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Symptom Experiences and Coping Patterns in Pancreatic Cancer Patients During Chemotherapy: A Qualitative Study

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Abstract: *Objective:* To explore symptom experiences and self-coping patterns during the early and late stages of chemotherapy in these patients to provide a basis for developing targeted symptom management strategies. *Methods:* A total of 27 patients with pancreatic cancer undergoing chemotherapy at two medical institutions were recruited between November 2023 and August 2024. Semi-structured interviews were conducted in person or over the phone. Data were analyzed using traditional content and thematic analyses. *Results:* Three themes were identified: symptom experience, self-coping patterns, and existing obstacles. During the early stages of chemotherapy, patients reported a higher frequency of unpleasant symptoms and recognized these symptoms earlier in the treatment course. Patients in the early stages primarily relied on external support to cope with symptoms, while those in the later stages adopted self-care strategies. Several challenges related to unpleasant symptoms were observed, which appeared to correlate with the self-coping patterns employed. *Conclusion:* Patients with pancreatic cancer undergoing chemotherapy experience a complex and diverse range of symptoms, with varying coping patterns at different stages of treatment. Symptom management during chemotherapy presents significant challenges. Healthcare providers should improve the ongoing monitoring of symptoms post-chemotherapy. By linking patients' symptom experiences and self-coping patterns at different stages of chemotherapy to their specific challenges, personalized symptom management strategies can be developed to enhance care quality.

Keywords: Pancreatic cancer; Chemotherapy; Symptom experience; Self-coping; Existing obstacles

1. Introduction

Pancreatic cancer is a highly lethal disease and currently ranks as the sixth leading cause of mortality worldwide [1]. The global 5-year survival rate is approximately 10% [2]. Systemic chemotherapy, encompassing neoadjuvant, adjuvant, and radical chemotherapy, remains the cornerstone of pancreatic cancer treatment. These systemic treatments significantly improve tumor-related clinical outcomes, including curative effects, overall survival, and progression-free survival [3-6].

However, chemotherapeutic agents often induce a range of adverse physiological effects due to their toxic side effects. A meta-analysis indicates that hematological, gastrointestinal, and constitutional symptoms have the highest incidence rates [7]. A study investigating two first-line chemotherapy regimens identified severe side effects, including anorexia, fatigue, nausea, diarrhea, and constipation [8]. Furthermore, reports show that advanced pancreatic cancer patients undergoing chemotherapy exhibit a higher incidence of severe symptoms, particularly fatigue (56.9%), anxiety (50.4%), and nausea (9.8%) [9].

Recent studies on the symptom burden experienced by pancreatic cancer patients have primarily focused on symptoms during the natural course of the disease or postoperative recovery [10,11]. Limited research exists on the symptom burden associated with different cycles of chemotherapy. Additionally, existing assessment tools often feature an excessive number of items, poor readability, and lack of specificity for pancreatic cancer patients, restricting their ability to report symptoms effectively [12].

In China's healthcare system, due to limited medical resources, most patients undergo chemotherapy during daytime outpatient visits. Patients receive infusion therapy at the hospital and return home the same day for rest and recovery. While healthcare providers monitor patients' conditions during hospital-based therapy, the severity of symptoms experienced at home remains inadequately assessed [13]. Furthermore, poor communication and interaction between physicians and patients outside of hospital settings often lead to insufficient symptom management during intervals between chemotherapy sessions [14].

Patients' self-coping strategies for managing therapy-related symptoms are critical for reducing symptom burden and maintaining normal functional status and quality of life (QOL) during home-based recovery periods [15]. Previous observations have indicated that the symptom burden of cancer patients varies across chemotherapy cycles [16]. However, the specific symptom burden and self-coping patterns of pancreatic cancer patients at different stages of chemotherapy remain unclear.

The Symptom Experience in Time (SET) theory suggests that when patients recognize the onset of unpleasant symptoms, they engage in self-assessment and subsequently pursue either self-care or external assistance to facilitate effective symptom management [15]. By integrating symptom-related theories, such as the theory of unpleasant symptoms and the symptom management model, the SET theory incorporates temporal dimensions to provide valuable guidance for understanding symptom experiences and corresponding coping patterns.

Therefore, this study aimed to explore differences in symptom experiences and self-coping patterns during the early and late stages of chemotherapy among patients with pancreatic cancer. The findings are intended to serve as a foundation for implementing personalized clinical symptom assessment methods and improving phased symptom management interventions.

2. Materials and Methods

2.1. Study design

This study utilized a descriptive qualitative research approach, incorporating semi-structured personal interviews to investigate the symptom experiences and self-coping patterns of patients with pancreatic cancer undergoing chemotherapy. The research combined thematic analysis with traditional content analysis methodologies. This approach was particularly advantageous, as thematic analysis provided a structured framework to explore patients' symptom experiences and their perceptions throughout the treatment process [17]. Traditional content analysis complemented this by objectively examining the textual data derived from thematic analysis. The study adhered to the Standards for Reporting Qualitative Research (SRQR) checklist to enhance transparency and ensure methodological rigor.

2.2. Participants and settings

A purposive sampling method, guided by the principle of maximum variation sampling, was employed to recruit 27 patients undergoing chemotherapy for pancreatic cancer at two tertiary hospitals in Southwest China between November 2023 and August 2024. The inclusion criteria were as follows: (1) patients aged 18 years or older; (2) confirmation of pancreatic malignancy through imaging and pathology, with patients undergoing chemotherapy; and (3) patients possessing clear consciousness and normal communication abilities. For this study, chemotherapy cycles were classified as early-stage (three or fewer cycles) or late-stage (more than three cycles) [18]. Ethical approval was obtained from the ethics committees of Mianyang Central Hospital (No: S202203501) and Chengdu Seventh People's Hospital (No: QT202300101). All participants provided written or electronic informed consent prior to inclusion.

