

# Factors Predicting Psychological Well-being among Survivors of Breast Cancer in A Tertiary Care Hospital, Thailand

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## ABSTRACT

**Objective:** The primary aim of this study was to examine predicting the effect of stress, social support, self-efficacy, and resilience on psychological well-being in breast cancer survivors

**Materials and Methods:** This predictive analysis for the descriptive cross-sectional study was conducted by the theoretical underpinning of resilience and population consisted of eligible breast cancer survivors receiving care at an outpatient clinic within a tertiary hospital setting. The data collecting was proceeded through self-administered questionnaires in line with convenient sampling. The analytical approach encompassed descriptive statistics, Pearson's correlation coefficient, and multiple linear regression.

**Results:** Emanating from the study included the recruitment of 123 participants, with stress, social support, and resilience collectively elucidating 43% of the variance in psychological well-being among breast cancer survivors. Notably, resilience emerged as the most influential predictor ( $\beta=.33$ ), followed by stress ( $\beta=-.27$ ) and social support ( $\beta=.26$ ), all of which significantly contributed to the prediction of psychological well-being.

**Conclusion:** Resilience, stress, and social support were three predictors of psychological well-being among survivors of breast cancer in this study. Recommendations extend to the integration of strategies that foster resilience and social support, while concurrently mitigating stress levels through activities and programs aimed at augmenting the psychological well-being of breast cancer survivors in the future.

**Keywords:** Breast cancer survivors; psychological well-being; resilience; self-efficacy; social support; stress (Siriraj Med J 2024; 76: 244-254)

## INTRODUCTION

Breast cancer is one of the most common diseases among women.<sup>1</sup> According to a report by the World Health Organization (WHO) in 2022, new cases of breast cancer and the mortality rate were 2.26 and 0.68 million per year, respectively.<sup>2</sup> In Thailand, breast cancer is the most common cancer occurring among women, accounting for 22,158 new cases and 8,266 deaths annually.<sup>3</sup>

Moreover, new breast cancer cases have increasingly been diagnosed and reported globally, revealing breast cancer as a significant public health issue for Asian women worldwide. Even though cancer deaths are prevalent, early diagnosis through detecting cancer by screening provides asymptomatic patients a greater chance of recovery.<sup>3-4</sup>

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A cancer survivor is a term that refers to a patient diagnosed with cancer from their first diagnosis and subsequently lives life as a cancer patient. Most survivors face a variety of cancer-related effects, including physical, mental, and social consequences. After receiving treatments, patients experience physical symptoms such as chronic pain,<sup>4</sup> dizziness, fatigue, insomnia, forgetfulness,<sup>5</sup> and discomfort.<sup>6</sup> Mental symptoms encompass stress, anxiety, and depression.<sup>7</sup> Stress may contribute to anxiety and depression, leading to an increased risk of suicide. Social impacts entail discomfort with other family, friends, and colleagues, an inability to maintain family and social roles, and the risk of work problems due to frequent sick leave and compromised work performance.<sup>8</sup> However, some of them have reported good psychological well-being without mental health problems, felt happy, had life satisfaction, and handled both disease conditions and lifestyle changes.

Psychological well-being (PWB) is a condition lacking any mental health problems and a vital indicator of personal mental health, mental strength, optimism, and the ability to live everyday life.<sup>9</sup> The six dimensions of PWB consist of living with autonomy, purpose in life, self-acceptance, personal growth, positive relations with others, and environmental mastery.<sup>9-11</sup> Various studies have examined the factors influencing breast cancer survivors' PWB, including stress,<sup>12,13</sup> self-efficacy,<sup>14,15</sup> social support,<sup>16,17</sup> and resilience.<sup>14,18</sup>

Stress is a personal perception reacting to stimuli, which causes physical changes and physiological imbalances between biology and biochemistry in response to those stimuli.<sup>19-23</sup> Breast cancer is considered a life-threatening condition that leads to stress, which causes patients to evaluate their illness as a threat, affecting their perceptions and raising stress levels and psychological disruptions.<sup>24</sup>

