Coping Behaviors and Predicting Factors among Breast Cancer Survivors During Each Phase of Cancer Survivorship

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Abstract : This cross-sectional predictive study aimed to: identify types of coping behaviors adopted by Thai breast cancer survivors during each phase of survivorship; examine the relationships among selected factors (uncertainty in illness, perceived health status, hope, sense of coherence, and perceived social support) and three types of coping behaviors (positive problem solving, escape/avoidance, and seeking social support); and, examine the predicting powers of the selected factors on each type of coping behavior. The sample included 360 Thai breast cancer survivors in the acute, extended, and permanent survival phases who were receiving care at one of three hospitals used as study sites. Data were collected via eight questionnaires and analyzed through use of descriptive statistics, one-way analysis of variance, Pearson's product moment correlation coefficient, and multiple regression analysis.

The findings revealed, during each phase of survivorship, that positive problem solving was the most frequently adopted coping behavior, followed by seeking social support, and escape/avoidance, respectively. In addition, similar predictors of each type of coping behavior were found in each phase of survivorship. Hope was the only predictor of the coping behavior, positive problem solving, in the acute and extended phases of survivorship, while hope and perceived health status predicted positive problem solving in the permanent phase of survivorship. In addition, uncertainty in illness and sense of coherence predicted the coping behavior, escape/avoidance, in the acute and permanent phases of survivorship, while uncertainty in illness, sense of coherence, and perceived health status predicted this type of coping in the extended phase of survivorship. However, uncertainty in illness and perceived social support predicted the coping behavior, seeking social support, during all three phases of survivorship. The findings suggest that adaptive coping behaviors of Thai breast cancer survivors can be promoted via appropriate intervention with particular predictors.

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Introduction

Breast cancer and treatments for breast cancer are known to impact every component of breast cancer survivors' and their families' physical, psychological, social, and spiritual being.[1, 2] The experience of living with cancer is referred to as cancer survivorship and consists of three survival phases: acute, extended, and permanent.[1] During each of these survival phases, breast cancer survivors face a number of stressful events, including: diagnostic and therapeutic procedures, during the acute phase; fear of cancer

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recurrence, feelings of isolation, and concern about living as cancer survivors, during the extended phase; and, long-term physical side effects, fear of cancer recurrence, and adjustment to a new lifestyle, during the permanent phase.[2]

Breast cancer survivors often employ a number of cognitive and behavioral strategies to cope with the various perceived stressful situations they experience.[3] Coping behaviors include: positive problem solving; escape/avoidance; and, seeking social support.[4] Prior studies have found, during stressful situations, concurrent and flexible use of multiple coping behaviors contribute to more successful psychosocial adaptation.[3, 5] In addition, engagement-oriented coping behaviors have proven to be more adaptive than disengagement-oriented ones.[3, 5]

Although the majority of studies related to coping with cancer have been conducted among Western populations, guided by Lazarus' and Folkman's model,[6-9] and included all aspects of the factors that influence one's coping process, similar studies in Thailand have placed emphasis only on psychological-resource factors and cancer survivors in the acute phase.[10, 11] Since one's culture heavily influences the way an individual thinks and behaves, findings from Western studies might not be generalizable to Thai breast cancer survivors. Therefore, there appears to be a need for investigation of the preferred coping behaviors of Thai breast cancer survivors, as well as of the effect of the influencing factors, within the Thai context, for choosing particular coping behaviors of Thai breast cancer survivors during each phase of their cancer survivorship.

Conceptual Framework and Review of Literature

The transactional model of stress and coping[12] was used as the theoretical framework of this study. In accord with the transactional model, coping was defined as the dynamic process of thoughts and behaviors that individuals use to manage the demands of stressful situations they appraise as exceeding their coping resources. In this respect, individuals are believed to mobilize personal and environmental resources to cope with any situation or event they appraise as being stressful. In addition, the way in which one's coping resources are mobilized depends on the availability of the resources, as well as the type and level of his/her appraisal of the stressful situation or event, and the extent to which constraints of the individual's resources exist.

Coping behaviors, according to the transactional model of stress and coping, may be problem-focused or emotion-focused.[12] For this study, coping behaviors were categorized into three types (positive problem solving, escape/avoidance, and seeking social support) based on the factor analysis of a prior study regarding coping of cancer survivors that used the Ways of Coping Questionnaire-Cancer Version.[4] Positive problem-solving coping behaviors addressed the functions of engagement-oriented problem solving and emotion-focused coping, while escape/avoidance coping behaviors addressed the functions of disengagement-orientated problem solving and emotion-focused coping. Finally, the seeking social support coping behavior addressed engagement-oriented problem solving and emotion-focused coping that required social support resources.

