

Awareness of Chemotherapy and Its Side Effects and Their Influence on Quality of Life Among Breast Cancer Patients in a Nigerian Teaching Hospital

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ABSTRACT

Breast cancer remains a leading cause of morbidity among women globally, with chemotherapy forming a central component of treatment across disease stages. While effective in controlling disease progression, chemotherapy is associated with a range of side effects that can adversely affect patients' quality of life. This study examines the relationship between awareness of chemotherapy side effects and quality of life among breast cancer patients within a clinical setting.

A descriptive cross-sectional design was employed, drawing on data from 80 patients receiving chemotherapy. Data were collected using a structured questionnaire assessing awareness of chemotherapy, awareness of side effects, and perceived impact on quality of life. Descriptive statistics were used to summarise responses and examine patterns across key variables.

Findings indicate that patients generally demonstrate a high level of awareness of chemotherapy (grand mean = 4.05) and its associated side effects (grand mean = 3.64). Awareness was strongest for visible and frequently experienced symptoms such as hair loss, nausea, and fatigue. However, gaps were observed in more complex aspects of treatment, particularly in relation to treatment sequencing and administration cycles. Quality of life outcomes revealed a consistent pattern of disruption, with respondents reporting fatigue, reduced physical functioning, increased dependence on others, decreased social participation, and heightened anxiety. The overall impact on quality of life was substantial (grand mean = 3.51).

Importantly, higher levels of awareness were associated with better coping and relatively improved quality of life, suggesting that awareness plays a meaningful role in shaping patient experience during treatment. These findings highlight the need for sustained patient-centred education that extends beyond basic information provision.

The study concludes that while awareness of chemotherapy and its side effects is generally high, it remains uneven and insufficient in critical areas. Strengthening patient education and ongoing communication within oncology care may improve coping, enhance quality of life, and support more effective engagement with treatment.

KEYWORDS

Breast cancer; chemotherapy; side effects; quality of life; patient awareness; oncology nursing; patient education; supportive care.

INTRODUCTION

Breast cancer remains one of the most significant global health concerns affecting women, with substantial implications for morbidity, mortality, and lived experience during treatment. Recent estimates indicate that breast cancer is the most commonly diagnosed cancer worldwide, with over 2.3 million new cases reported annually, reflecting a persistent burden across both high-income and low- and middle-income settings (World Health Organization, 2024). Improvements in early detection and treatment have contributed to increased survival rates, yet attention has shifted toward understanding how treatment modalities shape patients'

quality of life during and after care.

Chemotherapy remains a central component of breast cancer management, particularly in adjuvant and neoadjuvant settings. Its therapeutic value is well established, particularly in reducing recurrence and improving survival outcomes (Hurvitz et al., 2023; Villacampa et al., 2024; Zdenkowski et al., 2025). Despite these benefits, chemotherapy is associated with a wide range of adverse effects that extend beyond physiological disruption and influence emotional, social, and cognitive domains of patient well-being. Evidence suggests that these side effects can significantly reduce health-related quality of life, especially during active

treatment phases (Henderson et al., 2019; Bailey et al., 2024; Savitri et al., 2025).

The experience of chemotherapy is not shaped solely by the pharmacological properties of treatment. Patients' awareness and understanding of chemotherapy and its associated effects play a crucial role in shaping expectations, coping strategies, and perceived outcomes. Studies have shown that individuals who possess greater awareness of treatment processes and potential side effects tend to demonstrate improved psychological adjustment and better engagement with care (Almohammadi et al., 2020). Conversely, limited understanding can heighten distress, reduce adherence, and exacerbate perceived symptom burden.

Within sub-Saharan Africa, disparities in health literacy, access to structured patient education, and sociocultural influences continue to shape how patients interpret and respond to cancer treatment. Research conducted in Nigerian oncology settings indicates that while many patients are familiar with chemotherapy as a treatment option, gaps remain in understanding its mechanisms, sequencing, and long-term implications (Olayide et al., 2023; Ogunniyi et al., 2025). These gaps may influence both treatment experiences and overall quality of life.