Social support is a key factor related to PWB,<sup>18</sup> perceived interactions, support,<sup>25</sup> and illness management for breast cancer survivors. Social support helps promote appropriate adaptation, leading to beneficial mental health conditions. Optimal social support facilitates self-adaptation and promotes self-acceptance of the illness condition.<sup>26,27</sup>

Self-efficacy refers to a personal belief in the capability to do something that supports how one lives. Self-efficacy includes personal feelings, thoughts, motivations, and behaviors.<sup>28</sup> Studies have demonstrated that self-efficacy is an essential characteristic of successful self-management for the effects of cancer and its treatments. On the contrary, cancer patients with low self-efficacy tend to be more likely to experience depression.<sup>29</sup> Generally, cancer patients aim to be successful in their self-management, which is one of the components of mental health.

Resilience is likewise associated with PWB, perceived growth, and quality of life among breast cancer survivors.<sup>30</sup> It is a personality trait that individuals employ to protect themselves from undesirable events and to overcome negative experiences happening in their lives,<sup>31</sup> such as being diagnosed with cancer.<sup>32</sup>

Although the above-mentioned factors were examined among patients with cancer and other chronic diseases in once a factor, limited research simultaneously tested all factors in the same study. Thus, it is inclusive of the magnitude of the effect for each factor. Moreover, most studies focused on promoting a patient's quality of life rather than PWB. It is unclear which factors predict PWB among breast cancer survivors.<sup>16,33,34</sup>

Accordingly, this study aimed to examine the factors that predict PWB in breast cancer survivors in Thailand. It is hypothesized that stress, perceived social support, mindfulness, self-efficacy, and resilience would significantly predict PWB among breast cancer survivors in Thailand. The findings from this study would increase awareness among healthcare providers concerning PWB and should result in self-acceptance as well as the ability to live happily as a cancer survivor, maintaining good PWB.

### Theoretical framework

This research was guided by Kumpfer's resilience framework,<sup>35</sup> comprising six core concepts including stressors and challenges, external environmental context, person-environment transactional processes, internal resilience factors, resilience processes, and positive outcomes. Considering Kumpfer's framework and the factors relating to PWB, one recognizes that breast cancer survivors need surveillance for a recurrence, requiring continuous monitoring of treatment results. Cancer-related stress may lead to poor mental health. However, environmental contexts (such as social support from family, friends, and significant people) can minimize the effects of stress. The internal resilience factor and resilience process can lead to good adaptation. Self-efficacy and well-resilience grounds the ability to deal with stress and threats as well as reduce the chances of problems in adapting to the stress of being a breast cancer survivor. These enabling factors result in a positive outcome of effective adaptation to mental health problems and facilitate PWB.

Breast cancer survivors are a group with life goals. They have self-acceptance and good relationships with others, can adapt to threats, have the potential for self-improvement, and can make choices themselves. Besides, they have purposeful lives, take good care of their health, work to reduce relapses, and achieve long-term survivorship.

This determination to survive is consistent with the Ryff and Keyes<sup>9</sup> concept of PWB, which recognizes PWB as a personal commitment to a positive lifestyle. Its six dimensions consist of autonomy, self-acceptance, positive relationships with others, purpose in life, environmental mastery, and personal growth, as shown in Fig 1.

## MATERIALS AND METHODS

### Research design and participants

A predictive descriptive research design and convenience sampling were utilized. The target population included post-treatment breast cancer survivors from a breast surgery clinic at a large tertiary hospital in Bangkok, Thailand. In conclusion, female adults must meet the following inclusion criteria: (1) aged 18 years and older diagnosed with breast cancer stage 1-3 by attending doctors, (2) completed treatments, including surgery, radiation, chemotherapy, hormone therapy, or combined therapy for at least six months, and (3) were clinically stable as indicated by attending physicians. This study excluded people with a diagnosis of cancer recurrence, metastasis to various organs, and a history of mental disorders.

