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A Qualitative Study of Factors Influencing Preoperative Fear in ERCP Patients

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Abstract

Objective: To explore the psychological characteristics of ERCP patients' pre-operative fear and to provide a basis for the development of early intervention strategies. **Methods:** Using Roy's Adaptation Theory as theoretical framework and a descriptive research design, 12 patients with pre-operative fear of ERCP were selected for semi-structured interviews by purposive sampling; the interview data were analyzed by Colaizzi's seven-step analysis method. **Results:** A total of 5 themes and 13 sub-themes were extracted. **Conclusion:** There is a multidimensional complexity of preoperative fear in ERCP patients. Healthcare professionals should pay attention to the preoperative fear of ERCP patients and develop targeted intervention strategies to promote the improvement of their cognitive, behavioral and physiological functions and enhance their quality of life.

Keywords

Choledochal Stone, Endoscopic Retrograde Cholangiopancreatography, Negative Emotion, Qualitative Study

1. Introduction

Endoscopic Retrograde Cholangio Pancreatography (ERCP) is a cutting-edge diagnostic and therapeutic tool that integrates endoscopic techniques with X-ray imaging. Nowadays, it has become an important basis for the diagnosis and treatment of biliopancreatic diseases [1] [2]. With the outstanding advantages of less trauma and faster recovery, this technique has been widely used worldwide. Statistics show that the annual average number of ERCP procedures performed in

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China has exceeded 300,000 [3]. However, due to the invasive characteristics of ERCP surgery and the specificity of the surgical environment [4], patients often have significant preoperative psychological stress reactions due to psychological cognitive factors such as the unknown of the operation process, the stress perception of the medical scenario, and the expectation of pain tolerance [5]. The dual influence of insufficient knowledge and negative emotions not only reduces patients' treatment compliance and cooperation, but also leads to a decrease in patients' immune function, which is not conducive to patients' postoperative recovery [6]. Most of the existing quantitative studies focus on the statistical analysis of quantitative indicators and the construction of interventions for patients with ERCP preoperative fear, and it is difficult to comprehensively capture the individualized psychological experience and deep-seated motivation of patients' preoperative fear. Therefore, this study used semi-structured interviews to explore the psychological experience of patients with ERCP preoperative fear in depth, to explore the inner guiding value of patients' inner feelings, and to provide theoretical support for the construction of psychological intervention system in the future.

2. Objects and Methods

2.1. Objects of Study

From February to April 2025, patients who were proposed to undergo ERCP with preoperative fear in a tertiary general hospital in Kunming were selected for the study using purposive sampling. Inclusion criteria: 1) Patients who met the criteria for ERCP in the Chinese Guidelines for Transendoscopic Retrograde Cholangiopancreatography (2018 edition) and were proposed to undergo the procedure [2]; 2) Patients ≥ 18 years old; 3) FAVS score ≥ 1 [7]; 4) Informed about the study and signed an informed consent form; 5) Clear consciousness and good communication skills. Exclusion criteria: 1) with upper gastrointestinal stenosis and obstruction; 2) severe heart, liver, kidney and lung failure; 3) combined with malignant tumors of other organs; 4) severe mental illness and language communication disorder; 5) other psychological interventions during the study period. This study was approved by the Ethics Committee of the Second Affiliated Hospital of Kunming Medical University. Based on the principle of information "saturation", the sample size was stopped after each interview by analyzing the content of the interview and stopping the collection of the sample size when no new themes emerged [8]. All patients gave informed consent and participated in the study voluntarily. A total of 12 patients were interviewed in this study.