This paper examined awareness of chemotherapy, awareness of its side effects, and the perceived impact of these effects on quality of life among breast cancer patients receiving care in a Nigerian teaching hospital. The study was grounded in a descriptive cross-sectional design involving 80 patients undergoing chemotherapy. Findings indicated that patients generally reported a high level of awareness of chemotherapy as a treatment modality, with a grand mean of 4.05. Awareness of side effects was also substantial, with a grand mean of 3.64, while the perceived impact on quality of life was notable, with a grand mean of 3.51.

These findings align with broader research that highlights the dual nature of chemotherapy. While it contributes to improved survival, it simultaneously introduces a range of physical and psychological challenges that shape patients' daily functioning. Fatigue, nausea, alopecia, and emotional distress are frequently reported and can limit social participation, increase dependence on others, and heighten anxiety about health outcomes (Lôbo et al., 2014).

Understanding the relationship between awareness and quality of life is particularly important in clinical

practice. Awareness does not simply reflect knowledge acquisition; it influences how patients interpret symptoms, anticipate treatment effects, and engage with coping strategies. Evidence suggests that patients who are better informed are more likely to adopt adaptive coping mechanisms and report improved quality of life outcomes despite experiencing similar physical side effects (Ng et al., 2017).

The present paper builds on this foundation by critically examining how awareness of chemotherapy and its side effects shapes patient-reported quality of life within a Nigerian oncology context. It advances the argument that awareness is not a peripheral factor but a central determinant of treatment experience. This perspective has important implications for nursing practice, patient education, and policy development.

A key strength of this study lies in its integration of awareness and quality of life within a single analytical framework. Rather than treating these constructs as separate domains, the analysis highlights their interconnected nature. This approach reflects a broader shift in oncology research, where patient-centred outcomes are increasingly recognised as essential indicators of treatment success.

The theoretical orientation of the study is consistent with patient-centred care models that emphasise holistic assessment and intervention. Faye Abdellah's framework, which underpins the wider research, provides a useful lens for understanding how physical symptoms, emotional responses, and social factors interact to shape patient experience. This perspective reinforces the importance of addressing both informational and supportive needs in clinical settings.

This paper contributes to ongoing discussions in oncology and nursing research by offering context-specific evidence from Nigeria while engaging with global literature on chemotherapy and quality of life. It highlights the need for structured patient education, improved communication between healthcare providers and patients, and the integration of psychosocial support into routine cancer care.

METHODS

Study Design

This study adopted a descriptive cross-sectional design to examine the relationship between awareness of chemotherapy side effects and quality of life among

breast cancer patients. The design was appropriate for capturing patient-reported experiences and perceptions at a single point in time within a real-world clinical setting. Cross-sectional approaches are widely used in oncology research where the aim is to describe patterns and associations without introducing experimental manipulation (Setia, 2016).

Study Setting

The study was conducted in a tertiary healthcare facility, namely the Federal Teaching Hospital, Owerri, Nigeria. The hospital provides specialised oncology services and serves both urban and rural populations. Its central location and role as a referral centre ensure access to a diverse patient population receiving chemotherapy treatment.

Study Population

The study population comprised adult patients diagnosed with breast cancer and currently receiving chemotherapy within the study setting. Both inpatients and outpatients undergoing treatment during the study period were included.

Eligibility criteria were defined as follows:

Inclusion criteria

- Confirmed diagnosis of breast cancer
- Currently receiving chemotherapy
- Physically and mentally able to participate
- Willing to provide informed consent

Exclusion criteria

- Patients not receiving chemotherapy
- Patients too ill to complete the questionnaire
- Patients who declined participation

A total population approach was adopted. All 80 eligible patients within the study setting were included, ensuring complete coverage of the accessible population.

Sample Size and Sampling Strategy

The sample size consisted of 80 participants, representing the entire population of breast cancer patients receiving

chemotherapy in the study setting at the time of data collection. No sampling technique was applied due to the manageable size of the population. This approach reduces sampling bias and strengthens the internal validity of the findings within the defined context.

Data Collection Instrument

Data were collected using a structured questionnaire designed to assess three domains:

1. Awareness of chemotherapy
2. Awareness of chemotherapy side effects
3. Impact of chemotherapy on quality of life

The instrument included both researcher-developed items and elements adapted from established quality of life frameworks. The questionnaire was divided into two main sections:

- Section A: Sociodemographic characteristics
- Section B: Items related to awareness and quality of life

Responses were measured using Likert-type scales to capture degrees of awareness and agreement.

