

## Knowledge, attitudes, and anxiety levels of parents with suspected COVID-19 children: A cross-sectional study in Turkey

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### Abstract

**Objective:** To determine the knowledge, attitudes and anxiety levels of parents with children suspected of having coronavirus disease-2019.

**Method:** The descriptive, cross-sectional study was conducted at the coronavirus disease-2019 outpatient clinic of a tertiary hospital in Ankara, Turkey, between January and August 2021, and comprised parents who presented with suspicions of coronavirus disease-2019 in their children. Data was collected using a questionnaire to assess the parents' knowledge and attitudes towards coronavirus disease-2019, the State-Trait Anxiety Inventory-I and the visual analogue scale to determine levels of fear related to coronavirus disease-2019. Data was analysed using SPSS 25.

**Results:** Of the 307 subjects with mean age 40.53±8 years (range: 22-68 years), 237(77.2%) were mothers, 125(40.7%) were high school graduates and 130(42.3%) were employed. The mean score for fear of infection in the children was 7.95±2.64 (range: 0-10, while the mean score for fear of infection of self and other family members was 7.79±2.63 (range: 0-10). The mean scores for knowledge and attitude towards coronavirus disease-2019 were 24.93±4.05 (range: 6-30) and 64.86±26.53 (range: 18-90), respectively. The mean anxiety score was 39.74±7.27 (range: 20-80). There was a significant relationship of knowledge and attitude towards coronavirus disease-2019 with the mother-father status, age and education levels of the participants ( $p<0.05$ ). There was also a significant relationship of anxiety with the mother-father status and employment status of the parents ( $p<0.05$ ).

**Conclusion:** Parents had a high level of knowledge about coronavirus disease-2019, a positive attitude towards protective measures, and a moderate level of anxiety. They had a high level of fear of transmitting the disease to themselves, their children and other family members.

**Keywords:** COVID-19, Attitude, Knowledge, Anxiety. (JPMA 75: 14; 2025)

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### Introduction

Coronavirus disease-2019 (COVID-19) is a global public health pandemic with lingering effects.<sup>1</sup> The first case of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection in Türkiye was reported on March 11, 2020. During the pandemic, public spaces and social contact were restricted, and people were advised to stay at home and follow the rules of social isolation. With the discovery of the vaccines against COVID-19, the process of vaccination was initiated.<sup>1-4</sup> However, the unexpected and uncertain course of the pandemic led to global anxiety and negative psychological effects on the lives of children and adults alike.<sup>2-6</sup>

The COVID-19 pandemic increased the risk of mortality, resulting in fear, anxiety and psychiatric disorders worldwide.<sup>3,7,8</sup> A study conducted during the first phase of

the COVID-19 in China reported that one-third of the population had moderate to severe anxiety.<sup>9</sup> A study on 7,143 university students found that 21.3% of them had mild anxiety and 3.6% had moderate to severe anxiety, and noted that the economic impact of such anxiety on daily life and delays in academic activities were positively correlated with anxiety symptoms.<sup>8</sup>

The knowledge, attitudes and behaviours of all individuals, including children and parents, in the fight against COVID-19 were critical to controlling the spread of the disease.<sup>10,11</sup> The ever-changing nature of the COVID-19 pandemic necessitated regular updates to the literature and research methods. Reviews of knowledge, attitudes and interventions that have been published in the past years need to be updated over time.<sup>12</sup> A brief review of the literature shows that most of the studies on the knowledge and attitudes towards COVID-19 have been conducted on adults without focussing on the parents.<sup>1,3,7,13,14</sup> The pandemic led to significant disruptions in healthcare systems worldwide, particularly impacting families with children presenting with symptoms suggestive of the virus. Despite the critical role of parents in managing and responding to their children's health concerns, there is limited understanding of how parental knowledge,

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attitudes and anxiety levels influence their actions and decisions in this context. The current study was planned address the gap in the literature by determining the knowledge, attitudes and anxiety levels of parents with children suspected of having COVID-19.

## Subjects and Methods

The descriptive, cross-sectional study was conducted at the COVID-19 outpatient clinic of a tertiary hospital in Ankara, Turkiye, between January and August 2021, which was one of the active phases of the COVID-19 pandemic. After approval from the Gulhane ethics committee of the University of Health Sciences, Turkiye, the sample size was calculated using G\*Power version 3.1.9.2.<sup>15</sup> Given the lack of similar studies, the sample size was calculated for alpha ( $\alpha$ ) 0.05, effect size 0.30 and power 0.95.<sup>16</sup> The sample was raised using simple random sampling technique. Those included were parents who brought their children aged <18 years to the COVID-19 outpatient clinic and volunteered to participate. Those not willing to participate were excluded. Questionnaires were given to the participating volunteers, and the questionnaires not completed fully were excluded. The questionnaires took approximately 15 minutes to fill.

