



Lived Experiences of Cancer Patients Managing Treatment Side Effects through Personalized Pharmacotherapy

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ABSTRACT

Cancer treatment often leads to significant side effects that impact patients' quality of life. While personalized pharmacotherapy has been shown to improve clinical outcomes, less is known about its emotional and psychological effects on patients. This study seeks to explore the lived experiences of cancer patients managing treatment side effects through personalized pharmacotherapy, addressing the gap in understanding how individualized treatments influence patients' emotional well-being. We use a phenomenological approach to gain insights into how cancer patients perceive and cope with treatment side effects and how personalized care affects their overall experience. Data were collected through in-depth, semi-structured interviews with seven cancer patients undergoing personalized pharmacotherapy, and the transcripts were analyzed using thematic analysis to identify recurring patterns and meanings. The analysis revealed that personalized treatment significantly enhances patients' sense of control and emotional well-being, helping them better manage side effects and improving their quality of life. These findings highlight the importance of integrating personalized pharmacotherapy into cancer treatment plans while acknowledging limitations such as the small sample size and single-center recruitment, which may restrict generalizability. Future studies with larger and more diverse populations are needed to validate and expand these findings.



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INTRODUCTION

Cancer treatment, while increasingly effective, often brings significant challenges to patients, particularly in the form of side effects caused by pharmacotherapy (Song et al., 2025). These side effects can range from physical symptoms such as nausea, fatigue, and pain, to emotional and psychological impacts, which greatly affect a patient's overall quality of life. In many cases, cancer patients must navigate not only the medical complexities of their condition but also the social and psychological burdens associated with treatment. In this context, personalized pharmacotherapy has emerged as a promising approach to minimize these adverse effects by tailoring treatment regimens to the individual characteristics of the patient (Fu, Yan, et al., 2025). However, despite advancements in treatment personalization, there remains limited understanding of the lived experiences of patients undergoing such treatments and how they perceive the effectiveness of these approaches in managing side effects.

The relevance of this phenomenon is significant, as the experience of undergoing cancer treatment is deeply personal and subject to a wide range of emotional, psychological, and physical factors (Pei et al., 2025). Patients often report feelings of helplessness, isolation, and frustration, which can be exacerbated by the lack of personalized care or insufficient communication about treatment options. As such, the subjective experiences of patients, including how they understand and respond to pharmacotherapy, are critical to improving treatment outcomes and enhancing overall care. This calls for a deeper exploration of the human experience behind cancer treatment, one that goes

beyond clinical outcomes and delves into the emotional and personal dimensions of the treatment journey.

Phenomenology, with its focus on understanding lived experiences from the perspective of the individual, is particularly well-suited to explore the meaning patients attach to their experiences with personalized pharmacotherapy (Y. Yang et al., 2025). The need for such exploration is evident in the current literature, which often focuses on clinical effectiveness rather than on the personal, subjective experiences of those undergoing treatment (Guan et al., 2025). By understanding these experiences in depth, healthcare providers can improve the care they offer, ensuring that it is not only medically effective but also personally meaningful and emotionally supportive (Xu, Wang, et al., 2025). This study, therefore, seeks to fill a gap in the literature by providing a phenomenological examination of the ways in which cancer patients experience and make sense of personalized pharmacotherapy.

Research on the lived experiences of individuals undergoing cancer treatment has increasingly become a vital area of study, particularly within the field of clinical pharmacology and therapeutics (Ye et al., 2025). While clinical studies focus on the efficacy of treatments and their side effects, they often overlook the subjective experiences of patients, which are crucial for a comprehensive understanding of the impact of pharmacotherapy (Fiandaca et al., 2025). A growing body of literature has emphasized the importance of exploring these experiences in depth, as patients' perceptions and emotional responses can significantly influence their adherence to treatment and overall well-being. This gap in understanding calls for a more nuanced, phenomenological approach to capture the essence of patients' lived experiences, offering insights that can guide more patient-centered care.

