ผลกระทบทางจิตใจและปัจจัยที่เกี่ยวข้องในมารดาของเด็กที่เป็นโรคไส้เลื่อนบริเวณขาหนีบ: การศึกษาภาคตัดขวาง
Psychological Impacts and Its Factors Among Mothers of Children with Inguinal Hernia: A Cross-sectional Study

นิพนธ์ต้นฉบับ

Original Article

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วารสารไทยเภสัชศาสตร์และวิทยาการสุขภาพ 2566;18(4):371-378.

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Thai Pharmaceutical and Health Science Journal 2023;18(4):371-378.

บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาผลกระทบทางจิตใจของมารดาของเด็กที่เป็นไส้เลื่อนขาหนีบในเมืองเวินโจว ประเทศจีน และศึกษาปัจจัยที่มีอิทธิพลต่อผลกระทบทางจิตใจในมารดาของเด็กที่เป็นไส้เลื่อนขาหนีบ **วิธีการศึกษา**: การศึกษาเชิงพรรณนาแบบตัดขวางสุ่มอย่างง่ายเพื่อคัดมารดาของเด็ก 120 คน ที่เป็นโรคไส้เลื่อนขาหนีบในหอผู้ป่วยเด็กและแผนกผู้ป่วยนอกของโรงพยาบาลในเครือแห่งที่สองของมหาวิทยาลัยการแพทย์เวินโจว เมืองเจ้อเจียง ประเทศจีน เก็บรวบรวมข้อมูลด้วยแบบบันทึกข้อมูลส่วนบุคคล แบบสอบถามความรู้เกี่ยวกับการดูแลเด็กด้วยที่เป็นไส้เลื่อน แบบวัดสมรรถนะของตนเองทั่วไป แบบวัดการสนับสนุนทางสังคมที่ประเมินค่าใหม่ แบบวัดภาวะซึมเศร้าผนวกความเครียด วิเคราะห์ความสัมพันธ์ด้วยการวิเคราะห์ถดถอยพหุคูณ **ผลการศึกษา:** ความเครียดเป็นปัจจัยที่มีผลกระทบทางจิตใจมากที่สุดในมารดาของเด็กที่เป็นโรคไส้เลื่อนขาหนีบ การสนับสนุนทางสังคมอย่างเดียว (β = -0. 314, P-value < 0.001) ที่สามารถอธิบายผลกระทบทางจิตใจของมารดาของเด็กที่เป็นไส้เลื่อนขาหนีบได้อย่างมีนัยสำคัญร้อยละ 15.7 **สรุป:** พยาบาลเด็กควรให้ความสำคัญต่อสภาวะจิตใจของมารดาที่ดูแลเด็กที่เป็นไส้เลื่อนขาหนีบ ให้การสนับสนุนพวกเขาให้มากขึ้น รวมทั้งและส่งเสริมให้ครอบครัวของเด็กอื่น ๆ มีส่วนร่วมในการดูแล

คำสำคัญ: มารดา, เด็กที่เป็นไส้เลื่อนขาหนีบ, ผลกระทบทางจิตใจ, ความรู้เกี่ยวกับการดูแลเด็ก, การสนับสนุนทางสังคม

Editorial note
Manuscript received in original form: February 17, 2023;
Revision notified: March 16, 2023;
Revision completed: April 20, 2023;
Accepted in final form: April 24, 2023;
Published online: December 31, 2023.

Abstract

Objectives: To determine the psychological impacts and influencing factors of mothers of children with inguinal hernia in Wenzhou, China. **Methods:** This cross-sectional research used a simple random sampling method to recruit 120 mothers of children with inguinal hernia in the pediatric ward and outpatient department of the second affiliated hospital of Wenzhou medical university, Zhejiang, China. Data were collected using questionnaires of demographic characteristics, knowledge about childcare with hernia, General Self-efficiency scale, Social Support Revalued scale, and the Depression Annex Stress scales. Multiple regression analysis was conducted to analysis data. **Results:** Psychological impact was at a low level. Stress was the most common psychological impact. Only social support (β = -0.314, P-value < 0.001) significantly explained 15.7% of the psychological impact of the mothers. **Conclusion:** Even though mothers caring children with inguinal hernia had a low psychological impact, they should be promoted for better mental health through more support from family members.