2.2. Research Methodology

2.2.1. Determine the Outline of the Interviews

The research team systematically reviewed the domestic and international literature and consulted clinical experts according to the purpose of the study, initially formulated the interview outline based on the theory of Roy's adaptation theory, and selected two patients to conduct pre-interviews (the results of which were not

included in the analysis), and then optimized the results of the interviews to form the final version of the interview outline, which was as follows: 1) What did you feel physically uncomfortable about when you found out that you needed to have an ERCP procedure? 2) Please talk about your inner feelings when you learned that ERCP surgery was needed. 3) What do you know about the pre-operative knowledge of ERCP surgery? How did you acquire this knowledge? 4) What changes did you feel in your life when you learned that you needed to have ERCP surgery? 5) Did learning about the need for ERCP surgery affect you in any way at home, at work, or socially? 6) What were the main stresses and difficulties you encountered after learning about the need for ERCP surgery? How did you cope with them? What kind of help did you receive after learning about the need for ERCP surgery? What kind of help would you like to get in the future?

2.2.2. Data Collection Methods

The researcher conducted face-to-face semi-structured interviews with patients on the day before surgery to collect information. The interview was conducted in a separate, quiet and comfortable environment in the outpatient conference room, and the time of the interview was decided by the patient. The interviews were conducted by the researcher herself and were audio-recorded by the researcher after obtaining the patient's consent. The researcher responded appropriately to the patient's words during the interview, avoided the use of leading words, asked appropriate follow-up questions when necessary, clarified any doubts in a timely manner, and recorded the patient's movements or expressions that were meaningful to the analysis of the data in the interview, in order to collect more real, rich and vivid information, and wrote a memo. Data collection and analysis alternated as the researcher continued to search for and collect relevant information, processing and refining the categories that emerged from the study. When the collected data could no longer reveal new attributes of the core categories, two patients were recruited again for interviews, and no new categories or relationships appeared, which was considered category saturation and the data collection was completed.

2.2.3. Methods of Analyzing Information

Within 24 hours after the interview, transcribe the interview recording sentence by sentence into text. The interview materials are numbered alphabetically and entered into NVivo 12.0 for analysis. Two researchers independently analyze the data, and if there is any inconsistency, it will be decided through discussion within the research group. The data analysis was conducted using the Colaizzi seven step analysis method [9], with the following steps: 1) Carefully and repeatedly read all transcribed data; 2) Identify statements of significant importance in precipitation; 3) Repeatedly occurring viewpoints in coding; 4) Collecting codes, constructing unit meanings, and forming a prototype of the theme; 5) Cluster themes and provide detailed descriptions; 6) Repeatedly comparing themes and descriptions, summarizing similar viewpoints, and constructing thematic concepts; 7) Return

to the research subject for verification. If any new information appears during the verification process, integrate it into a detailed description.

3. Results

3.1. General Information about the Respondents

A total of 12 patients with pre-operative ERCP fears were interviewed, 9 males and 3 females. This ensured that a diversity of perspectives was obtained between participants with different roles and experiences. Each of the 12 interviewees was interviewed once, and the total length of the interviews was 276 minutes, which was transcribed to form a text totaling 41,864 words. General information about the interviewees is shown in Table 1.

Table 1. General information of respondents (n = 12).

serial number	genders	Age (years)	educational attainment	marital status	Average monthly income (Chinese Yuan)	FAVS score (low fear: 1 - 3, moderate fear: 4 - 6, high fear: 7 - 9)
N1	male	67	high school	divorcee	3000 - 8000	7
N2	male	64	junior high school	married	3000 - 8000	6
N3	male	41	specialized training school	married	>10,000	5
N4	women	72	secondary schools	widowhood	3000 - 8000	8
N5	women	56	secondary schools	married	3000 - 8000	6
N6	male	64	high school	married	3000 - 8000	5
N7	male	63	junior high school	married	3000 - 8000	7
N8	male	58	undergraduate	married	>10,000	4
N9	male	59	junior high school	married	3000 - 8000	8
N10	male	68	high school	married	8000 - 10,000	7
N11	male	67	secondary schools	married	3000 - 8000	6
N12	women	35	specialized training school	married	3000 - 8000	6

3.2. Refinement of Themes

3.2.1. Anticipated Physiological Experience Triggers Preoperative Fear in Patients

1) Discomfort from invasive maneuvers

At the level of psychological anticipation associated with invasive maneuvers, patients generally had strong subjective assumptions about possible discomfort during ERCP. This resulted in significant anxiety and fear. N1: "This staying awake is so scary, it's so hard, it's super hard." N12 "He can't cooperate at the thought of intubation, it's too hard. He wouldn't be able to cooperate well... I can't even move a finger on the operating table, I wouldn't be subjected to this if I didn't have to."

