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Exploring Predictors of Psychological Well-Being Among Women Living with Breast Cancer: A Cross-Sectional Study

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ABSTRACT

Psychological well-being plays a crucial role in the recovery and quality of life of women diagnosed with breast cancer. Understanding the factors influencing well-being is essential for developing effective psychosocial interventions. This study aims to evaluate the association of several factors with the psychological well-being of women with cancer. A quantitative cross-sectional design was employed at Jenderal Ahmad Yani Regional Public Hospital, Metro, in May 2024. A total of 73 respondents were selected through convenience sampling from a population of 273 patients. Data were collected using the Multidimensional Health Locus of Control Scale (Cronbach's $\alpha = 0.791$) and Ryff's Psychological Well-Being Scale (Cronbach's $\alpha = 0.805$). Data were analyzed using Chi-square tests and logistic regression with a significance level of $p < 0.05$. Chi-square analysis showed that cancer stage ($p = 0.003$), mastectomy status ($p = 0.006$), and health locus of control ($p < 0.001$) were significantly associated with psychological well-being. Logistic regression identified mastectomy and health locus of control as significant predictors. Women who underwent mastectomy were more likely to experience lower psychological well-being (OR = 4.34; $p = 0.050$), while those with a high health locus of control were more likely to report better well-being (OR = 0.021; $p < 0.001$). Psychological well-being in women with breast cancer is strongly influenced by health locus of control and mastectomy experience. Enhancing patients' internal control beliefs and providing targeted psychosocial support, particularly for post-mastectomy patients, may improve psychological adaptation and overall quality of life.

Key Messages:

- Psychological well-being in women with cancer is influenced by clinical and psychological aspects, including cancer stage, mastectomy status, and HLOC.
- The health locus of control significantly influences patients' psychological adjustment throughout various cancer stages and treatment experiences, including mastectomy. Enhancing patients' internal health locus of control via focused education and supportive interventions may improve coping strategies and lead to more favorable psychological outcomes.

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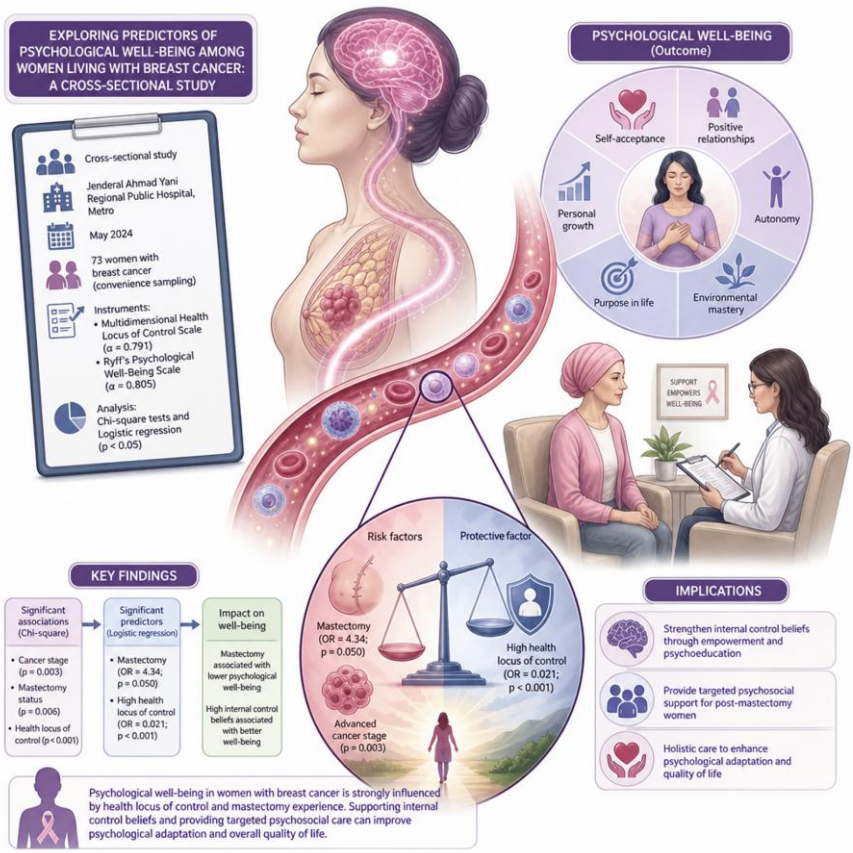
GRAPHICAL ABSTRACT