When breast cancer survivors judge themselves capable of handling particular stressful person-environment transactions, they have been found to engage in activities that help them change or manage the environment that is creating demands on them and/or requiring them to regulate their demand-associated emotions.[13] The individual might assess and deal with the stressful situation directly (positive problem solving) or seek assistance from others (seeking social support) in dealing with the event. When cancer survivors perceive stressful situations as hopeless or overwhelming, they are more likely to distance themselves from such situations (escape/avoidance).

In this study, the situational and personal factors (i.e., uncertainty in illness, perceived health status, hope, sense of coherence, and perceived social support) were examined with respect to how they influenced each of three types of coping behaviors among Thai breast cancer survivors (see **Figure 1**). Uncertainty in illness was seen as an antecedent that influenced an individual's appraisal of a situation.[12] Uncertainty of a situation often is evaluated as stressful because one cannot recognize clearly what is going to occur. In this respect, the uncertainty of breast cancer survivor has been viewed as a fluctuating experience that occurs across breast cancer survivorship.[2] In addition, fear and uncertainty about the future have repeatedly been found to present the greatest concern for cancer survivors,[6,8] while uncertainty of illness has been found to be associated with harm and threat appraisals among breast cancer survivors.[9] High levels of uncertainty among cancer survivors also has been found to be significantly positively correlated with emotion-focused coping.[11]

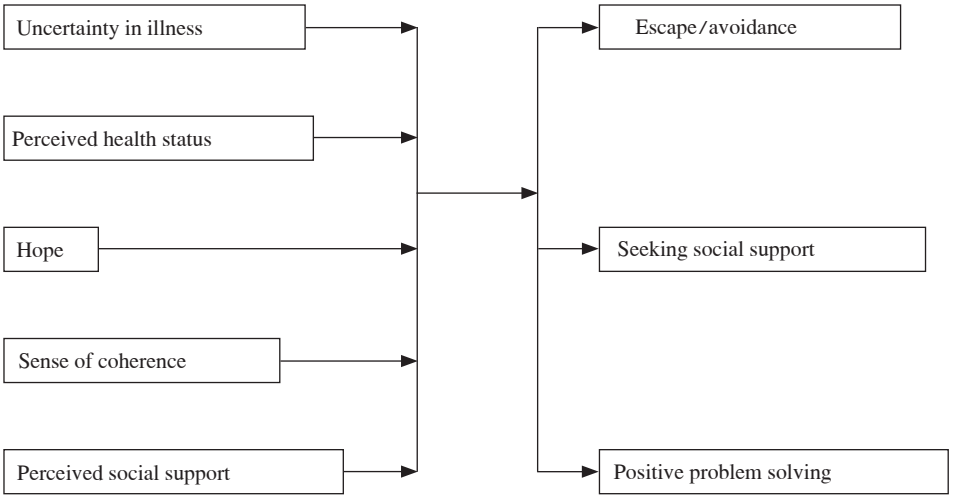

Figure 1 Study's Conceptual Framework

Perceived health status refers to one's perception of his/her overall health and has been viewed as a physical coping resource to facilitate coping.[12] Previous studies have found associations between perceived health status and coping behaviors.[14] Thus, one might expect breast cancer survivors, who have higher levels of perceived health status, to use more positive problem solving than escape/avoidance coping.

Hope has been recognized as a positive belief in one's ability to control his/her reactions and feelings, and carry on in a stressful situation. In this regard, hope has been viewed as a psychological coping resource that facilitates coping.[12] Prior studies have found a significant positive relationship between hope and coping behaviors.[15] Hope also has been found to influence positive reappraisal coping behavior.[9] Thus, one might expect hope, among breast cancer survivors, to influence the use of positive problem solving and seeking social support.

Sense of coherence has been viewed as a general personal belief about control and an experience-generated psychological coping resource that facilitates coping.[12] Those with a high sense of coherence have

been noted to view stressful situations as relatively predicable, manageable, and valuable to endure.[16] Individuals who have a strong sense of coherence also have been found to be able to comprehensively appraise an event, resolve tension in a healthful manner, and more likely engage with their problems than those without a strong sense of coherence.[16] The findings of prior studies also have suggested that one's sense of coherence may influence his/her coping behavior.[17] Thus, a sense of coherence, among breast cancer survivors, may influence the use of positive problem solving and seeking social support.