The development of structured questionnaires informed by validated quality of life tools aligns with best practice in oncology research, particularly where patient-reported outcomes are central (Bottomley et al., 2019).

Validity and Reliability

Content and face validity were established through expert review. The instrument was assessed for clarity, relevance, and comprehensiveness in relation to the study objectives. Necessary revisions were made before final administration.

Reliability testing was conducted using Cronbach's alpha. The instrument demonstrated strong internal consistency, with coefficients of 0.864, 0.839, and 0.876 across the key domains, indicating high reliability. Values above 0.70 are generally considered acceptable in health research, supporting the dependability of the measures used (Taber, 2018).

Data Collection Procedure

Data were collected through direct, face-to-face

administration of the questionnaire. This approach facilitated clarification of items where necessary and ensured a high response rate. All 80 questionnaires distributed were completed and returned, resulting in a 100% response rate.

Data collection was conducted over a three-week period. Prior approval was obtained from hospital management and relevant unit heads before engaging with participants.

Data Analysis

Data were analysed using descriptive statistical techniques, including frequencies, percentages, and mean scores. These methods were used to summarise demographic characteristics and assess levels of awareness and quality of life.

A criterion mean of 3.0 was applied to interpret responses. Mean values equal to or above this threshold were considered indicative of awareness or agreement, while values below the threshold indicated lack of awareness or disagreement.

The relationship between awareness and quality of life was examined to identify patterns within the data. Descriptive approaches remain appropriate where the objective is to explore trends and associations in patient-reported outcomes (Kim et al., 2017).

Ethical Considerations

Ethical approval was obtained from the relevant institutional authorities within the study setting. The study adhered to established ethical principles for research involving human participants.

Participants were provided with clear information about the study and gave informed consent prior to participation. Confidentiality and anonymity were maintained throughout the research process. Participants were informed of their right to withdraw at any stage without consequence.

Care was taken to ensure that participation did not expose individuals to physical, psychological, or emotional harm.

RESULTS

A total of 80 questionnaires were distributed, and all were returned, yielding a response rate of 100%. Results are presented across demographic profile, awareness of chemotherapy, awareness of side effects, and quality of life outcomes (see Table 1 and Figure 1).

Table 1. Demographic characteristics (N = 80)

Variable	n	%
Age $\geq$ 31 years	62	77.50
Age 12–30 years	18	22.50
Female	80	100.00
Married	57	71.25
Employed	46	57.50
Urban residence	44	55.00

Note: Percentages may not total 100 due to rounding.