INTRODUCTION

Breast cancer continues to be the most frequently diagnosed cancer among women worldwide and is a significant cause of cancer-related mortality (1). According to the Global Burden of Cancer (Globocan) 2020 data, breast cancer is the most often diagnosed cancer globally, comprising 11.7% of the total 19.2 million cases. The majority of these cases are reported from underdeveloped nations. In Indonesia, 234,511 new cases were documented in the year 2020. Breast cancer was the largest proportion, with 42.1% of all cancer cases. Breast cancer is one of the foremost causes of cancer-related mortality in women (2). Cancer therapies, including surgery, chemotherapy, and radiotherapy, are intricate and can affect patients on various levels—physically, psychologically, socially, and spiritually. Women diagnosed with cancer encounter not only medical obstacles but also considerable psychological and emotional strain, such as emotional distress and body image concerns, which can negatively impact their overall quality of life (3)(4).

Beyond the physical impact of breast cancer, psychological effects such as depression, anxiety, and emotional distress are prevalent throughout the course of the disease (5). Psychological well-being, indicative of positive functioning and emotional health, is crucial in influencing the quality of life for women receiving breast cancer therapy (6,7). Although mastectomy status and health locus of control have been widely studied independently, limited evidence is available regarding their combined influence on psychological well-being within specific cultural and healthcare contexts, particularly among women with breast cancer in Indonesia.

Surgical procedures, such as mastectomy, are acknowledged as potential factors contributing to psychological distress due to changes in body image and function. However, the specific effects on long-term psychological well-being, especially in relation to individual psychological resources like health locus of control, have not been thoroughly investigated (8). Mastectomy, while frequently essential for clinical management, can negatively impact body image, perceptions of femininity, and self-esteem (9). The

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concept of Health Locus of Control (HLOC)—the extent to which individuals perceive their health as governed by internal or external factors—has been identified as a crucial psychological construct that affects coping mechanisms and adaptation to chronic illnesses, such as cancer (10). Women possessing a robust internal health locus of control are more inclined to view themselves as active agents in managing their health, potentially fostering adaptive coping mechanisms and enhancing psychological resilience (11). The stage of cancer indicates the severity and progression of the disease, with advanced stages frequently linked to increased psychological burden (12). The impact of different cancer stages and the time elapsed since diagnosis on psychological well-being, in conjunction with other significant factors, remains inadequately defined within a comprehensive framework (13).

Previous studies have examined psychological well-being among women with breast cancer; however, limited attention has been given to the combined influence of cancer stage, mastectomy status, and health locus of control (HLOC). Existing research often considers these factors in isolation, thereby overlooking their potential interactions. Empirical evidence indicates that psychological distress is a significant outcome following mastectomy, that cancer survivors remain at increased risk of anxiety and depression over time, and that a stronger internal locus of control is associated with better quality of life and lower psychological distress among breast cancer patients (14–16).

Therefore, this study aims to enhance understanding of the psychological well-being of women with breast cancer through the integration of clinical and psychological perspectives. The stage of cancer and mastectomy status indicate the severity of the disease and associated treatment stressors. The health locus of control signifies an individual's coping orientation, while sociodemographic factors, including age, education, employment status, and time since diagnosis, affect psychological adjustment and the availability of coping resources. This study therefore investigates the multivariate predictive relationships of these factors with psychological well-being to support successful adaptation and resilience among breast cancer survivors.

METHODS

This research employed a quantitative, cross-sectional design to examine the associations between multiple predictors and psychological well-being in women diagnosed with breast cancer. The study was performed at Jenderal Ahmad Yani Regional Public Hospital (RSUD) in Metro Lampung, in May 2024. The study population consisted of 273 individuals, including a sample of 73 women diagnosed with breast cancer, which was obtained through a convenience sampling method. Convenience sampling was used due to limited access to eligible participants and time constraints during data collection, a common approach in hospital-based clinical studies. The inclusion criteria encompassed patients diagnosed with cancer for a minimum of six months, allowing sufficient time for psychological adjustment beyond the initial distress following diagnosis, who consented to participate as respondents. The exclusion criteria included patients with significant cognitive impairments.