The sample size was determined by power analysis calculated with the G\*Power version 3.1.9.4 program. A study examined the effect of resilience on PWB among breast cancer survivors<sup>36</sup> and generated a small effect size ( $r = .30$ , Cohen's  $d = .10$ ). With this effect size, a significance level ( $\alpha$ ) of .05, power = 80%, four predicting variables, and at least 123 participants were required for this study.

### Variables and measurements

There were two groups: tools for screening and data collection.

#### Screening tool

The Thai Mental State Examination (TMSE)<sup>37</sup> was developed by 14 international institutions of brain rehabilitation groups. Patients with total scores less than

or equal to 23 points would be a cut-off for cognitive impairment and excluded from this study.<sup>38</sup>

#### Tools for data collection

PWB was evaluated by using the 18-item Thai-version psychological well-being scale (PWES),<sup>9</sup> which was translated from the original PWES<sup>39</sup> and consisted of six components including autonomy, environmental mastery, purpose in life, personal growth, positive relations with others, and self-acceptance. The assessment form uses a six-point Likert scale. Scores for each item range from 1 to 6, with 1 (strongly disagree), 2 (very disagree), 3 (disagree sometimes), 4 (agree sometimes), 5 (very agree), and 6 (strongly agree), while summed scores range from 18 to 108 points, and high scores indicated a high degree of psychological wellbeing. Cronbach's alpha for the total scale was .80, and predictive validity was .75.<sup>39</sup>

Stress was evaluated with the Thai version of the 10-item Perceived Scale (PSS).<sup>40</sup> The Thai version of the PSS was translated from the original PSS.<sup>41</sup> It is a text style that measures perceived stress situations. It is a question about feelings and thoughts in the past month. The assessment form uses a five-point Likert scale. Scores for each item range from 0 (not at all), 1 (almost none), 2 (sometimes), 3 (quite often) to 4 (very often), while summed scores range from 0-40 points, and high scores indicate a high degree of perceived stress. Cronbach's alpha for the total scale was .85, and predictive validity was .80.<sup>41</sup>

Social support was evaluated with the Thai version of the 12-item Multidimensional scale of perceived social support (MSPSS).<sup>42</sup> The Thai version of the MSPSS was translated from the original MSPSS.<sup>43</sup> It is a text style that measures perceived social support. The assessment form uses a seven-point Likert scale. Each item scored on a 7-point ordinal scale, ranging from 1 to 7 (1 = very strongly disagree, 2 = strongly disagree, 3 = mildly disagree, 4 = neutral, 5 = mildly agree, 6 = strongly agree, and 7 =

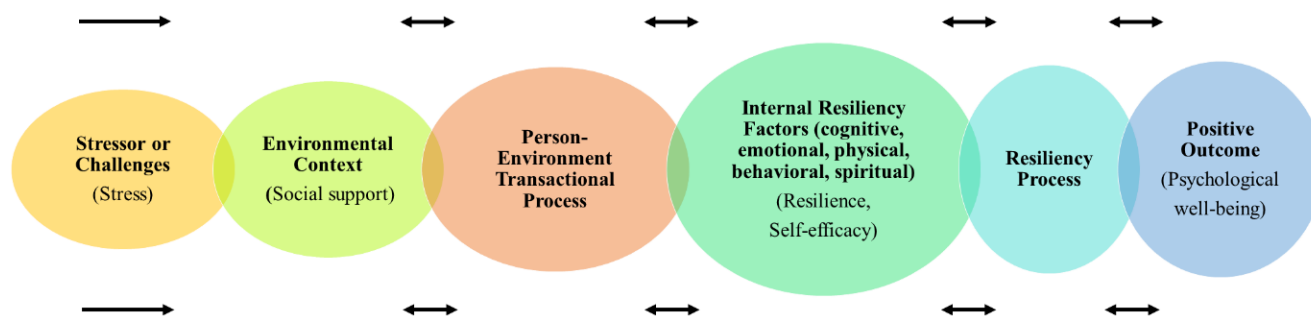


Fig 1. Psychological well-being factors of breast cancer survivors according to the conceptual framework of Kumpfer's resilience

very strongly agree). Summed scores ranged from 12-84 points, with a high score indicating a high degree of perceived social support. Cronbach's alpha for the total scale was .89, and predictive validity was .92.<sup>43</sup>

