

Effect of Anxiety Caused by COVID-19 in Parents with the Mediating Role of Perceived Social Support: A Case Study of Mashhad, Iran

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Abstract

Background: COVID-19 has had adverse effects on both physical and mental health. The increase in anxiety and stress caused by this disease has affected the well-being of parents and children. This study aimed to investigate anxiety related to COVID-19 in parents and its effects on children's health, with perceived social support as a mediating factor, in the metropolis of Mashhad, northeastern Iran.

Methods: This cross-sectional study was conducted in 2021 in Mashhad, Iran. The study population comprised 435 individuals from families with children aged 5 to 18 years. Data were collected using the Corona Disease Anxiety Scale (CDAS), the Multidimensional Scale of Perceived Social Support (MSPSS), and the Child Health Questionnaire (CHQ). Statistical analyses were performed using SPSS version 26 and AMOS version 26.

Results: The results showed that parental anxiety related to COVID-19 had a negative and significant relationship with both parents' perceived social support ($\beta = -0.220$, $P < 0.001$) and children's health ($\beta = -0.443$, $P < 0.001$). Additionally, the mediating role of social support in the relationship between parental anxiety and children's health was significant ($P < 0.001$).

Conclusion: Strengthening social support—particularly through the expansion of school- and community-based psychosocial services and increasing parental awareness of its importance—reduces parental anxiety and indirectly enhances children's physical and mental health. These interventions mitigate the transmission of stress from parents to children by fostering a supportive family environment and strengthening children's psychological resilience. Therefore, integrating mental health support programs into schools and local community spaces is an indispensable component of child health policy in Mashhad, representing an effective and cost-efficient strategy for mitigating the long-term impacts of public health crises on future generations.

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Introduction

In mid-December 2019, a disease later named COVID-19 was first identified in Wuhan, China, and rapidly

spread across the country, soon emerging as a global public health concern.¹ On January 30, 2020, the World Health Organization (WHO) declared the outbreak of the novel coronavirus (SARS-CoV-2), which causes

COVID-19, a Public Health Emergency of International Concern (PHEIC).² The WHO later characterized the outbreak as a pandemic on March 11, 2020. In Iran, the first confirmed case of COVID-19 was reported by the Ministry of Health and Medical Education on February 19, 2020; within two weeks, the virus had spread to nearly all provinces.³

Following this official announcement, and in an effort to control transmission, most public and crowded venues were closed. To break the chain of infection, people were advised to stay at home, avoid non-essential outings, and maintain strict personal hygiene.⁴ While these measures were necessary, they also contributed to a significant increase in anxiety and stress across society.

This disease has had numerous negative psychological and social effects on individuals during its outbreak. At the individual level, people are likely to experience a fear of contracting the disease or a sense of powerlessness in the face of it.⁵ Consequently, the outbreak can cause substantial psychological stress, which may adversely affect mental health.⁶ Studies have shown that COVID-19 affects the physical and mental health of various groups in society,^{7,8} including the general public, patients, healthcare workers, children, and, in particular, parents.⁹ Under such conditions, individuals may experience increased feelings of loneliness, reduced social support, decreased perceived life expectancy, fear and worry, clinical stress and anxiety, disease-related mental and behavioral obsessions, and even symptoms of post-traumatic stress disorder and acute stress.^{10,11}

In this context, studies have indicated that the increase in anxiety and stress caused by COVID-19 can negatively affect children's health. During the outbreak, behavioral disorders, anxiety, and aggression were more prevalent among male children, whereas emotional disorders, depression, and stress were observed more frequently in female children.¹² ¹³ Qin et al. (2021) reported that 10.5% of children experienced psychological distress.¹⁴ Lavigne-Cerván et al. (2021) examined the effects of the COVID-19 pandemic on anxiety, sleep quality, and executive functioning in children and adolescents, finding that female children exhibited higher levels of anxiety, sleep disturbances, and executive function problems compared to male children.¹⁵ During home quarantine, many school-aged children attended virtual classes for the first time and had no prior experience with such an epidemic, which contributed to significant fear and stress.^{16,17}

