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Exploring barriers to resilience among preoperative non-small cell lung cancer patients: a qualitative study in China

Jiayi Guo[1,2†], Jie Zhu[1,2], Xuting Li[2,3], Wei Li[1,2] and Man Ye[1,2,3*]

Abstract

Background Resilience is crucial for lung cancer patients to navigate the challenges they face. However, current research on the barriers to resilience, particularly in relation to various levels of stressors, is limited. This study seeks to explore and analyze the barriers at various levels affecting resilience among preoperative lung cancer patients.

Methods A descriptive phenomenological qualitative research method was employed, conducting semi-structured interviews with 23 patients who had received a preliminary diagnosis of lung cancer and were preparing for surgical treatment. Data were analyzed using Colaizzi's seven-step method within the social-ecological framework.

Results Three categories and 11 themes were identified among lung cancer patients: (i) Micro-level system: Individual vulnerability (Fear of the unknown, Empathy for pain, Self-blame, Physical function decline, Waning interest). (ii) Meso-level system: Unstable family structure (Family enmeshment, Role conflicts, Communication barriers between couples). (iii) Macro-level system: Weak support systems (Lung cancer demonization, Workplace discrimination, Insufficient information support).

Conclusion This study sheds light on barriers to resilience at the individual, family, and societal levels among preoperative lung cancer patients. Given the variability in patient experiences, there is a critical need for patient-centered psychological, informational, and self-management support. Particularly in China, enhancing public awareness of lung cancer stands as a vital measure. Exploring the intricate dynamics of the empathy for pain, familial enmeshment, and the demonization of lung cancer emerges as pivotal areas for future inquiry. These knowledge can inform enhanced pain management strategies, improved family support systems, and a more accurate and less stigmatizing perception of lung cancer.

Trial registration The registered No. from Chinese Clinical Trial Registry (CHICTR) was ChiCTR2300074853 and the registration date is August 17, 2023 (Archived by Webcite at https://www.chictr.org.cn/showproj.html?proj=205091)

Keywords China, Lung neoplasms, Oncology, Psychology, Qualitative, Resilience

†Jiayi Guo first author.

*Correspondence:
Man Ye
yeman82@csu.edu.cn

[1]Xiangya Nursing School of Central South University, Changsha, Hunan 410013, China
[2]Clinical Nursing Teaching and Research Section, The Second Xiangya Hospital of Central South University, Changsha, Hunan 410011, China
[3]Department of Thoracic Surgery, The Second Xiangya Hospital of Central South University, Changsha, Hunan 410011, China

Introduction

Lung cancer is one of the most common malignancies worldwide. In China, the incidence and mortality rate of lung cancer rank first among all cancer types [1]. Lung cancer is associated with a higher susceptibility among patients to experience negative emotions compared to patients with other types of tumors [2]. According to former studies, lung cancer patients exhibit a higher incidence of emotional distress, anxiety, and depression symptoms, with rates reaching 46%, 35%, and 31% respectively [3]. Surgery is the primary treatment for lung cancer, particularly for non-small cell lung cancer (NSCLC) stages IIIA and below [4]. A study conducted in China reported that the prevalence of preoperative anxiety and depression among lung cancer patients was found to be 26.3% and 18%, respectively [5]. In clinical practice, lung cancer patients undergoing surgery may experience increased psychological pressure, such as surgical trauma, financial burden, and uncertainty about prognosis. The ongoing emotional distress during treatment can exacerbate stress reactions in lung cancer patients, thereby reducing their ability to cope with surgery and affecting overall treatment outcomes [6]. Moreover, as the disease progresses, anxiety and depression have a negative impact on the quality of life of patient [7]. Therefore, to mitigate the adverse consequences of emotional issues, it is crucial for preoperative lung cancer patients to develop resilience.