Self-efficacy was evaluated with the Thai version of the 10-item General self-efficacy scale (GSES).<sup>44</sup> The Thai version of the GSES was translated from the original GSES.<sup>45</sup> It is a text style that measures self-efficacy. The assessment form uses a four-point Likert scale. Scores for each item range from 1 (not at all true), 2 (barely true), 3 (moderately true) to 4 (exactly true), while summed scores ranged between 10-40 points, and high scores indicated a high degree of self-efficacy. Cronbach's alpha for the total scale was .84, and predictive validity was .88.<sup>45</sup>

Resilience was evaluated with the Thai version of the 10-item Connor-Davidson resilience scale (CD-RISC).<sup>46</sup> The Thai version of the CD-RISC was translated from the original CD-RISC.<sup>47</sup> It is a text style that measures resilience. The assessment form uses a five-point Likert scale. Scores for each item range from 0 (not at all true), 1 (rarely true), 2 (sometimes true), 3 (often true) to 4 (true nearly always). Summed scores would range from 0-40 points, so high scores indicated a high degree of resilience. Cronbach's alpha for the total scale was .86, and predictive validity was .89.<sup>47</sup>

The collection of personal information consisted of age, marital status, education, occupation, religion, income, and perceived income sufficiency. Clinical data encompassed the right to medical treatment, body mass index (BMI), congenital or co-morbid diseases, history of drug allergy and food allergy, past illness history, and duration of illness.

### **Ethical considerations**

Ethical approval was granted by the Institutional Review Board of the Faculty of Nursing for the study of universities (IRB-NS 2020/52.0212) and the study of hospitals (IRB No.072/2564). Participants completed informed consent forms, and all procedures complied with ethical guidelines and regulations. The study was conducted from November 2020 through July 2022, and participant recruitment took place from August 2021 to October 2021. The participants completed the questionnaires, comprising 73 items, which took approximately 30 to 45 min for each participant to complete.

### **Data collection procedure**

After receiving ethical approval, the researchers required permission from the hospital Directors of Study and breast surgery clinic to commence data collection. After that, the

researchers met the director of the breast surgery clinic to clarify the objectives, methods of data collection, and research benefits. Afterward, the researchers coordinated with nurses working at the breast surgery clinic to identify and screen for eligible participants. Subsequently, the researchers approached eligible participants, explained the details concerning the research project, and invited them to participate in the study. Before completing the self-administered questionnaire, each participant received a participant information sheet and signed a consent form. Each completed questionnaire was checked to ensure that there were no missing data. For those who could not read the questionnaire clearly, the researchers assisted by reading for them and recording the data based on their responses. During the process, if participants experienced certain symptoms (such as headache), the researchers would allow them to discontinue answering the questionnaire and provide necessary care immediately. In addition, given that data collection took place during the COVID-19 outbreak, the researcher and participants complied strictly with measures for preventing the spread of infection, including screening for symptoms, checking body temperature, wearing masks, and maintaining social distances of at least two meters.

### **Data analysis**

All data were analyzed by the Statistical Package for Social Science (SPSS), as follows:

1. Personal information (such as age, marital status, and education) and clinical data (such as medical treatments, and congenital or co-morbid disease) were analyzed by univariate statistics such as frequency, percentage, mean and standard deviation.
2. Study variables (stress, social support, self-efficacy, resilience, and PWB) were analyzed by descriptive statistics.
3. The factors predicting PWB among breast cancer survivors were stress, social support, self-efficacy, resilience, and PWB, which were analyzed by running Pearson's correlation coefficient and multiple regression using the enter method, with a statistical significance level of .05.

