

PEOPLE LIVING WITH BREAST CANCER: THE RELATIONSHIP BETWEEN UNCERTAINTY AND COPING STRATEGIES DURING CHEMOTHERAPY TREATMENT

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ABSTRACT

Chemotherapy treatment for breast cancer patients is frequently perceived as fraught with uncertainty, despite being the most effective methods to halt cancer progression. This study aims to determine the relationship between feelings of uncertainty and coping strategies during chemotherapy. An observational analytical study with a cross-sectional design was conducted involving 141 breast cancer patients who have been undergoing chemotherapy for three months. Respondents completed a self-administered questionnaire assessing feelings of uncertainty and coping strategies. Among the sub dimensions of uncertainty, the ambiguity dimension showed the strongest correlation with coping strategies ($r = 0.381$ and $p = 0.000$). Overall, feelings of uncertainty were significantly associated with coping strategies in breast cancer patients receiving chemotherapy ($r = 0.378$, $p = 0.000$). Experiencing uncertainty in life encourages patients to use more effective coping strategies; thus, the greater the uncertainty felt, the more effective the use of coping strategies in during breast cancer chemotherapy.

Keywords: *Breast cancer; chemotherapy; coping strategies; uncertainty*



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BACKGROUND

Chemotherapy is one of the most effective treatment modalities for cancer (Hanna and Mayden, 2021). However, several therapies that have been undertaken by individuals living with breast cancer still do not provide a clear path for healing (Hellerstedt-Bo & Holmstro, 2016). Consequently, undergoing breast cancer treatment is frequently felt to be full of uncertainty (Greco, 2022). This uncertainty persists throughout patient's life journey —from diagnosis, treatment, and prognosis —resulting in prolonged mental stress (Biparva, Raoofi, Rafiei, Masoumi, et al., 2023; Pahria et al., 2023).

The International Agency for Research on Cancer has reported that breast cancer is the most common cancer disease among people already diagnosed with cancer, and the sixth leading cause of cancer-related deaths, accounting for 2,261,419 cases (11.7%). Additionally, this virus has infected 684,996 people (6.9%) (WHO Global Report, 2020).

Currently, breast cancer ranks first among all cancer type in Indonesia, with 65,858 cases (16.6%), and is the second leading cause of cancer-related death after lung cancer, which affects 22,430 people (9.6%) (WHO Global Report, 2021). Women account for nearly 30% of all new cancer diagnoses each year (Sauer et al., 2019).

The findings of this study help to demonstrate that feelings of life uncertainty are experienced strongly by individuals living with breast cancer and undergoing chemotherapy. This highlights the importance of promoting effective coping strategies to alleviate mental distress. Meanwhile, during chemotherapy, the patients felt that they had not yet shown any signs of substantial progress in their recovery.

Feelings of uncertainty regarding breast cancer treatment stem from fundamental fear related to the known aspects of the situation being experienced, where the outcomes do not commensurate with the desired expectations (Maheu et al.,

2021), particularly when optimal healing progress is not observed (Clayton, Dingley and Donaldson, 2017). Apart from that, this disease is difficult to predict (Hui, 2015), and chemotherapy does not tolerate the survivor's physical condition (Nurgali, Jagoe and Abalo, 2018). This is because cancer cells have the potential to influence destructive cellular processes, such as programmed cell death (apoptosis), drug resistance, DNA damage, disruption of DNA replication, and immune suppression (Anand *et al.*, 2023). Furthermore, repeated treatments improvement contribute to heightened ambiguity, (Burgers *et al.*, 2022), a feeling especially pronounced among partners of patients other cancers (Varner *et al.*, 2019). Consequently, people living with breast cancer experience a sense of life teetering on the edge between what is known and unknown, reflecting persistent feelings of uncertainty throughout their daily lives.

Moreover, the prognosis for breast cancer, particularly advanced breast cancer is worsening day by day (Zewdie *et al.*, 2024), which significantly diminishes patients' quality of life (Biparva, Raoofi, Rafiei, Kan, *et al.*, 2023; Mulyono and Chen, 2023). This decline often leads to feelings of helplessness (Fan *et al.*, 2023). Patients are uncertain about the next steps in their treatment or care (Roszkowska and Białczyk, 2023). Consequently feelings from them leads to suicide ideation due to failure to fulfill their unmet hopes (Grobman *et al.*, 2023). Additionally, self-stigmatization related to their condition increasingly damages their mental and emotional well-being (Tisnasari, Nuraini and Afiyanti, 2022), often resulting in social withdrawal (Hilakivi-Clarke and de Oliveira Andrade, 2023).

There is a consensus that cancer has no definitive cure, and chemotherapy remains the primary treatment option (Liu *et al.*, 2015). For individuals with breast cancer, continuing treatment can be a challenging dilemma because the outcomes of the treatment have not been able to improve their condition. This often leads to feelings of pessimism regarding their treatment and causes them to experience uncertainty throughout days (de Rooij *et al.*, 2018).