Keywords: mothers, children with inguinal hernia, psychological impacts, knowledge about childcare, social support

Journal website: http://ejournals.swu.ac.th/index.php/pharm/index

Introduction

Inguinal hernia (IH) in children is one of the most basic diseases and the most common disease in pediatrics. The global incidence rate of inguinal hernia is 1.2 cases per 1000 person years.[1] The incidence rate of inguinal hernia in infants in China is about 1%~5%, and the incidence rate of premature infants is as high as 30%.[2] Mother is the primary caretaker of the child. Anxiety about unfamiliar diseases[3] and fear of not having enough knowledge to take care of children will affect the mental health of mothers.[4]

Factors such as the uncertainty caused by the disease itself[5] and worries about children also increase the mothers' unhealthy psychological feelings. It may cause mothers to suffer from continuous stress when taking care of children.[6] Mothers of children with inguinal hernia have been reported have a common anxiety phenomenon during the perioperative period.[7] Due to concerns about the safety and prognosis of surgery, the vast majority of mothers are prone to greater anxiety before surgery.[8] Postoperative pain causes some mothers to experience varying degrees of worries.[9] Mothers who are forced to choose conservative treatment options for their children may experience long-term pain and depression.[10] The mother's psychological state (stress, anxiety, depression) may be an effective factor of the child's growth retardation.[11] It effects inability to cope, which is related to low childcare enthusiasm, participation, efficiency and satisfaction, and high hostility to childcare.[12] Maternal

depression has been proved to be related to the function and psychopathology of children[13], specifically related to the infant's dystrophy temperament, anxiety and depression symptoms, social withdrawal behavior[14], and children's aggressive behavior etc.[15] Compared with the father, the anxiety and depression scores of mothers caring for sick children were significantly higher than that of fathers[16], and they were more likely to suffer from psychological distress.

From the literature review, knowledge about childcare, self-efficacy, and social support is related to the psychological impact of mothers having children with inguinal hernia. Knowledge about childcare reducing negative psychological emotions by reducing the uncertainty and unknown risks of disease.[17] Self-efficacy leads to learning behavior[18] by directly stimulating mothers' internal motivation to seek knowledge. Social support, as a buffer against stress[19], can perceive the appropriate support provided by others to alleviate an mothers' emotional and physiological responses.

The objective of this study was to determine the psychological impact of mothers of children with inguinal hernia in Wenzhou, China, and to examine the predictive relationship between knowledge about childcare, self-efficacy, social support and the psychological impact of mothers of children with inguinal hernia. At present, most pediatric surgical nurses only pay attention to the recovery of the physical disease of children with hernia and ignore the psychological impact on the mother as the main nurse of children's continuing care. Results of this study could help nurses to understand these factors, improve the psychological status of mothers and thus improve the family care of children.

Methods

The descriptive cross-sectional predictive study was conducted from August 2022 to September 2022 in the outpatient department and ward of the Second Affiliated Hospital of Wenzhou Medical University. It is one of the tertiary level hospitals in Zhejiang province. The demographic characteristics of pediatric clients and their mothers can reflect children and mothers in Southern Zhejiang and Northern Fujian.

The sample size of this study was estimated based on the number of independent variables. The sample-to-variable ratio suggests observation-to-variable ratios of 15:1 or 20:1 are preferred.[20] With three independent variables, the researcher considered 40 participants for each independent resulting in a total of 120 mothers required. Participants were recruited by simple random sampling from mothers caring for children with inguinal hernia in the inpatient department and outpatient department of the Second Affiliated Hospital of Wenzhou Medical University. The inclusion criteria included children who were term infant (gestational age 38 - 40 weeks) with age less than 1 year old and no physical or mental illness other than inguinal hernia. For mothers, they had to be childbearing adult female aged 18 to 45 years old with no history of mental illness or serious cognitive impairment in their medical record who were able to read and write Chinese fluently.

Research instruments

The first part of the questionnaire collected demographic characteristics of children and mothers. For children, the form collected age, gender, gestational age at birth, multiple births, family ranking, and medical service payment method. For mothers, it collected age, marital status, current employment situation, taking care of children alone during hospitalization, type of family, education level, and average family monthly income.