2.3. Data collection

Patients meeting the inclusion criteria were identified in the oncology outpatient or inpatient departments. The study's purpose and procedures were thoroughly explained, and informed consent was obtained along with demographic and clinical information. Interviews were conducted face-to-face or telephonically at times convenient for the participants. Based on the SET theoretical framework, a formal interview outline (**Table 1**) was developed following discussions between two specialist physicians and two specialized nurses. Preliminary interviews with two patients further informed the outline's design.

Table 1. Outline of the interview

Number	Question
1	What symptoms did you experience during chemotherapy?
2	Could you describe the severity of these symptoms? Kindly elucidate your specific experiences in detail.
3	Have you noticed any disparity in the perception of these symptoms at various time points?
4	What effects have these symptoms had on you?
5	How do you typically cope with these symptoms? Do you ask for help positively?
6	What challenges or needs do you encounter during chemotherapy?

The interviews were conducted independently by researchers with over 12 months of clinical research experience and systematic training in qualitative research. Audio recordings and data collection were facilitated using electronic tablets. The sequence of questions during interviews was adjusted flexibly to ensure an engaging and accessible process. Data saturation was deemed achieved when no new themes emerged during the preliminary analysis and after interviewing two additional participants. At this point, the study was concluded.

2.4. Data analysis

Data transcription and analysis commenced immediately after the first interview. Within 24 hours of each interview, two researchers (Xin Tian and Peiyang Mao) transcribed the audio recordings into standard text, supplemented the transcripts with interview notes, and conducted verbatim verification. The first author utilized traditional content and thematic analyses as guiding frameworks for the data analysis.

Patient identities were anonymized using identifiers (P1–P27), and text encoding was conducted independently by researchers based on the study's thematic focus. The initial coding clusters were developed using the SET theoretical framework. Discrepancies in coding were resolved through team discussions to achieve consensus, and adjustments were made until a uniform agreement was reached. Subsequently, the findings were integrated and iteratively refined to delineate primary themes and subthemes. Data analysis was performed using NVivo software (NVivo Qualitative Data Analysis Software; QSR International Pty Ltd., 12th edition, 2018).

3. Results

3.1. Demographic and clinical characteristics

Interviews were conducted with 27 patients undergoing chemotherapy, including 13 in the early stages and 14 in the late stages of treatment. The duration of interviews ranged from 7 to 35 minutes, with a median duration of 18 minutes. The average age of participants was 58.19 years, with 15 female patients and 23 individuals in stages III–IV of the disease. Details of the demographic and clinical characteristics are presented in **Table 2**. The three themes and eight subthemes identified in this study are summarized in **Table 3**.

Table 2. Demographic and clinical characteristics of the patients (*n* = 27)

Patient	Age	Gender	Education	Occupation	Surgical history of pancreatic cancer	Pathological stage	Chemotherapy	
							Cycle	Stage
P2	34	Male	Junior high school	Unemployed	No	IV	3	Early
P7	65	Female	No formal education	Farmer	No	III	2	Early
P9	59	Female	Junior high school	Farmer	No	IV	1	Early
P10	53	Male	Primary school	Unemployed	No	IV	2	Early
P11	50	Male	Junior high school	Laborer	No	III	3	Early
P13	66	Female	College or undergraduate	Retired	Yes	IV	2	Early
P14	50	Female	Primary school	Unemployed	No	IV	2	Early
P17	78	Male	Primary school	Farmer	No	IV	1	Early
P18	70	Male	Junior high school	Farmer	Yes	II	3	Early
P20	72	Female	Junior high school	Unemployed	Yes	IV	1	Early
P21	58	Female	Primary school	Unemployed	Yes	IV	3	Early
P22	60	Male	Junior high school	Unemployed	No	IV	2	Early
P27	56	Female	Primary school	Unemployed	Yes	IV	1	Early
P1	69	Female	Primary school	Retired	Yes	I	4	Late
P3	57	Female	College or undergraduate	Retired	Yes	IV	4	Late

Table 2 (Continued)

Patient	Age	Gender	Education	Occupation	Surgical history of pancreatic cancer	Pathological stage	Chemotherapy	
							Cycle	Stage
P4	56	Male	College or undergraduate	Civil servant or corporate or institution staff	No	II	4	Late
P5	61	Female	High school or vocational school	Retired	Yes	IV	6	Late
P6	41	Male	College or undergraduate	Civil servant or corporate or institution staff	No	III	4	Late
P8	51	Female	Primary school	Unemployed	Yes	IV	4	Late
P12	57	Female	High school or vocational school	Retired	Yes	IV	4	Late
P15	68	Male	Primary school	Laborer	Yes	IV	4	Late
P16	54	Female	Primary school	Farmer	Yes	I	5	Late
P19	54	Male	High school or vocational school	Farmer	No	IV	5	Late
P23	54	Female	College or undergraduate	Civil servant or corporate or institution staff	No	III	6	Late
P24	61	Male	Junior high school	Laborer	No	IV	4	Late
P25	55	Female	High school or vocational school	Retired	Yes	IV	6	Late
P26	62	Male	Junior high school	Retired	No	IV	4	Late