## **RESULTS**

### **Demographics and clinical information of the participants**

In total, the study comprised 123 breast cancer survivors with a mean age of 55.06 (SD =10.67), and most of them were in the age range of 50-59 (37.40%) (Table 1). The majority were married (52.80%; n=65) and Buddhist (94.30%; n=116), had graduated with a bachelor's degree or vocational certificate (52.00%; n=66), and qualified under the Civil Servant Medical Benefit Scheme (44.70%; n=55). Generally, they were

**TABLE 1.** Demographics and clinical information of the participants.

Demographics and clinical information	N	%	Demographics and clinical information	N	%
<b>Age (years)</b>			<b>Religion</b>		
30-39	6	4.90	Buddhism	116	94.30
40-49	30	24.40	Islam	4	3.30
50-59	46	37.40	Christianity	3	2.40
> 60	41	33.30			
( $\bar{X}$ =55.06, S.D.=10.67, Max=85, Min=30)			<b>Income (monthly)</b>		
<b>Marital Status</b>			< 10,000	32	26.00
Single	34	27.60	10,000-29,999	30	24.40
Married	65	52.80	30,000-49,999	25	20.30
Divorced	12	9.80	> 50,000	36	29.30
Other	12	9.80	( $\bar{X}$ =23,361.14, S.D.=28,001.99, Max=150,000, Min=0)		
<b>Education</b>			<b>Medical Insurance plans</b>		
Undergraduate	42	34.10	Cash	22	17.90
Graduated in bachelor's degree or vocational certificate	64	52.00	Civil servant plans	55	44.70
Master's degree	16	13.00	State Enterprise Officer	8	6.50
Doctor's degree	1	0.80	Health insurance	21	17.10
			Social insurance	16	13.00
			Other	1	0.80
<b>Occupation</b>			<b>Body mass index (BMI: kg/m<sup>2</sup>)</b>		
Unemployed	2	1.60	<18.5	5	4.10
Government officer	35	28.50	18.5-22.9	34	27.60
			23-24.9	28	22.80
<b>Occupation</b>			25-29.9	40	32.50
Employee	15	12.20	≥30	16	13.00
Self-Employed	33	30.90	( $\bar{X}$ =25.16, S.D.=4.37, Max=42.24, Min=16.41)		
Other	38	26.80	<b>Average duration of illness (monthly)</b>		
			< 12	71	57.70
<b>Adequacy of income</b>			12-24	24	19.50
Enough	106	86.20	25-36	14	11.40
Not enough	17	13.80	>37	14	11.40
			( $\bar{X}$ =21.31, S.D.=24.15, Max=132, Min=2)		
<b>Congenital or co-morbid disease</b>					
No co-morbid disease	48	39.00			
One disease	45	36.60			
Two diseases	18	14.60			
Three or more disease	12	9.80			
<b>History of drug allergies, food allergies</b>					
Yes	20	16.30			
No	103	83.70			
<b>History of illness</b>					
Yes	52	42.30			
No	71	57.70			

housewives, hired workers, or others (30.90%), with 50,000 baht or more being the average monthly income (29.30%). Participants had an average BMI of 25.16 (SD=4.37).

### Psychological well-being, stress, social support, self-efficacy, and resilience

The results for psychological well-being, stress, social support, self-efficacy, and resilience are presented in Table 2. PWB ( $\bar{X}$ =83.19, SD=8.85), stress ( $\bar{X}$ =13.28, S.D.=6.16) social support ( $\bar{X}$ =70.33, S.D.=11.03), self-efficacy ( $\bar{X}$ =31.90, S.D.=4.61) and resilience ( $\bar{X}$ =31.39, S.D.=5.35).