Other than the questionnaire on parents' knowledge and attitudes towards COVID-19, data was collected using the State-Trait Anxiety Inventory-I (STAI-I) and the visual analogue scale (VAS).<sup>8,10,11,17</sup>

The questionnaire was developed based on literature.<sup>8,10,11,17</sup> It included 11 questions on socio-demographic characteristics, 30 yes/no questions on parents' knowledge of COVID-19, and 18 Likert-type questions on their attitudes towards the pandemic. The Cronbach's alpha coefficients for the knowledge and attitudes subscales of the questionnaire were 0.858 and 0.985, respectively.

STAI-I, developed in 1964, was revised in 1983 and adapted into Turkish.<sup>18,19</sup> The scale consists of 20 items, which are scored on a four-point Likert scale. Possible scores ranged 20-80, with higher scores indicating higher levels of anxiety.<sup>18,19</sup> Cronbach's alpha in the current study was 0.731, indicating a high level of reliability.

The COVID-19 fear VAS was a 10cm horizontal scale, ranging from 0 = no fear to 10=extreme fear. The participants were instructed to self-rate their perceived level of fear regarding COVID-19 infection for their children, themselves and their family members.

Data was analysed using SPSS 25. Descriptive data was presented as frequencies and percentages, mean $\pm$ standard

deviation, or median, as appropriate. Data normality was tested using Shapiro-Wilk test. Mann-Whitney U test was used to examine the differences between the means of two independent groups when the assumption of normality was not met. Kruskal-Wallis test was employed to assess differences between the means of three or more independent groups under the same condition. Post-hoc adjusted Bonferroni test was used to determine the source of difference between groups. Spearman's correlation was used to measure the relationship between continuous variables. Kendall's tau correlation was used to examine the relationship between continuous and categorical variables. Statistical significance was set at  $p < 0.05$ .

## Results

Of the 307 subjects with mean age  $40.53 \pm 8$  years (range: 22-68 years), 237(77.2%) were mothers, 125(40.7%) were high school graduates, 130(42.3%) were employed, and 33(10.7%) had children with chronic diseases (Table 1).

The mean score for fear of infection in the children was  $7.95 \pm 2.64$  (range: 0-10, while the mean score for fear of infection of self and other family members was  $7.79 \pm 2.63$  (range: 0-10). The mean scores for knowledge and attitude towards coronavirus disease-2019 were  $24.93 \pm 4.05$  (range: 6-30) and  $64.86 \pm 26.53$  (range: 18-90), respectively. The mean anxiety score was  $39.74 \pm 7.27$  (range: 20-80) (Table 2).

**Table-1:** Descriptive characteristics (n=307)

	n (%)
<b>Interviewed parent</b>	
Mother	237 (77.2)
Father	70 (22.8)
<b>Age of parent (years)</b>	
22-30	33 (10.7)
31-45	186 (60.6)
46 and over	88 (28.7)
<b>Education level</b>	
Elementary	118 (38.4)
High school	125 (40.7)
University and higher	64 (20.8)
<b>Working status</b>	
Yes	130 (42.3)
No	177 (57.7)
<b>Income level</b>	
Low	65 (21.2)
Moderate	231 (75.2)
High	11 (3.6)
<b>Number of children</b>	
1-2	201 (65.5)
3 and over	106 (34.5)
<b>Children with chronic diseases</b>	
Yes	33 (10.7)
No	274 (89.3)

**Table-2:** Mean scores for Visual Analogue Scale, State Trait Anxiety Inventory I and the questionnaire on parents' knowledge and attitudes toward COVID-19.

	Min.	Max.	Mean±SD	Median
Fear of infection of children	0	10	7.95 ±2.64	9
Fear of infection of self and family members	0	10	7.79 ±2.63	9
Knowledge	6	30	24.93 ±4.05	26
Attitudes	18	90	64.86 ±26.53	75
State Trait Anxiety Inventory I	20	80	39.74 ±7.27	39

COVID-19: Coronavirus disease-2019, SD: Standard deviation.

the parents in the current study had a high level of knowledge about COVID-19.<sup>12,20,21</sup> This was probably because social media and television programmes played a significant role in informing the people about the COVID-19 pandemic.

