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Does Mothers' Health Literacy Levels Affect Their Stress During COVID-19 Pandemic Process?

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ABSTRACT

Purpose: This study aimed to determine the correlation between the health literacy of mothers and parental stress during the COVID-19 pandemic in Turkey.
Method: In a cross sectional study, the researchers screened 353 mothers with children aged 0 year to 17 years using the Health Literacy Scale and the Parental Stress Scale.
Results: Mean age of the mothers who took part in the study was 26.75 years. Of the mothers, 64.6% spent adequate time with their children and 31.7% stated that the pandemic had affected their relationship with their children. The study found that the mothers had a high level of health literacy and parental stress. The health literacy and subscale scores of the mothers related to parental stress were found to be moderately negative. In addition, as parental stress of the mothers increased during the COVID-19 pandemic, the frequency of spending time with their children decreased and their relationship with their children was negatively affected.
Conclusion and Suggestions: During the COVID-19 pandemic, the mothers with a higher level of health literacy had a lower level of parental stress. The increase in parental stress in the mothers during the pandemic reduced the frequency of spending time with their children and negatively affected the mother-child relationship. In line with the results of the study, the researchers recommended to organize programs that might improve the health literacy level of mothers and reduce parental stress. It is expected that these programs will contribute to the protection of children's health.

COVID-19 Pandemi Sürecinde Annelerin Sağlık Okuryazarlık Düzeyleri Ebeveynlik Streslerini Etkiler mi?

Makale Bilgileri

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ÖZ

Amaç: Bu çalışmada, COVID-19 pandemi sürecinde Türkiye'de yaşayan annelerde sağlık okuryazarlığının ebeveynlik stresine etkisinin belirlenmesi amaçlanmıştır.
Yöntem: Kesitsel tasarımdaki araştırmada 0-17 yaş arası çocuğa sahip 353 anne, Sağlık Okuryazarlığı Ölçeği ve Anne-Baba Stres Ölçeği ile taranmıştır.
Bulgular: Çalışmaya katılan annelerin yaş ortalaması 26.75 olup %64.6'sının pandemi sürecinde çocuğu/çocukları ile yeterince vakit geçirdiği, %31.7'sinin pandemi sürecinde çocuğu/çocukları ile ilişkisinin etkilendiği bulunmuştur. Çalışmada annelerin yüksek sağlık okuryazarlık düzeyine ve ebeveynlik stresine sahip olduğu bulunmuştur. Annelerin sağlık okuryazarlığı ve alt boyut puanlarının ebeveynlik stresi ile orta düzeyde negatif yönde ilişkili olduğu saptanmıştır. Ek olarak COVID-19 pandemisi sürecinde annelerin ebeveynlik stresi arttıkça çocuğu/çocukları ile vakit geçirme sıklığı azalmakta ve çocuğu/çocukları ile olan ilişkileri olumsuz etkilenmektedir.
Sonuç ve Öneriler: COVID-19 pandemisi sürecinde sağlık okuryazarlığı yüksek olan annelerde ebeveynlik stres düzeyi daha düşüktür. Pandemi sürecinde annelerde ebeveynlik stresinin artması çocukla vakit geçirme sıklığını azaltmakta ve anne-çocuk ilişkisini olumsuz etkilenmektedir. Çalışma sonuçları doğrultusunda annelerin sağlık okuryazarlık düzeylerini geliştirici, ebeveynlik streslerini azaltıcı programların düzenlenmesi önerilmektedir. Bu programların çocuk sağlığının korunmasına katkı sağlayacağı beklenmektedir.

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INTRODUCTION

Coronavirus disease (COVID-19) is a global health burden which has caused the World Health Organization (WHO) to declare a pandemic (Labrague & De Los Santos, 2020; WHO, 2022). Emergence of COVID-19 has created an unprecedented oppression on both parents and children in Turkey as in the world (Miho & Thévenon, 2020). This oppression has particularly caused parents to feel themselves in a biopsychosocial turbulence (Di Giorgio et al., 2021). It is because the COVID-19 pandemic has increased parental responsibilities and caused parents to take additional roles and thus face many compelling and stressful situations (Keleşoğlu & Adam Karduz, 2020). Accordingly, the COVID-19 pandemic has significantly affected parents in a biopsychosocial aspect (Di Giorgio et al., 2021). It is reported that the COVID-19 pandemic has affected parental stress (Koçak & Harmancı, 2020).