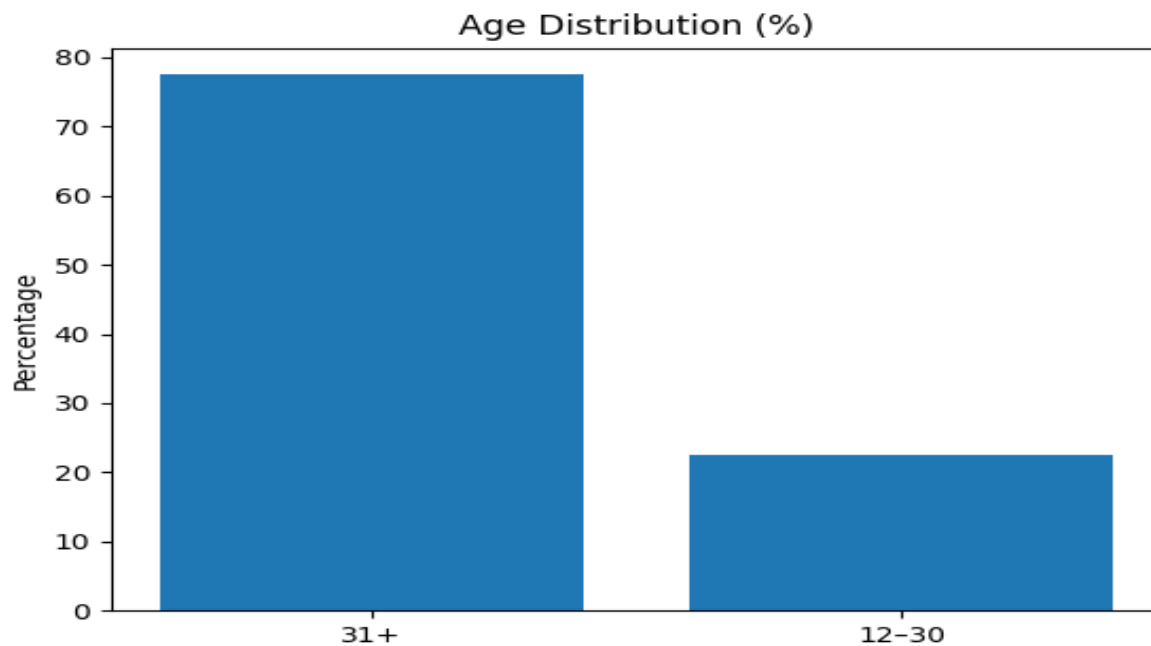


Figure 1: Age distribution

Table 2 presents respondents' awareness of chemotherapy across key treatment domains. Overall awareness was high, with a grand mean of 4.05, exceeding the decision threshold and indicating a generally informed patient population. Respondents demonstrated very high awareness of chemotherapy as a treatment option ($M = 4.78$) and its systemic nature ($M = 4.74$). Awareness of routes of administration was similarly strong ($M = 4.93$), suggesting that routine clinical interactions effectively communicate basic treatment processes.

Table 2: Awareness of chemotherapy (N = 80)

Item	Mean	Interpretation
Chemotherapy awareness	4.78	Very aware
Systemic nature	4.74	Very aware
Pre-surgery use	4.05	Aware
Post-surgery use	2.61	Low awareness
Mode of administration	4.93	Very aware
Cycles	3.16	Moderate
Benefits	3.43	Aware
Information received	4.73	Very aware

More detailed aspects of chemotherapy knowledge revealed variation. Awareness of pre-surgical use of chemotherapy was moderate ($M = 4.05$), indicating partial understanding of neoadjuvant applications. In contrast, awareness of post-surgical chemotherapy was notably lower ($M = 2.61$), falling below the acceptance threshold and signalling a clear knowledge gap. Understanding of treatment cycles was also limited ($M = 3.16$), with responses clustering around neutrality.