2) Traumatic experiences

Some ERCP patients were significantly affected by their past medical experiences and showed strong psychological burdens prior to their next procedure.

N11: "I've had it done once before, and I really had a headache and a pain in my mouth. That taste, I really don't want to do it again." N7: "I had a stone removal surgery then, too. This time it's coming to ERCP surgery again soon, I'm really worried, I don't know how many more times I'll have to do it, I'm scared just thinking about it." N12: "Staying awake is so scary, so hard, super hard. It's so much more painful than having a doll, so scary."

3.2.2. Individual Psychological Traits Amplify Patients' Preoperative Fears

1) High sensitivity to physical sensations can exacerbate psychological stress

Some psychologically sensitive patients present significant preoperative features of psychological stress reactions and emotional disturbances. N6: "My heart is in a state of turmoil, I'm not in the mood to eat those things... Nothing goes well. Anything unlucky catches up with me." N4: "Well, I have a big burden on my mind. Originally, after my son left, I couldn't eat or sleep well every day, and I said that I would die of hard anger because I have no relatives left." N4: "These days is that I don't sleep very well, I always think about a lot of things, I just can't sleep."

2) Poor coping strategies

The patient presents a state of self-enclosure to regulate emotions, exacerbation of surgical worries due to a bad life, and deeper fear and anxiety due to loneliness and disease recurrence. N6: "I just didn't want to care about anyone at that time, I just kind of wanted to self-digest that kind of feeling." N9: "Oops, we're in deep shit, everything bad caught up with us, everything wrong caught up with us, you young people can still go and ask, we older ones just have to wait." N4: "I only have this sister. The old man has gone, the children have gone, and now it's my turn. I have only half a life left, and now I'm not feeling well. I don't want to think about anything anymore. My life is like this, I've resigned myself to it."

3) Healthcare environmental stimuli

In terms of adaptation to the hospital environment and preoperative waiting space, some patients showed obvious discomfort with the noisy environment in the ward. N8: "The ward I live in is too crowded, and it's very noisy every day, which makes me upset." N3: "It's mainly this side of the room, but it's not as comfortable as at home. 'N11: 'The waiting area is cold, and I was alone when I first started to wait, so I must have been scared."

3.2.3. Imperfect Disease Awareness and Information Support Exacerbate Psychological Stress in Patients

1) Narrow access to knowledge

Interviews showed that patients' knowledge acquisition paths were concentrated in limited channels such as traditional paper materials, in-hospital education facilities, and information from medical staff, and that patients' preoperative knowledge acquisition channels were passive and single-channel. N7: "My partner and I don't use cell phones very much, and we saw it in a small book issued by the doctor at the entrance to the neighborhood." N11: "Think about it, who normally

comes to the hospital? I also saw this surgery on the TV in front of your department when I came to make an appointment." N4: "I don't know, that Dr. Li told me about this surgery, I haven't heard of it before."

2) Inadequate cognitive reconstruction of disease

Patients present multidimensional concerns and fears due to imperfect knowledge of the disease. N6: "I see that they have finished this surgery with tubes and bags, it's too ugly. I don't even want to go out. If people see you when you go out, they won't necessarily say anything." N7: "How long does it usually take? Is it a long time? I just want to know if the operation will go well."

3) Negative effects experienced by other patients

Descriptive information about surgical pain, tissue damage, etc., obtained through fellow patients, etc., caused some patients to internalize the somatic feelings of others into their own fears. N11: "I heard the bed next to mine say to me that it hurt during the... When the tube was inserted, it felt like the flesh was being mangled and bleeding, and there was a foreign body sensation. It was especially hard." N8: "When I walked down the corridor, I saw all those patients with tubes, scary... Couldn't even move around well."