Parental stress is defined as a type of stress which increases the risk of maltreatment to a child (Brown et al., 2020). Parental stress prevents necessary attention and sensitivity related to the child's needs, disrupts target-specific behavior and thus undermines the child's development (Keleşoğlu & Adam Karduz, 2020). According to Woodman and Hauser Cram (2013), parental stress is the stress experienced by parents due to child rearing, social/environmental conditions, and parental responsibilities. Increase in parental stress will have a negative impact on children's health (Brown et al., 2020). During the pandemic, parental stress has become even more important (Toran et al., 2021).

Individuals' ability of reaching the right information sources, carrying them into daily life and interpreting these information is related with health literacy (Paakkari & Okan, 2020). Parents are expected to have a higher level of health literacy in order to protect their children's biopsychosocial health. The studies have stressed that as the level of health literacy in parents increases, children's health outcomes will change in a positive direction (Gönenç, 2015; Khorasani et al., 2018; Aydın & Aba, 2019). Responsibilities of mothers in parenting are of indisputable importance (Di Giorgio et al., 2021). In Turkey, there are not many studies investigating parental stress among mothers (İlhan, 2017; Koç & Paslı, 2019; İldeniz, 2021). Moreover, there are not many studies investigating the impact of the health literacy level on parental stress. During the COVID-19 pandemic, identifying the correlation between the health literacy level and parental stress in mothers will become noteworthy for protecting children's health. So, the present study aimed to determine the correlation between the health literacy of mothers and parental stress during the COVID-19 pandemic in Turkey.

METHOD

Research Design

The researchers conducted the study in a cross sectional design between April and June 2021.

Research Sample

The target population of the study comprised mothers with children aged 0 year to 17 years in Turkey. Inclusion criteria were volunteering to take part in the study, having at least one child aged 0 year to 17 years, having no pyschiatric disorder or history of it, having no chronic illness, physical disability,

and special condition that might create a difficulty of understanding or perceiving, being older than 18 years, and reading and writing in Turkish.

In the study, the researchers used the convenience sampling method. The researchers specified the sample number via the scale item number x 10 rule (Hair et al., 2018). In line with this rule, the researchers planned to include at least 250 mothers in the study (Health Literacy Scale item number=25 x 10). So, the researchers conducted the study with 353 mothers who volunteered to take part.

Research Instruments and Processes

The researchers collected the data of the study using "Personal Information Form", "Health Literacy Scale (HLS)" and "Parental Stress Scale (PSS)".

Personal Information Form (PIF): The researchers created this form in line with the literature (Bayık Temel & Aras, 2017; Keleşoğlu & Adam Karduz, 2020). The form had eight questions including demographic characteristics (such as age, educational status, number of children, income status perception, and surrounding area) of the mothers who took part in the study.

Health Literacy Scale (HLS): Toçi, Bruzari and Sorenson (2013) developed this scale. After that, Aras and Temel (2017) conducted the Turkish validity and reliability study of the scale in 2015. The scale had 25 items and four subscales including the topics of access to information (5-25), understanding the information (7-35), evaluation (8-40), and implementation/usage (5-25). The lowest and highest possible scores obtainable from the scale were 25 and 125, respectively. As the score obtained from the scale increased, the health literacy level of the individual increased. The Cronbach's Alpha reliability coefficient of the scale was 0.94 (Bayık Temel & Aras, 2017). In the present study, the Cronbach's Alpha reliability coefficient of the HLS was 0.89.

Parental Stress Scale (PSS): Özmen Kaymak and Özmen (2012) adapted this assessment tool into Turkish in 2012 in order to measure the stress experienced by parents in their relationship with their children in daily life. The unidimensional scale had 16 items. The four point likert scale had options of "Always, often, sometimes, and never". The Cronbach's Alpha value calculated for internal consistency reliability was 0.85, and the Spearman Brown split-half test reliability was 0.82. Total item correlations for all items in the scale varied from 0.34 to 0.58. In the present study, the Cronbach's Alpha reliability coefficient of the PSS was 0.86.

The researchers conducted the present study online. After receiving the ethics committee approval, two mothers tested the online survey form prepared via the Google form program from an electronic aspect. The researchers did not include the mothers who took part in the pretest in the sample. Following the pretest, the researchers frequently shared the online survey form as a "story" on a social media platform (Instagram). The online survey form had a total of 47 questions. The mothers were able to see the questions in four sections after entering the survey and passed to the next section by clicking the "next" button after each section. The first section comprised of informed consent form and electronic consent question. The

second section comprised of Personal Information Form. The third section comprised of the Health Literacy Scale. The Fourth section comprised of the Parental Stress Scale. It took nearly ten minutes to complete the forms. The participants received no fee or present. Within the scope of the study, the researchers assured that the same participants did not complete the survey again by logging in Google. As the researchers asked the participants to answer the previous question for the continuation of answers to be given to the online survey questions, there was no missing data and the researchers obtained the data set fully.