Table 3. Themes and subthemes

Themes	Subthemes	Content
Symptom experience	Varied symptom presentation	Pain Fatigue Lack of appetite Nausea Numbness Fever Itchy skin
	Dynamic symptom perception	Fluctuations within a cycle Variability between cycles Perception of severity
	Multidimensional symptom impact	Emotion Social interaction Daily activity Walking Work

Table 3 (Continued)

Themes	Subthemes	Content
Self-coping patterns	External support as the main approach	Seeking medical attention proactively
		Seeking multifaceted support from healthcare providers, family members, and friends
	Self-care as the main approach	Transforming behavioral patterns and lifestyle
		Redirecting attention
		Emotional regulation
		Self-endurance
Existing obstacles	Accessing medical resources	Insufficient feedback from healthcare providers
		Resource constraints
		Cumbersome disposal procedures
		Inconvenient access to medical care
	Negative attitude towards seeking support	Imposing an additional burden on others
		Barriers to effective communication
	Insufficient awareness of symptom management	Improper medication usage
		Lack of common knowledge
		Perceiving others as incapable of providing support or assistance
	Facing challenges in emotional regulation	Social impairments
		Disorder of negative emotion management

3.2. Symptom experience

The symptoms experienced by the patients were notably diverse, affecting multiple bodily systems. Variations were observed in the symptom presentation reported by patients at different stages of chemotherapy, as well as in their perceptions of symptoms and their impact (**Figure 1**).

3.2.1. Varied symptom presentation

Patients reported a total of 27 distinct physical symptoms, with a median of six symptoms per individual. The symptoms were categorized based on the International Classification of Functioning, Disability, and Health (ICF) anatomical structures, encompassing eight neurological symptoms, 11 gastrointestinal symptoms, one cardiovascular and respiratory symptom, three endocrine and metabolic symptoms, and four skin and related structural symptoms. A detailed list of symptoms and their reporting percentages is provided in **Figure 2**.

Symptoms related to the nervous system, endocrine and metabolic systems, and skin structures were reported more frequently during the early stages of chemotherapy.

P1 (69-year-old, female, cycle 4): "During the first two or three cycles, eating wasn't really affected, but later it got worse. I started feeling nauseous, and food felt greasy and heavy."

P5 (61-year-old, female, cycle 6): "I felt very weak, like my whole body was exhausted. My legs felt shaky when I walked."

P13 (66-year-old, female, cycle 2): "I'm constipated now. We've tried everything, and I haven't had a bowel movement in three days."

P22 (60-year-old, male, cycle 2): "The worst part is the pain. It hurts right here (touching the abdomen)."

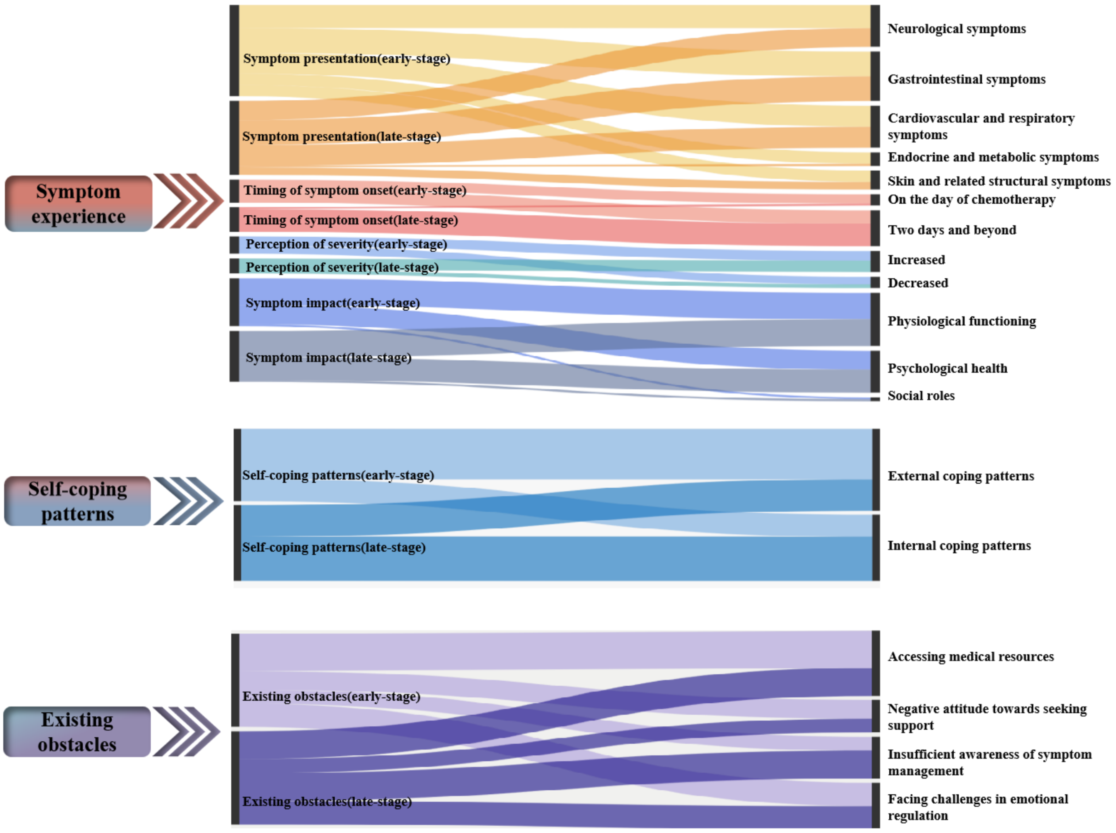

Figure 1. Description of symptom experience, self-coping patterns, and existing obstacles in the early and late stages of chemotherapy