The American Psychological Association (APA) defined resilience as the ability of individuals to maintain or regain relatively stable psychological and physical functioning in the face of stressful life events or adversity [8]. Numerous studies have provided evidence for the beneficial role of resilience in predicting positive treatment outcomes and reducing distress among patients [9]. Moreover, there is a positive correlation between resilience and quality of life, with higher levels of resilience associated with improved quality of life [10]. Gaining a profound understanding of the factors that influence this adaptive capacity is essential as it enables patients learn to cultivate a positive mindset when facing adversity, thus overcoming some obstacles successfully.

Kumpfer proposed that individual resilience is influenced by external environments, characteristics of resilience within the individual, and the interaction between the individual and their environment [11]. Although existing studies have preliminarily identified some factors influencing the resilience of lung cancer patients through cross-sectional quantitative methods, including individual internal factors (such as age, self-efficacy, and symptom distress) and external environmental factors (such as average family income, social support), the current factors related to resilience in lung cancer patients are still limited [12, 13]. Qualitative research methods could analyze complex psychological phenomena by gaining insights into the authentic experiences of lung cancer patients, possibly uncovering a broader range of potential influencing factors. Our research team has published a qualitative study that delved into the dynamic process of resilience and protective factors among long-term lung cancer survivors [14]. The study revealed that within this process, five themes were identified as conducive to their resilience, including robust psychological qualities, strong social support, consistent lifestyle habits and exercise, engagement in social activities, and traditional Chinese medicine interventions. While prior studies have examined various protective factors of resilience, limited attention has been given to barriers impeding resilience. When individuals interact with their environment, the process of resilience in the face of stressors is dynamic [11]. Eshel et al. [15] suggested that risk factors, especially distressing emotions acted as major role in defining resilience, highlighting the necessity to reevaluate the shifts in focus within resilience research. Furthermore, in China, newly diagnosed lung cancer patients face significant stigma [16], distress symptoms, and external environmental structural barriers [17, 18]. Therefore, identifying resilience barriers is crucial for optimizing outcomes and developing targeted psychological and social interventions for lung cancer patients.

Within the framework of social-ecological theory, resilience is a process of adaptive coping in response to adversity, influenced by environmental factors at various levels [19]. Given that the resilience of lung cancer patients is primarily shaped by individual, familial, and societal factors, this framework provides a comprehensive lens for examining barriers at multiple levels. It can be briefly divided into three levels [20]. At the micro-level, individual internal systems, including physiology, psychology, and behavior, play a significant role in shaping resilience. The meso-level refers to smaller-scale groups associated with the individual, such as the family, school, and workplace. The macro-level encompasses larger groups, including organizations, communities, and social and cultural factors. This theory has been applied in research on resilience promotion [21], social work interventions [22] and chronic disease management [23], among other areas. By classifying the barriers that lung cancer patients face into micro, meso, and macro levels, healthcare professionals can create actionable recommendations to enhance resilience and implement targeted interventions at each of these levels.

Therefore, the aim of this study is to uncover the multiple barriers to resilience that affect preoperative lung cancer patients at three levels: the micro level, focusing on individual psychological, physiological, and behavioral factors; the meso level, identifying family-related influences; and the macro level, examining social and cultural

contexts. This effort seeks to provide more comprehensive support and intervention strategies to enhance the resilience of lung cancer patients prior to surgery.

Methods

Study design

This qualitative study adopted a descriptive phenomenological approach, rooted in the tradition of Husserl's phenomenology approach, originating from psychology, emphasizing epistemology, and focusing on the experiences perceptible to human consciousness, which are then described [24]. Given that this research design allowed for a profound, authentic, and comprehensive understanding of the phenomenon under investigation, it emerged as one of the optimal methods for describing the barriers to resilience in preoperative lung cancer patients. The definition of resilience provided by the APA was employed in this study. In designing interview guidelines and conducting data analysis, the social-ecological framework was primarily referenced. The COREQ guidelines were adhered to ensure thorough and transparent reporting of our study (Additional file 1) [25].