The research utilized two standardized measurement instruments. The initial instrument utilized was the Multidimensional Health Locus of Control Scale (MHLC) Form C, which exhibited strong internal consistency, indicated by a Cronbach's alpha coefficient of 0.791. The item-total correlation values (r table) varied from 0.432 to 0.803, demonstrating that all items satisfied the validity criteria. Ryff's Psychological Well-Being Scale (PWB) demonstrated high reliability, indicated by a Cronbach's alpha value of 0.805. The validity coefficients for the questionnaire items varied from 0.66 to 1.00, indicating a strong correlation with the total score and confirming their validity for this study.

The analysis of the data involved both descriptive and inferential statistical methods. The Chi-square test was utilized to evaluate the relationships between sociodemographic and clinical variables and psychological well-being. Variables that demonstrated significant associations in the bivariate analysis were subsequently analyzed through logistic regression to determine the most predictive factors. The findings were deemed statistically significant with a p-value of under 0.05.

CODE OF HEALTH ETHICS

Ethical approval for the study was obtained from the ethics committee at Jenderal Ahmad Yani

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Regional Public Hospital (Approval No. 370/449/KEPK-LE/LL-02/2024), and informed consent was received from all participants.

RESULTS

A total of 73 women diagnosed with cancer participated in this study. The characteristics of respondents in this study consisted of age, education level, employment status, duration since diagnosis, cancer stage, mastectomy, health locus of control and psychological well-being.

Table 1. Respondent Characteristics

Variable		n	%
Age	Adults	62	84.9
	Elderly	11	15.1
Education Level	Basic education	66	90.4
	Higher education	7	9.6
Employment Status	Employed	26	35.4
	Not Employed	47	64.4
Duration Since Diagnosis	< 2 years	62	84.9
	≥ 2 years	11	15.1
Cancer Stage	Early-stage cancer	32	17.8
	Late-stage cancer	41	26.0
Mastectomy	No Mastectomy	31	43.8
	Mastectomy Performed	42	56.2
Health locus of control	High	41	56.2
	Low	32	43.8
Psychological Well-Being	High	37	50.7
	Low	36	49.3

As presented in Table 1, the majority of whom were adults (84.9%), possessed a basic education level (90.4%), and were unemployed (64.4%). A significant portion had received their diagnosis for under two years (84.9%), were in the advanced stage of cancer (56.2%), and had experienced mastectomy (56.2%). Over fifty percent demonstrated a strong health locus of control (56.2%) and a significant level of psychological well-being (50.7%).

Table 2. Correlation analysis of Psychological Well-Being

Variable	Psychological Well-Being						*p-value*	*OR*	*IK 95%*	
	Low		High		Total					
	n	%	n	%	n	%			Min	Max
Age										
Adults	29	46.8	33	53.2	62	100	0.482	0.502	0.133	1.891
Elderly	7	63.6	4	36.4	11	100				
Education Level										
Basic education	34	51.5	32	48.5	66	100	0.248	2.656	0.481	14.678
Higher education	2	28.6	5	71.4	7	100				
Employment Status										
Employed	13	50.0	13	50.0	26	100	1.000	1.043	0.400	2.720
Not Employed	23	48.9	24	51.1	47	100				
Duration Since Diagnosis										
< 2 years	28	45.2	34	54.8	62	100	0.174	0.309	0.075	1,275
≥ 2 years	8	72.7	3	27.3	11	100				
Cancer Stage										
Early-stage cancer	9	28.1	23	71.9	32	100	0.003	0.203	0.074	0.554
Late-stage cancer	27	65.9	14	34.1	41	100				
Mastectomy										
No Mastectomy	9	29.0	22	71.0	31	100	0.006	0.227	0.084	0.618
Mastectomy Performed	27	64.3	15	35.7	42	100				
Health locus of control										
High	29	90.6	3	9.4	32	100	<0.001	46.952	11.120	198.248
Low	7	17.1	34	82.9	41	100				

The correlation between the characteristics of respondents and their psychological well-being was

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examined through the Chi-square test, as shown in Table 2. The findings revealed a significant association between cancer stage, mastectomy status, and health locus of control with psychological well-being ($p < 0.05$). Individuals diagnosed with early-stage cancer exhibited a higher likelihood of possessing elevated psychological well-being in comparison to those diagnosed at a later stage (OR = 0.203; 95% CI = 0.074–0.554; p = 0.003). In a similar vein, individuals who had not experienced mastectomy were inclined to indicate higher levels of psychological well-being compared to those who had undergone the procedure (OR = 0.227; 95% CI = 0.084–0.618; p = 0.006). A significant correlation was identified regarding health locus of control. Individuals exhibiting a strong internal health locus of control demonstrated a 46.95-fold increase in the likelihood of achieving high psychological well-being (95% CI = 11.120–198.248; $p < 0.001$). Conversely, factors such as age, education level, employment status, and time since diagnosis did not demonstrate a significant correlation with psychological well-being ($p > 0.05$).