It appears that social support can influence children's health by reducing parental anxiety.¹⁸ ¹⁹ Indeed, one of the most common forms of social interaction is social support, and both the presence of support and a person's perception of it as well as

their need for it can vary according to gender, age, personality, and culture. Moreover, the importance of social support may vary at different stages of life and may have a greater impact than other factors. For instance, during infancy and childhood, family support is particularly crucial, playing a more central role in ensuring the child's physical and psychological well-being than support from other sources.²⁰

Perceived social support refers to the emotional experience and satisfaction individuals feel when they are respected, supported, and understood within society.²¹ It influences behavior and development because the psychological reality of subjectively perceived support likely has a beneficial effect on mental health—perceived social support functions as a buffer between stress and mental well-being. Individuals can derive positive effects, such as reduced anxiety or problem resolution, from the support of friends, neighbors, or family members.²²

A study conducted by Ren et al. (2020) during the COVID-19 outbreak found that parents of children with special needs experienced behavioral and mental challenges, which affected their anxiety levels.²³ During this period, such parents often sought support from others to help address child care difficulties. This research examines the impact of social support on parents' anxiety during the COVID-19 outbreak, aiming to inform targeted interventions that can help reduce parental anxiety.²³

Social support can reduce anxiety by serving as a positive psychological resource. It is considered one of the most significant sources of general resilience, enabling individuals to perceive their lives as more predictable, controllable, and understandable, thereby promoting greater adaptability in stressful situations.²⁴ Researchers view social support as a resource that helps individuals cope with psychological pressures and life challenges. It also serves as a protective barrier against psychological stress and is linked to positive social, psychological, and physical outcomes. Moreover, perceived social support, being readily available and accessible, can play a valuable role in intervention programs designed to enhance well-being, particularly psychological well-being.²⁰

Examining the results of previous studies indicates that perceived social support plays a central role in the level of anxiety related to COVID-19.²⁵ Another study demonstrated that perceived social support negatively influences coronavirus-related anxiety; in other words, the greater the perceived social support, the lower the level of COVID-19-related anxiety.²⁶ Considering the COVID-19 pandemic, the importance of children's health, and the anxiety induced by the disease—which is a vulnerable factor for other psychological disorders—it is essential to investigate variables related to COVID-19-related anxiety.

Therefore, the present study aimed to examine the effect of parental anxiety caused by COVID-19 on children's health in Mashhad City, with perceived social support as a mediating factor.

Methods

This correlational study employed structural equation modeling (SEM) as a multivariate analytical technique. Data were collected via a cross-sectional online survey conducted in 2021 among parents of children aged 5 to 18 years residing in Mashhad, a major metropolitan city in northeastern Iran. The initial sample size was estimated using G*Power. However, because the primary objective of this study involved SEM, the final sample size was determined according to the recommendations of Hair et al. (2019), who suggest a minimum of 300 participants for models with seven or fewer latent constructs and relatively low factor loadings (below 0.45). Considering the approximate normality of observed variables, the absence of missing data, and to enhance statistical power, the final sample size was set at 435 participants.^{27, 28}

The survey link was distributed through widely used Iranian social media platforms, including WhatsApp, Telegram, and Instagram. Participants completed validated questionnaires assessing: (1) parental anxiety related to the COVID-19 pandemic (Coronavirus Disease Anxiety Scale, CDAS); (2) perceived social support (Multidimensional Scale of Perceived Social Support, MSPSS); and (3) children's health-related quality of life (Child Health Questionnaire, CHQ). Demographic information was also collected, including parental age, gender, educational level, children's health insurance status, and housing conditions. The online survey required approximately 15–20 minutes to complete.

Before participation, all respondents provided informed consent in accordance with institutional research ethics guidelines.²⁹

Inclusion criteria: (1) Having at least one child aged 5–18 years, (2) Residing in Mashhad for a minimum of five years. Exclusion criteria: (1) Declining to participate; (2) Having a child diagnosed with a severe mental or physical disability, or a child not residing with the parent.