Participants and setting

This study employed purposive sampling to survey lung cancer patients who were scheduled to undergo surgical treatment. Additionally, considering the heterogeneity of resilience across different demographics, efforts were made to select research subjects who exhibit maximum diversity in certain characteristics, such as age and gender, in order to gain a comprehensive perspective. The survey took place from August to September 2023 in the thoracic surgery ward of a tertiary hospital located in Changsha, Hunan province, China. The Inclusion criteria were: (i) preliminary diagnosis of lung cancer through imaging or histopathological examinations, (ii) scheduled for surgical treatment, (iii) classified as stages I to IIIA according to the TNM staging system, (iv) aged 18 years or older, (v) awareness of the disease diagnosis, (vi) ability to express and articulate inner feelings clearly, (vii) voluntary participation in the study and signing an informed consent form. Exclusion criteria were: (i) critically ill patients unable to cooperate with the investigation, (ii) concurrent presence of other cancers, (iii) a history of mental illness or communication barriers hindering regular communication.

Table 1 Interview guide

Questions
1. Could you please share your experience of falling ill and being hospitalized?
2. What difficulties or pressures have you encountered from the time of diagnosis until now?
3. What unpleasant emotional experiences have you had (including personal, family, interpersonal, and societal aspects)? Why?
4. What factors do you believe contribute to your fear and increased concerns regarding this illness?
5. Regarding the surgical treatment and prognosis, what other concerns or worries do you have? Why?

Data collection

The semi-structured interview guide was tested and refined through pilot interviews with two lung cancer patients (Table 1). Prior to the interviews, the researchers(JG, JZ) who have received qualitative research training and possess relevant research foundations utilized sustained observation techniques to build rapport and establish trust with the participants [26]. JG and JZ were interns in thoracic surgery, and participants were informed about the principle of voluntary participation, and they were assured that declining to participate in the interviews would not have any impact on their treatment. Interviews were scheduled during participants' free time, outside of their treatment schedule, and conducted in a private, tranquil room within the thoracic surgery inpatient department (Doctor's Office), ensuring a relaxed and confidential atmosphere was maintained. Each face-to-face interview lasted 30–60 minutes. The interviews were approached with a neutral attitude, and exploratory questioning was employed to elicit more detailed information. Furthermore, the researcher kept a reflective journal after each interview to document important statements from the participants and personal reflections. The researcher considered the professional and cultural differences between themselves and the participants, such as the potential concern that participants might fear their thoughts and feelings would not be understood or might be judged, which could lead them to conceal their true opinions. However, by ensuring that the data collection process remained impartial and focused on the participants' perspectives, emphasizing confidentiality, and engaging in open discussions of data interpretation with other qualitative researchers, all identified potential biases were addressed to the fullest extent possible. Data collection persisted until the interviews no longer revealed new themes, indicating that conceptual saturation had been reached. In the 23rd interview, the research team observed that themes were becoming redundant, prompting them to decide to end participant recruitment.

Data analysis

The recorded content of the interviews was transcribed verbatim by JG and JZ within 24 hours after completion. The Colaizzi's seven-step method is a commonly utilized approach in descriptive phenomenological research analysis [27, 28]. It emphasizes the thorough exploration of participants' experiences and the inherent meanings within the data, facilitating a comprehensive

interpretation of the results within the social-ecological framework. Therefore, it was selected as the data analysis method for this study. JG and JZ respectively imported the interview data into NVivo V.12 software for coding and analysis. After the analysis of the codes, themes and theme clusters related to participants' resilience barriers, these were mapped onto the framework of social-ecological framework. The data analysis process involved the following steps: (1) Repeatedly reading the interview data to familiarize oneself with the content. (2) Extracting relevant and meaningful statements related to resilience barriers.(3) Recurring viewpoints were coded and their meanings were constructed. (4) Inviting other team members, apart from the interviewers, to discuss disagreements and collectively determine meaningful common concepts, while consolidating the themes and theme clusters together. (5) Linking the themes to the original statements for a comprehensive description. (6) Presenting the essential structure that constituted the phenomenon. In this step, the study aligned the resulting data closely with the social-ecological framework, allowing for the manifestation of participants' resilience barriers at micro, meso, and macro levels. (7) Providing the research findings to the participants for verification, enhancing the study's reliability. Three participants were selected to share the preliminary results via phone for member checking. This iterative process involved seeking their feedback and insights to validate the emerging themes and interpretations. Furthermore, The method of Investigator Triangulation was incorporated into our analytical strategy, mitigating potential limitations associated with a single analytical perspective [29].