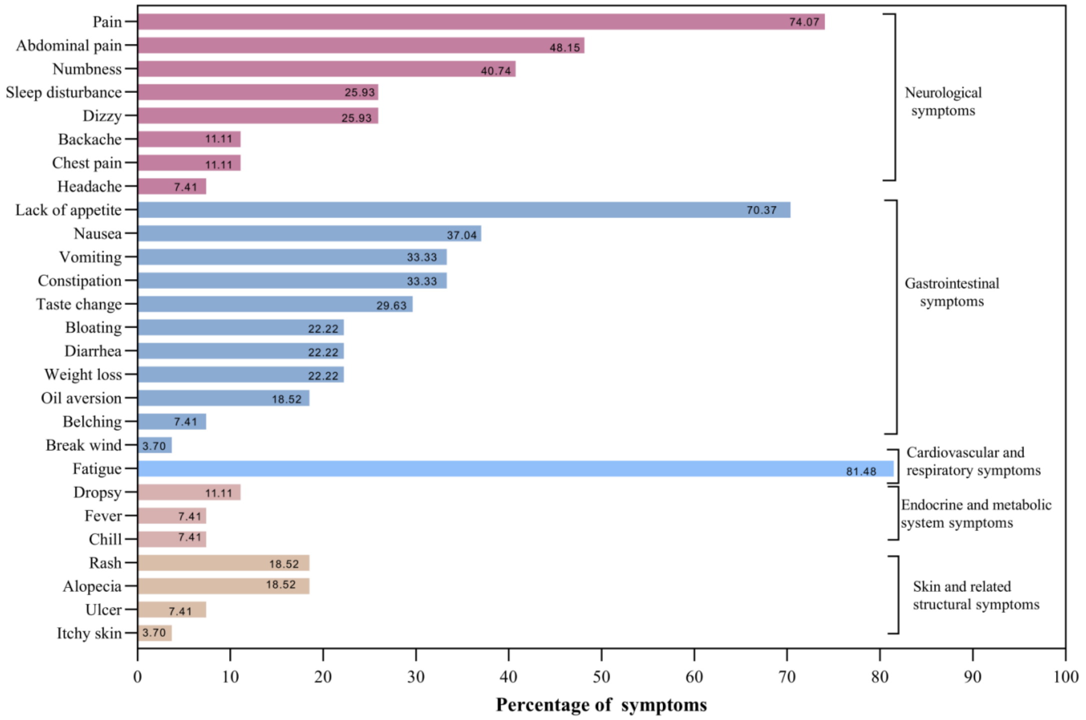

Figure 2. Detailed list of symptoms reported by patients, accompanied by the prevalence percentage for each individual symptom

3.2.2. Dynamic symptom perception

The demanding nature of the chemotherapy regimen imposes significant physical and psychological burdens on some patients. Variations in the onset and recovery of symptoms were observed both within the intervals between treatment cycles and across different stages of chemotherapy.

Nineteen patients reported experiencing adverse reactions within two to three days of returning home, of whom 12 were in the late stage of chemotherapy. Conversely, six patients noted the emergence of symptoms on the day of treatment itself, with five of these patients being in the early stages of chemotherapy.

P6 (41-year-old, male, cycle 4): "Usually, symptoms showed up two to three days after chemo. After those two or three days, they disappeared."

P13 (66-year-old, female, cycle 2): "I throw up about a day after the chemo, that's usually the day it started."

Symptoms generally subsided over a span of approximately one week; however, fatigue persisted as a chronic issue for many.

P3 (57-year-old, female, cycle 4): "Fatigue is just part of the routine. It's always been like this."

P22 (60-year-old, male, cycle 2): "For example, I got the chemo today, and the worst is usually tomorrow and the day after. It'll be around six or seven days before I start feeling better."

Eleven patients reported increasingly severe or unpredictable symptoms as their treatment progressed. Conversely, six patients described developing a gradual tolerance to the symptoms, with four of these patients being in the early stages of chemotherapy.

P7 (65-year-old, female, cycle 2): "I had two cycles of chemotherapy before, and my stomach doesn't hurt as much now. It feels like it's getting a bit better."

P12 (57-year-old, female, cycle 4): "… By the third cycle, I couldn't recover for a week. By the fourth cycle, when I was supposed to rest for two weeks, I still couldn't recover in that time."

3.2.3. Multidimensional symptom impact

The symptoms associated with chemotherapy had a multifaceted negative impact, affecting patients' physiological functioning, psychological well-being, and social roles.

Although differences in emotional distress between the early and late stages of chemotherapy were not clearly captured, many patients reported psychological challenges, including negative emotions and social impairments related to self-image and physical appearance. A total of 22 patients reported experiencing anxiety, irritability, restlessness, and pessimism due to chemotherapy-related symptoms.

P7 (65-year-old, female, cycle 2): "I'm quick to lose my temper and snap when I'm feeling down."

P15 (68-year-old, male, cycle 4): "I've generally had a pretty good attitude, but this illness has really been affecting me."

P21 (58-year-old, female, cycle 3): "Even after just two or three days back home, I still didn't feel like eating. It left me feeling anxious and worried."