The second part assessed knowledge about childcare with hernia questionnaire (KACCWHQ) developed by researcher. Sixteen items had three dimensions including knowledge about inguinal hernia (items 1 - 8), knowledge about hernia prevention (items 9 - 10) and knowledge about childcare before surgery (items 11 - 12) and after surgery (items 13 - 16). The response was a yes/no with score of 1 and 0 points, respectively. In this study, internal consistency reliability was acceptable with a Kruder-Richardson-20 coefficient of 0.760.

In the third part, the General Self-efficacy scale (GSEs)[21] was used to measure self-efficacy. The GSEs was originally developed in German by Schwarzer and Jerusalem in 1981 and consisted of 10 items.[22] Scholar Wang introduced this Chinese version through the research of College Students' psychology and found a high internal consistency reliability (Cronbach's alpha coefficient of 0.87).[21] The response was a 4-point Likert-type scale ranging from 1-not at all true to 4-exactly true. With a total possible score of 10 to 40 points, higher scores indicate a higher level of self-efficacy. In this study, internal consistency reliability was high (Cronbach's alpha coefficient of 0.941).

The fourth part was the Social Support Revalued (SSR) scale [23] to measure social support. SSR is a three-dimensional

scale. It was first proposed and perfected by Xiao and colleagues in 1994.[9] SSR scale has 10 questions and contains three dimensions namely subjective support (4 items), objective support (3 items), and utilization of support (3 items). The scale had a high internal consistency reliability (Cronbach's alpha coefficient of 0.833). With a total possible score of 14 to 66 points, higher scores indicate higher levels of social support. In this study, internal consistency reliability was acceptable (Cronbach's alpha coefficient of 0.752).

The fifth part was the Depression Anxiety Stress (DASs-C21) scale[24] to measure the severity of negative emotional symptoms in mothers. It was developed by Lovibond and Lovibond in 1995[25] and later revised to have 21 items. Wen et al. in 2012 modified the Chinese version to better adapt to the language habits of mainland Chinese people.[24] The scale has three subscales of depression, anxiety, and stress, with seven items in each subscale. The response was a 4-point Likert-type scale ranging from 0-did not apply to me at all to 3-applied to me very much or most of the time. With a possible total score of 0 – 63 points, higher scores indicate a higher degree of stress, anxiety, and depression. The scoring criteria for each dimension are provided. Higher scores indicate greater severity. Stress levels were categorized as normal, mild, moderate, severe, and extremely severe (0 – 14, 15 – 18, 19 – 25, 26 – 33, and 34 points or higher, respectively). Anxiety levels were categorized as normal, mild, moderate, severe, and extremely severe (0 – 7, 8 – 9, 10 – 14, 15 – 19, and 20 points or higher, respectively). Depression levels were categorized as normal, mild, moderate, severe, and extremely severe (0 – 9, 10 – 13, 14 – 20, 21 – 27, and 28 points or higher, respectively). Internal consistency reliability of dimensions of depression, anxiety, and stress, and total scale (i.e., psychological impact) of DASs-C21 was high with Cronbach's alpha coefficients of 0.823, 0.754, 0.796, and 0.912, respectively.[24] In this study, Cronbach's alpha of DASs-C21 total scale was 0.918.

Participant ethical protection

The research proposal was approved by the Burapha University Ethics Committee on Human Research (G-HS037/2564), Institution Review Board (IRB) of Wenzhou Medical University (WMU) and the second affiliated hospital of WMU (2021-K-75-02). Participants were informed about the objective, process, and voluntary nature of the study. Written informed consent was obtained. The participants could refuse or withdraw from participation at any time with no negative consequences on the care they received. Data of the participants were secured and presented as a summary not individual participants' information.

Data collection procedure

After ethical approval from the Institutional Review Board approval from Burapha University, Wenzhou Medical University and the Second Affiliated Hospital of Wenzhou Medical University, and permission for study conduct, the researcher started the survey. With the situation of COVID-19 in China, the researcher and participants followed the prevention measures. The children and their mothers were randomly selected from the checklist and invited to participate in this survey. The participant mothers were asked to fill out the questionnaire anonymously after obtaining their consent. The questionnaire for this study was collected on-site, with a response rate of up to 90%. It took approximately 45 minutes to complete all the questionnaires. When participants were unable to correctly understand the content and options of the questionnaire, the researcher explained in detail and truthfully recorded the answers to the questionnaire for them.