Table 2 Demographic characteristics of participants

Variable	Number	Frequency (%)	Mean ± SD
Gender			
Male	10	43.48	
Female	13	56.52	
Age			45.04 ± 13.14
Illness time (months)			3.17 ± 1.37
Type			
Adenocarcinoma	19	82.61	
Squamous cell carcinoma	3	13.04	
Adeno-squamous carcinoma	1	4.35	
TNM staging			
I	13	56.52	
II	7	30.43	
IIIA	3	13.04	
Habitation			
Urban	15	65.22	
Rural	8	34.78	
Payment Method			
Medical insurance	12	52.17	
Self funded	11	47.83	
Education level			
Primary school	5	21.74	
High school	7	30.43	
Bachelor's degree	5	21.74	
Other	6	26.09	
Marriage			
Married	21	91.30	
Unmarried	1	4.35	
Divorce	1	4.35	

Ethics

Interview data will be used exclusively for this study. Personal identifiable information will undergo anonymization, using numeric codes, and stored in password-protected files to ensure confidentiality. All participants were informed of the research purpose and signed an informed consent form. The Ethics Committee of Xiangya Nursing School, Central South University, approved this study (approval number: E2023129).

Results

Interviews were conducted with a total of 23 participants, comprising 10 male and 13 female lung cancer patients. The median age of the participants was 42 years (ranging from 27 to 69 years) and the majority of participants had lung adenocarcinoma (82.61%). The highest number of participants had stage I lung cancer (56.52%), followed by stage II (30.43%) and stage IIIA (13.04%). They were aware of their lung cancer diagnosis for varying durations, ranging from one month to six months, and all participants were preparing for surgical treatment. Further detailed demographic characteristics of the participants are presented in Table 2.

Table 3 illustrates the analysis process. Eleven themes emerged from the interview data, and then synthesized into three thematic clusters, mapped onto the macro-, meso-, and micro-system levels of the social-ecological framework, as shown in Fig. 1. See Additional file 2 for example quotations of the themes.

Micro-level system: individual vulnerability

Negative individual internal characteristics may be associated with weaker resilience, potentially contributing to a negative attitude towards illness and more negative emotions. The micro-level corresponds to a cluster of themes related to individual vulnerability, including fear of the unknown, empathy for pain, self-blame, physical function decline, and waning interest.

Fear of the unknown

Participants expressed that their knowledge about the disease was minimal prior to receiving their preliminary cancer diagnosis, and they emphasized that the name

Table 3 Examples of the analysis process

Meaningful statements	Meaning units	Themes	Theme clusters	Categories
"A long time ago, there were several people in my village who passed away due to lung cancer, but they found out that it was already in its late stages. Later, the people in the village were afraid of lung cancer and thought it was an incurable disease."(P9)	Lung cancer is considered an incurable disease	Lung cancer demonization	Weak support systems	Macro-level system
"Many people around me have little understanding of lung cancer. Therefore, they cannot provide helpful advice. Moreover, because they haven't experienced it, they unable to empathize with my emotions. As a result, I have gradually stopped sharing my experiences with them."(P9)	Public knowledge about lung cancer is limited	Insufficient information support		