Ethical Consideration

The study was approved by the Medical Ethics Committee of the University of Social Welfare and Rehabilitation Sciences (IR.USWR.REC.1400.043). All participants provided written informed consent to participate in the study. Additionally, written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Instruments

Corona Disease Anxiety Scale (CDAS)

The CDAS is an 18-item questionnaire comprising two components. Items 1–9 assess psychological symptoms, while items 10–18 evaluate physical symptoms. Responses are scored on a 4-point Likert scale (never, sometimes, most often, and always).³⁰ Total scores range from 0 to 54, with higher scores indicating greater levels of anxiety.

The reliability of the instrument was previously estimated using Cronbach's alpha coefficient for psychological symptoms ($\alpha=0.879$), physical symptoms ($\alpha=0.861$), and the overall questionnaire ($\alpha=0.919$).³¹ In the present study, Cronbach's alpha coefficients were 0.861 for psychological symptoms, 0.920 for physical symptoms, and 0.924 for the entire questionnaire.

Multidimensional Scale of Perceived Social Support (MSPSS)

The MSPSS is a 12-item questionnaire developed by Zimet et al. (1988).³² This scale measures perceptions of the adequacy of social support from three sources: family, friends, and significant others (important people in one's life). Specifically, items 3, 4, 8, and 11 assess support from family; items 6, 7, 9, and 12 assess support from friends; and items 1, 2, 5, and 10 assess support from significant others.³²

Responses are scored on a 7-point Likert scale (strongly disagree, partially disagree, slightly disagree, neither agree nor disagree, slightly agree, partially agree, strongly agree).³³ Total scores range from 12 to 84,³²⁻³⁴ with higher scores indicating a higher perceived level of social support. Scores between 12 and 48 reflect low perceived social support, scores between 49 and 68 reflect moderate support, and scores between 69 and 84 reflect high support.³⁵

In the present study, Cronbach's alpha coefficients were 0.804 for family, 0.867 for friends, and 0.799 for significant others, indicating acceptable internal consistency.

Child Health Questionnaire (CHQ)

The CHQ was designed by Landgraf and Abetz³⁶ to assess children's health status. It is one of the most widely used instruments for evaluating health and quality of life in children, measuring key areas of child functioning and health based on parental reports. The questionnaire can be used for both male and female children of different ages, as well as for parents with varying educational backgrounds, employment statuses, and marital conditions.^{37, 38} It is completed by one of the parents (father or mother).

In this study, a 28-item version of the CHQ for parents was used to measure children's health status. Golzarpour and colleagues (2017) examined the

construct validity of the questionnaire in Iran and, considering cultural conditions, removed six items, reducing the questionnaire to 22 items. Responses are scored on a Likert scale, with some items ranging from 1 to 4 and others from 1 to 5 points.^{37, 38}

In the present study, Cronbach's alpha coefficients for the CHQ components were as follows: mental health (0.861), child satisfaction (0.623), child mobility (0.705), child performance (0.639), parental concern (0.858), parental restriction (0.682), and general child health (0.699), indicating acceptable to good internal consistency for the respective subscales.

Results

The demographic and socioeconomic characteristics of the study sample (N=435) are presented in Table 1. The mean age of children was 12.21 years, and the mean age of parents was 39.16 years. Among the children, 51.7% (n=225) were girls and 48.3% (n=210) were boys.

Regarding educational level, the largest proportion of children were enrolled in elementary school (43.4%, n=189), followed by high school (29.7%, n=129) and middle school (22.8%, n=99). In terms of children's health insurance, the majority were covered by Social Security Insurance (44.4%, n=193), followed by Health Services Insurance (23.4%, n=102). Notably, 10.1% of children (n=44) had no health insurance, highlighting a vulnerable segment of the population in accessing healthcare services during the pandemic.

Regarding parental characteristics, most respondents were mothers (79.1%, n=344). In terms of educational attainment, 35.4% (n=154) held an academic degree, and 29.7% (n=129) had a high school diploma. Regarding housing status, the majority of families (76.3%, n=332) lived in owner-occupied housing, while 20% (n=87) resided in rental housing, and 3.7% (n=16) lived in organizational housing.