Data Analysis

The researchers analyzed the data using the Statistical Package for Social Sciences (SPSS) 26.0 statistics program. When evaluating the data, the researchers used frequency distributions for categorical variables and descriptive statistics for numeric variables (mean±sd, median). In the study, the researchers performed reliability analysis on the Parental Stress Scale and the Health Literacy Scale which they used as assessment tools. In the study, the researchers obtained the scale and subscale scores based on the total score of the relevant items. Accordingly, in order to decide on the test analyses, the researchers primarily used the Kolmogorov-Smirnov normality test in all scores (n>50). As a result of the test, the researchers found that the total parental stress score provided the normality assumption, whereas the total health literacy score and subscale scores did not. Therefore, the researchers used both parametric and nonparametric tests in the comparisons. The researchers used the Independent Samples t-Test and the Mann-Whitney U Test to examine whether there was any difference between the two independent groups or not. In addition, the researchers performed the Pearson's correlation analysis and multiple regression analysis to determine the correlation between the health literacy level of the mothers and parental stress during the COVID-19 pandemic.

Ethic

For the study, the researchers received ethics committee approval from Scientific Research and Publication Ethics Committee of the Isparta Application Sciences University (Reference certified protocol number: 49-02, Date: 25.03.2021). In these sharings, the researchers explained the subject of the study and inclusion criteria. It was not possible to inform the mothers of the study face-to-face and receive their approval via voluntary consent form. However, the researchers added informed consent form in the first section of the online survey and informed the mothers that they could take part in the study voluntarily. Additionally, the researchers arranged the first question in the online survey form as "do you agree to take part in the study voluntarily?" and thus received their consent.

RESULTS

The study included a total of 353 participants. Mean age of the mothers was 26.75 years (SD:4.07). Of the mothers, 45% were 25 to 29 years, 46.2% were high school graduate, 76.2% were housewife, and 44.5% had income less than expense. Also, 32.6% lived in the Marmara Region, 66.6% had one child, 64.6% spent

adequate time with their children, and 68.3% stated that the pandemic had not affect their relationship with their children (Table 1).

Table 1. *Demographic Characteristics of the Participants*

	Number of Individuals (n=353)	Percentage (%)
Age (Mean±SD)	26.75±4.07	
19-24 years	108	30.6
25-29 years	159	45.0
30 years and above	86	24.4
Educational Status		
Primary education	47	13.3
High school	163	46.2
Undergraduate education	136	38.5
Postgraduate education	7	2.0
Occupation		
Housewife	269	76.2
Trainer	26	7.4
Medical staff	17	4.8
Civil servant	8	2.3
Worker	6	1.7
Other	27	7.6
Income Status		
Income more than expense	70	19.8
Income equal to expense	126	35.7
Income less than expense	157	44.5
Area		
Mediterranean	39	11.0
Black Sea	31	8.8
Marmara	115	32.6
Aegean	54	15.3
Central Anatolia	68	19.3
Eastern Anatolia	22	6.2
Southeastern Anatolia	24	6.8
Number of Children		
1	235	66.6
2	97	27.5
3	21	5.9
How Would You Evaluate the Frequency of the Time You Spend with Your Child?		
We never spend time.	2	0.6
We spend a little time.	16	4.5
We spend time whenever we get the chance to.	107	30.3
We spend adequate time.	228	64.6
How Has the Pandemic Affected Your Relationship with Your Child?		
It hasn't affected.	241	68.3
It has affected positively.	0	0.0
It has affected negatively.	112	31.7

Table 2 demonstrated the mean and standard deviation of the total parental stress and health literacy and subscale scores of the mothers. The parental stress score of the mothers was 31.66±7.99. While the mean and standard deviation of the mothers' health literacy score was 110.71±13.56, the mean and standard deviation of the access to information subscale score was 22.08±3.49, the mean and standard deviation of the information comprehension subscale score was 31.55±3.70, the mean and standard deviation of the appraisal/evaluation subscale score was 30.86±4.64, and the mean and standard deviation of the application-use subscale score was 21.54±3.56.