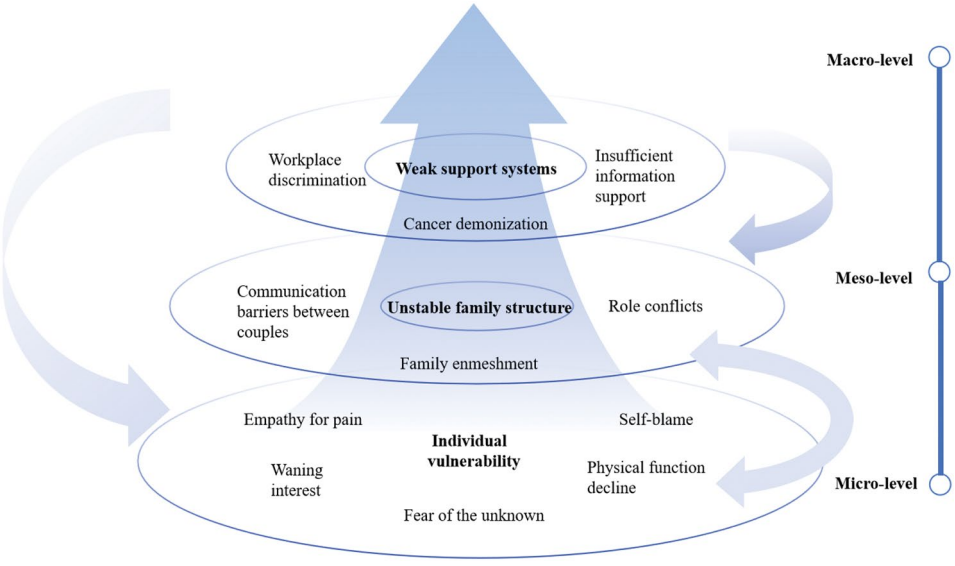

Fig. 1 Barriers affecting the resilience of lung cancer patients. Note: The arrows represent the interactions between three levels. The macro-level can directly effect individual vulnerability within the micro-level, or indirectly induce it by influencing the meso-level

"cancer" itself intensified their fear of death. Assessment of participants' attitudes and knowledge concerning lung cancer during the interviews revealed that participants may still lacked sufficient health literacy, which puts them at a loss in the treatment phase.

> *Um, yeah, so when I found out I had lung cancer, I was like totally clueless, you know? I had no idea what this was all about, the treatments, the chances of survival, none of it. This makes me very confused, like pushing open an unknown door. (P17)*

Empathy for pain

The study found that participants seem to be more likely to empathize and immerse themselves in the situations of others. The participants expressed to us that when they see other patients who have similar illness experiences and suffer from physical pain after surgery, they will also feel the pain and increase their concerns about the future. One participant said:

> *The fear of pain after surgery is no joke. I mean, thinking about how much my mom suffered in the past, it gets to me, you know? Just mentioning it makes me break out in a cold sweat. It's like this intense nervousness that keeps me up at night, tossing and turning with anxiety. (P7)*

Self-blame

Participants have disclosed experiencing a sense of self-blame as they grapple with the financial and caring burdens induced by surgical treatment. This was accompanied by more negative emotions such as guilt and regret.

> *My family isn't well-off, and the cost of my surgery will put a huge financial burden on us. Moreover, my family members will have to take leave from work to take care of me, and it makes me feel guilty. (P22)*

Physical function decline

Elderly participants believe that their body's ability to recover is inferior to that of younger individuals. They

worry about needing more time to recover after surgery or being unable to restore their previous state of health. For them, the aging process and the accompanying decline in physical function can lead to physical and mental exhaustion.

Being older, at 60 years old, having this illness means my recovery will probably be slower compared to younger folks. Sigh. (P1)

Waning interest

Female participants appeared more likely to hold negative perception of their situation after entering the surgical treatment phase, which has led to a decrease in their initiative and motivation to engage in activities they previously enjoyed.

I'm someone who cares a lot about my appearance. But after being hit with this illness, especially these past few days, I don't even feel like washing my face anymore. I've reached a point where I don't even want to look in the mirror and see my sickly self staring back at me. (P4)

Meso-level system: unstable family structure

The interviews revealed that participants' small-scale social networks included family, friends, colleagues, and other patients with similar illnesses. However, the most significant interpersonal stressors contributing to reduced resilience were a cluster of themes related to unstable family structure, including family enmeshment, role conflict, and communication barriers between couples.