4) Barriers to doctor-patient interaction

The patient's cognitive blurring of core information and the temporal and spatial disconnection of doctor-patient interactions resulted in the expansion of the patient's information gap, manifesting a preoperative fear of unknown medical processes. N7: "It's inconvenient for me to ask anything, I'm going to have an operation right now, and I didn't even say a few words to your doctor." N6: "You guys talk so fast, we really can't remember."

3.2.4. Social Role Dysfunction Reinforces Patients' Own Negative Emotions

1) Conflict of professional roles

ERCP patients generally showed significant preoperative anxiety about the treatment process interfering with the fulfillment of family responsibilities and social roles, focusing on the conflict between occupational responsibilities and physical limitations.N9: "I would have wanted to come for a checkup and inspection, and I didn't look for how I could still be hospitalized, and I want to hurry up and get checked out right now, and there's still a lot of work to do in my family's field." N8: "I was already working, I just took a leave from the leadership yesterday, and it's hard to go back and forth. If it wasn't so hard this time, I wouldn't have come to this surgery, and I still have a lot of work ahead of me. It wouldn't be a good idea for me to go back with a tube."

2) Misaligned identity roles of family members

On the family role dimension, patients generally presented concerns about changes in their role functioning and the impact on family relationships. N6: "It's all about my old partner taking care of me this time. I'm just afraid that I'll have to bother my old partner when it's time to put in another tube or bag or something." N4: "My family is gone, so I have to bother my sister. I see that they can't

move after the surgery, and I'm afraid that my sister won't be able to get me. But then my sister only comes during the day, and at night I am alone, shedding tears." N9: "I retired, and now I have a little granddaughter, a little grandson. When you see your little granddaughter, you say you don't need to say anything else, just seeing her makes you happy. But these days I lie in bed every day, afraid to let them see."

3.2.5. Inadequate Social Support Hinders One's Negative Emotion Regulation

1) Socio-economic burden pressure

Some patients showed significant concern about the medical costs and potential financial burden associated with ERCP. N10: "I have been undergoing checkups all this time, and I have stayed in the hospital below for a while, and the expenses are still a bit high. Now the main thing is that I am afraid that I still have to do it several times", N2: "Stayed here for a long time with my partner, also afraid of whether I still have to spend more money in the follow-up, ah, we are both retired workers, and my partner is not in very good health." Linking the financial uncertainty of postoperative rehabilitation to limited retirement income and family members' health status reflects the superimposed effect of financial burden on preoperative psychology.

2) Emotional Misalignment and Communication Dilemmas in Family Support Interactions

Some patients showed sensitivity and resistance to their family's daily communication style due to preoperative stress, and their inner anxiety was not effectively understood, leading to a disconnect between the need for emotional support and the actual interaction effect. n5: "I was so annoyed yesterday that I wanted to talk to him. He didn't even listen to what I said, he started, look at how nice my socks are, tell me how can I talk to him? It's really devastating." N12: "My family also advised me that my mind should be put at ease, which is good to say, ah, which is so good to do ah, speak lightly."

4. Discussion

4.1. Physiological Stress and Somatic Discomfort Intertwine to Induce Negative Emotions in Patients

In Roy's adaptation theory, physiological function involves the physiological processes and survival needs of the organism, and this study found that the multiple physiological shocks triggered by invasive operations were an important stressor constituting the patient's fear through semi-structured interviews, which was consistent with the findings of Wu Beibei *et al.* [10], and laterally mapped the physiological function part of the theory. Patients construct the painful cognitive thought of intraoperative pharyngeal irritation in the awake state through multiple sources of information and visualize it as a preview of the surgical scene, forming a psychological imprint of fear of surgical operation. This psychological stress state can trigger physiological stress reactions such as accelerated heartbeat, ele-