However, exploring these deep, subjective experiences presents significant methodological challenges (Deng et al., 2025). Traditional quantitative research methods, which are often used to evaluate the efficacy of medical treatments, are limited in their ability to capture the nuanced emotional, psychological, and social dimensions of a patient's experience. These approaches typically rely on numerical data and generalizations, which can fail to address the complexities of individual perceptions (Tan et al., 2025). Furthermore, even qualitative studies that rely on open-ended surveys or interviews may struggle to fully capture the richness of personal experience, as they often lack the in-depth, interpretative analysis required to reveal the true essence of lived experiences.

These limitations highlight the inadequacy of existing research methods in fully understanding the personal, emotional, and subjective realities of cancer patients (Guo et al., 2025). Phenomenological approaches, by contrast, are uniquely suited to explore these dimensions in a meaningful way (Gao et al., 2025). They allow for the identification of core themes that emerge from individuals' lived experiences, providing a more complete understanding of how patients make sense of their treatment and its impact on their lives. This study, therefore, aims to address these methodological gaps by using phenomenology to delve deeply into the personal experiences of cancer patients undergoing personalized pharmacotherapy, ensuring a richer, more comprehensive exploration of their treatment journeys.

While existing research on cancer treatment primarily focuses on the clinical efficacy of personalized pharmacotherapy, these studies often adopt practical, outcome-based approaches to address the challenges of side effects. These methods, typically grounded in quantitative measures, offer valuable insights into treatment effectiveness and general patient responses (Break et al., 2025). However, they fail to provide a deep understanding of the subjective experiences that patients undergo while managing treatment side effects. The emphasis on objective clinical data often overlooks the personal, emotional, and psychological impacts of treatment, thus offering a limited view of the phenomenon.

Current approaches tend to be inadequate when it comes to capturing the full richness of individual experiences, particularly regarding how patients perceive and make sense of their treatment journeys (Lim et al., 2025). These methods lack the ability to explore the deeper meanings and emotional layers that characterize the lived experiences of cancer patients (Li et al., 2025). Without understanding the complexities of these personal narratives, healthcare providers cannot fully address

the nuanced needs of patients, potentially hindering the development of more empathetic and effective treatment plans.

An alternative approach, phenomenology, offers a more holistic and in-depth exploration of the phenomenon (Z. Yang et al., 2025). By focusing on the lived experiences of patients, phenomenology allows for the identification of core themes that reveal how individuals perceive, interpret, and respond to the side effects of personalized pharmacotherapy. This methodological approach enables a more comprehensive understanding of the meaning patients attach to their treatment experiences, bridging the gap left by more traditional research methods. Therefore, this study aims to explore the essence of these experiences through a phenomenological lens, providing deeper insights that can ultimately inform more patient-centered care practices.

Previous studies have explored the various challenges faced by cancer patients undergoing pharmacotherapy, with a focus on clinical outcomes and the side effects associated with treatment (El-Haggag et al., 2025). However, few studies have delved into the lived experiences of patients, particularly regarding how they perceive and manage these side effects within the context of personalized pharmacotherapy (Mo et al., 2025). Existing research often relies on quantitative methods that measure general outcomes but do not fully capture the emotional, psychological, and social dimensions of the patient experience (Xu, Yan, et al., 2025). Theories related to patient-centered care and personalized medicine have highlighted the importance of tailoring treatments to individual needs, but these studies have largely ignored the subjective interpretation of these treatments by patients. Consequently, the gap in understanding the deeper meaning of cancer patients' experiences remains unaddressed.

To address this gap, this study adopts a phenomenological approach, focusing on the lived experiences of cancer patients in relation to personalized pharmacotherapy (He et al., 2025). Phenomenology is particularly well-suited for exploring the meaning that individuals attach to their experiences, as it allows for a deeper understanding of how patients perceive and make sense of their treatment journey (Kazuta et al., 2025). This methodology enables the research to uncover the essence of patients' experiences with treatment, providing insights that go beyond the clinical and objective data typically captured in medical studies. By using phenomenology, the study seeks to offer a more holistic view of how cancer patients experience personalized treatment and its impact on their quality of life, answering the need for a more nuanced understanding of this phenomenon.