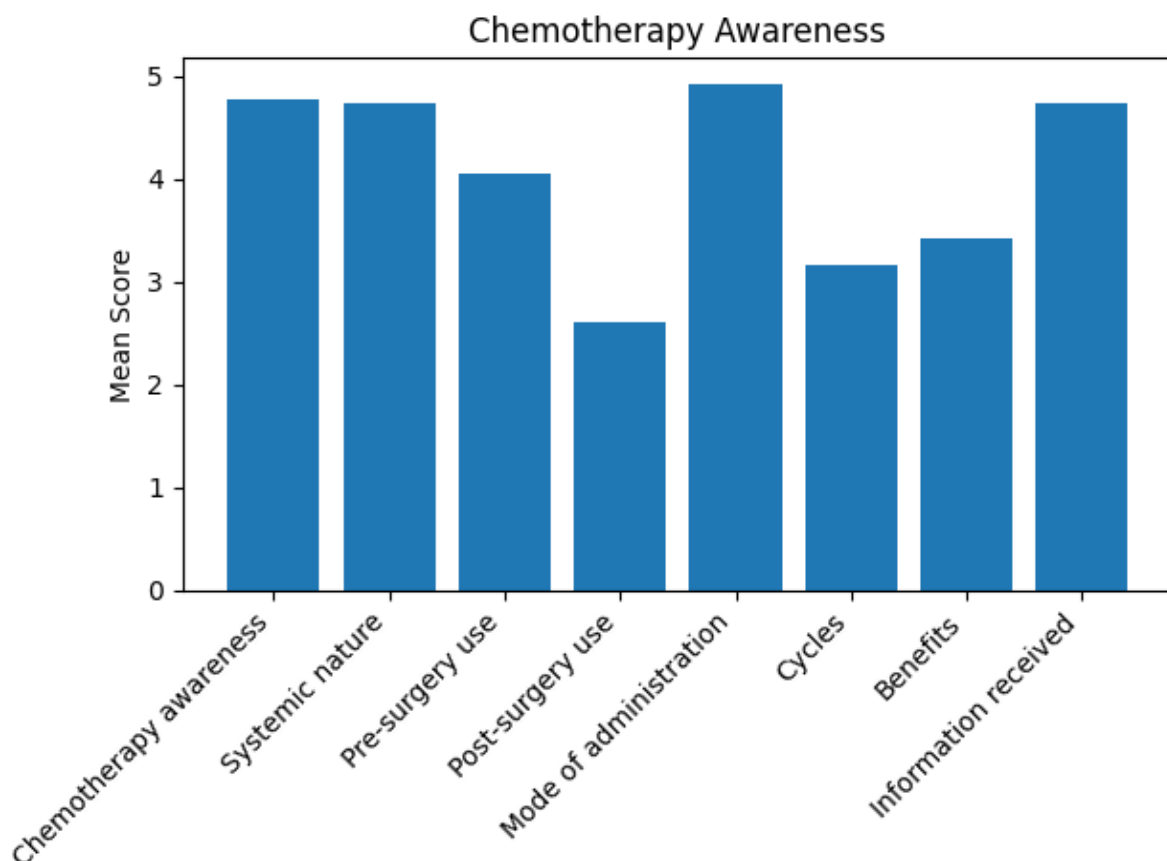


Figure 2: Awareness profile

Perceived knowledge of treatment benefits ($M = 3.43$) and reported receipt of information from healthcare providers ($M = 4.73$) were both above threshold levels. This pattern suggests that while patients receive information, depth and retention of clinically specific details remain uneven. The results indicate that awareness is broad but not uniformly comprehensive, with gaps concentrated in treatment sequencing and regimen structure.

Table 3 reports respondents' awareness of chemotherapy-related side effects. The grand mean of 3.64 indicates a high level of awareness across the symptom spectrum. The most strongly recognised side effects were hair loss ($M = 3.95$) and weakness due to anaemia ($M = 3.91$), reflecting the salience of visible and physically debilitating symptoms.

Table 3: Awareness of side effects (N = 80)

Side effect	Mean
Nausea	3.79
Weight change	3.46
Fever/chills	3.15
Hair loss	3.95
Headache	3.59
Weakness	3.91
Vomiting	3.65

Gastrointestinal symptoms were also widely recognised, with high mean scores for nausea ($M = 3.79$) and vomiting ($M = 3.65$). Headaches ($M = 3.59$) and weight changes ($M = 3.46$) were similarly acknowledged, though with slightly lower intensity. Fever and chills recorded the lowest mean ($M = 3.15$), although still above the threshold,

suggesting comparatively weaker recognition of systemic or infection-related effects (Figure 3).