Data analysis

Descriptive statistics including mean with standard deviation and frequency with percentage were used to summarize demographic characteristics of the participants and study factors. Correlations between psychological impact (dependent variable) and independent variables were tested. Independent variables with significant correlation with psychological impact were further tested in multiple linear regression analysis. Statistical significance was set at a type I error of 5% (i.e., P-value < 0.05). All statistical analyses were performed using software program SPSS version 20.

Results

Of the 120 mothers and children, the average age of children was 9.90 ± 2.74 months (Table 1). Most children were male (74.2%), singletons (88.33%), and the second child in their family (56.67%). Only 10.83% of them pay out-of-pocket for medical service. The average age of mothers was 30.11 ± 4.04 years. Most were married (91.67%), had full-time employment (60.00%), had high school education (60.83%), and took care of children alone during hospitalization with

mother/mother-in-law (61.70%). The majority had extended family (68.26%) and a good family economic situation (60.01%) (Table 1).

Table 1 Demographic characteristics of children with Inguinal hernia and their mothers (N = 120).

Characteristics	N	%
Children		
Age (months) (M = 9.90, SD = 2.74, Min = 1, Max = 12)		
1 – 3	4	3.33
4 – 6	13	10.83
7 – 9	18	15.00
10 – 12	85	70.84
Gender		
Male	89	74.20
Female	31	25.80
Multiple births		
Single	106	88.33
Twins	14	11.67
Birth order		
First child	49	40.83
Second child	68	56.67
Third child	3	2.50
Medical service payment method		
Farmers health insurance (health)	68	56.67
New medical insurance (agricultural insurance)	39	32.50
Other at his own expense	13	10.83
Mothers		
Age (years) (M = 30.11, SD = 4.04, Min = 23, Max = 42)		
20 - 25	11	9.16
26 – 30	62	51.67
31 – 35	30	25.00
36 – 40	15	12.50
41 - 45	2	1.67
Marital status		
Married	110	91.67
Married separation	5	4.17
Divorce	4	3.33
Widowed	1	0.83
Current employment situation		
No employment	41	34.17
Part-time	7	5.83
Full-time employment	72	60.00
Taking care of children alone during hospitalization		
Alone	2	1.67
With husband	43	35.80
With mother /mother-in-law	74	61.70
With other family numbers	1	0.83
Types of family		
Nuclear family	37	30.83
Extended family	82	68.26
Single parent family	1	0.83
Education		
Primary school	9	7.50
Junior high school	38	31.67
High school above	35	29.16
University	38	31.67
Average family monthly income (RMB) (1 RMB = 0.154 USD)		
< 2000	1	0.83
2000 – 4000	7	5.83
4000 – 6000	15	12.50
6000 – 8000	25	20.83
8000 – 10000	35	29.17
> 10000	37	30.84

The mothers had an average psychological impact base on DASs-C21 of 12.40 points (SD = 8.57) which was at a low level. For individual dimensions, stress was at a moderate level while anxiety and depression were at a low level (mean = 6.00, 3.18 and 3.21 points, respectively) (Table 2).

Table 2 Scores of the Chinese version Depression Anxiety Stress Scales (DASS-C21) (N = 120).

Variables	Possible score	Actual Score	*M*	*SD*	*Level*
Psychological impact	0 - 63	0 - 42	12.39	8.54	Low
Stress	0 - 21	0 - 18	6.00	3.49	Moderate
Anxiety	0 - 21	0 - 14	3.18	2.95	Low
Depression	0 - 21	0 - 11	3.21	3.12	Low

There were a significantly negative correlations between psychological impact of mothers and self-efficacy (r = -0.29, P-value < 0.01) and social support (r = -0.39, P-value < 0.01). There was also a significantly, positive correlation between self-efficacy and knowledge about childcare (r = 0.190, P-value < 0.05) (Table 3). As a result, self-efficacy and social support were further tested in multiple linear regression.