In addition, patients often employ ineffective coping strategies, such as discontinuing prescribed treatment without any clear reasons, particularly when the results achieved do not match the efforts made (Khankeh *et al.*, 2023). This situation necessitates proactive efforts to explore various sources of psychological coping, especially in cases of metastatic breast cancer (Esquivas *et al.*, 2024). Scientific evidence indicates that the use of adaptive coping strategies can reduce feelings of uncertainty (Hao *et al.*, 2023).

The presence of a nurse in situations experienced by people living with breast cancer is crucial, especially for discussing the conditions experienced, allowing patients to express their feelings (Chang *et al.*, 2023). Apart from that, it is necessary to discuss the resources available to them, including both personal resources and environmental resources, which help strengthen coping strategies in determining adaptive coping (Hao *et al.*, 2023). Psychological-based interventions are often employed by nurses to reduce mental stress throughout the day (Pahlevan Sharif, 2017). This can be effective when individuals with breast cancer maintain an optimistic outlook on their lives (Bahrami, Mohamadirizi and Mohamadirizi, 2018). Meanwhile, self-confidence can strengthen their resilience in undergoing chemotherapy treatment (Nira, Triharini and Nastiti, 2020). Several studies have linked coping strategies to other variables such as anxiety (Silva, Zandonade and Amorim, 2017), Fatigue Experience (Dahal and Meheta, 2018) in breast cancer patients undergoing

chemotherapy. However, there has been no research report linking feelings of uncertainty to coping strategies in breast cancer patients undergoing chemotherapy. Furthermore, self-confidence enhances their resilience during chemotherapy treatment. Therefore, this study aims to identify the relationship between feelings of uncertainty and coping strategies during chemotherapy treatment.

METHOD

Research design

The research is observational and analytic, using a cross-sectional design. This research was conducted from July 2023 to September 2023.

Population and sample

The population for this study consisted of breast cancer patients undergoing chemotherapy at Dr. Soetomo General Hospital, Surabaya. The inclusion criteria for this study were: 1) breast cancer patients undergoing intravenous chemotherapy at the hospital, and 2) breast cancer patients with stages I to III. The exclusion criteria included: 1) breast cancer patients who had experienced metastasis, and 2) patients who were not present at the time of the study. The sample size was determined using G*power software, employing a one-way correlation test with 95 power%, an effect size of 25%, and an alpha level of 0.05. This analysis indicated that a minimum of 164 respondents was required (Neuha *et al.*, 2023). However, 13 respondents discontinued filling out the questionnaire for unspecified reasons, and 10 respondents completed less than 50% of the questionnaire due to disagreement with the items, resulting in incomplete data. Therefore, 141 respondents who met the criteria for questionnaire completion were included, selected through a constructive sampling technique. (Neuha *et al.*, 2023).

Instruments

Feelings of uncertainty in breast cancer survivors were measured using the Mishel Uncertainty in Illness Scale (MUIS), which was originally developed in China for stroke patients and has a reported Cronbach's alpha of 0.8 (Han *et al.*, 2021). Coping strategies in breast cancer survivors were measured using the Coping and Adaptation Processing Scale, which has a Cronbach's alpha of 0.82 (Kim *et al.*, 2018).

Data collection

Before conducting the research, the researcher requesting ethical clearance from the hospital. A measured questionnaire was used to gather data. The researcher along with research assistants collected data. The researcher approached potential respondents in the patient clinic, explained this study's purpose and procedure. Researchers asked potential respondents' willingness to participate in this study. Respondents who willing to participate in this study then signed an informed consent form. Researchers provided an explanation of how to fill out the questionnaires. Then, respondents filled out the questionnaires. Researchers collected the filled questionnaires from respondents and thanks respondents for their participation in this study.

Data analysis

Bivariate analysis with correlation tests was conducted to test the relationship between feelings of uncertainty and coping strategies, using a significance level of $p < 0.05$. Additionally, descriptive analysis was carried out on the uncertainty variables and coping strategies to determine their mean value and standard deviations.

Ethical approval

Ethics statement: Research ethics adhere to the principle of beneficence and respects for human dignity. This research was conducted following approval from the Research Ethics Committee of RSUD Dr. Sutomo, under reference number 0721/KEPK/7/2023.

RESULT

Respondent Characteristics

The characteristics of the respondents are reported according to age, education level, marriage status, and duration of illness, as shown in Table 1.