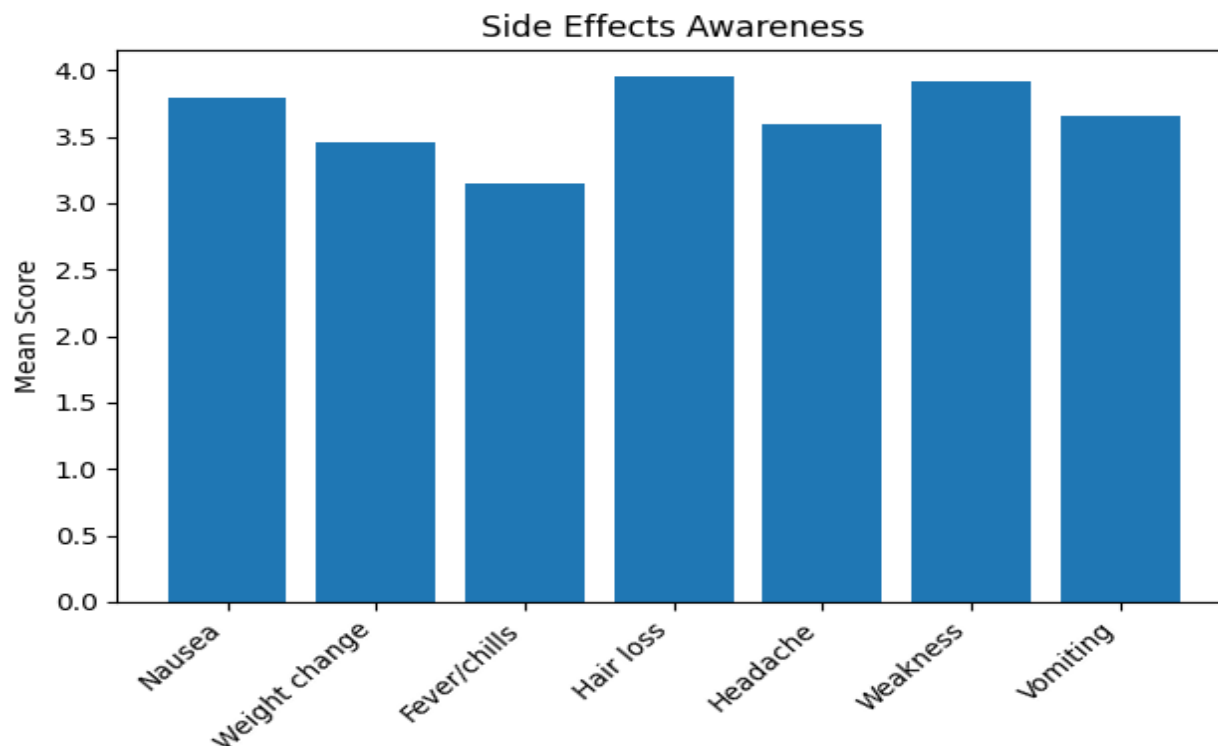


Figure 3: Side effects awareness

The consistency of mean scores above the decision criterion indicates that respondents are broadly aware of common chemotherapy side effects. However, variation in mean values suggests that awareness is strongest for symptoms that are either visible or directly experienced, while less obvious or less frequent effects receive comparatively lower recognition.

Table 4 presents the perceived impact of chemotherapy on quality of life across multiple domains. The grand mean of 3.51 indicates that respondents generally agree that chemotherapy has a significant negative effect on their quality of life

Table 4: Quality of life impact (N = 80)

Impact	Mean
Fatigue	3.85
Reduced QoL	3.34
Memory issues	2.90
Dependence	3.65
Reduced social activity	3.93
Anxiety	3.30
Reduced physical activity	3.58

Physical effects were among the most pronounced. Fatigue and weakness recorded a high mean score ($M = 3.85$), while reduced ability to participate in social activities was the highest rated impact ($M = 3.93$). Reduced capacity for daily physical activities ($M = 3.58$) further reflects the functional limitations experienced during treatment (Figure 4).

