

Psychological effects of COVID-19 outbreak on mental health in parents of children with hematopathy

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Abstract. – OBJECTIVE: We explored whether parents of children with hematopathy had more psychosocial problems than parents of healthy children during the COVID-19 outbreak.

SUBJECTS AND METHODS: An online survey was performed, and a total of 1,116 parents participated. The mental health variables were assessed *via* the Simplified Coping Style Questionnaire (SCSQ) and the Symptom Checklist-Revised (SCL-90-R).

RESULTS: Compared with parents of healthy children, parents of children with hematopathy have a higher possibility of negative coping style (70.9% vs. 33.2%, $p=0.01$) and are more concerned with media reports related to the pandemic (37.8% vs. 17.6%, $p=0.02$). In SCL-90-R somatization, obsessive-compulsive, and anxiety scale, the parents of children with hematopathy have higher scores than parents of healthy children (12.50 ± 1.69 vs. 12.23 ± 1.37 , $p<0.01$; 13.42 ± 6.69 vs. 10.47 ± 2.25 , $p<0.01$; 15.21 ± 5.53 vs. 10.52 ± 2.34 , $p<0.01$, respectively). History of visiting Wuhan, and history of epidemics occurring in the community are independent risk factors of parental obsessive-compulsive and anxiety symptoms ($p<0.01$).

CONCLUSIONS: Parents of children with hematopathy had evident severe symptoms of obsessive-compulsive and anxiety during the outbreak of COVID-19. Providing psychological interventions and beneficial approaches to parents of children with hematopathy urgently needs to be realized.

Key Words:

Hematopathy, Parents, COVID-19, Psychosocial, Anxiety.

the development of the COVID-19 infection, however, children's cases have significantly increased because children were unlikely to wear masks or take any special effective measures^{1,2}.

Based on these facts, one key issue for parents is how to take care of their children, especially children with hematopathy. As children with hematopathy are more susceptible to be infected with SARS-CoV-2 than normal children, parents should teach much knowledge about respiratory viruses, hand washing, and wearing masks. It was reported that COVID-19 had a crucial effect on the hematopoietic system³, which may exacerbate health for individuals with hematopathy⁴. In addition to being calm for a sense of security to children, parents also need to control their own emotions to deal with too much uncertainty, such as deeper social isolation and economic loss^{5,6}. Therefore, these parents are suffering from more psychological pressure than general parents⁷, post-traumatic stress disorder (PTSD)⁸, and depression^{9,10}. An investigation on the psychological status of the parents of children with hematopathy during the pandemic was conducted, and the mental health of these parents under a special environment was discussed. This is the first study about the psychological effects of the COVID-19 outbreak on parents of children with hematopathy during the pandemic.

Subjects and Methods

Online Survey

An online survey was conducted between February 17, 2020, and June 21, 2021, with the endorsement and approval of the ethical review board at the Central Hospital of Jiangjin (approval data of ethical review board: 02/11/2020).

Introduction

At the beginning of the COVID-19 outbreak, the disease was always more common among adults, and the number of positive cases in children was reported to be relatively rare. With

All people enrolled filled out the questionnaire online *via* Questionnaire Star (<https://www.wjx.cn>) through social media (WeChat, QQ, etc.). The study sample consisted of parents of healthy children and parents of children with hematopathy. All participants signed an informed consent.

Data Collection

We made a questionnaire to review and obtain all necessary information, including demographic and epidemiological information (gender, age, education, their children's disease course, and epidemic contact).

Psychological Symptoms and Coping Style Assessment

The evaluation of psychological symptoms and coping strategies in our study was conducted using two well-established instruments: the Symptom Checklist-90-Revised (SCL-90-R) and The Simplified Coping Style Questionnaire (SCSQ)¹¹⁻¹³. Both tools have been extensively validated and are noted for their excellent psychometric properties. The SCL-90-R is a comprehensive instrument that assesses a wide array of psychological issues and symptoms, making it an invaluable tool for understanding the multifaceted nature of psychopathology. Meanwhile, the SCSQ provides a focused approach to discern individual coping styles, distinguishing between positive and negative strategies. This combination of tools offered a robust and nuanced understanding of the psychological landscape within our study cohort.