vated blood pressure, and shortness of breath in patients through the synergistic effect of the HPA axis and the sympathetic nervous system, which in turn manifests as somatic discomfort such as panic, chest tightness, dizziness, and nausea. This physical discomfort will make the patient in a long-term high alert and nervous state, and when this negative state exceeds the individual's tolerance threshold, it will trigger negative emotions. A physiological-psychological vicious cycle is formed [11]-[13]. In addition, the effect is further reinforced by poor self-regulation of emotions in hypersensitive patients with physical stimuli such as low temperature, noise and spatial oppression in the healthcare environment as potential stress amplifiers [14]. This chronic stress state not only increases the risk of fear, anxiety and PTSD, but also exacerbates the risk of postoperative infection through immune suppression, which is not conducive to the patients' postoperative recovery. Therefore, it is necessary to strengthen the professional training of nurses to improve their ability to recognize and manage physiological stress and physical discomfort in patients with ERCP preoperative fear, which can be strengthened through thematic training, psychological nursing education and other ways to enhance the relevant knowledge and skills. At the same time, nurses should popularize the knowledge of patients and their families by means of bedside lectures and distribution of health brochures, so as to promote the early recognition and understanding of physiological stress and physical discomfort related to preoperative fear, and to increase the degree of patients' knowledge of and attention to ERCP. In addition, healthcare professionals can use positive stress reduction techniques to regulate patients' breathing and attention, block the vicious cycle of physiological stress and negative emotions, and enhance patients' self-efficacy through standardized preoperative preaching to guide intraoperative cooperation skills and strengthen the professional training of nurses to improve their ability to identify and manage physiological stress and physical discomfort in patients with preoperative fear of ERCP [15].

4.2. Cognitive Bias and Psychological Regulation Imbalance in ERCP Patients Enhance Patient Fear

Self-concept refers to an individual's cognitive and emotional evaluation of himself. In this study, we found that the dynamic imbalance between the three dimensions of disease cognition, emotion regulation, and self-perception in ERCP patients was one of the main reasons for patients' preoperative fear, reflecting the self-concept component of Roy's adaptation theory. At the level of disease perception, excessive worry about disease deterioration and blind dependence on treatment modalities were common among patients with non-specialized backgrounds, which is consistent with the findings of Zhang Jingqiu *et al.* [16]. The cognitive bias of patients on the progress of the disease and the necessity of treatment, superimposed on the passive acceptance status of patients on the medical program, resulted in insufficient acquisition of preoperative information, which exacerbated the psychological gap of patients. Meanwhile, in the dimension of emotional regulation, the conditioned fear triggered by the environment related to previous

medical trauma, intertwined with the uncertainty of the treatment cycle and outcome, easily causes patients to irrationally magnify the transient discomfort of the medical operation into a persistent traumatic experience, which leads to a crisis of trust in the healthcare team, and drives the patients to fall into a vicious cycle of fear avoidance. This vicious circle is further exacerbated by the loss of control over the body and the sense of shame that may be triggered by the postoperative drainage device, which prompts patients to adopt negative emotional coping strategies to alleviate the fear of surgery through avoidance behaviors, and ultimately creates a multidimensional imbalance of the psychological stress state. Therefore, healthcare professionals should improve the perception of disease cognitive bias in patients with pre-operative fear of ERCP, grasp the key timing of communication with patients, and establish a trusting relationship. On this basis, a personalized health education plan should be formulated to explain in detail the causes of biliary and pancreatic diseases, their progression, and possible treatment and control methods, to help patients establish correct disease cognition, and to promote their self-management, and ultimately to improve the recovery confidence of patients with pre-operative fear of ERCP.