This article is structured to first provide a general background on the phenomenon of cancer treatment and its side effects, highlighting the importance of understanding the patient's perspective (Sukumar et al., 2025). Following this, the methodology section details the phenomenological approach used to explore the experiences of the participants (Eissa et al., 2025). The article proceeds with a description of the data collection process, followed by an analysis of the themes that emerged from the interviews (Zhai et al., 2025). The discussion then interprets the findings in relation to existing literature, and the conclusion summarizes the insights gained from this study, emphasizing the significance of personalized pharmacotherapy in improving patient care.

RESEARCH METHODS

Study Design

This study employed a phenomenological approach to explore the personal experiences of cancer patients in managing the side effects of treatment through personalized pharmacotherapy (Fife, 2020). Phenomenology, as a qualitative research design, is specifically suited for understanding and describing the lived experiences of individuals. By focusing on the subjective experiences of patients, this approach enables a deeper understanding of how they perceive and make sense of their treatment journey. The decision to use phenomenology is grounded in its capacity to uncover the essence of human experiences and to allow participants' voices to authentically reflect their feelings and perceptions regarding cancer treatment.

In this study, an interpretative phenomenological analysis (IPA) approach was chosen. IPA is particularly relevant as it not only seeks to explore personal experiences but also interprets how

participants make sense of those experiences in the context of their lives. This methodological approach was selected because it facilitates a comprehensive exploration of how cancer patients navigate the complexities of pharmacotherapy personalization and its impact on their quality of life.

Participants

Participants in this study were selected using purposive sampling to ensure that individuals with relevant experiences and perspectives on the phenomenon were included. The inclusion criteria required participants to be adult cancer patients who were actively undergoing treatment and experiencing side effects related to pharmacotherapy. Participants were selected based on their ability to articulate their personal experiences with managing side effects, particularly those involving personalized treatment strategies.

A total of seven participants were involved in this study, including four females and three males, with an average age of 52 years. The participants were diverse in terms of the type of cancer they had been diagnosed with, as well as the stage of their treatment, allowing for a range of experiences to be represented. Exclusion criteria included individuals who were unable to communicate their experiences due to cognitive impairments or those who had not started pharmacotherapy as part of their treatment regimen.

Data Collection

Data were collected through in-depth, semi-structured interviews conducted with each participant. The interviews were designed to explore the participants' experiences with managing the side effects of cancer treatment and their perceptions of how personalized pharmacotherapy had impacted their quality of life. A semi-structured interview guide was used, which allowed for flexibility in the conversation while ensuring that key topics related to the research questions were covered. The interviews lasted between 45 to 60 minutes each and were conducted in private settings to ensure confidentiality and comfort for the participants.

All interviews were audio-recorded with participants' consent and later transcribed verbatim for analysis. Efforts were made to create a comfortable environment for participants by conducting the interviews in a familiar and private space, ensuring that they felt at ease sharing their personal experiences. The data collection process was designed to allow participants to speak openly and reflectively about their treatment experiences.

Data Analysis

The data were analyzed using interpretative phenomenological analysis (IPA), which is suited for examining how individuals make sense of their personal and social worlds. The analysis began with a detailed reading of the transcribed interviews to gain an initial understanding of the data. Each transcript was then examined for emergent themes that encapsulated significant aspects of the participants' experiences with personalized pharmacotherapy and its impact on their treatment journey.

The analysis followed a systematic process of identifying themes, clustering them into broader categories, and interpreting the connections between the themes. NVivo software was used to assist with the organization of the data, but the emphasis was on the manual coding and interpretation of the data. Each theme was further explored to understand how it related to the participants' overall experience and the meaning they attributed to their treatment.

Ethics

Ethical approval for this study was obtained from the relevant research ethics committee. Prior to participation, all individuals were provided with detailed information about the study and its objectives, and written informed consent was obtained. Participants were assured of their right to confidentiality, and all data were anonymized to ensure that their identities remained protected throughout the research process. Participants were informed that they could withdraw from the study at any time without any negative consequences. The study adhered to ethical standards set by international guidelines for research involving human participants.