### Correlations between psychological well-being, stress, social support, self-efficacy, and resilience

According to the rule of Thumb for interpreting the size of a correlation coefficient, the correlation coefficient in the range of .90 to 1.00 (-.90 to 1.00), .70 to .90 (-.70 to -.90), .50 to .70 (-.50 to -.70), .30 to .50 (-.30 to -.50), .00 to .30 (.00 to -.30) are assigned to the positive (negative) correlation in the level of very high, high, moderate, low and negligible, respectively.<sup>55</sup> The correlations between psychological well-being, stress, social support, self-efficacy, and resilience are presented in Table 3. It is revealed that PWB was positively correlated with resilience ( $r=.55, p<.01$ ), social support ( $r=.44, p<.01$ ), and self-efficacy ( $r=.34, p<.01$ ). On the other hand, stress showed

a negative correlation with psychological well-being ( $r= -.49, p<.01$ )

### Predictors of mental health among participants

The model summary by an enter model of multiple linear regressions showed that stress, social support, self-efficacy, and resilience could explain the variance of PWB by 44% (adj  $R^2=.43, F_{(4,118)}=23.58, p<.01$ ) are presented in Table 4. Resilience had the strongest and significant effect on PWB ( $\beta=.33, p<.01$ ), followed by stress ( $\beta=-.27, p<.01$ ) and social support ( $\beta=.26, p<.01$ ). However, self-efficacy ( $\beta=.05, p>.01$ ) did not affect PWB.

## DISCUSSION

This study aimed to examine the factors that predicted PWB among breast cancer survivors in Thailand. The findings indicated that stress, social support, and resilience were significant predictors of PWB, except for self-efficacy. All variables explained 44% of the variance on PWB.

Breast cancer survivors with higher levels of stress were more likely to report lower PWB. Therefore, there is a need to help them manage stress, thus enhancing their mental health and PWB.<sup>24,48</sup> The findings from the study indicate a significant negative relationship between stress and PWB in breast cancer survivors ( $r= -.49, p<.01$ ). Moreover, stress emerged as a significant predictor of PWB at a confidence level of .01 ( $\beta=-.27,$

**TABLE 2.** Descriptive statistics for the outcome measures (n=123).

Variables	Subscale		Item		
	Mean	S.D.	Score range	Scale range	Item range
<b>Psychological wellbeing</b>	83.19	8.85	60-103	18-108	1-6
Autonomy	11.61	1.94	6-15	3-18	1-6
Self-acceptance	11.60	1.88	6-18	3-18	1-6
Personal growth	12.52	1.96	7-17	3-18	1-6
Positive relationships with others	9.66	1.97	6-18	3-18	1-6
Environmental mastery	12.99	1.62	8-17	3-18	1-6
The purpose of life	11.45	2.04	6-17	3-18	1-6
<b>Stress</b>	13.28	6.16	0-31	0-40	1-4
<b>Social support</b>	70.33	11.03	23-84	12-84	1-7
Family	24.69	4.12	6-28	4-28	1-7
Friends	21.65	5.39	6-28	4-28	1-7
Intimate partners	23.98	3.61	11-28	4-28	1-7
<b>Self-efficacy</b>	31.90	4.61	13-40	10-40	1-4
<b>Resilience</b>	31.39	5.53	13-40	0-40	0-4

**TABLE 3.** The correlation coefficient between study variables (n=123).

Variables studied	1	2	3	4	5
Stress	1				
Social support	-.24**	1			
Self-efficacy	-.37**	.23*	1		
Resilience	-.45**	.32**	.39**	1	
Psychological well-being	-.49**	.44*	.34**	.55**	1

\*Correlation is significant at the 0.05 level (two-tailed).