Table 1. Characteristics of families with schizophrenia (n=141)

Variable	Category	Frequency	Percentage
Age	17 – 25 years (Late Adolescence)	2	1,42
	26 – 35 years (Early Adulthood)	19	13,48
	36 –45 years (Late Adulthood)	49	34,75
	46 – 55 years (Early Seniors)	48	34,04
	56 – 65 years (Late Seniors)	23	16,31
Education levels	Elementary and Junior High School	36	25,53
	Senior High School	81	57,45
	Diploma / Bachelor's degree	24	17,02
Marriage	Married	135	95,74
	Unmarried	6	4,26
Length of illness	< 1 years	37	26,24
	1 – 3 years	85	60,28
	>3 years	19	13,48

Statistical description based on research variables

The results of the statistical descriptive analysis show that the most prominent dimension of uncertainty experienced by individuals living with breast cancer is ambiguity, with a mean value of 20.021 and a standard deviation of 3.161. Meanwhile, the most frequently used coping strategies among these individuals is increased awareness, with a mean value of 12.113 and a standard deviation of 2.181. These findings are summarized in Table 2.

Table 2. Frequency of Uncertainty and coping strategies with person with breast cancer (n= 141)

Variable	Dimensions	Mean	Standard Deviation
Feeling Uncertainty	Complexity	18,163	4,684
	Ambiguity	20,021	3,161
	Difficulty understanding	19,333	3,743
	Difficulty predicting	15,134	3,458
Coping strategies	Focused and resourceful	20,766	3,275
	Consistent	12,177	2,149

Variable	Dimensions	Mean	Standard Deviation
	Positive thinking and knowledge-based	20,574	3,343
	Increase alertness	12,113	2,181

Description of the Relationship between uncertainty dimension variables and coping strategies

The results of the correlation test between the uncertainty dimension variables and coping strategies indicate that four uncertainty dimension variables are significantly related to coping strategies: complexity variable dimension ($r = 0,322$; $p = 0.000 < \alpha = 0.001$), ambiguity ($r = 0.381$; $p = 0.000 < \alpha = 0.001$), difficulty understanding ($r = 0.374$; $p = 0.000 < \alpha = 0.001$), and difficulty predicting ($r = 0.323$; $p = 0.000 < \alpha = 0.001$). Furthermore, these four uncertainty dimensions exhibit a powerful positive relationship with coping strategies, with the ambiguity dimensions showing the strongest association ($r = 381$; $p = 0.000 < \alpha = 0.001$). Details results are presented in Table 3.

Table 3. Description of the relationship between Uncertainty and coping strategies in persons with breast cancer (n = 141)

Variable	Coping strategies	
	r	p
Complexity	0,322**	0,000
Ambiguity	0,381**	0,000
Difficulty understanding	0,374**	0,000
Difficulty predicting	0,323**	0,000

Note: Pearson correlations shown.

** Indicates $p < 0.01$.

*** Indicates $p < 0.001$.

Description of the relationship between Uncertainty and coping strategies in persons with breast cancer

Table 4 presents the results of bivariate parametric statistical tests examining the relationship between uncertainty and coping strategies. The results show a strong, statistically significant positive relationship between uncertainty and coping strategies in individuals with breast cancer, with results of $p = 0.000$ and $r = 0.378$. These findings are detailed in Table 4.

Table 4. Distribution of the relationship between Uncertainty and coping strategies with person with breast cancer, n = 141

Variable	n	Coping Strategies	
		p	r
Felling Uncertainty	141	$p = 0,000$	$r = 0,378^{**}$

Note: Pearson correlations shown.

** Indicates $p < 0,01$.

*** Indicates $p < 0,001$.

DISCUSSION

This research uses the liminality approach developed by V.W. Turner., which posits that individuals experiencing feelings of uncertainty in life feel different from others and occupy a threshold position in their life journey (Uzun and Arslan, 2025). Based on this research, people living with breast cancer while undergoing chemotherapy treatment experience significant uncertainty, necessitating the development of effective coping strategies to achieve

adaptive coping throughout the chemotherapy process, as reported in previous research (Zhang, 2017).

People living with breast cancer must have confident that chemotherapy treatment is the best treatment choice for curing their disease (Nihayati, Nurhanifah and Krisnana, 2021). They also hope that the uncertainty regarding chemotherapy transform into feelings of optimism, as this positive outlook contributes to makes them better (Finck *et al.*, 2018). Meanwhile, breast cancer imposes significant mental pressure, diminishes motivation to a lower point, and disrupts the global order of life (Zamanian *et al.*, 2021). Additionally, patients often experience a feeling of failure as a human being due to damage to their self-image (Sousa *et al.*, 2018), leading to persistent feelings of life's uncertainty (Soria-reyes *et al.*, 2023).