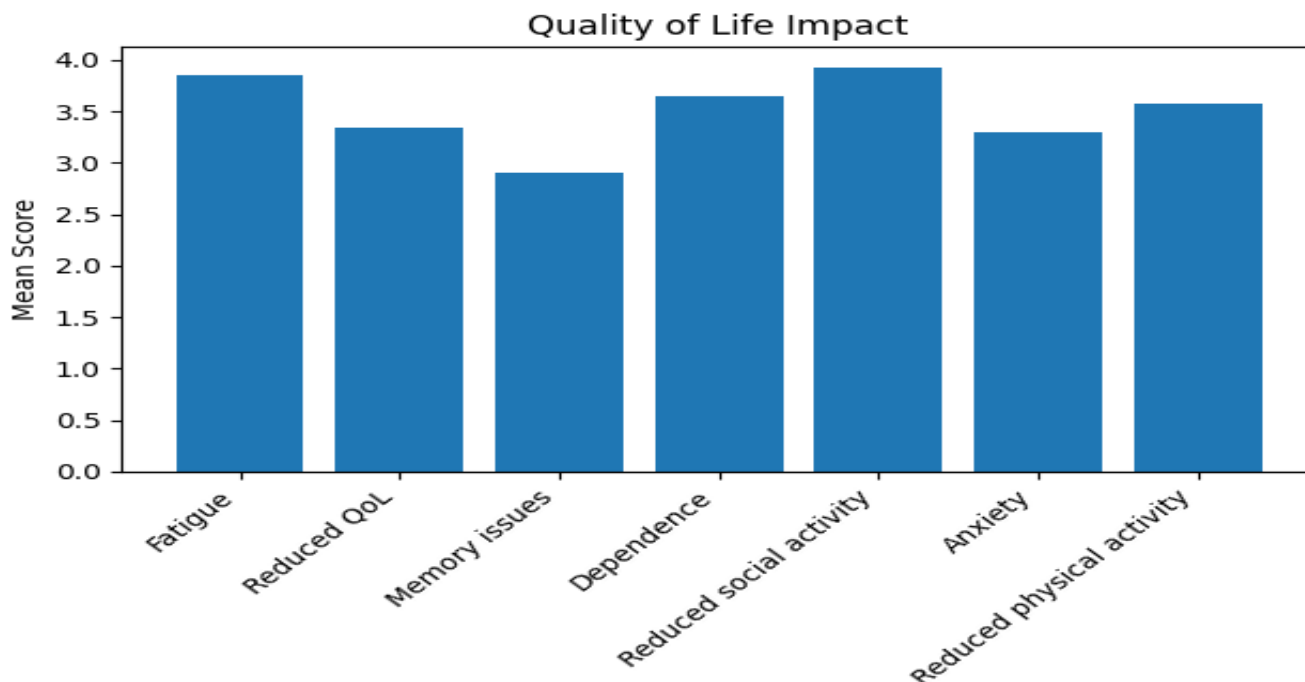


Figure 4: Quality of life impact

Psychosocial effects were also evident. Increased dependence on others ($M = 3.65$) and heightened anxiety about health and future ($M = 3.30$) indicate a substantial emotional and relational burden. Memory lapses recorded the lowest mean ($M = 2.90$), though still above the threshold, suggesting that cognitive effects are present but less consistently perceived.

Thus, the findings demonstrate that chemotherapy exerts a multidimensional impact on quality of life, affecting physical functioning, emotional wellbeing, and social participation. The pattern of results indicates that functional and social limitations are particularly salient in shaping patients' lived experience during treatment.

DISCUSSION

The findings of this study provide a clear account of how awareness of chemotherapy and its side effects intersects with the quality of life of breast cancer patients within a clinical setting. The results indicate that patients generally demonstrate a high level of awareness of chemotherapy as a treatment modality, alongside substantial awareness of common side effects. However, this awareness is not uniform across all aspects of treatment, and important gaps persist. These patterns have direct implications for how patients experience treatment and manage its consequences.

High levels of general awareness observed in this study are consistent with recent research showing that patients undergoing cancer treatment often acquire basic knowledge through repeated clinical encounters and routine education in oncology settings (Husson et al., 2011). Awareness of visible and frequently experienced side effects such as hair loss, nausea, and fatigue was particularly strong. This aligns with evidence suggesting

that experiential learning plays a central role in shaping patient knowledge, especially for symptoms that are physically apparent and recurrent (Boman et al., 2017; Bilodeau et al., 2022).

Despite this, the findings highlight a critical limitation in the depth of patient understanding. Lower awareness of treatment sequencing, particularly the role of chemotherapy following surgery, reflects a gap in more complex clinical knowledge. This pattern is supported by studies indicating that patients often retain general information about treatment but struggle with more detailed or technical aspects, particularly when information is delivered in a single session or without reinforcement (Kotronoulas et al., 2014). Such gaps may have practical consequences, including uncertainty about treatment pathways and reduced confidence in care decisions.

The relationship between awareness and quality of life is particularly important. Patients with higher awareness reported better coping and relatively improved quality of

life. This finding is consistent with broader evidence that informed patients are more likely to adopt adaptive coping strategies and engage actively in their care (McCaughan et al., 2017). Awareness reduces uncertainty, which is a major contributor to psychological distress in cancer patients. When patients understand what to expect, side effects are less likely to be interpreted as unexpected or alarming, thereby reducing anxiety and enhancing perceived control.

At the same time, the study confirms that chemotherapy has a substantial negative impact on quality of life across multiple domains. Physical effects such as fatigue and reduced activity levels were prominent, reflecting well-established evidence that treatment-related toxicity significantly impairs functional capacity (Cooper et al., 2024; Obispo et al., 2025). Social participation was also markedly reduced, with patients reporting limited engagement in daily and interpersonal activities. This reflects the broader social burden of cancer treatment, where physical symptoms intersect with emotional strain to disrupt normal life patterns (Faller et al., 2013).

Emotional outcomes further reinforce this pattern. Increased anxiety about health and the future highlights the ongoing psychological burden associated with cancer treatment. Research has shown that uncertainty regarding prognosis and treatment effects is a key driver of emotional distress in oncology populations (Rodriguez-Gonzalez et al., 2022). The presence of cognitive effects, although less strongly reported, is also noteworthy. Emerging evidence suggests that chemotherapy-related cognitive impairment, often described as “chemo brain,” can affect memory and concentration, thereby influencing daily functioning and work capacity (Janelins et al., 2016).