\*\*Correlation is significant at the 0.01 level (two-tailed)

**TABLE 4.** Predictors of mental health among participants (n=123).

Variables studied	$\beta$	t	p-value
Constant		-7.76	.000
Stress	-.27	-3.35	.001
Social support	.26	3.60	.000
Self-efficacy	.05	.63	.532
Resilience	.33	4.01	.000

$\beta$ =standardized regression coefficient

$p < .01$ ). These results are consistent with prior research, which similarly found a negative correlation between stress and PWB in breast cancer survivors ( $r = -.44$ ,  $p < .00$ ), with stress being a significant predictor of PWB ( $\beta = -.59$ ,  $p < .00$ ).<sup>24,46</sup> A possible explanation for this relationship is that breast cancer survivors who experience stress may be better equipped to handle daily challenges, perceiving stress as a challenge and strengthening their ability to cope with stress effectively. Based on Kumpfer's resilience framework,<sup>35</sup> it has been suggested that stress can function as a personal characteristic that facilitates positive adaptation by encouraging individuals to perceive stressors as challenges. Breast cancer survivors are individuals who have undergone comprehensive treatment and are now in a monitoring phase where continuous follow-ups of treatment outcomes is necessary in case of recurrence. This ongoing process can significantly impact their lifestyle, potentially leading to heightened stress levels compared to their pre-diagnosis state. When individuals experience elevated stress levels and struggle to effectively manage it, they become increasingly aware of stress as a looming threat, difficult to handle. This can result in

mental health issues and hinder their ability to adapt to both their medical condition and its treatment, ultimately contributing to poor mental well-being. It is a process of stressors and challenges within the individual regarding the first component of Kumpfer's resilience framework. Therefore, it can be concluded that appropriate stress-coping strategies may support patients by helping them achieve good mental health and high levels of PWB.

The results of this study indicated a significant positive correlation between social support and psychological well-being (PWB) ( $r = .44$ ,  $p < .01$ ). These findings suggest that individuals with greater social support tend to report higher PWB levels. Additionally, social support emerged as a significant predictor of PWB at a confidence level of .01 ( $\beta = .26$ ,  $p < .01$ ). These results align with earlier research<sup>16</sup>, which similarly found a positive correlation between family support and improved mental health ( $r = .42$ ,  $p < .01$ ) in older cancer patients undergoing chemotherapy. Meanwhile, decreasing social support predicted stress and negatively affected PWB among breast cancer survivors.<sup>50</sup> In addition, this group of patients had to have prolonged follow-ups continuously,

allowing patients to meet with fellow patients who went for breast cancer treatment simultaneously. They also acted as consultants or shared their experiences with other patients and interacted about their illnesses and goals for treatment. In addition, this group of patients had to be followed regularly every three months in the first three years post-treatment.<sup>54</sup> The follow-ups could enable patients to meet fellow patients undergoing breast cancer treatment. Some served as consultants and interacted by sharing experiences about their illnesses and goals for treatment. In other words, social support is necessary for ill patients to balance their PWB and cope with stress appropriately. Afterward, it brings the individual's transition process within the inner resilience element.<sup>51,52</sup> In line with Kumpfer's resilience framework,<sup>35</sup> social support is an external environmental cortex that balances and interacts with internal/external protective factors and environmental factors. Patients perceiving beneficial social support (especially from family members, friends, or intimate partners) would be able to balance their perceptions towards stress, thus contributing to better mental health and PWB. Additionally, people with high levels of PWB could build good relationships with others, value empathy in relationships, and establish mutual trust.<sup>49</sup>

The findings of this study revealed a significant positive correlation between resilience and psychological PWB among breast cancer survivors ( $r=.55, p<.01$ ). This suggests that those with higher levels of resilience are more inclined to report better PWB. Resilience emerged as a significant predictor of PWB with a confidence level of .01 ( $\beta=.33, p<.01$ ). Moreover, a prior investigation similarly highlighted the association between resilience and PWB in breast cancer patients ( $r = .80, p = .00$ ), with resilience significantly predicting PWB ( $\beta =.58, p < .00$ ).<sup>18</sup> Furthermore, resilience was correlated with growth perception ( $r=.61, p<.00$ ), and it could predict growth perception ( $\beta=.61, p < .00$ ).<sup>30</sup> A possible explanation is that breast cancer survivors with resilience could manage every obstacle in daily life. They perceived stress as a challenge, thus strengthening their ability to cope with stress effectively. Based on Kumpfer's resilience framework,<sup>35</sup> resilience is a personal characteristic that helps individuals perceive stress as a challenge and promotes positive adaptation. It is a process of change within the individual regarding flexibility, the fourth component of Kumpfer's resilience framework.