RESULTS

Perception of Side Effects and the Impact on Quality of Life

A recurrent theme from the interviews was the profound impact of treatment side effects on patients' daily lives and well-being. Participants consistently described physical exhaustion and emotional strain that limited normal activities and affected mental health. For example, one participant (P3) noted that side effects were overwhelming and left her constantly fatigued. This illustrates how side effects shape patients' lived experiences, directly linking to the research question on emotional and psychological burdens.

Some patients also highlighted that discussing side effects with healthcare providers within the framework of personalized pharmacotherapy gave them a sense of control. As one patient (P5) explained, adjusting medication provided hope and a sense of agency, showing how personalization mediates the relationship between treatment and well-being.

Personalization of Therapy: A Pathway to Empowerment

Another dominant theme was empowerment through personalized pharmacotherapy. Tailored treatment plans made patients feel acknowledged as individuals, rather than treated uniformly. One participant (P2) described feeling valued when his medication was adjusted based on his genetic profile. This aligns with the research question on how individualized care influences perceptions of agency and involvement.

Personalized pharmacotherapy thus reduced feelings of helplessness, allowing patients to regain a sense of control over their lives, as reflected in several accounts (e.g., P4).

Challenges in Communication and the Need for Support

Despite the benefits of personalization, communication difficulties were frequently reported. Patients often struggled to articulate the severity of side effects, leading to frustration and feelings of being misunderstood (e.g., P6). This underscores the need for improved communication strategies between patients and healthcare providers.

Support networks also played a critical role in coping. Several participants (e.g., P7) emphasized that family and social support mitigated emotional and physical burdens, highlighting the importance of external resources in complementing medical care.

In summary, the findings reveal that while personalized pharmacotherapy enhances emotional well-being and empowerment, challenges in communication and the need for strong support systems remain. These themes directly address the research questions by showing how patients experience and interpret the interplay between treatment side effects, personalization, and coping mechanisms.

DISCUSSION

The primary findings of this study highlight the profound impact of personalized pharmacotherapy on cancer patients' experiences of managing treatment side effects (M. Zhang et al., 2025). Participants reported feeling empowered and more in control when their treatments were tailored to their specific needs, suggesting that personalized care is not only a clinical necessity but also a source of emotional and psychological support. This study contributes to a deeper understanding of how patients perceive the effectiveness of their treatment, beyond the traditional clinical metrics, emphasizing the personal and emotional dimensions of their experiences.

The findings provide clear answers to the research question, which sought to explore how cancer patients experience personalized pharmacotherapy and its impact on their quality of life. The results reveal that personalization of treatment significantly alters how patients perceive and cope with side effects, highlighting the need for healthcare practices that consider both the clinical and personal aspects of treatment (Kim et al., 2025). By showing that personalized pharmacotherapy enhances patients' sense of control and emotional well-being, this research offers valuable insights into how healthcare providers can better meet the complex needs of cancer patients. The findings also

demonstrate that focusing on the patients' subjective experiences leads to a more holistic view of their treatment journey, which is essential for improving patient care.

When compared to existing literature, the findings of this study align with previous research on patient-centered care and personalized medicine. Studies by authors like Finkelstein et al. (2020) and Greenfield et al. (2018) have emphasized the importance of considering the patient's individual needs in medical treatments, but few have focused on the lived experiences of patients undergoing cancer treatment in a personalized pharmacotherapy context (Bhatnagar et al., 2025). This research supports and expands upon the existing body of work by providing a phenomenological perspective that captures the emotional and psychological aspects of treatment, which are often overlooked in clinical studies. However, while this study corroborates previous research on the importance of personalization, it also highlights a gap in understanding the detailed experiences and emotions that accompany personalized pharmacotherapy, which traditional medical studies fail to address. This study, therefore, contributes significantly to the literature by offering a richer, more nuanced interpretation of the phenomenon.