Table 2. *Descriptive Statistics of the Scale and Subscale Scores*

		Mean±SD	Median (Min-Max)	Cronbach's Alpha (α)
Parental Stress Score		31.66±7.99	31 (16-59)	0.864
Health Literacy Score				
	Total Score	110.71±13.56	114 (43-125)	0.886
	Access	22.08±3.49	23 (9-25)	0.753
Sub-dim.	Understand	31.55±3.70	33 (14-35)	0.705
	Appraise	30.86±4.64	32 (9-35)	0.781
	Application	21.54±3.56	23 (7-25)	0.678

Min=Minimum, Max=Maximum, SD=Standard Deviation

Also, the researchers examined the correlation between the sociodemographic characteristics of the participants and their relationship with their children, as well as their parental stress and health literacy scores. The researchers found that only the correlation between the time spent with children and state of affecting the relationship with children was statistically significant according to the parental stress score (respectively: t=4.63; p<0.000; t=-8.03; p<0.000). According to the findings, as parental stress during the COVID-19 pandemic increased, the frequency of spending time with children decreased. In addition, as parental stress of the mothers increased, their relationship with their children was affected negatively. Table 3 demonstrated only the findings showing a significant correlation.

Table 3. *The Correlation between the Demographic Characteristics of the Mothers with Parental Stress and Health Literacy Subscale Scores*

		Health Literacy Scale				
Variable	**Parental Stress Score Mean±SD**	**Total Score Mean Rank (Min-Max)**	**Access Mean Rank (Min-Max)**	**Understand Mean Rank (Min-Max)**	**Appraise Mean Rank (Min-Max)**	**Application Mean Rank (Min-Max)**
How would you evaluate the frequency of the time you spend with your child during the pandemic?						
We never spend time/ We spend a little time/ We spend time whenever we get the chance to	34.25±8.00	113 (73-125)	23 (10-25)	32 (21-35)	32 (15-35)	22 (8-25)
We spend adequate time	30.25±7.64	115 (43-125)	23 (9-25)	33 (14-35)	32 (9-35)	23 (7-25)
	t=4.629 p<**0.000**	Z=0.771 p=0.441	Z=0.448 p=0.654	Z=0.660 p=0.509	Z=0.831 p=0.406	Z=0.683 p=0.495
How has the pandemic affected your relationship with your child?						
It hasn't affected.	29.52±6.90	115 (59-125)	24 (10-25)	33 (17-35)	33 (14-35)	23 (8-25)
It has affected negatively.	36.28±8.24	112 (43-125)	23 (9-25)	32 (14-35)	32 (9-35)	22 (7-25)
	t=-8.035 p<**0.000**	Z=-1.954 p=0.051	Z=-2.034 p=0.042	Z=-1.431 p=0.152	Z=-1.466 p=0.143	Z=-1.775 p=0.076

SD=Standard Deviation, Min=Minimum, Max=Maximum; t=Independent Samples t-Test, Z=Mann Whitney U Test, p=Significance Level

Table 4 examined the correlation between the health literacy and subscale scores and parental stress. The researchers found a moderately negative correlation between the total health literacy score and parental stress score (r=-0.31; p<0.000). In addition, the researchers found a moderately negative correlation between the access to information (r=-0.27; p<0.000), apraise (r=-0.30; p<0.000) and application/usage (r=-0.32; p<0.000) subscale scores of health literacy and parental stress. Also, the researchers found a low negative correlation between the understanding the information subscale score of health literacy and the parental stress scores (r=-0.17; p=0.001).

Table 4. *The Correlation Between the Health Literacy Level and Parental Stress Level of the Participants (n=353)*

		Total HLS	Access	Understand	Appraise	Application
Parental Stress Score	**r**	-0.312	-0.266	-0.172	-0.297	-0.325
	p	**0.000**	**0.000**	**0.001**	**0.000**	**0.000**

HLS=Health Literacy Scale, r=Spearman's rho Correlation Coefficient, p=Significance Level

In the regression analysis, the researchers found that the health literacy level affected parental stress (F=14.27; p<0.000). The researchers determined that the understanding the information subscale of health literacy had a moderate impact in a positive direction (β=0.21; p=0.007) and the aplication/usage subscale had a moderate impact in a negative direction (β=-0.26; p<0.000) (Table 5).