The results of this study imply that while self-efficacy demonstrates a significant correlation with PWB ( $r=.34, p<.01$ ), it does not emerge as a significant predictor of PWB. Conversely, a prior study suggested that self-

efficacy correlated to quality of life via personal mental well-being ( $r=.75, p<.00$ ). Patients with high self-efficacy tend to exhibit good PWB and considered as component of quality of life.<sup>53</sup> According to the present findings, self-efficacy could not be a significant predictor for PWB because it has a low correlation. It is implied that some other variables are incorporated into self-efficacy through the resilience process, as shown in Fig 1.

### Limitations

The strength of this study was its utilization of acceptable and reliable validated instruments within the Thai population. Subjective data were collected via a questionnaire, allowing participants to express their feelings or needs. The study employed convenience sampling, a method known for its comprehensiveness and accuracy in selecting small sample groups. Furthermore, a cross-sectional design, enabling the simultaneous examination of multiple variables, was employed in this work. However, the findings could involve limitations because data were collected only at one hospital. Thus, the results herein should not be appropriately generalized to diagnose breast cancer patients and survivors of breast cancer in other hospitals at a similar level, primary and secondary hospitals.

### CONCLUSION

The present research examined factors related to psychological well-being in survivors of breast cancer. Our results highlighted resilience, stress, and social support factors that could predict psychological well-being. These results would be beneficial for future research and programs of development or innovation to effectively promote PWB among breast cancer survivors, especially among the Thai population.

### Recommendations

#### Nursing Practice

Nurses should provide psychological care, particularly for resilience factors, such as delivering a program for breast cancer survivors' participation by organizing activities that develop resilience in life.<sup>56,57</sup> Because it would help them adapt to illness and have good mental health. Also, social support should be advocated, such as Experience Sharing Groups among breast cancer survivors.<sup>58,59</sup> Additionally, nurses should assess stress regularly, offer stress management programs support stress relief clinics to alleviate stress in the group of patients, and provide comprehensive and appropriate nursing care, which would lead to better mental health promotion for patients.

## Education

The results of this study indicate that the factors that could predict mental health among survivors of breast cancer included stress, social support, and resilience. Therefore, it is necessary to provide nurses with training courses or knowledge about assessing stress levels, promoting social support, and increasing resilience in the care of breast cancer survivors.<sup>60-61</sup>

## Future research

Further research should explore unpredictable factors like self-efficacy in the PWB of breast cancer survivors, potentially increasing sample size and development programs to enhance PWB among survivors warrant investigation.<sup>62</sup> Future studies should extend beyond public hospitals to include private and community hospitals, diverse age groups, and other chronic diseases for comprehensive mental health promotion. Longitudinal designs and follow-up studies are essential to uncover the trajectory of Kumpfer's conceptual theory and understand precise changes in breast cancer survivors' well-being.

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## Conflicts of interest

The authors declare no conflict of interest.

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## Authors' contributions

NS: general research process, framework of the study, data collection procedure, data analysis, writing-original draft preparation; WT: framework of the study, validation, resources, writing -review and editing, visualization, supervision, project administration; NV: framework of the study, methodology, validation, formal analysis, writing – review, and editing; SK framework of the study, methodology, validation, formal analysis, writing–review, and editing; PKY: writing – review, and editing. All authors read and approved the final manuscript.

## Data availability statement

Data is unavailable due to privacy and ethical

restrictions from the Institutional Review Board (IRB) of Mahidol University, Thailand.

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