The SCSQ contains twenty questions, with each item using a four-point score (0 = never, 1 = seldom, 2 = often, 3 = always), and two subscales: positive coping (12 items) and negative coping (8 items). If the result is greater than 0, the participant is defined as adopting a positive coping style when facing stress; if the result is less than 0, the participant is defined as offering a bad coping style¹⁴.

Statistical Analysis

χ^2 test was applied to compare group differences of categorical variables. *t*-test or one-way analysis of variance was used to find the differences in psychological distress (K10 score) among categorical variables. All statistical analyses were used in SPSS 16.0 (SPSS Inc., Chicago, IL, USA), $p < 0.05$ was considered to be statistically significant.

Results

A total of 1,116 parents effectively completed the survey. Of these sample characteristics, there was no significant difference for gender, suffering from organic diseases, household income, education degree, and children's disease course. Significant differences were found in living areas. The detailed data and information can be found in Table I.

In the SCL-90-R anxiety scale, each item of parents of children with hematopathy is higher than that of healthy children's parents. In the SCL-90-R obsessive-compulsive symptom scale, 8 of 10 items had significantly higher scores in the parents of children with hematopathy than in healthy children's parents. In the SCL-90-R somatization symptoms scale, 5 of the 12 items had significantly higher scores in parents of children with hematopathy than in healthy children's parents. The detailed data and information can be found in Table II.

Being female, living in rural areas, and being over 40 years old were risk factors for somatization symptoms among parents of children with hematopathy. Living in rural areas, having experience of living in Wuhan, and being concerned with media reports related to the epidemic were all risk factors for obsessive-compulsive symptoms among parents of children with hematopathy. In anxiety models, being female and having experience with epidemics were selected as independent factors among parents of children with hematopathy, while no risk factors were found for parents of healthy children. The detailed data and information can be found in Table III.

Discussion

The new coronavirus pandemic, SARS-CoV-2, damages the mental health of the general population¹⁵⁻²⁰. Its impact is much more aggressive on parents, especially those parents of children with hematopathy. In the present study, we found that parents of children with hematopathy were more concerned about the media reports related to the epidemic. The reason may be that their children are more susceptible to the virus and the consequences of infection are very serious, which leads to parents of children with hematopathy having evident obsessive-compulsive symptoms during the outbreak of COVID-19.

Table 1. Sample characteristics.

Variables	N	Parents of children with hematopathy	Parents of healthy children	<i>p</i>
Gender				
Female	641 (57.4)	213 (55.3)	428 (58.5)	0.68
Male	475 (42.6)	172 (44.7)	303 (41.5)	
Age				
18-30	534 (47.8)	215 (55.8)	319 (53.6)	0.75
31-40	359 (32.2)	102 (26.5)	257 (25.2)	
41-50	181 (16.2)	52 (13.5)	129 (17.6)	
>50	42 (3.8)	16 (4.2)	26 (3.6)	
Living areas				
Urban	561 (50.3)	257 (46.8)	304 (41.6)	0.38
Rural	555 (49.7)	128 (53.2)	427 (58.4)	
Suffering from organic diseases				
No	995 (89.2)	343 (89.1)	652 (89.2)	0.88
Yes	121 (10.8)	42 (10.9)	79 (10.8)	
Household income (RMB)				
<50,000	75 (6.7)	32 (8.3)	43 (5.9)	0.65
50,000-100,000	225 (20.2)	57 (14.8)	168 (23.0)	
100,000-300,000	626 (56.1)	214 (55.6)	412 (56.4)	
>300,000	190 (17.0)	82 (21.3)	108 (14.7)	
Education degree				
Less than high school	63 (5.6)	28 (7.3)	35 (4.8)	0.32
High school	159 (14.2)	36 (9.4)	123 (16.8)	
Bachelor's degree	843 (75.5)	298 (77.4)	545 (74.6)	
Master's degree	39 (3.5)	18 (4.7)	21 (2.9)	
Doctoral degree	12 (1.2)	5 (1.2)	7 (0.9)	
Children's disease course				
Less than 6 months		31 (8.1)	-	/
6 months to 1 year		87 (22.6)	-	
1 year to 2 years		102 (26.5)	-	
More than 2 years		165 (42.8)	-	
History of visiting Wuhan				
No	1,076 (96.4)	374 (97.1)	702 (96.0)	0.87
Yes	40 (3.6)	11 (2.9)	29 (4.0)	
History of epidemics occurring in the community				
No	106 (95.1)	372 (96.6)	689 (94.3)	0.65
Yes	55 (4.9)	13 (3.4)	42(5.7)	
Concerning with media reports related to the epidemic				
Less concerned	18 (1.6)	6 (2.0)	12 (1.6)	0.02
Concerned	380 (34.1)	92 (13.3)	288 (69.4)	
More concerned	462 (41.4)	107 (37.8)	355 (18.6)	
Extremely concerned	256 (22.9)	180 (46.9)	76 (10.4)	
Coping style				
Negative	516 (46.2)	273 (70.9)	243 (33.2)	0.01
Positive	600 (53.8)	112 (29.1)	488 (66.8)	