Four attributes that support feelings of uncertainty among individuals undergoing chemotherapy for breast cancer include complexity, ambiguity, difficulty in understanding, and difficulty in predicting (Han *et al.*, 2021). Among these, ambiguity is the most prominent feelings that support feelings of uncertainty in life, with a mean value and standard deviation of 20,021 and 3,161, respectively. This prominence arises because chemotherapy treatment for breast cancer is often exhausting and yields results that fall short of expectations (Rosnani, 2017). Consequently, many breast cancer survivors often experience ambiguity regarding whether to continue treatment or discontinue treatment. Initially, treatment may show positive signs of recovery, but ultimately, some patients must cease treatment when disease persists (Salafia and Adamsons, 2025). This uncertainty is especially common among individuals with advanced breast cancer (Grimm *et al.*, 2022). In contrast to findings from qualitative research on other chronic diseases, even though the disease was very life-threatening, some of them considered their life-threatening conditions as a trial from God rather than suffering, thus fostering a sense of survival despite the severity of their disease (Mirabi, Chaurasia and Oremus, 2022). Meanwhile, support from significant others can enhance optimism toward undergoing chemotherapy treatment for breast cancer (Garner *et al.*, 2015; Astari *et al.*, 2025).

Another noteworthy finding is that some individuals living with breast cancer experience very complex problems after undergoing chemotherapy, with a mean value and standard deviation of 18.163 and 4.684, respectively. In line with the results of other studies, patients initially felt comfortable at the beginning of undergoing chemotherapy treatment because the side effects had not yet significantly impacted their physical condition, aside from nausea and decreased appetite (Altun and Sonkaya, 2018). However, as treatment progresses, they suffer more severe side effects, such as hair loss and continued decline in physical condition (Katta *et al.*, 2023). Additionally, prolonged treatment has an impact on their financial situation, which in turn impacts other family members, because they must divide their financial resources between covering medical expenses and supporting the rest of their families (Jalali *et al.*, 2023). Apart from that, mental stress arising from feelings of terminal illness adversely affects their emotional state; among breast cancer survivors, some even experience suicidal ideation (Shi *et al.*, 2022), while others endure prolonged depression (Biparva, Raoofi, Rafiei, Masoumi, *et al.*, 2023).

Some individuals living with breast cancer face daily stressful events (Ochoa-Arnedo *et al.*, 2022). To cope, they often surrender by accepting their condition (Hajian *et al.*, 2017),

and strive to maintain a positive thinking to alleviate tension related to breast cancer (Barjoe *et al.*, 2022).

Research results indicate that individuals living with breast cancer experience a pervasive sense of uncertainty in life, prompting them to develop coping strategies to address psychosocial problems (Ahadzadeh and Sharif, 2018). Consequently, they often require psychosocial support and approval (Broadbridge *et al.*, 2023). Similarly, people with gynecological cancer also experience feelings of uncertainty in life and must organize effective coping strategies to improve their quality of life (Ko and Lee, 2023).

Given the complexity of cancer, which impacts both individuals and family dynamics, an increasing number of studies focus on cancer's multifaceted effects, including those experienced by breast cancer patients (Idrisu, Aziato and Dedey, 2020). Thus, nursing interventions for cancer generally aim to increase resilience (Aizpurua-Perez and Perez-Tejada, 2020) and self-acceptance (Chen *et al.*, 2017). Additionally, nursing interventions with an "end of life" theory approach are often applied to individuals with breast cancer, because these interventions have proven effective in improving their psychological well-being (Terzi and Kapucu, 2022). Because breast cancer can be profoundly distressing mentally and emotionally, patients initially respond with denial of their diagnosis of cancer (Salisu *et al.*, 2022). However, they eventually admit their conditions and subsequently collect many coping strategies (Czerw, Religioni and Deptala, 2016). This is why some people living with breast cancer must consistently focus on continuing treatment and following their doctor's advice to effectively cure their disease, especially chemotherapy treatment (Wang and Wu, 2023).

Limitations

One limitation of this study is that the data were collected independently, which may deviate from standard practice. However, the researchers employed a number of techniques to help mitigate bias in the responses. A longitudinal study would be better suited to confirm the directionality of the relationships, as the cross-sectional design used here is less capable of drawing strong conclusions about causal relationships between the variables studied. Furthermore, this study was limited to Dr. Soetomo General Hospital in Surabaya, which is not a nationally representative. Therefore, the results of this study need to be replicated in larger, more nationally representative studies, both in Indonesia and internationally.

CONCLUSION AND RECOMMENDATION

This research reveals the relationship between feelings of uncertainty and coping strategies among breast cancer patients. This research demonstrates that breast cancer patients experience significant life uncertainty experienced and encourages them to use effective coping strategies during undergoing chemotherapy treatment. Therefore, it is important for people living with breast cancer to consistently use coping strategies that are effectively eliminate feelings of uncertainty in life. Further research is recommended to determine the factors contributing to life uncertainty in breast cancer sufferers, with the aim of enhancing understanding of chemotherapy treatment and motivating the consistent use of effective coping strategies.

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