Table 3. Multiple Logistic Regression: Predictors of Psychological Well-Being

Predictor Variable	B (Coefficient)	odds	Wald	p
Mastectomy Performed	1.467	4.338	3.831	0.050
High Health Locus of Control	-3.842	0.021	24.353	<0.001

A multiple logistic regression analysis using a backward elimination method was conducted to identify the most significant predictors of psychological well-being in women with breast cancer (Table 3). The results showed that mastectomy status and health locus of control were significant predictors. Women who did not undergo mastectomy had 4.34 times higher odds of reporting high psychological well-being compared with those who underwent mastectomy (OR = 4.338; p = 0.050). In contrast, low health locus of control was associated with significantly lower odds of high psychological well-being (OR = 0.021; $p < 0.001$), indicating a strong protective role of high internal health locus of control.

DISCUSSION

This study reveals the strong association between cancer stage, mastectomy status, health locus of control, and psychological well-being among women diagnosed with cancer. The findings contribute to the expanding body of literature underlining the psychological vulnerability of cancer patients, particularly those at more advanced stages of disease and those who have undergone mastectomy. Notably, the robust link between a high health locus of control and greater psychological well-being gives unique insight into the function of internal psychological resources in buffering distress.

This study's findings indicate an inverse relationship between cancer stage and psychological well-being, aligning with prior research that shows patients in advanced cancer stages are especially susceptible to psychological distress. Previous research indicates that advanced stages of disease correlate with increased emotional distress, encompassing anxiety, depression, and existential concerns, as patients face disease progression, uncertainty, and perceived threats to life (17). Comparable results have been observed in colorectal cancer patients, indicating that advanced-stage disease is a significant predictor of heightened anxiety and depressive symptoms (18). The consistency of these findings among various cancer populations indicates that cancer stage serves as both a clinical indicator of disease severity and a significant psychological factor influencing well-being. With disease progression, patients may encounter heightened treatment burden, exacerbated physical symptoms, anxiety regarding mortality, and a reduced sense of control, all of which can negatively impact psychological well-being. The current findings support the idea that disease severity significantly affects psychological vulnerability, highlighting the necessity for early psychological screening and specific psychosocial interventions, especially for women diagnosed at later stages of breast cancer.

Similarly, this study's findings about the negative impact of mastectomy on psychological well-being are in line with earlier studies showing that breast removal may result in problems with body image, a perceived loss of femininity, and low self-esteem (9). Psychosocial challenges are significant contributors to emotional distress in women undergoing mastectomy. The literature indicates variability in psychological outcomes, with certain studies demonstrating that reconstructive surgery, psychological

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counseling, and robust social support networks can alleviate the negative psychological effects of mastectomy. Mastectomy continued to be a significant predictor of reduced psychological well-being in this study, despite the presence of protective factors reported in other research. This finding may indicate restricted access to comprehensive post-surgical psychosocial care in the study context, underscoring the necessity for integrative interventions that encompass both physical recovery and psychological adjustment after mastectomy.

This study reveals a significant correlation between health locus of control (HLOC) and psychological well-being, highlighting the crucial role of internal psychological resources in the mental health of women with breast cancer. Consistent with prior research, individuals with a strong internal HLOC are more likely to employ active coping strategies, self-regulation, and adaptive health practices, thereby enhancing psychological adjustment and reducing emotional distress (11,19). High internal HLOC fosters a sense of personal agency and perceived control over health outcomes, mitigating feelings of helplessness and uncertainty frequently encountered after cancer diagnosis and treatment. These findings contribute to the literature by demonstrating the independent role of HLOC in psychological well-being within a multivariate framework, even when controlling for disease-related variables. The results suggest that psychosocial interventions aiming to strengthen internal HLOC may support psychological resilience among women with breast cancer.