4.3. Role Conflicts Stimulate Patients' Deep Fears

In Roy's adaptation theory, role functioning refers to the responsibilities and behavioral norms that an individual assumes in a social system. Role conflict, on the other hand, refers to the inconsistency between the expectations associated with a role. Individuals are often confronted with situations that require them to assume roles that conflict with their own value system or to assume two or more conflicting roles [17]. ERCP patients' fear of postoperative activity limitation is essentially a reflection of the anxiety of imbalance of family care resources, and their own need to be cared for and the expectation of responsibility for the maintenance of family functioning play with each other, which is alienated into the deep-seated fear of the dissolution of the value of the family's role. The anxiety of family care resources imbalance. In the real environment where socio-economic status and occupational roles are highly bound, patients' occupational role conflict is highlighted as a dichotomy between the need for occupational continuity and the necessity of health intervention: on the one hand, patients are worried about the loss of competitiveness in the workplace due to the interruption of treatment, so they tend to make decisions to cede their health rights and interests to the continuation of their occupations; on the other hand, patients' fear of the impairment of their labor ability caused by the post-surgical impairment of their body functions has intensified their anxiety about the fluctuation of their socio-economic status. On the other hand, the fear of postoperative impairment of somatic function leads to the loss of labor capacity, which increases the anxiety about the fluctuation of their socioeconomic status. The economic vulnerability and caregiving responsibilities of family members in anticipation of repeat surgeries further amplify the psychological load of treatment uncertainty. Intervention strategies should include the construction of an information support system for the interpretation of disease-

related knowledge and the pre-assessment of the risk of repeated treatments, to reduce the fear triggered by cognitive dissonance and treatment uncertainty; and through continuity of care [18], to guide the patients to reconstruct the perception of family contribution, and to weaken the metaphorical fear of being marginalized.

4.4. Mismatch between the Supply of Resources in the Healthcare System and Patient Demand Exacerbates Patient Fear

For ERCP patients the social support system can be divided into intra-family environmental support system and extra-social environmental support system, and this study found that insufficient social environmental support in ERCP patients' preoperative fear is essentially a communication dilemma caused by the mismatch between the healthcare system's resource allocation and the patients' needs, which is in line with the core connotation of the Roy's Adaptation Theory of Interdependence. On the one hand, the information acquired by patients is single and lacks authority, while healthcare is characterized by superficiality in mental health promotion to patients due to heavy task load and imbalance in the doctor-patient ratio. This fragmented information output and rapid education model not only leads to patients' lack of access to key information, but also inadvertently exacerbates patients' fear of the unknown medical process. And the family's daily habit of de-medicalization topic transfer strategy, the lack of professional training failed to touch the deep psychological needs of patients, resulting in cognitive conflict between the real situation and emotional expression of patients, exacerbating the fear of patients and daily life of the contrast between the sense of laceration, the formation of emotional detachment of the negative cycle [19], and ultimately catalyzed a crisis of trust in the health care system. Intervention strategies need to focus on breaking through the dual dilemmas of communication barriers and lack of emotional support in the healthcare system. In this regard, the development of a standardized doctor-patient communication checklist and the introduction of multimedia technology to simulate the operation process should be used to crack the problem of single and fragmented information acquisition [20]. Organize preoperative systematic psychological assessment training for nurses, incorporate the standardized emotional support process into the assessment index, and improve the effect of health education. Organize the family members of patients to receive standardized training on disease knowledge, and provide good therapeutic accompaniment for fearful patients.

5. Conclusion

In this study, we used semi-structured interviews to understand the psychological influencing factors of patients with ERCP preoperative fear, which mainly included the expected physiological experience triggering patients' preoperative fear, individual psychological traits amplifying patients' preoperative fear, imperfect disease awareness and information support catalyzing patients' psychological

stress, social role dysfunction reinforcing patients' own negative emotions, and insufficient social support hindering their own negative emotion regulation in five aspects. The following is a summary of the five aspects of the study. It is recommended that in future psychological interventions, we enhance the diversity and effectiveness of interventions, pay attention to patients' mental health, provide adequate medical, family and social support, and promote the improvement of patients' cognitive, behavioral and physiological functioning outcomes through the development of communication checklists, the use of multimedia educational tools, and the provision of standardized training for family members, so as to bring into play the roles of both internal and external driving factors and improve patient The present study was limited to the Yunnan Province. The limitation of this study is that the patients were only selected from a tertiary hospital in Yunnan Province. In the future, we can expand the scope of the population to understand the psychological experience of patients with different pre-operative fear of ERCP, so that we can provide a reference for the construction of surgical cognitive intervention programs for this group of patients.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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