Table II. Psychological symptoms of parents of children with hematopathy versus parents of healthy children.

Variables	Total (n=1,116)	Parents of children with hematopathy (n=385)	Parents of healthy children (n =731)	p-value
Total somatization symptoms score	12.49±1.56	12.50±1.69	12.23±1.37	<0.01
Question 1: Headaches	1.04±0.21	1.06±0.24	1.03±0.18	0.07
Question 4: Faintness or dizziness	1.01±0.10	1.01±0.09	1.01±0.10	0.37
Question 12: Pain in the heart or chest	1.01±0.12	1.01±0.11	1.05±0.12	<0.01
Question 27: Pain in the lower back	1.10±0.27	1.10±0.32	1.04±0.24	<0.01
Question 40: Nausea or upset stomach	1.17±0.35	1.17±0.40	1.07±0.31	<0.01
Question 42: Soreness of your muscles	1.04±0.17	1.04±0.19	1.02±0.15	0.03
Question 48: Trouble getting your breath	1.00±0.72	1.00±0.05	1.00±0.06	0.37
Question 49: Hot or cold spells	1.02±0.10	1.02±0.12	1.01±0.07	0.07
Question 52: Numbness/tingling in body	1.03±0.14	1.03±0.17	1.01±0.12	<0.01
Question 53: A lump in your throat	1.01±0.07	1.01±0.07	1.00±0.05	0.67
Question 56: Feeling weak in your body	1.03±0.15	1.03±0.21	1.00±0.10	<0.01
Question 58: Heavy feelings in arms/legs	1.02±0.12	1.02±0.14	1.01±0.10	0.17
Total obsessive-compulsive symptom score	11.49±4.56	13.42±6.69	10.47±2.25	<0.01
Question 3: Unwanted thoughts/words	1.10±0.38	1.20±0.52	1.05±0.25	<0.01
Question 9: Trouble remembering things	1.14±0.45	1.29±0.61	1.06±0.31	<0.01
Question 10: Worried about sloppiness	1.03±0.17	1.04±0.22	1.02±0.14	0.16
Question 28: Feeling blocked	1.15±0.52	1.37±0.80	1.03±0.20	<0.01
Question 38: Having to do very slowly	1.19±0.68	1.53±1.06	1.02±0.16	<0.01
Question 45: Check and double-check	1.20±0.64	1.50±0.96	1.04±0.26	<0.01
Question 46: Difficulty making decisions	1.10±0.54	1.28±0.87	1.01±0.13	<0.01
Question 51: Your mind going blank	1.11±0.43	1.29±0.67	1.01±0.12	<0.01
Question 55: Trouble concentrating	1.08±0.37	1.09±0.37	1.07±0.37	0.68
Question 65: Having to repeat	1.39±0.81	1.81±1.05	1.17±0.53	<0.01
Total anxiety score	12.13±4.37	15.21±5.53	10.52±2.34	<0.01
Question 2: Nervous, not at ease	1.39±0.79	2.04±1.04	1.04±0.24	<0.01
Question 17: Tremble	1.05±0.27	1.14±0.44	1.01±0.09	<0.01
Question 23: Suddenly feel scared for no reason	1.15±0.47	1.39±0.70	1.03±0.19	<0.01
Question 33: Feeling afraid	1.25±0.50	1.61±0.57	1.08±0.33	<0.01
Question 39: Heartbeat	1.08±0.30	1.22±0.45	1.01±0.09	<0.01
Question 57: Feeling nervous or easily nervous	1.37±0.60	2.01±0.84	1.04±0.22	<0.01
Question 72: Fear or panic	1.43±0.77	2.13±0.87	1.06±0.40	<0.01
Question 78: Feeling restless	1.13±0.42	1.21±0.44	1.10±0.40	<0.01
Question 80: Something that feels familiar becomes strange or doesn't seem real	1.08±0.29	1.21±0.42	1.02±0.14	<0.01
Question 86: Feel like finishing things soon	1.18±0.51	1.25±0.46	1.14±0.53	<0.01