Table 3 Correlations among independent and dependent variables (N = 120).

Variables	Knowledge about childcare	Self-efficacy	Social support	Psychological impact
Knowledge about childcare	1.000			
Self-efficacy	0.190*	1.000		
Social support	0.060	0.500	1.000	
Psychological Impact	0.020	-0.290**	-0.390**	1.000

* P-value <.05; ** P-value <.0.01,

In multiple linear regression, no multicollinearity between predictors was found as indicated by the variance expansion factor (VIF) of 1.292) which was less than a cut-off of 2 (Table 4). Self-efficacy and social support together explained 15.7% of mothers' psychological impact (Adjusted R^2 = 0.157, $F_{4,114}$ = 11.549, P-value < 0.001). However, only social support was significantly associated with psychological impact (β = -0.314, P-value < 0.001).

Table 4 Predicting factors of psychological impact of mothers of children with hernia (N = 120).

Variables	Unstandardized coefficients *B*	*SE*	Standardized coefficients Beta	t	P-value	VIF
Self-efficacy	-0.009	0.005	-0.161	1.635	0.105	1.292
Social support	-0.015	0.005	-0.314	3.198	0.002	1.292

R^2 = 0.172, Adjusted R^2 = 0.157, $F_{(4, 114)}$ =11.549, P-value < 0.001, constant = 12.324.

Discussions and Conclusion

The psychological status of mothers caring for children with inguinal hernia in Wenzhou was found to be relatively low, with negative emotional status being manifested in three aspects namely stress, anxiety, and depression. According to the DASS-21 scoring criteria, only 12.5% of participants reported feeling moderate or severe stress, while 25.83% reported moderate to severe anxiety, and 19.17% reported moderate to severe depression (data not shown). The reason for the inconsistency in percentage values presented here compared to the research results in Table 2 is that in the DASS scoring criteria, moderate and severe anxiety scores are far lower than moderate and severe stress scores. Thus, looking at the composition of participants' stress and anxiety from the perspective of score statistics alone, anxious people seem more prevalent than stressed people. In reality, however, the psychological impact of stress on participants is the greatest because moderate and severe stress scores are higher. This is consistent with the results of this survey. Zeng et al.[26] found that stress perception can indirectly affect an individual's physical and mental health through two parallel mediating variables, i.e., positive and negative emotions. Stress perception can also regulate individual physiological indicators by expressing physical and mental symptoms, thereby affecting their mental health and maintaining internal homeostasis.[27] Stress perception can also have an impact on depression through the mediation of self-compassion, thus depression has an impact on psychological effects.[28] Safe behavior is considered to be one of the important mechanisms for maintaining anxiety disorders, and individuals use safe behavior to prevent or mitigate fear consequences. It alleviates the vulnerability of psychological crises and has a significant negative predictive effect on anxiety.[29]

Factors predicting psychological impact of inguinal hernia

There was no significant correlation between the childcare knowledge of children with hernia and their mothers' psychological influence, which could be due to low parental knowledge levels and low variability, which may not be related to psychological impact. Childcare knowledge includes knowledge of children's cognitive development and nursing knowledge to ensure children's physical health. When mothers have a higher understanding of the development of their infants and children, they exhibit higher parenting skills. The uncertainty brought about by disease[5] and the individual's risk perception system[30] are the mechanisms by which knowledge can have an impact on psychology. Previous studies have shown that fathers and highly educated individuals have better knowledge of hepatitis B prevention and treatment, and exhibit more stable psychological performance.[31] Another study found no significant difference in the psychological quality of parents of autistic children based on mothers' educational background, age, and other general information.[32] In this study, the educational background of participants in the questionnaire on nursing knowledge of children with hernia was not detailed enough and showed little difference. The majority of interviewees (68.33%) had lower than university-level education, indicating relatively low educational levels, which is consistent with previous research findings that educational background is not significantly related to mothers' psychological impact. Since an experimental control variable method was used, all children in the program had not undergone surgery and received services from nurses in the same department, with similar training for promoting knowledge of care and upbringing of hernia children. However, due to the age or degree of illness of the child, some mothers may choose conservative treatment while others may need to arrange surgery in the near future, resulting in different health knowledge content, which may have little effect on mothers' psychological impact. Therefore, the nursing knowledge of children with hernia was not significantly associated with their mothers' psychological impact.