Identifying the factors that influence the knowledge and attitudes of individuals is critical in the fight against pandemics.<sup>4</sup> Analysis of the factors influencing the level of knowledge of the participants in this study showed that

**Table-3:** Comparison of the knowledge, attitude and anxiety scores with respect to descriptive characteristics.

Characteristic	n	Knowledge			Attitudes			State-Trait Anxiety Inventory-I		
		Mean±SD	Median	p-value	Mean±SD	Median	p-value	Mean±SD	Median	p-value
<b>Interviewed parent</b>										
Mother	237	25.26±3.84	26.00	0.015a	62.89±27.21	72.00	0.024a	39.11±7.31	39.00	0.001a
Father	70	23.83±4.58	25.00		71.51±23.03	82.50		41.87±6.74	41.50	
<b>Age (in years)</b>										
22-30	33	25.33±3.47	26.00	0.015a	65.18±27.52	75.00	0.876	40.39±8.52	40.00	0.791
31-45	186	25.36±3.87	26.00		63.65±27.07	74.00		39.59±6.82	39.00	
46 and over	88	23.89±4.47	26.00		67.28±25.08	76.00		39.83±7.73	39.00	
<b>Education level</b>										
Elementary	118	23.86±4.67	25.00	0.000a	58.14±28.34	70.50	0.001a	39.11±6.24	38.00	0.486
High school	125	25.14±3.84	26.00		66.95±24.82	74.00		40.32±8.43	40.00	
University and higher	64	26.53±2.33	27.00		73.14±23.46	85.50		39.78±6.54	40.00	
<b>Working status</b>										
Yes	130	24.88±3.91	26.00	0.641	69.32±23.66	78.00	0.107	40.41±7.21	40.00	0.046a
No	177	24.97±4.17	26.00		61.58±28.06	73.00		39.25±7.29	38.00	
<b>Income level</b>										
Low	65	23.45±5.41	26.00	0.079	59.89±28.14	72.00	0.058	40.45±8.46	39.00	0.078
Moderate	231	25.31±3.55	26.00		65.74±25.92	75.00		39.29±6.75	39.00	
High	11	25.82±2.89	26.00		75.55±26.54	88.00		45.00±8.35	42.00	
<b>Number of children</b>										
1-2	201	25.20±4.09	26.00	0.073	63.40±27.07	74.00	0.202	39.62±6.97	39.00	0.989
3 and over	106	24.42±3.96	26.00		67.61±25.37	78.50		39.97±7.83	39.00	

SD: Standard Deviation. a The relationship is significant at the level of p < 0.05.

There was a significant relationship of knowledge and attitude towards COVID-19 with the mother-father status, age and education levels of the participants (p<0.05). There was also a significant relationship of anxiety with the mother-father status and employment status of the parents (p<0.05) (Table 3). There was no significant relationship between knowledge level and attitude scores (r=0.093; p=0.104), knowledge level and STAI-I scores (r=-0.029; p=0.607), and attitude scores and STAI-I scores (r=-0.002; p=0.978).

**Discussion**

Individual awareness, knowledge levels, attitudes and behaviours play a critical role in the fight against pandemics, such as the COVID-19.<sup>10,17</sup> Existing studies on COVID-19 aimed at determining whether the participants had basic knowledge of the symptoms of COVID-19 and how to protect themselves. In parallel with the literature,

mothers of children with COVID-19 had a higher level of knowledge about the pandemic. Similar to the current findings, earlier studies found that women tend to have a higher level of knowledge.<sup>17,22,23</sup> A study reported a higher prevalence in male patients diagnosed with COVID-19 than that in female patients.<sup>24</sup> These findings may be explained by higher risk perception and adherence to preventive behaviours in women.

Contrary to the literature, this study found that middle-aged parents had a higher level of knowledge about COVID-19.<sup>17,24</sup> Luo et al. did not find any relationship between age and knowledge level.<sup>20</sup> A brief review of the literature shows that most studies have been conducted on adults. Since this study was conducted on parents, it is plausible to expect that having children may have a positive effect on the knowledge of COVID-19. On the other hand, in parallel with the literature, an increase in education

level was found to be associated with the knowledge of COVID-19.<sup>10,17,20,21,23,24</sup> Public awareness has been an important strategy in the Turkish Ministry of Health's fight against COVID-19. Information about COVID-19 was regularly provided by the ministry through various channels, especially social media and television.<sup>2,3,25</sup> The increase in health literacy parallel to the increase in the level of education seems to be associated with access to correct sources of information.