Family enmeshment

This is a specific pattern of relationship found among family members in this study. In this case, excessive concerns and inquiries from family members after a patient falls ill can disrupt the patient's privacy and personal independence. To be specific, participants may feel that their individual boundaries and personal space have been violated. They desire more independence and freedom to have their personal space.

I prefer going to the doctor alone, without my family accompanying me. It's just that when they're around, it somehow affects my mindset and overwhelms me. (P14)
I still need care and support, but I also value having my own alone time. (P15)

Role conflict

Female participants exhibited a greater propensity for challenges in adjusting to their role as a patient while being hospitalized. This hinders their ability to fully concentrate on their recovery. The added pressure of being primary caregivers for their families, especially with responsibilities towards their children, leaves them feeling guilty and uneasy when they are unable to fulfill these obligations while being hospitalized due to illness.

My daughter-in-law is busy with work and doesn't have time to take care of the kids. Now that I'm sick, there's no one to look after them. I have to undergo surgery right away and go back to help take care of her children. (P10)

Communication barriers between couples

This topic describes the potential content of this study. During the interviews, participants revealed their desire for their partners to adopt a more open approach in expressing emotions after their illness. However, they felt powerless due to differences in communication styles and habits. As a result, communication barriers have created an unfavorable family environment and dysfunctional patterns of interaction. As one participant mentioned:

My wife and I have always struggled with communicating. She's just not used to it. Even though I wish she would take the initiative to talk to me, it's hard for me to bring it up myself, so I internalize my emotions. (P18)

Macro-level system: weak support systems

The macro-level system corresponds to a cluster of themes categorized as weak support systems, impacting both micro and meso levels. These themes include Lung cancer demonization, Workplace discrimination, and Insufficient information support.

Lung cancer demonization

Due to inherent perceptions about cancer, participants may perceive lung cancer as an incurable terminal illness and view lung cancer patients as victims of unfortunate fate. However, in the early stages of lung cancer, most patients do not experience any physical discomfort. As a result, lung cancer patients feel that this demonization imposes unnecessary social discrimination and psychological burden upon them.

I don't want others to view me through a biased lens. I hope you treat me just like any other normal person. (P8)

Workplace discrimination

Furthermore, this study revealed the existence of negative perceptions towards employees with lung cancer in the workplace from the perspective of patients, as well

as constraints on their career advancement and promotional opportunities. This workplace culture tends to regard illness as a negative trait or flaw. Participants' concerns stem from their perception and understanding of workplace regulations and protocols.

> *I've heard that the recovery period for lung cancer surgery can be quite lengthy, and it involves avoiding heavy physical activities. However, my job requires a lot of physical movement. If others discover my condition, they might hesitate to hire me. (P18)*

Insufficient information support

Numerous rural patients have reported that most individuals in their communities lack an adequate understanding of lung cancer. Consequently, they encounter challenges seeking informational and emotional support from their immediate social circles. This situation leaves patients feeling a lack of empathy from those around them. Moreover, the absence of a supportive network and reliable information exacerbates their feelings of helplessness, potentially inhibiting their ability to address their concerns effectively.

> *Many people around me have little understanding of lung cancer. Therefore, cannot provide helpful advice. Moreover, because they haven't experienced it, they unable to empathize with my emotions. As a result, I have gradually stopped sharing my experiences with them. (P9)*

Moreover, even though patients receive health education on lung cancer during treatment, they have reported that the educational materials are not presented in a clear and accessible manner, which impedes their comprehension.

> *What's written about the "perioperative period" and all that? Peri-what? Never mind, I won't read it. I wouldn't understand it anyway. (P21)*

Discussion

This study identified the barriers that impede the resilience of lung cancer patients across three interconnected systems, namely, the micro-level system, meso-level system, and macro-level system. It is crucial to understand the various barriers that can impede resilience at different levels, as well as how to recognize and address potential challenges. Previous studies on lung cancer patients have rarely emphasized the vulnerability of individual resilience at the micro-level, particularly the unclear understanding of early-stage lung cancer and the negative impact of pain empathy on resilience. At the meso-level, family enmeshment and role conflicts among female patients may be more pronounced within Chinese family contexts. At the macro-level, the demonization of lung cancer and associated career limitations in China warrant attention.