Research Model

To examine the effects of anxiety from COVID-19 (A.C) and social support (S.S) on children's health (C.H), structural equation modeling (SEM) was employed. The model was estimated using AMOS 26 with the Maximum Likelihood Estimation (MLE) method. To assess the mediating effect of social support, the bias-corrected bootstrap method (with 5,000 resamples) and a 95% confidence interval were utilized.³⁹

The results of the fitted model (CMIN=3.496, GFI=0.901, CFI=0.926, RMSEA=0.076) indicated a negative and statistically significant relationship between parental anxiety related to COVID-19 and social support ($\beta=-0.220$, $P<0.001$). Additionally, anxiety from COVID-19 had a negative and significant relationship with children's health ($\beta=-0.443$, $P<0.001$). Conversely, social support showed a positive and significant relationship with children's health ($\beta=0.339$, $P<0.001$) (Table 2).

These results suggest that coronavirus-related anxiety has a significant negative effect on both social

Table 1: Descriptive Statistics of Study Variables (N=435)

Variable	Category / Level	Count	Percentage (%)
Child's gender	Boy	210	48.3
	Girls	225	51.7
Child's educational status	Kindergarten (Pre-primary Preschool)	5	1.1
	Primary preschool	5	1.1
	Secondary preschool	8	1.8
	Elementary school	189	43.4
	Middle school	99	22.8
	High school	129	29.7
Children's insurance status	Iranian Insurance	5	1.1
	Supplemental Insurance	11	2.5
	Health Insurance	80	18.4
	Social Security Insurance	193	44.4
	Health Services insurance	102	23.4
	No insurance	44	10.1
Parents' gender	Female	344	79.1
	Male	91	20.9
Parents' education	Illiterate	7	1.6
	Elementary	52	12
	Secondary	62	14.3
	High school education degree	129	29.7
	Associate degree	31	7.1
	Academic education	154	35.4
Housing type	The owner	332	76.3
	Rental housing	87	20
	Organizational housing	16	3.7

Table 2: Results of the Structural Equation Model Examining the Effect of Anxiety from COVID-19 on Child Health with Social Support as a Mediator

Dependent variable	Predictors	β	S.E.	C.R*	B	P
SS	<--- A.C	-0/220	0/059	-3/668	-0/218	0/000
CH	<--- A.C	-0/433	0/043	-7/317	-0/314	0/000
	<--- S.S	0/339	0/045	5/743	0/248	0/000

*Critical Ratio

support and children's health, accounting for 22% and 43% of the variance, respectively. Social support, as a mediating variable, has a significant positive effect on children's health, accounting for 34% of its variance (Figure 1).

Model Guide

Anxiety from COVID-19 (A.C): An.Ps.Co (psychological dimension of anxiety from COVID-19), An.Ph.Co (physical dimension of anxiety from COVID-19).

Child Health(C.H): M.H (child's mental health), S.Sat (child's self-satisfaction), Mov.St (child's mobility status), Perf (child's performance), Uneasy (parental concern), Par.Lim (parental limitation), G.H. (child's general health). **Social Support (S.S):** Fa.Su (social support from family), Fr. Su (social support from friends), and So.Su (social support from significant others).