Implications of Findings

The findings of this study provide important insights into how personalized pharmacotherapy affects the experience of cancer patients in managing side effects (Wu et al., 2025). From a scientific perspective, the results reinforce the significance of integrating personalized treatment plans to improve patient outcomes, not only in terms of clinical efficacy but also in terms of emotional and psychological well-being. The study suggests that a more individualized approach to cancer treatment helps patients feel more in control, reducing feelings of helplessness that often accompany the side effects of treatment (Almeida et al., 2025). On a practical level, healthcare providers can utilize these findings to enhance patient care by prioritizing personalized treatment regimens and fostering open communication with patients about their needs and concerns. This can lead to greater patient satisfaction, improved adherence to treatment, and overall better quality of life.

Beyond individual patient care, the implications of this research extend to the broader social and cultural contexts. Cancer treatment is not just a medical intervention; it is a deeply personal journey shaped by societal and cultural factors (Su et al., 2025). The study highlights that cancer patients, particularly those in personalized treatment programs, often perceive the emotional and psychological aspects of care as just as important as the clinical outcomes (Sharma et al., 2025). This understanding can inform policies and practices that promote patient-centered care on a larger scale, making healthcare systems more responsive to the diverse needs of patients (Liu et al., 2025). Furthermore, these findings stress the importance of empathy and holistic approaches in healthcare, ensuring that patients' voices are heard and their experiences valued in clinical decision-making processes.

Limitations of the Study

While this study provides valuable insights into the lived experiences of cancer patients, it is important to acknowledge several limitations that may affect the generalizability of the findings (Wang et al., 2025). The study sample consisted of a small, purposively selected group of participants, which limits the ability to draw broad conclusions across diverse populations (Adewale et al., 2025). Additionally, the study focused on cancer patients undergoing personalized pharmacotherapy, and thus the findings may not be applicable to individuals with other chronic conditions or those receiving different types of treatments (Varol et al., 2025). Furthermore, the data were collected through in-depth interviews, which, while providing rich qualitative insights, may be subject to biases inherent in self-reported data, such as social desirability or recall bias. Future research could address these limitations by expanding the sample size, including a more diverse group of participants, and exploring the experiences of patients with different types of diseases or treatments.

Directions for Future Research

The findings from this study open avenues for future research into personalized pharmacotherapy and patient-centered care (Fu, Hao, et al., 2025). One potential area for further exploration is the role of healthcare providers in shaping the patient experience with personalized

treatments (Shen et al., 2025). Understanding how communication, trust, and emotional support from healthcare professionals impact patient outcomes could offer valuable insights for improving patient-provider relationships. Additionally, the study suggests the need for more research into the cultural and social factors that influence patients' perceptions of their treatment, particularly in diverse populations (Moon et al., 2025; L. Zhang et al., 2025). Future studies could also examine how different methods of delivering personalized care, such as digital health platforms or telemedicine, influence the patient experience and treatment adherence. Overall, this research has the potential to contribute significantly to the growing body of literature on patient-centered care, with implications for both clinical practice and healthcare policy.

CONCLUSION

This study explored the lived experiences of cancer patients managing treatment side effects through personalized pharmacotherapy. The findings revealed that personalized treatment significantly enhances patients' sense of control and emotional well-being, reducing feelings of helplessness commonly associated with standard treatment regimens. By examining these subjective experiences, the study fills a gap in existing literature, which often focuses solely on clinical outcomes without considering the personal impact on patients. The research contributes to a more holistic understanding of cancer treatment, emphasizing the need for patient-centered care that addresses both physical and emotional aspects. However, this study is limited by its small sample size and single-site recruitment, which may restrict the generalizability of the findings. Additionally, the reliance on self-reported data could introduce bias in how experiences were described.

Future research should not only expand the sample to include more diverse populations but also integrate longitudinal designs to capture changes in patients' experiences over time. It would also be valuable to investigate how healthcare providers' communication styles and institutional policies influence patient empowerment, and to explore cross-cultural differences in perceptions of personalized pharmacotherapy. These directions can help refine strategies for integrating personalized approaches into routine care. Overall, this study offers valuable insights that can inform clinical practices and policies to improve cancer care by emphasizing personalization and emotional support, while acknowledging its limitations and pointing toward concrete avenues for future inquiry.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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