The findings reveal that mastectomy and health locus of control are the most significant correlates of psychological well-being in women with breast cancer, highlighting their essential role in the adjustment process. The findings are consistent with previous research highlighting the significant impact of body image disturbances after surgical interventions and the individual's perceived control over their health trajectory on mental health outcomes in chronic conditions (20). The emotional and psychological consequences of mastectomy, frequently influenced by changes in body image, highlight the necessity for specialized psychological support. The perception of a negative body image is consistently associated with depressive symptoms, diminished quality of life, and interpersonal challenges among breast cancer survivors (8). On the other hand, an adequate internal health locus of control stimulates individuals to actively participate in self-management and coping strategies, resulting in improved psychological well-being (21). In contrast, an external health locus of control, where individuals ascribe health outcomes to chance or influential others, may result in feelings of helplessness and a decline in psychological well-being (22). This emphasizes the significance of evaluating patients' locus of control beliefs in order to modify interventions that foster a sense of self-efficacy and agency (23).

Instead, age, education, employment status, and time since diagnosis did not affect psychological well-being. This indicates that disease-related factors and internal psychological resources may influence breast cancer patients' psychological well-being more than sociodemographic factors. Previous research found inconsistent or non-significant relationships between age and psychological well-being, suggesting that breast cancer-related emotional distress is experienced throughout life (24). Similarly, education level and employment status have not reliably forecasted psychological well-being, as the psychological impact of cancer diagnosis and treatment may surpass any socioeconomic benefits (25). The absence of correlation with time since diagnosis supports findings that psychological adjustment to cancer is varied and non-linear, with distress possibly continuing as a result of ongoing treatment effects, fear of recurrence, or challenges associated with long-term survivorship (26). These findings underscore the importance of focusing on modifiable psychological factors, such as health locus of control, rather than solely on demographic characteristics when developing psychosocial interventions for women with breast cancer.

The correlation between mastectomy and HLOC with psychological well-being underscores their importance as focal points for clinical interventions intended to enhance patient outcomes. Understanding a patient's health locus of control can assist clinicians in customizing communication strategies to improve perceived control and support psychological adjustment (27). Furthermore, addressing the psychological effects of mastectomy through supportive therapies can reduce negative body image issues and promote healthier coping strategies (8). Evidence from clinical therapy, spiritual-based interventions and survivor

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support group interventions underscores the effectiveness of structured psychological support in enhancing adjustment and quality of life among breast cancer patients (28,29).

Findings from this study demonstrate that advanced cancer stage and mastectomy are connected with lower psychological well-being, while a strong internal health locus of control is linked to improved mental health outcomes. The stage of cancer and the experience of mastectomy not only reflect clinical circumstances but also function as psychological pressures. The findings indicate that strong internal health locus of control is a significant protective factor against emotional distress in women with breast cancer. This underscores the importance of integrated psychosocial interventions designed to enhance patients' sense of personal control, particularly for those undergoing invasive treatments or facing advanced-stage disease. Strengthening internal control beliefs may promote psychological resilience and facilitate better adaptation throughout the cancer trajectory.

Notwithstanding the substantial connections observed in this investigation, numerous limitations must be recognized. The cross-sectional design restricts causal interpretation among cancer stage, mastectomy status, health locus of control, and psychological well-being. Moreover, the dependence on convenience sampling and self-reported metrics may introduce selection and response bias, thus compromising the generalizability of the results. Furthermore, the identified relationships may not comprehensively encompass additional unmeasured psychosocial or contextual factors that could also affect the psychological well-being of women with breast cancer.

CONCLUSION

The findings suggest that psychological well-being in women with breast cancer is affected by both clinical factors, such as mastectomy, and internal psychological resources, notably health locus of control. Women exhibiting a higher internal health locus of control demonstrated an increased likelihood of reporting elevated psychological well-being, whereas those who underwent mastectomy showed a decreased likelihood of achieving optimal well-being. The findings underscore the significance of comprehensive cancer care that encompasses both clinical and psychosocial aspects. Interventions aimed at enhancing internal control beliefs, including structured educational programs, psychotherapy, and support groups, may bolster adaptive coping, promote resilience, and enhance overall psychological adjustment, especially for patients undergoing invasive treatments or dealing with advanced disease.

DECLARATION OF THE USE OF AI

The authors declare that no artificial intelligence (AI), AI-assisted technologies, or large language models (LLMs) were used in the conception of the study, data analysis, or the drafting, writing, and editing of this manuscript. The only exception is the graphical abstract, which was created using the design platform Illustrae (https://illustrae.co/). The authors take full responsibility for the content and accuracy of the graphical abstract and the entire manuscript

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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