At the micro-level system, our interview findings covered various aspects of individuals' cognitive, emotional, spiritual, physical qualities, and behavioral characteristics. This discovery correspond well with the components of personal internal resilience factors outlined in Kumpfer's resilience framework [11]. Kumpfer's resilience framework mainly emphasizes protective factors. In comparison, our research might contribute to supplementing the understanding of internal barrier factors within the individual resilience aspect of the resilience framework. Specifically, our research revealed that individual vulnerability encompasses fear of the unknown, empathy for pain, self-blame, decline in physical functioning, and diminished interest. These factors respectively fell within the categories of cognitive, emotional, psychological, physical, and behavioral characteristics. Lung cancer patients faced with sudden adverse life events commonly experienced fear of the unknown [30]. Consistent with Wang et al.'s [31] qualitative study on resilience barriers in lymphoma patients, the source of fear primarily stemmed from unclear disease cognition. This study found that participants had limited knowledge about the different stages of lung cancer, treatment plans, and survival rates, which created a unique internal barrier to resilience for preoperative lung cancer patients. Consequently, healthcare practitioners are vital for providing accurate information and effective communication to patients. Another key finding of this study revealed the unique impact of empathy for pain perception in preoperative lung cancer patients. Pain is a significant source of symptom burden for lung cancer surgery patients. This qualitative interview found that participants' excessive emotional involvement in others' pain experiences might exacerbate psychological distress and pain sensitivity through emotional contagion. Guiding patients in setting emotional boundaries and encouraging them to trust their own experiences is crucial. Given that few studies have reported this associative effect, future research should explore the correlation and underlying mechanisms between patients' empathy traits and pain perception, in order to identify new intervention targets for optimizing postoperative pain management. It is also crucial for medical staff to pay close attention to lung cancer patients who exhibit specific characteristics, including diminished interest, self-blame, and declining physical functioning. By identifying these pre-characteristics, it is helpful for clinical staff to promptly identify and address the resilience barriers of patients, and implement early educational interventions.

At the meso-level system, social support, notably from family members, has been consistently identified

in previous research as a crucial protective factor for individual resilience [32]. Nevertheless, this study found that certain families may inadvertently create dysfunctional dynamics at the family level by failing to establish appropriate boundaries for patients, thus becoming a barrier to resilience at the meso-level. This finding may provides valuable insight into the dual-edged effect of family support. Family enmeshment occurs when the dynamics of relationships in a family do not allow individuals to maintain their personal emotional space [33]. In previous studies, family enmeshment was considered detrimental to the healthy family dynamics of European Americans [34]. In China, the family is viewed as the fundamental unit of an individual's life, and family members of cancer patients are generally expected to take on caregiving responsibilities, such as treatment tasks, financial support, and companionship [35]. In this context, the patient's emotional space and autonomy are more likely to be overlooked, leading to family enmeshment and becoming a barrier to resilience. When distressed patients recognize their unhealthy patterns within their families, healthcare professionals should encourage them and their families to establish health connections through open communication, providing healthy emotional support and recognizing individual needs. Additionally, our study confirms previous research findings that inappropriate behavioral patterns between partners can significantly impair individual well-being or resilience during illness or recovery [36]. Guiding patients and their partners to adopt harmonious communication strategies is crucial in enhancing the quality of their relationship and fostering increased resilience [37]. Compared to nordic countries, Chinese women tend to assume a greater share of caregiving responsibilities within the family [38]. This study reveals that female participants face a conflict between their caregiving and patient roles during hospitalization. This conflict potentially impedes individuals from efficiently allocating time and resources across different roles, thereby undermining their capacity to adapt to changes. Healthcare providers can suggest patients temporarily seek support from family, supervisors, and subordinates to alleviate their burden, enabling them to concentrate on their treatment.