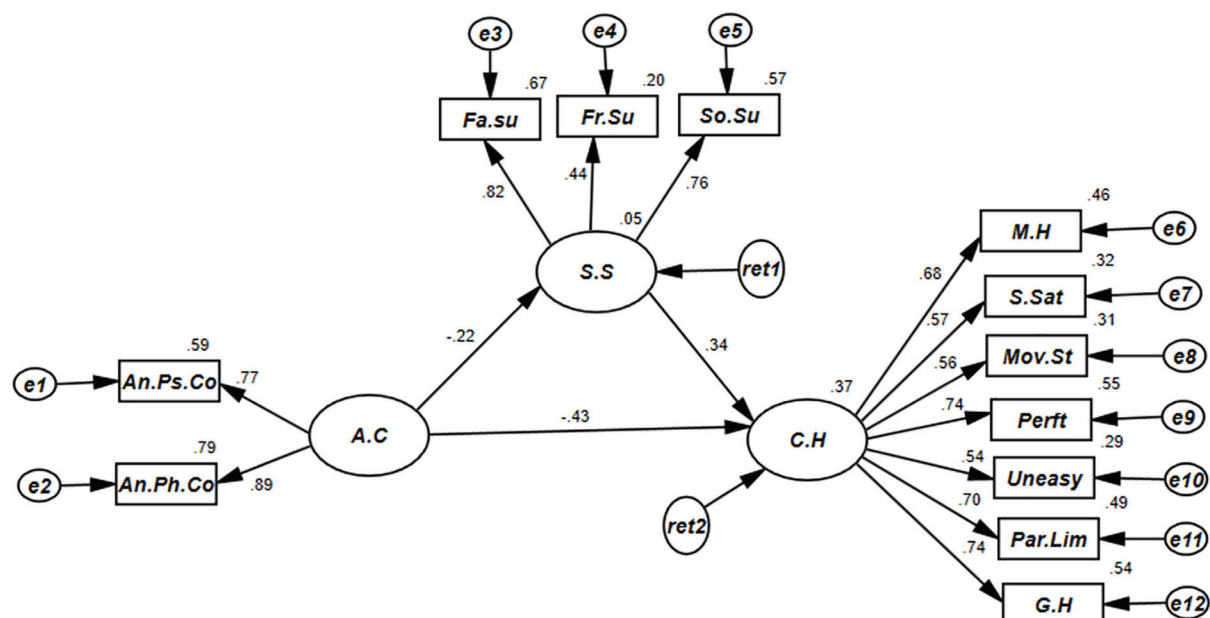
Moreover, the results presented in Table 3 indicate that the significance level (p-value) of the indirect effect of anxiety from COVID-19 (A.C) on child health (C.H) is 0.001, which is less than 0.01. The estimated magnitude of this relationship

is -0.075. Therefore, the bootstrap results confirm that the indirect effect of A.C. on C.H. through the mediating variable social support (S.S) is statistically significant.

Discussion

The increase in anxiety and stress caused by COVID-19 has affected not only parents but also children's health. This study aimed to investigate parental anxiety related to COVID-19 and its effects on children's health, with social support as a mediating factor, in the metropolis of Mashhad, northeastern Iran.

The results of our study showed that anxiety about COVID-19 was negatively associated with both parental social support and children's health. In other words, perceived social support directly influenced levels of coronavirus-related anxiety and was effective in reducing it.²⁶ Previous studies have similarly indicated that during the COVID-19 outbreak, parents of children experienced psychological and behavioral problems, along with stress and lack of social support, all of which contributed to higher anxiety levels.²³⁻⁴⁰ Furthermore, higher material well-being, job satisfaction, and family satisfaction were associated

**Figure 1:** The Effect of Coronavirus Anxiety on Child Health Mediated by Social Support**Table 3:** Estimation of the Indirect Effect of A.C on C.H Mediated by S.S

Indirect path	P	Upper Bounder	Lower Bounder	Estimation
AC → SS → CH	0.001	-0/043	-0/116	-0.075

with lower parental anxiety.⁴¹ Conversely, as the socioeconomic status of families decreases, parental anxiety increases, adversely affecting their mental health.⁴²

Regarding children's health, other studies have shown that quarantine regulations and social distancing measures have led to a decrease in physical activity among children.⁴³ Social isolation limited opportunities for learning social behaviors and contributed to the development of behavioral and emotional problems.⁴⁴ Children also experienced feelings of insecurity, fear, and loneliness, as well as sleep disturbances, anorexia, depression, post-traumatic stress disorder, and obsessive-compulsive behaviors, which may have long-term consequences.^{12, 45, 46}

In this context, a study conducted in the Netherlands suggested that contact with healthcare professionals can help reduce children's anxiety and mitigate its potential adverse effects. Additionally, educating parents on regulating their own negative emotions is an essential measure to protect children's mental health in critical situations.⁴⁶

Overall, the adverse effects of COVID-19-related anxiety on children's health may limit their learning opportunities and contribute to behavioral problems, with potential long-term consequences. Therefore, it is recommended that policymakers implement targeted educational programs to reduce disease-related anxiety in children, thereby mitigating its harmful effects on their development and well-being.