The current study found that parents exhibited a positive attitude towards preventive measures against COVID-19. In line with the literature, the increase in the level of education was positively associated with the positive attitude of parents.<sup>20,24</sup> This finding may be related to highly educated individuals' greater access to information. Compared to mothers, fathers of children had more positive attitudes. A brief review of the literature reveals conflicting results related to gender.<sup>22,26</sup> This difference may be attributable to variations in the personal characteristics within the sample.

The participants in the current study had moderate levels of anxiety, which was in line with earlier findings even though higher levels of anxiety have also been reported.<sup>1,7,10</sup> In contrast to the current findings, literature showed that mothers had higher levels of anxiety than fathers<sup>10,14</sup>. This finding may be related to the fact that the percentage of employed fathers was higher than that of the mothers. Other studies have confirmed that working parents experienced more anxiety<sup>1,10,14</sup>.

Although the pandemic has since subsided, its effects continue. In parallel with the literature, the current study found that the parents were highly fearful of COVID-19 infection in their children, themselves and other family members.<sup>1,5,7,10,17,20,21,24-27</sup>

The current study has limitations as it was conducted at a single centre, and, due to the pandemic, data collection was done on the basis of self-report rather than through face-to-face interviews.

It is important for health professionals to educate and counsel parents on how to protect their mental and physical health, and that of their children during pandemics, such as the COVID-19. When providing education, the age, gender and educational levels of the parents should be considered. Counselling services and stress management resources should be made accessible to parents experiencing anxiety. Additionally, psychological strategies should be developed to help parents manage and cope with their fears of transmission in situations like the COVID-19 pandemic. By addressing these areas, health

professionals can help parents better manage their knowledge, attitudes and anxiety, ultimately supporting their overall wellbeing and response to a pandemic. This, in turn, will enhance the quality of care provided to both children and their families.

## Conclusions

The parents who brought their children to the hospital with suspected COVID-19 had high levels of knowledge about the virus, demonstrated positive attitudes toward protective measures, and exhibited moderate levels of anxiety. Additionally, the parents had a high level of fear regarding the transmission of the disease to themselves, their children, and other family members. Higher education and being a mother positively influenced knowledge, whereas higher education and being a father positively impacted attitudes. Conversely, employment status and being a father had a negative effect on anxiety levels.

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## References

1. Pinar Senkalfa B, Sismanlar Eyuboglu T, Aslan AT, Ramasli Gursoy T, Soysal AS, Yapar D, et al. Effect of the COVID-19 pandemic on anxiety among children with cystic fibrosis and their mothers. *Pediatr Pulmonol* 2020;55:2128-34. doi: 10.1002/ppul.24900
2. Dilek TD, Boybay Z, Kologlu N, Tin O, Güler S, Saltik S. The impact of SARS-CoV2 on the anxiety levels of subjects and on the anxiety and depression levels of their parents. *Mult Scler Relat Disord* 2021;47:102595. doi: 10.1016/j.msard.2020.102595
3. Durcan G, Barut K, Haslak F, Doktor H, Yildiz M, Adrovic A, et al. Psychosocial and clinical effects of the COVID-19 pandemic in patients with childhood rheumatic diseases and their parents. *Rheumatol Int* 2021;41:575-83. doi: 10.1007/s00296-021-04790-x
4. Yakar B, Öztürk Kaygusuz T, Piriñçi E, Önalın E, Ertekin YH. Knowledge, attitude and anxiety of medical students about the current COVID-19 outbreak in Turkey. *Fam Pract Palliat Care* 2020;5:36-44. doi: 10.22391/fppc.737469.
5. Cadamuro A, Bisagno E, Trifiletti E, Di Bernardo GA, Visintin EP. Parental Support during the COVID-19 Pandemic: Friend or Foe? A Moderation Analysis of the Association between Maternal Anxiety and Children's Stress in Italian Dyads. *Int J Environ Res Public Health* 2022;20:268. doi: 10.3390/ijerph20010268.
6. Liu JJ, Bao Y, Huang X, Shi J, Lu L. Mental health considerations for children quarantined because of COVID-19. *Lancet Child Adolesc Health* 2020;4:347-9. doi: 10.1016/S2352-4642(20)30096-1
7. Althiabi Y. Attitude, anxiety and perceived mental health care needs among parents of children with Autism Spectrum Disorder (ASD) in Saudi Arabia during COVID-19 pandemic. *Res Dev Disabil* 2021;111:103873. doi: 10.1016/j.ridd.2021.103873
8. Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, et al. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res* 2020;287:112934. doi: 10.1016/j.psychres.2020.112934

9. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *Int J Environ Res Public Health* 2020;17:1729. doi: 10.3390/ijerph17051729
10. Lin Y, Hu Z, Alias H, Wong LP. Knowledge, Attitudes, Impact, and Anxiety Regarding COVID-19 Infection Among the Public in China. *Front Public Health* 2020;8:236. doi: 10.3389/fpubh.2020.00236
11. Smith KM, Machalaba CC, Seifman R, Feferholtz Y, Karesh WB. Infectious disease and economics: The case for considering multi-sectoral impacts. *One Health* 2019;7:100080. doi: 10.1016/j.onehlt.2018.100080
12. Siddiquea BN, Shetty A, Bhattacharya O, Afroz A, Billah B. Global epidemiology of COVID-19 knowledge, attitude and practice: a systematic review and meta-analysis. *BMJ Open* 2021;11:e051447. doi: 10.1136/bmjopen-2021-051447
13. Gerçeker GÖ, Özdemir EZ, Özdemir B, Bektaş M. Development of the parental attitude scale-protecting children during COVID-19 and the relationship between parental attitudes and fear of COVID-19. *J Pediatr Nurs* 2022;62:113-20. doi: 10.1016/j.pedn.2021.09.007
14. Ebrahim AH, Saif ZQ, Buheji M, AlBasri N, Al-Husaini FA, Jahrami H. COVID-19 Information-Seeking Behavior and Anxiety Symptoms among Parents. *OSP J Health Car Med* 2020;1:1-9.
15. Faul F, Erdfelder E, Lang AG, Buchner A. G\*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods* 2007;39:175-91. doi: 10.3758/bf03193146
16. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed. Hillsdale, NJ: Lawrence Erlbaum Associates; 1988.
17. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *Int J Biol Sci* 2020;16:1745-52. doi: 10.7150/ijbs.45221
18. Öner N. *State-Trait Anxiety Inventory Handbook*, 2nd ed. Istanbul, Türkiye: Boğaziçi University Publications; 1985.
19. Spielberger CD, Gorsuch RL, Lushene RE, Vagg PR, Jacobs GA. *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press, 1983.
20. Luo YF, Chen LC, Yang SC, Hong S. Knowledge, Attitude, and Practice (KAP) toward COVID-19 Pandemic among the Public in Taiwan: A Cross-Sectional Study. *Int J Environ Res Public Health* 2022;19:2784. doi: 10.3390/ijerph19052784
21. Reuben RC, Danladi MMA, Saleh DA, Ejembi PE. Knowledge, Attitudes and Practices Towards COVID-19: An Epidemiological Survey in North-Central Nigeria. *J Community Health* 2021;46:457-70. doi: 10.1007/s10900-020-00881-1
22. Kasemy ZA, Bahbah WA, Zewain SK, Haggag MG, Alkalash SH, Zahran E, et al. Knowledge, Attitude and Practice toward COVID-19 among Egyptians. *J Epidemiol Glob Health* 2020;10:378-85. doi: 10.2991/jegh.k.200909.001
23. Ali M, Uddin Z, Banik PC, Hegazy FA, Zaman S, Ambia ASM, et al. Knowledge, Attitude, Practice, and Fear of COVID-19: an Online-Based Cross-cultural Study. *Int J Ment Health Addict* 2023;21:1025-40. doi: 10.1007/s11469-021-00638-4
24. Vahidy FS, Pan AP, Ahnstedt H, Munshi Y, Choi HA, Tiruneh Y, et al. Sex differences in susceptibility, severity, and outcomes of coronavirus disease 2019: Cross-sectional analysis from a diverse US metropolitan area. *PLoS One* 2021;16:e0245556. doi: 10.1371/journal.pone.0245556
25. Ministry of Health COVID-19 Information Platform. Türkiye: COVID-19. [Online] [Cited 2023 May 16]. Available from URL: <https://COVID19.saglik.gov.tr/>.
26. Bostan S, Erdem R, Öztürk YE, Kılıç T, Yılmaz A. The Effect of COVID-19 Pandemic on the Turkish Society. *Electron J Gen Med* 2020;17:em237. doi: 10.29333/ejgm/7944.
27. Negrone AJ, Caldwell PH, Scott KM. COVID-19 and Dr. Google: Parents' changing experience using online health information about their children's health during the pandemic. *J Paediatr Child Health* 2023;59:512-8. doi: 10.1111/jpc.16339.

**Author Contribution:**

**DK, DY and BU:** Study conception and design.

**DK, DY, BU:** Data collection.

**DK, EK, DY:** Data analysis, interpretation, drafting and critical revision.