At the macro-level system, participants were observed to encounter various challenges related to social values, workplace culture, and social resources. Existing research has confirmed the presence of stigmatization towards lung cancer within society [39], which is negatively correlated with resilience [40]. Compared with the British public, the Chinese public shows a stronger stigma towards lung cancer, as manifested in their perception of the disease's severity and tendency to avoid related topics rather than smoking denormalization [41]. Our research further expands on the stigmatization of lung cancer by proposing the concept of the "Lung cancer demonization", which emphasizes the exaggerated reactions to the disease. Despite evidence indicating higher 5-year survival rate for earlier stages of lung cancer, participants still tend to describe lung cancer in exaggerated, negative, and worsening terms driven by subjective biases. This indicates a need for further clarification and education regarding lung cancer knowledge. Moreover, "Work" is a cornerstone of self-identity and self-esteem. However, this qualitative study in China has revealed that factors such as the demonization of lung cancer, insufficient social and psychological support, and unfavorable work culture potentially increase the concerns of preoperative lung cancer patients about their future employment. To foster resilience of individuals with lung cancer, chinese government agencies should prioritize the enhancement of support networks and career development opportunities for them, while also launching public campaigns to address lung cancer demonization.

Limitations and future directions

This qualitative research offered valuable insights into obstacles affecting the resilience of preoperative lung cancer patients at the micro, meso, and macro levels. However, there are some limitations. Firstly, participants were recruited from tertiary hospitals in cities with relatively good medical resources. Therefore, these findings may not be representative of patients receiving treatment in hospitals with relatively poor medical conditions. Further research should consider the resilience barriers of patients in primary hospitals. Secondly, social norms may cause some participants to hide certain information or embellish some narratives that deviate from reality. In future studies, it is recommended to include family and community members as research subjects to obtain a broader perspective and more in-depth findings. Finally, to further strengthen this study, a multi-center study with a longitudinal design is needed to explore the changing process and influencing factors of resilience during the treatment experience of lung cancer patients.

Conclusion

Grounded in the social-ecological framework, this study elucidated the resilience barriers experienced by preoperative lung cancer patients. These barriers stem from factors such as individual vulnerability, unstable family structures, and inadequate social support systems. Our research has yielded several key findings: individual empathy for pain, family enmeshment resulting from a lack of well-defined boundaries, insufficient social support encompassing demonization of cancer, inadequate lung cancer information support, and workplace biases hindering resilience among preoperative lung cancer patients. Considering individual differences,

patient-centered psychological, informational and self-management support should be developed to assist preoperative lung cancer patients in coping with the disease and adapting to stress while promoting optimal recovery. In China, there is an urgent need to increase public awareness of lung cancer. Exploring the complex dynamics of pain empathy, family enmeshment and lung cancer demonization is a key area for future research.

Overall, these findings could enable healthcare providers to identify key resilience barriers among preoperative lung cancer patients and implement appropriate intervention measures to promote patient resilience, improve treatment compliance, and reduce readmission rates.

Abbreviations

COREQ	Consolidated criteria for reporting qualitative research
SD	Standard deviation
TNM	Tumor Node Metastasis

Supplementary information

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Additional file 1

Additional file 2

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Author contributions
JG: Data collection, formal analysis, visualization, figure-making, writing-original draft & revising; MY: Conceptualization, formal analysis, writing-review, revising & editing; JZ, XL, and WL: Data collection, data analysis & writing-review; All authors have read and agreed on the published version of the manuscript.

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Data availability
The dataset generated and analyzed is not available for others according to Norwegian data protection legislation. Analysis files can be made publicly available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This qualitative study involving human participants was in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Ethical approval was provided by the College Ethics Review Committee of Xiangya Nursing School of Central South University (Approval Number: E2023129). Both verbal and written informed consent was obtained from the participates.

Consent for publication
Not applicable.

Competing interests
The authors declare that there are no conflicts of interests.

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