These findings support a holistic interpretation of patient experience, where awareness, physical symptoms, and psychosocial factors are closely interconnected. Awareness appears to function as a moderating factor that can buffer, but not eliminate, the negative effects of chemotherapy. This reinforces the importance of moving beyond one-off information delivery towards continuous, patient-centred education throughout the treatment trajectory.

From a clinical perspective, the results highlight the central role of healthcare professionals, particularly nurses, in shaping patient awareness and supporting quality of life. Ongoing communication, tailored education, and practical guidance on symptom

management are essential components of effective care. Evidence suggests that structured, nurse-led interventions can significantly improve patient-reported outcomes, including symptom control and psychological wellbeing (De Ligt et al., 2023; Lanfear & Harding, 2023; Trisyani et al., 2026).

In the end, the study demonstrates that while awareness of chemotherapy and its side effects is generally high, it remains uneven and incomplete. This awareness is closely linked to quality-of-life outcomes, with higher levels associated with better coping. Chemotherapy continues to impose a significant burden on physical, emotional, and social wellbeing, underscoring the need for integrated, patient-centred approaches to care that prioritise both information and support.

Implications for Practice, Policy, and Research

Clinical practice should prioritise structured and ongoing patient education. Education should extend beyond basic information and include practical guidance on managing side effects and maintaining quality of life. Tailored communication strategies that respond to individual patient needs are essential.

Policy frameworks should support the integration of quality-of-life assessment into routine oncology care. Standardised tools can facilitate early identification of patients experiencing significant distress and guide targeted interventions.

Future research should explore longitudinal changes in awareness and quality of life, as cross-sectional data cannot capture how these variables evolve over time. There is also a need to examine culturally relevant approaches to patient education, particularly in resource-constrained settings.

CONCLUSION

This study provides a focused account of how awareness of chemotherapy and its associated side effects shapes the quality of life of breast cancer patients within a clinical setting. The findings show that patients generally possess a strong foundational awareness of chemotherapy as a treatment modality and demonstrate considerable recognition of common side effects. However, this awareness is uneven, with notable gaps in understanding more complex aspects of treatment, particularly in relation to treatment sequencing and clinical application.

The results also confirm that chemotherapy exerts a

substantial and multidimensional impact on quality of life. Physical limitations, especially fatigue and reduced functional capacity, emerge as dominant challenges. These are closely followed by psychosocial effects, including increased dependence on others, reduced participation in social activities, and heightened anxiety about health and future outcomes. Cognitive difficulties, although less strongly reported, further contribute to the overall burden of treatment. These patterns reflect the lived reality of patients undergoing chemotherapy, where the benefits of treatment are accompanied by significant disruptions to everyday life.

A central contribution of this study lies in highlighting the role of awareness as a key factor influencing patient experience. Higher levels of awareness are associated with better coping and relatively improved quality of life. This suggests that awareness functions as more than a passive form of knowledge. It supports patients in anticipating treatment effects, interpreting symptoms, and engaging more confidently with care processes. At the same time, awareness alone does not eliminate the burden of chemotherapy, indicating the need for supportive structures that translate knowledge into practical coping strategies.

The findings reinforce the importance of patient-centred care that integrates education, communication, and ongoing support throughout the treatment journey. Healthcare professionals, particularly nurses, are well positioned to lead this process through continuous engagement with patients. Strengthening awareness through structured and sustained education has the potential to improve patient resilience, enhance treatment adherence, and mitigate the negative impact of chemotherapy on quality of life.

AUTHOR CONTRIBUTION

All authors played a substantive role in shaping this study and developing the manuscript. C.C. conceptualised the work and designed the overall study framework under the supervision of F.C.O. Data analysis, interpretation of data and validation of findings were carried out collaboratively, with each author contributing to the discussions that informed the final results. G.M.Y., C.E.E. and K.O.O. prepared the initial manuscript draft, covering the introduction, methods, results and discussion. Co-authors strengthened the analysis, offered detailed revisions and enhanced the clarity and coherence of the final document. Every author reviewed the complete manuscript, approved the final version and

accepted responsibility for the integrity of the work.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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