average level with a mean scale score of 20.07±6.37 (Table 1). In a study in which CKCDI was developed by Ertem et al.[21] the mean total scale score was at a moderate level with 19.2±5.6. Because mothers are expected to have complete or almost complete knowledge regarding the development of their children, it is thought that this knowledge levels of mothers are not at the expected level in this study and in the study conducted by Ertem et al.[21]

The emotion of motherhood and the responsibility of having a child both cause anxiety, but this anxiety is quite intense.[25] In this study, the mothers' knowledge and anxiety levels regarding their children's growth were assessed, and their anxiety levels were determined using the BAI. The mothers' mean BAI score was 11.31±9.46, which indicates that their anxiety levels were mild, as the range of 8 to 15 points is considered mild (Table 1). Studies[17,26] have also determined that the anxiety levels of mothers were mild and moderate, similar to the results of this study 7.86±10.85 and 8.25±6.23. The mothers' average level of knowledge may explain their mild anxiety.

The mother's sociodemographic characteristics (age, educational status, economic status, and family type) and knowledge level as the primary caregiver have a significant impact on the child's healthy development. [27,28] This study found a significant difference ($p<0.05$) between mothers' education status, employment status, number of children, and average CKCDI score in assessing their knowledge and anxiety levels regarding their children's development (Table 2). Studies[4,29,30] have indicated that mothers with a high education level have a high level of knowledge about their children's development. Additionally, the mother's employment status provides economic and sociocultural gains to the mother, as well as enabling her to develop herself, thus increasing her knowledge about her child's development. It is also noted that a mother's level of knowledge and experience increased with the number of children she had.

In this study, it was discovered that there were no statistically significant differences between the mothers' CKCDI score averages, gender, and age ($p>0.05$; Table 3). Studies[1,29,31] as well as this study indicate no correlation between gender, age and mother's knowledge level. Furthermore, being a mother is a unique and rewarding experience for women. However, previous studies[8,32,33] found no significant difference in mean BAI scores between mothers and their children based on gender and age ($p>0.05$; Table 3).

According to the correlation analysis results between mothers' developmental knowledge levels and anxiety levels, this study found a low-level negative relation ($r=-0.082$). There was no statistically significant relationship between mothers' knowledge levels and overall anxiety levels ($p=0.340$). In the study conducted by Şahinöz and Bütün Ayhan[12] in 2020 on the knowledge of the developmental characteristics of children and the anxiety levels of mothers with children aged 0–24 months, it was reported that as the mothers' level of knowledge about their children increased, their anxiety levels decreased. In a study conducted by Şayık et al.[17] evaluating the relationships between parents' knowledge about pregnancy, birth, and newborn and their anxiety and depression levels, it was concluded that the levels of anxiety and depression decreased as the mothers' and fathers' knowledge level increased. This study indicated that when mothers' knowledge increased, their anxiety levels reduced, which is similar to the findings of Şahinöz et al.[12] and Şayık et al.[17] in 2019.

Limitations

The results of this study are limited to the responses provided by mothers with children aged 0–36 months who visited the pediatric polyclinic of a training and research hospital in a province in the Central Anatolia Region. The results are only applicable to the group in which they were conducted.

Conclusion

The mothers' knowledge about their children's development was moderate, and their anxiety was mild. Mothers with undergraduate and graduate degrees who were employed and had only one child had a high level of knowledge about their children's development. As mothers' knowledge about their children's development increased, their anxiety levels decreased. In line with the study results, it is recommended that pediatric nurses should inform mothers about the growth and development of their children and assess their anxiety levels. Therefore, more studies should be conducted to reduce the anxiety levels of mothers with high anxiety levels.

Ethics Committee Approval: The Hitit University Non-Interventional Research Ethics Committee granted approval for this study (date: 05.11.2020, number: 2020-112).

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