Physiological challenges included difficulties with walking and performing daily activities, which were reported more frequently by patients in the late stages of chemotherapy.

P11 (50-year-old, male, cycle 3): "I do walk around a bit, but mostly I stay in bed. When I get up to go to the bathroom, I stumble around."

P20 (72-year-old, female, cycle 1): "Anyway, I haven't really gone downstairs. We live on the fourth floor, so I just walk around the house a bit, eat, stand around, and I feel like I have no energy at all."

The impact on social roles was evident, with younger patients reporting work-related disruptions due to discomfort.

P2 (34-year-old, male, cycle 3): "Because I have already stopped working."

P19 (54-year-old, male, cycle 5): "I can't get a job again. No one wants to hire me for anything, not even for picking up garbage."

3.3. Self-coping patterns

Patients primarily employed two self-coping strategies when dealing with distressing symptoms: seeking external support and engaging in self-care. These self-coping patterns varied depending on the stage of treatment (**Figure 1**).

3.3.1. External coping patterns

Some patients predominantly relied on external assistance to cope with their symptoms. The external coping strategies included proactive healthcare engagement (20/27), seeking help from healthcare providers as well as family and friends (9/27), and obtaining public information (4/27). For these patients, healthcare providers played a significant role in alleviating unpleasant symptoms associated with chemotherapy.

P2 (34-year-old, male, cycle 3): "After my second round of chemo, I told my attending physician about my insomnia, and he prescribed me some sleeping pills. I also mentioned that I had occasional abdominal pain, so he gave me some painkillers."

P7 (65-year-old, female, cycle 2): "My son and daughter-in-law told me that keeping up with nutrition is important for my immune system, especially since chemo is so damaging. They'd tell me what to eat and what to buy each day."

P11 (50-year-old, male, cycle 3): "What else can I do? I just take some medicine... get a prescription, take the pills, and go see the doctor."

P18 (70-year-old, male, cycle 3): "I've been watching a lot of educational videos; they all say to eat light, eat whole grains, and cut back on main staples like rice."

3.3.2. Internal coping patterns

Other patients adopted self-centered coping strategies, including behavioral and lifestyle modifications (12/27), redirecting attention (8/27), and emotional regulation (6/27). These efforts were aimed at improving their overall quality of life (QOL). Notably, 10 patients endured their suffering in silence, forming a group that warrants significant attention and support in the future.

P5 (50-year-old, male, cycle 6): "I'd listen to audiobooks or music... just to take my mind off things and try to relax a bit."

P7 (65-year-old, female, cycle 2): "I'm worried that it's getting worse. How will I manage? There are so many rounds left, a few more cycles to go."

P12 (57-year-old, female, cycle 4): "At home, I'd move around a bit and use a hot water bottle. That was about it. What else could I do?"

P19 (54-year-old, male, cycle 5): "When I had symptoms, they would gradually go away. By then, I already knew how it worked."

P23 (54-year-old, female, cycle 3): "Actually, I think you can consult patients more from a psychological perspective or guide them. I believe this is important."

3.3.3. Differences in self-coping patterns based on the stage of chemotherapy

Patients undergoing the initial three cycles of chemotherapy exhibited a cheerful outlook and were more inclined to seek external support. There were six more patients in the early stages of chemotherapy who primarily employed external coping strategies compared to those in the late stages. Conversely, patients who had undergone more than three cycles of chemotherapy tended to manage their suffering independently, relying on self-care. In the late stages of chemotherapy, patients were more oriented toward internal self-coping strategies compared to those in the early stages.

3.4. Existing obstacles

Although patients often take proactive measures to manage unpleasant symptoms, they encounter various obstacles in addressing their condition. A larger proportion of patients in the early stages of chemotherapy reported challenges in accessing medical resources (14/27). Conversely, more patients in the late stages of chemotherapy displayed a negative attitude toward seeking support (7/27) and demonstrated insufficient awareness of symptom management (9/27). Emotional regulation disorders were observed across different stages of treatment (10/27).

3.4.1. Accessing medical resources

Patients frequently experienced physical discomfort during consultations and pharmacological interventions. Due to the unique nature of their illnesses and treatment modalities, 14 patients encountered such challenges, eight of whom were in the early stages of chemotherapy. These issues included insufficient or delayed feedback from healthcare providers (6/27), resource constraints (4/27), and cumbersome medical procedures (2/27).

P11 (50-year-old, male, cycle 3): "We've tried a lot of ways, but in the end, they just tell us to go to the hospital. But when we get there, there's no available bed."

P12 (57-year-old, female, cycle 4): "I asked the doctor, and they said these are just the side effects of the treatment. There's nothing we can do."

P20 (72-year-old, female, cycle 1): "The process is too complicated. They take so much blood at once, three or four vials."

In addition, some patients expressed frustration due to difficulties in accessing medical care (2/27). Geographical distance from healthcare facilities often hindered their ability to obtain analgesics regularly and address their concerns promptly.

P9 (59-year-old, female, cycle 1): "We can ask other patients or doctors at the hospital, but when we go back to our hometown, there's no one to ask."

P22 (60-year-old, male, cycle 2): "I had to travel far just to get some painkillers. What can I do?"

3.4.2. Negative attitude towards seeking support

Seven patients faced challenges in seeking external support from hospitals and family, with four of these patients in the late stages of chemotherapy. Psychological burdens contributed to their reluctance to seek assistance, as they were mindful of the busy schedules of healthcare providers and the additional strain on their family members (4/27). Furthermore, stigma associated with their condition and communication barriers, particularly in older patients, discouraged them from seeking help (3/27).