Most parents of children with hematopathy deal with double pressure from COVID-19 and their children's disease in a negative way. Our study has revealed higher levels of somatization symptom score, obsessive-compulsive symptom score, anxiety score in parents of children with hematopathy and potential risk factors for parents of children with hematopathy to develop obsessive-compulsive behaviors, anxiety,

and somatization symptoms. Independent factors (i.e., being female; living in rural areas; being over 40 years old) were common risk factors for somatization, obsessive-compulsive, and anxiety symptoms among parents of children with hematopathy during COVID-19 pandemic. Being concerned about media reports was related to the pandemic. The experience of visiting Wuhan, and the history of epidemics

Table III. Outcomes of psychological manifestations.

Variables	OR (95% CI)	p-value
Models for somatization symptoms		
Parents of children with hematopathy		
Gender (female vs. male)	2.42 (2.12-3.42)	<0.01
Living areas (rural vs. urban)	1.34 (1.25-1.43)	<0.01
Age (over 40 vs. under 40)	2.56 (2.03-5.34)	<0.01
Parents of healthy children		
No variables were entered	/	/
Total population		
Gender (female vs. male)	0.14 (0.12-0.27)	0.02
Living areas (rural vs. urban)	1.83 (1.51-2.03)	<0.01
Age (over 40 vs. under 40)	2.65 (2.42-6.21)	<0.01
Models for obsessive-compulsive symptoms		
Parents of children with hematopathy		
Living areas (rural vs. urban)	2.79 (2.18-7.46)	0.03
History of visiting Wuhan (yes vs. no)	1.53 (1.24-2.03)	<0.01
History of epidemics occurring in the community (yes vs. no)	2.47 (2.01-3.82)	<0.01
Concern with media reports related to the epidemic (High frequency vs. low frequency)	3.65 (3.19-6.43)	<0.01
Parents of healthy children		
History of epidemics occurring in the community (yes vs. no)	2.75 (2.39-4.65)	0.04
Concern with media reports related to the epidemic (High frequency vs. low frequency)	3.78 (3.67-5.98)	<0.01
Total population		
Concern with media reports related to the epidemic (High frequency vs. low frequency)	2.17 (2.03-6.11)	0.03
Models for anxiety		
Parents of children with hematopathy		
Gender (female vs. male)	2.03 (1.76-4.02)	0.02
History of epidemics occurring in the community (yes vs. no)	1.12 (1.03-2.98)	0.01
Parents of healthy children		
No variables were entered	/	/
Total population		
History of epidemics occurring in the community (yes vs. no)	2.78 (2.53-5.32)	0.01

occurring in the community were the independent risk factors of the two groups' parental obsessive-compulsive and anxiety symptoms.

The present study has several limitations. Firstly, most of the respondents are from Jiangsu Province. As a matter of fact, the source of the population is not very comprehensive. Secondly, the study applies online surveys, which restrict the parents who cannot access the internet to participate in the investigation.

Conclusions

In conclusion, parents of children with hematopathy are suffering from psychological

distress, such as obsessive-compulsive and anxiety symptoms. Providing psychological interventions and beneficial approaches to parents of children with hematopathy urgently need to be realized.

Conflict of Interest

The authors declare no conflicts of interest.

Authors' Contributions

QZ contributed to the experimental design; LW performed the experiments, and analyzed and interpreted the data; LW and QZ wrote the manuscript.

Ethics Approval

This study was approved by the ethical committee of the Central Hospital of Jiangjin (Ethics Number: 20190611-24) and was performed according to the Helsinki Declaration and its latest amendments.

Informed Consent

All participants in the present study signed the informed consent.

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Availability of Data and Materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

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