In the present study, the relationship between parental anxiety about COVID-19 and children's health was significant, with social support serving as a mediating factor. Consistent with these findings, previous studies have shown that COVID-19-related anxiety is negatively associated with perceived social support, highlighting the central role of social support in mitigating anxiety levels.²⁵ Other research has similarly confirmed the positive effect of social support on mental health and anxiety reduction.^{47, 48} Family and community support likely help alleviate anxiety by providing psychological, physical, and financial resources when needed.⁴⁹ Consequently, parents with higher levels of social support—from family, friends, and the broader community—can positively influence their children's health by reducing their own anxiety.⁵⁰ Conversely, lower levels of social support have been linked to an increased risk of depression within the population.⁵¹ Evidence suggests that higher social support correlates with lower levels of anxiety and depression, acting as a protective shield against stress.^{23, 52} Enhancing social support within families and communities can improve mental health, reduce parental anxiety, and promote children's health, serving as an effective mechanism for coping with stress.

In conclusion, parental anxiety related to COVID-19 significantly impacts children's health; however, this relationship is meaningfully buffered by social support. Strengthening family and community support systems, along with targeted mental health interventions for parents, represents a critical strategy for safeguarding children's psychological and physical well-being during public health crises. Policymakers and healthcare providers are therefore encouraged to prioritize social support networks and parental emotional education as essential components of pandemic response frameworks.

Limitations

This study has several limitations. First, as a cross-sectional design, it cannot establish causal relationships, and voluntary participation may have introduced selection bias. Second, the study was conducted during a later phase of the pandemic; therefore, longer-term longitudinal studies are needed to understand the enduring anxiety-related effects of COVID-19 fully. Third, data collection occurred amid the ongoing spread of COVID-19, and due to special circumstances—including nationwide quarantine measures in Iran—in-person administration of questionnaires was not feasible. Consequently, online questionnaires were provided to parents. Fourth, the use of self-report questionnaires represents another limitation, as such instruments are susceptible to response bias. For more in-depth exploration, complementary methods such as interviews or observational assessments may be warranted in future research.

Conclusion

This study is the first to directly examine the mediating role of perceived social support in the relationship between parental anxiety induced by COVID-19 and its impact on children's health within the unique socio-cultural context of Mashhad, a major metropolitan area in northeastern Iran. Findings indicate that parental anxiety exerts a direct and significant effect on children's psychological and physical well-being, and that this association is substantially moderated by the level of social support received from family networks, friends, and local community ties. In other words, perceived social support functions not as a peripheral variable but as a central moderating mechanism capable of attenuating or interrupting the intergenerational transmission of stress from parent to child.

The distinctive contribution of this research lies in its contextual sensitivity. In societies such as Mashhad, where extended family structures and informal support networks—including neighborhood solidarity, kinship bonds, and communal cohesion—are stronger than in many Western contexts, perceived social support

serves as a critical source of psychological resilience. It significantly buffers the adverse effects of parental anxiety, even under conditions of economic strain or stringent public health restrictions. This finding introduces a novel conceptual model of psychosocial resilience in communities characterized by high social capital yet limited access to formal support resources.

From a practical standpoint, these results suggest that mental health interventions during public health crises should not be restricted to individual-level anxiety management. Instead, they must prioritize the reinforcement of informal social support systems through family-centered psychoeducation, engagement of local institutions, and mobilization of civil society capacities as a cost-effective, preventive public health strategy. Health policymakers in Iran and similar sociocultural contexts can safeguard not only parental mental health but also, indirectly, the well-being of the next generation by designing community-based interventions that enhance perceived social support at the household level.

Authors' Contribution

MG, FN: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. FA.: Methodology, Supervision, Writing – review & editing.

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Conflict of Interest

None declared.

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