Perceived social support refers to the amount of informational, emotional, and instrumental support one perceives he/she is receiving.[18] Therefore, perceived social support is viewed as a significant environmental coping resource. Prior studies have found that cancer survivors perceive receiving more informational support from healthcare providers, while receiving more emotional and tangible support from family and friends.[19] In this regard, the perception that there is someone available to understand, care, and support them has been found to make the survivors stronger and better able to tolerate their difficulties.[18] Thus, breast cancer survivors might be expected to use more positive problem solving and seeking social support, rather than escape/avoidance coping, when they perceive receiving a high level of social support.

Therefore, based upon prior research, the transactional model of stress and coping,[12] and review of the literature, the purposes of this study were to: identify the types of coping behaviors adopted by Thai breast cancer survivors during each phase of survivorship; examine the relationships among selected factors (uncertainty in illness, perceived health status, hope, sense of coherence, and perceived social support) and three types of coping behaviors (positive problem solving, escape/avoidance, and seeking social support); and, examine the predicting powers of the selected factors on each type of coping behavior.

Method

Design: A cross-sectional predictive correlational design was used.

Ethical considerations: The Research Ethics Review Committee of the primary investigator's (PI) institution and selected hospitals, used as study sites, approved conduct of the study prior to data collection. Potential subjects were: provided information about the study; assured of their right to withdraw from the study at any time without repercussions; and, informed about anonymity and confidentiality issues. Those who were willing to participate were asked to sign a consent form prior to data collection.

Subjects and Settings: The sample consisted of 360 Thai breast cancer survivors who were recruited from three hospitals in northern Thailand that treated large numbers of women with breast cancer. Of these 360 survivors, 312 subjects were from Hospital A, 14 were from Hospital B, and 34 were from Hospital C (See Table 1). Potential subjects' names were obtained via the head nurses of the outpatient clinics, in each of the hospitals, where breast cancer survivors were being seen. The inclusion criteria for subjects included Thai females who: were diagnosed with stage I, II, or III breast cancer; scored eight or more on the Mental Status Questionnaire;[20] were able to communicate in Thai; and, were willing to participate in the study. The sample size was calculated, on the basis of a multiple regression analysis,[21] with a ratio of 20 subjects to each independent variable, resulting in a primary sample size of 100 for each survival phase. Due to similar prior studies reporting an attrition rate of 20%,[6,8] the final sample size needed for each phase of survivorship was determined to be 120, for a total of 360 subjects. Initially, 400 potential subjects were approached. However, 29 of them did not meet the inclusion criteria due to having: poor understanding of the meaning of and responses to some of the questionnaires' items; metastatic cancer; a history of

psychiatric problems; no apparent stress; and stopped cancer treatments. In addition, seven potential subjects did not have sufficient time to participate and four refused to take part in the study.

The subjects consisted of 120 acute-phase, 120 extended-phase, and 120 permanent-phase Thai breast cancer survivors who had average ages of 52.18, 53.93, and 56.37 years, respectively (see **Table 1**). The majority of them were: married; Buddhists; primary school graduates; and, unemployed. Most of the subjects indicated having: sufficient economic status, some type of health care coverage, and no problem paying for medical services or hospital visits. The average length of diagnosis, with breast cancer, for the women in each phase of survivorship was: 5.87 months (acute); 28.06 months (extended); and, 108.64 months (permanent). The majority of them were in stage II breast cancer and being treated by surgery, in addition to chemotherapy and radiotherapy. No significant differences were found in the demographic data among the three groups of survivorship, in regards to marital status, religion, occupation, payment problems, or stage of breast cancer (see **Table 1**). However, differences were noted between the groups with respect to: age; length of formal education; educational background; economic status; number from each hospital used as a study site; type of health care coverage; time since diagnosis; and, treatment received. Women in the permanent phase of survivorship tended to be older than those in the other two groups, while subjects in the extended and permanent phases of survivorship tended to have more education than those in the acute phase. The subjects in the permanent phase of survivorship tended to indicate more sufficiency of economic status, as well as greater length of time since breast cancer diagnosis, compared to those in the other two phases. Subjects receiving care from Hospital A tended to be in the extended and permanent phases of survivorship, while subjects in Hospital B tended to be in the acute phase and those in Hospital C tended to be in the acute and extended phases. Government officer reimbursement, as a type of health care coverage, was used more by subjects in the extended and permanent phases than by those in the acute phase, while universal health care coverage was used more by subjects in the acute phase than those in the other two phases. Self-support and social security, as types of health care coverage, were used by subjects fairly equally across all three phases of survivorship. Also, the women in the extended and permanent phases of survivorship were receiving more treatment involving surgery, chemotherapy, and hormone therapy than those in the acute phase of survivorship, while those in the acute phase of survivorship were receiving more surgery, chemotherapy and radiation therapy (with/without hormone therapy) than the subjects in the other two phases.