Self-efficacy was significantly, negatively correlated with the psychological impact experienced by mothers, but it could not predict their psychological effects. Self-efficacy refers to the level of confidence in one's own abilities to perform specific activities and tasks under specific circumstances, that is, whether and to what extent one believes they have the necessary skills[33]. People with high levels of self-efficacy believe that they can control the status quo, are more likely to view problems as challenges instead of threats or uncontrollable events and are more proactive in dealing with problems.[33] Improving self-efficacy can help mothers establish a sense of role identity and promote their adaptation to their role.[34] Peng found that self-efficacy plays a mediating role between self-identity and personal subjective well-being.[35] As a result of this mediating role, when parenting behaviors occur, mothers' self-confidence and persistence increase, their ability to care for their children improves, and their sense of parenting competence improves. This helps them better

fulfill their role as mothers and promotes the achievement of parenting goals and tasks.[36] An author has improved the overall self-efficacy of mothers of autistic children through short-term group dance interventions, reducing maternal stress.[37] Therefore, self-efficacy has a positive impact on individual psychology. The survey results of this study show that participants' self-efficacy scores are higher, indicating that most mothers participating in the program have high levels of self-efficacy. According to The Depression Anxiety Stress Scales (Chinese version) (DASs-C21), the average psychological impact score of mothers of children with inguinal hernia was only 12.40 points, which indicates a lower score and suggests that the mothers in this study experienced fewer negative emotions. These findings are consistent with previous research results.

In the mothers of children with hernia, social support was significantly negatively correlated with the psychological impact, and negatively predicted it. Social support includes social support networks, perceptions of social support, and specific behaviors involved in seeking and providing support.[8] Social support is not only material but also includes various tangible and intangible psychological assistance.[38] Maternal social support refers to the support and assistance provided by members of a mother's interpersonal network during the process of raising her child. It is centered around the child's mother, the people around her who have contact with her, and the interactions between them.[39] For mothers, family, friends, and partners are the most important factors in meeting their needs.[40] As the smallest unit of society, the family is also the most basic social support. Family members are the main social support providers for mothers caring for sick children at home. Xiang and Yuan also pointed out that emotional support from fathers can best alleviate mothers' stress.[41] It is believed that grandparents can provide mothers with more instrumental support and share childcare tasks, especially in China reducing maternal fatigue in childcare and thereby reducing the role constraints of mothers.[41,42] The key role of partner and family support is related to the mother's subsequent low levels of stress and anxiety. Therefore, the respondents in this study have a higher level of social support, while the mothers have lower levels of stress, anxiety, and depression, which is consistent with previous research results.

The Second Affiliated Hospital of Wenzhou Medical University, which carried out this study, was the most famous pediatric hospital in Wenzhou. This hospital had the largest number of hernia children in Wenzhou, so it was the most representative of inguinal hernia children in Wenzhou. The high response rate (100%) of this study provided the most comprehensive explanation for the conclusion. It must be acknowledged that this study was conducted in a single environment, and the results may not represent all the psychological characteristics of the mothers of children with hernia in China.

In conclusion, the results of this study provide a deeper insight into the psychological impact and predictive factors of the mothers of children with inguinal hernia in Wenzhou. It revealed the status quo of psychological influence of mothers of children with inguinal hernia in Wenzhou, and participants showed more anxiety and depression. This information can help formulate appropriate nursing interventions, pay attention to the mental health of mothers while caring for children's diseases, reduce and prevent the bad mental state of mothers of hernia children by strengthening self-efficacy and social support of mothers of hernia children, help establish extended family care, promote the early recovery of children, and maintain the health of mothers and children.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of competing interest

There is no conflict of interest in this study.

Acknowledgements

The authors appreciate Assistant Professor Dr. Wantana Supasrimanont for her guidance during research process and Mrs. Chunmei Zhang, Vice Dean of School of Nursing Wenzhou Medical University for her help during IRB approval at the hospital. We also would like to acknowledge all the research participants for their kind cooperation.

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