P1 (69-year-old, female, cycle 4): "When I got sick, the whole family started to revolve around me, and it just added to the stress."

P2 (34-year-old, male, cycle 3): "I feel like if I can solve things on my own, I won't have to bother my family or the doctors and nurses."

P5 (65-year-old, female, cycle 2): "I just feel like I don't want to interact with anyone, don't want to communicate with others. It means I feel pretty lonely and isolated, you know? I guess I'm just feeling a bit down."

3.4.3. Insufficient awareness of symptom management

Nine patients demonstrated a lack of understanding regarding effective symptom management, with six of them primarily relying on internal self-coping strategies in the late stages of chemotherapy. Fear of potential addiction to medications or the belief that such drugs might obscure critical bodily signals led some patients to avoid using analgesics or sedatives (3/27). Many opted to endure discomfort until their physical condition became untenable.

P10 (53-year-old, male, cycle 2): "I did buy those sleeping pills; the doctor prescribed me sleeping pills and painkillers, but I haven't taken any. If I start taking them, I'll have to rely on them all the time."

P20 (72-year-old, female, cycle 1): "If I take the medicine, it'll just mask the issues happening in my body. So, I can't know what's wrong with my body."

Additionally, some patients believed that others were incapable of offering meaningful support (7/27), prompting them to reject counseling.

P12 (57-year-old, female, cycle 4): "The doctors don't really have a solution now. No matter how they try to help, they can't solve these problems for me."

3.4.4. Facing challenges in emotional regulation

Emotional regulation disorders were evenly distributed among patients at different stages of chemotherapy. Many patients struggled to regulate their emotional states in response to distressing symptoms (8/27). Anxiety over the potential ineffectiveness of treatments, fear of worsening conditions, and uncertainty about future therapies, particularly when faced with severe adverse reactions, were common concerns.

P7 (65-year-old, female, cycle 2): "I'm worried that it's getting worse. How will I manage? There are so many rounds left, a few more cycles to go."

P13 (66-year-old, female, cycle 2): "I can't help but think about it—this pain here and there. Is it spreading somewhere else?"

Feelings of inferiority, driven by fear of judgment or stigma, further discouraged social interactions (3/27).

P18 (70-year-old, male, cycle 3): "That's why I don't want to tell people about this. In rural areas, people tend to look down on it."

5. Discussion

This study revealed that patients with pancreatic cancer experience a complex and diverse range of symptoms during chemotherapy, with variations in their experiences and coping patterns at different stages of treatment. Patients in the early stages of chemotherapy were more likely to adopt external self-coping patterns to manage their symptoms, whereas those who had undergone more than three cycles of chemotherapy tended to rely on internal self-coping strategies. These findings provide valuable insights for healthcare providers, supporting the implementation of ongoing symptom monitoring and personalized self-coping strategies.

Patients reported a wide range of physical symptoms affecting various systems during chemotherapy, including the neurological, cardiovascular, gastrointestinal, and other systems [19]. Symptoms related to the nervous, endocrine, metabolic systems, and skin structures were more prevalent among patients in the early stages of chemotherapy compared to those in later stages. Additionally, patients in the early stages of chemotherapy tended to perceive the onset of symptoms earlier than those in the later stages. This may be attributed to an increased threshold for symptom perception as chemotherapy progresses, consistent with previous findings that cancer patients' perception of symptoms can change over time [20].

The diverse symptoms experienced by patients have multidimensional effects. Physiologically, walking difficulties were more prevalent among patients in the late stages of chemotherapy, potentially linked to the prolonged symptom burden and the coping strategies employed. Psychologically, the impact of symptoms was significant but often overlooked by patients. Over time, emotional avoidance may inadvertently lead to a decline in quality of life (QOL) [21]. These findings underscore the importance of conducting symptom assessments at regular intervals during chemotherapy. Frequent symptom assessments can provide critical insights into the patient's physiological condition and identify when interventions are needed outside the hospital. By employing high-frequency symptom monitoring, variations and patterns in symptom severity can be accurately identified, enabling timely interventions to mitigate adverse outcomes [22]. This study provides a qualitative foundation for the development of assessment tools for patients with pancreatic cancer. Continuous symptom monitoring during consultations, combined with real-time decision support, represents a promising strategy for addressing these challenges [23].

The findings also revealed that seeking external support was the primary self-coping strategy for patients in the early stages of chemotherapy. These patients tended to adopt problem-focused coping strategies [24], driven by the fear of "unknown" consequences of treatment, as they were unfamiliar with chemotherapy during its initial stages. In contrast, self-care emerged as the predominant coping approach among patients in the late stages of chemotherapy. This strategy was not primarily focused on addressing specific problems but was instead characterized by an emotion-focused approach. Previous studies have demonstrated that patients employing problem-focused coping strategies tend to be more proactive, while those relying on emotion-focused strategies are more likely to experience severe anxiety [25].

Patients face numerous obstacles in managing their symptoms due to both internal and external factors, which persist throughout chemotherapy. These barriers are closely tied to the self-coping patterns patients adopt. It was observed that a greater number of patients in the early stages of chemotherapy felt that support from healthcare providers was insufficient, likely due to communication challenges and limited medical resources [26,27]. This aligns with the finding that patients in advanced stages require more comprehensive care and support [28]. In contrast, some patients demonstrated a reluctance to seek help, choosing instead to endure discomfort silently due to psychological burdens and a tendency to conceal their symptoms [29]. Many of these patients preferred to manage their discomfort independently.