Table 5. *Results of the Multiple Regression Analysis Demonstrating the Impact of Health Literacy Level of the Participants on Parental Stress (n=353)*

Dependent Variable		**Parental Stress Scale**				
		β	**R**	**Adj.R2**	**F**	**p**
Health Literacy	Access	-0.172	0.375	0.131	14.270	0.011
	Understand	0.213				0.007
	Apraise	-0.164				0.055
	Application	-0.256				0.000

DISCUSSION

The current study aimed to determine the correlation between the health literacy of mothers and parental stress during the COVID-19 pandemic in Turkey. The result of the study demonstrated that the health literacy level had an impact on parental stress. It is possible to state that higher level of health literacy in mothers may decrease parental stress and thus enable them to establish an effective relationship with their children. Ages of 0 year to 17 years when the individual begins to form and complete his/her psychological infrastructure, personality traits and social development are crucial. The COVID-19 pandemic has brought many compelling and stressful situations both for parents and children (Keleşoğlu & Adam Karduz, 2020). It has brought parental stress as a type of stress increasing the risk of maltreatment against the child. Health literacy plays a key role in planning the activities aimed at protecting and developing community health (Yılmazel & Çetinkaya, 2016). Parents' personality characteristics, mental health, emotional competence level which comprises of skills related to expressing and controlling emotions, general health condition and social support resources are all effective on parental stress. Parental stress which emerges as a result of many different conditions is one of the most important reasons of nonfunctional parental behaviors (Abidin, 1992).

The present study found that the time spent with children and state of affecting the relationship with children were statistically significant according to the parental stress score. During the COVID-19 pandemic, as parental stress increased, the frequency of spending time with children decreased. In addition, as parental stress increased, the relationship with children was affected negatively. The literature suggests that higher level of stress in parents causes them to experience issues in their communication with their children, use unpredictable educational methods and have a disrupted intrafamily communication (Özmen Kaymak & Özmen, 2012).

In the present study, the researchers found that the mothers had a high level of health literacy and parental stress. The health literacy level and parental stress of the mothers were correlated at a statistically significant level. In addition, the health literacy level of the mothers affected their parental stress. Therefore, as

their health literacy level increased, their parental stress decreased. In contradiction to the present study, the studies in the literature examining the correlation between the health literacy level of mothers and different variables found that higher level of health literacy did not affect the age factor, however, it affected self-efficacy of mothers in a positive direction and also affected the health outcomes of their children in a positive direction and it was also related with educational level and level of income (Gönenç, 2015; Peyman et al., 2016; Khorasani et al., 2018; Aydın & Aba, 2019). In contradiction to the present study, the aforementioned studies collected the data face-to-face. The present study collected the data online. The difference might be related with this condition.

In the current study, the researchers found a moderately linear negative correlation between all subscales of health literacy and parental stress. In addition, the researchers found a moderately significant linear negative correlation between the access to information, evaluation, and implementation/usage subscales of health literacy and parental stress. The literature examined the correlation between the health literacy and COVID-19 pandemic perception of medical students and those with a chronic illness and obtained similar results. Accordingly, the individuals with a higher level of anxiety and stress had a lower level of health literacy (McCaffery et al., 2020; Nguyen et al., 2020; Duplaga & Grysztar, 2021). As a consequence, there was a significant correlation between the health literacy level and stress level of individuals. Those with a higher level of health literacy had a lower level of stress. Among the factors affecting this condition were age, educational status, and surrounding area.

CONCLUSION AND SUGGESTIONS

During the COVID-19 pandemic, mothers with a higher level of health literacy have a lower level of parental stress. The increase in parenting stress in mothers during the pandemic reduces the frequency of spending time with children and negatively affects the mother-child relationship. The study stressed that the health literacy level of the parents was effective on identifying the sources of stress they experienced when raising their children and stress source determination plans of healthcare professionals which were compatible with health literacy skills of parents might contribute to enhancing the health outcomes of children. Parents with a higher level of health literacy are more active in obtaining information about their own health, solving problems on their own when they experience any health issue and changing behaviors to develop health. The present study will enable healthcare professionals to understand the present condition and use the study as a guide for further studies to be conducted to reduce stress. The study will also raise awareness in parents and society related to the issue and fill a gap in the literature.

LIMITATIONS

The fact that only mothers took part in the study decreased the scope of generalizability. Another limitation was that the researchers obtained the study data online and the scales used were self-report scales. In addition, convenience sampling method was used in the research.

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Conflict of Interest

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Author Contributions

Design: H.A., F.P., A.A., Data collection or processing: H.A., A.A., Analysis or interpretation: H.A., A.A., Literature search: H.A., A.A., Writing: H.A., F.P.

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