By addressing the existing obstacles and understanding the self-coping patterns of patients, symptom management can be significantly improved. Between chemotherapy sessions, timely access to support and effective self-care are critical for recovery. Remote monitoring and management systems offer a promising solution for alleviating the burden on healthcare providers while addressing patients' needs in the future [30].

5. Limitations

Due to the characteristics of qualitative research and the late-stage diagnosis of pancreatic cancer, a larger proportion of the participants interviewed were in the advanced stages of the disease. While the limited sample size may affect the representativeness of the findings, the study nonetheless captures specific disease characteristics. The principle of data saturation was followed, with data collection ceasing when no new themes emerged. Additionally, the retrospective nature of the interviews may have introduced recall bias. Future research should consider adopting a longitudinal qualitative design or a quantitative approach to gain a more comprehensive understanding of the symptom burden and barriers faced by patients with pancreatic cancer.

6. Conclusion

Patients with pancreatic cancer experience a multifaceted and dynamic spectrum of symptoms throughout chemotherapy. Significant differences were observed between the early and late stages of chemotherapy in terms of symptom experiences and self-coping patterns. Patients in the early stages exhibited heightened sensitivity to symptoms and predominantly sought external support, whereas those in the late stages increasingly relied on self-care strategies. These differing self-coping patterns were frequently associated with distinct obstacles to symptom management. Enhancing collaboration among healthcare providers, families, and patients is essential. Regular symptom monitoring during chemotherapy, identification of primary burdens at different stages, and implementation of tailored management strategies aligned with patients' preferred coping styles are crucial for optimizing care and improving outcomes.

Acknowledgments

We sincerely thank all the patients who voluntarily participated in this interview and dedicated their time to our research. Allowing us to see issues from their perspective has greatly enriched our understanding.

Ethics approval and informed consent

This study was approved by the ethics committees of Mianyang Central Hospital (No: S202203501) and Chengdu Seventh People's Hospital (No: QT202300101). All participants provided written or electronic informed consent.

Consent for participation

Informed consent was obtained from all individual participants included in the study.

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Disclosure statement

The authors declare no conflict of interest.

References

[1] Bray F, Laversanne M, Sung H, et al., 2024, Global Cancer Statistics 2022: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin, 74(3): 229–263. https://doi.org/10.3322/caac.21834

[2] Park W, Chawla A, O'Reilly EM, 2021, Pancreatic Cancer: A Review. JAMA, 326(9): 851–862. https://doi.org/10.1001/jama.2021.13027. Erratum in JAMA, 326(20): 2081. https://doi.org/10.1001/jama.2021.19984

[3] Yu KH, 2024, Advances in Systemic Therapy in Pancreatic Cancer. Hematol Oncol Clin North Am, 38(3): 617–627. https://doi.org/10.1016/j.hoc.2024.03.002

[4] Weiss L, Fischer LE, Heinemann V, et al., 2024, Changes Over Time in the Course of Advanced Pancreatic Cancer Treatment with Systemic Chemotherapy: A Pooled Analysis of Five Clinical Trials from Two Decades of the German AIO Study Group. ESMO Open, 9(4): 102944. https://doi.org/10.1016/j.esmoop.2024.102944

[5] Evans D, Ghassemi N, Hajibandeh S, et al., 2024, Meta-Analysis of Adjuvant Chemotherapy Versus No Adjuvant Chemotherapy for Resected Stage I Pancreatic Cancer. Surgery, 175(6): 1470–1479. https://doi.org/10.1016/j.surg.2023.11.027

[6] Altman AM, Wirth K, Marmor S, et al., 2019, Completion of Adjuvant Chemotherapy After Upfront Surgical Resection for Pancreatic Cancer is Uncommon Yet Associated with Improved Survival. Ann Surg Oncol, 26(12): 4108–4116. https://doi.org/10.1245/s10434-019-07602-6

[7] Chen J, Chen L, Yu J, et al., 2019, Meta-Analysis of Current Chemotherapy Regimens in Advanced Pancreatic Cancer to Prolong Survival and Reduce Treatment-Associated Toxicities. Mol Med Rep, 19(1): 477–489. https://doi.org/10.3892/mmr.2018.9638

[8] Takeda T, Sasaki T, Mie T, et al., 2021, The Prognostic Impact of Tumour Location and First-Line Chemotherapy Regimen in Locally Advanced Pancreatic Cancer. Jpn J Clin Oncol, 51(5): 728–736. https://doi.org/10.1093/jjco/hyab014

[9] Lelond S, Ward J, Lambert PJ, et al., 2021, Symptom Burden of Patients with Advanced Pancreas Cancer (APC): A Provincial Cancer Institute Observational Study. Curr Oncol, 28(4): 2789–2800. https://doi.org/10.3390/curroncol28040244

[10] Liu C, Liu L, Chen M, 2023, Experience of Living with Symptom Clusters in Postoperative Pancreatic Cancer Patients. Eur J Oncol Nurs, 62: 102266. https://doi.org/10.1016/j.ejon.2022.102266

[11] Tang CC, Draucker C, Tejani M, et al., 2018, Symptom Experiences in Patients with Advanced Pancreatic Cancer as Reported During Healthcare Encounters. Eur J Cancer Care (Engl), 27(3): e12838. https://doi.org/10.1111/ecc.12838

[12] Tang CC, Von Ah D, Fulton JS, 2018, The Symptom Experience of Patients With Advanced Pancreatic Cancer: An Integrative Review. Cancer Nurs, 41(1): 33–44. https://doi.org/10.1097/NCC.0000000000000463

[13] Giesinger JM, Wintner LM, Zabernigg A, et al., 2014, Assessing Quality of Life on the Day of Chemotherapy Administration Underestimates Patients' True Symptom Burden. BMC Cancer, 14: 758. https://doi.org/10.1186/1471-2407-14-758

[14] Komatsu H, Yagasaki K, Hirata K, et al., 2019, Unmet Needs of Cancer Patients with Chemotherapy-Related Hand-Foot Syndrome and Targeted Therapy-Related Hand-Foot Skin Reaction: A Qualitative Study. Eur J Oncol Nurs, 38: 65–69. https://doi.org/10.1016/j.ejon.2018.12.001

[15] Henly SJ, Kallas KD, Klatt CM, et al., 2003, The Notion of Time in Symptom Experiences. Nurs Res, 52(6): 410–417. https://doi.org/10.1097/00006199-200311000-00009

[16] Rha SY, Park M, Lee J, 2019, Stability of Symptom Clusters and Sentinel Symptoms During the First Two Cycles of

Adjuvant Chemotherapy. Support Care Cancer, 27(5): 1687–1695. https://doi.org/10.1007/s00520-018-4413-9

[17] Braun V, Clarke V, 2019, Novel Insights into Patients' Life-Worlds: The Value of Qualitative Research. Lancet Psychiatry, 6(9): 720–721. https://doi.org/10.1016/S2215-0366(19)30296-2

[18] Zhang J, Wang S, Zhou Z, et al., 2023, Unpleasant Symptoms of Immunotherapy for People with Lung Cancer: A Mixed-Method Study. Int J Nurs Stud, 139: 104430. https://doi.org/10.1016/j.ijnurstu.2022.104430

[19] Livshits Z, Rao RB, Smith SW, 2014, An Approach to Chemotherapy-Associated Toxicity. Emerg Med Clin North Am, 32(1): 167–203. https://doi.org/10.1016/j.emc.2013.09.002

[20] Nunes KZ, Grippa WR, Lopes AB, et al., 2024, Cancer Symptom Clusters, Cardiovascular Risk, and Quality of Life of Patients with Cancer Undergoing Chemotherapy: A Longitudinal Pilot Study. Medicine (Baltimore), 103(16): e37819. https://doi.org/10.1097/MD.0000000000037819

[21] Davis S, Serfaty M, Low J, et al., 2023, Experiential Avoidance in Advanced Cancer: A Mixed-Methods Systematic Review. Int J Behav Med, 30(5): 585–604. https://doi.org/10.1007/s12529-022-10131-4

[22] Yu H, Lei C, Wei X, et al., 2024, Electronic Symptom Monitoring After Lung Cancer Surgery: Establishing a Core Set of Patient-Reported Outcomes for Surgical Oncology Care in a Longitudinal Cohort Study. Int J Surg, 110(10): 6591–6600. https://doi.org/10.1097/JS9.0000000000001855

[23] Mooney K, Whisenant MS, Beck SL, 2019, Symptom Care at Home: A Comprehensive and Pragmatic PRO System Approach to Improve Cancer Symptom Care. Med Care, 57 Suppl 5 Suppl 1(Suppl 5 1): S66–S72. https://doi.org/10.1097/MLR.0000000000001037

[24] Folkman S, Lazarus RS, Gruen RJ, et al., 1986, Appraisal, Coping, Health Status, and Psychological Symptoms. J Pers Soc Psychol, 50(3): 571–579. https://doi.org/10.1037//0022-3514.50.3.571

[25] Silva AVD, Zandonade E, Amorim MHC, 2017, Anxiety and Coping in Women with Breast Cancer in Chemotherapy. Rev Lat Am Enfermagem, 25: e2891. https://doi.org/10.1590/1518-8345.1722.2891

[26] Khan NN, Maharaj A, Evans S, et al., 2022, A Qualitative Investigation of the Supportive Care Experiences of People Living with Pancreatic and Oesophagogastric Cancer. BMC Health Serv Res, 22(1): 213. https://doi.org/10.1186/s12913-022-07625-y

[27] Challinor JM, Alqudimat MR, Teixeira TOA, et al., 2020, Oncology Nursing Workforce: Challenges, Solutions, and Future Strategies. Lancet Oncol, 21(12): e564–e574. https://doi.org/10.1016/S1470-2045(20)30605-7

[28] Temiz G, Durna Z, 2020, Evaluation of Quality of Life and Health Care Needs in Cancer Patients Receiving Chemotherapy. J Cancer Educ, 35(4): 796–807. https://doi.org/10.1007/s13187-019-01533-2

[29] Riegel B, Page SD, Aryal S, et al., 2024, Symptom Characteristics, Perceived Causal Attributions, and Contextual Factors Influencing Self-Care Behaviors: An Ecological Daily Assessment Study of Adults with Chronic Illness. Patient Educ Couns, 123: 108227. https://doi.org/10.1016/j.pec.2024.108227

[30] Maguire R, McCann L, Kotronoulas G, et al., 2021, Real Time Remote Symptom Monitoring During Chemotherapy for Cancer: European Multicentre Randomised Controlled Trial (eSMART). BMJ, 374: n1647. https://doi.org/10.1136/bmj.n1647. Erratum in BMJ, 374: n2116. https://doi.org/10.1136/bmj.n2116