Instruments: Data were collected via use of eight questionnaires: Mental Status Questionniare;[20] Demographic Data Form; the Self-Rated Health Form, a modified version of the Health-related Quality of Life Visual Analogue Scale (VAS); [22] the Thai version of Mishel's Uncertainty in Illness Scale-Community Form;[11] a modified version of the Ways of Coping-Cancer Version;[4] a modified version of the Social Support Questionnaire;[23] a Thai version of Herth's Hope Index;[24] and, a Thai version of the short-form of the Sense of Coherence Questionnaire.[25] Permission was obtained for use of all of the copyrighted instruments.

The Mental Status Questionniare[20] was used to determine the subjects' cognitive status and whether they met the study's inclusion criterion for mental capacity to participate. The questionnaire was a 10-item scale involving: orientation to time and place (i.e., "What is the name of this place?"); remote memory (i.e., "Who was the previous prime minister of

Table 1 Demographics of Subjects from Three Phases of Survivorship

Demographics	Survival Phases			*p*
	Acute n (%)	Extended n (%)	Permanent n (%)	
Age (years)				.001[b*]
Range ($\bar{X}$±SD)	32 – 75 (52.18± 8.62)	36-79 (53.93± 8.59)	35-78 (56.37± 7.65)	
Marital status				.549[a]
Single	10 (8.3)	16 (13.3)	18 (15.0)	
Married	83 (69.2)	79 (65.8)	74 (61.7)	
Divorced/widowed/separated	27 (22.5)	25 (20.8)	28 (23.3)	
Religion				.218[a]
Buddhism	116 (96.7)	119 (99.2)	119 (99.2)	
Christianity/Islamic	4 (3.3)	1 (0.8)	1 (0.8)	
Length of formal education (years)				.000[b*]
Range ($\bar{X}$±SD)	0-21 (7.28 ±4.87)	0-24 (10.07± 5.91)	1-20 (9.43± 5.51)	
Educational background				.005[a*]
No formal schooling	5 (4.2)	2 (1.7)	0 (0)	
Primary school	71 (59.2)	49 (40.8)	59 (49.2)	
Secondary school	21 (17.5)	23 (19.2)	14 (11.7)	
Diploma/Bachelors/Graduate Degree	23 (19.2)	46 (38.4)	47 (39.1)	
Occupation				.198[a]
Unemployed	34 (28.3)	30 (25.0)	33 (27.5)	
Government officer	11 (9.2)	28 (23.3)	24 (20.2)	
Agriculturalist	27 (22.5)	16 (13.3)	16 (13.3)	
Employee	5 (4.2)	4 (3.3)	6 (5.0)	
Business man	15 (12.5)	14 (11.7)	18 (15.0)	
Laborer	28 (23.3)	28 (23.3)	23 (19.2)	
Economic status				.022[a*]
Insufficient	28 (23.3)	22 (18.3)	12 (10.0)	
Sufficient	92 (76.7)	98 (81.7)	108 (90.0)	
Hospitals				.000[a*]
Hospital A	93 (77.5)	103 (85.9)	116 (96.7)	
Hospital B	10 (8.3)	1 (0.8)	3 (2.5)	
Hospital C	17 (14.2)	16 (13.3)	1 (0.8)	

Table 1 Demographics of Subjects from Three Phases of Survivorship (Continued)

Demographics	Survival Phases			*p*
	Acute n (%)	Extended n (%)	Permanent n (%)	
Type of health care coverage				.002[a*]
Self-support	1 (0.8)	1 (0.8)	2 (1.6)	
Government officer reimbursement	31 (25.8)	60 (50.0)	54 (45.0)	
Universal health care coverage	69 (57.5)	47 (39.2)	50 (41.7)	
Social security	17 (15.8)	12 (10.0)	14 (11.7)	
Medical payment problem				.651 [a]
Yes	2 (1.7)	3 (2.5)	2 (1.7)	
No	118 (98.3)	117 (97.5)	118 (98.3)	
Payment problem relating to hospital visits				.182[a]
Yes	30 (25.0)	19 (15.8)	22 (18.3)	
No	90 (75.0)	101 (84.2)	98 (81.7)	
Time since diagnosis (months)				.000[b*]
Range ($\bar{X}$±SD)	1-20(5.87±3.19)	6-67(28.06±14.55)	58-324(108.64±54.18)	
Stage of breast cancer				069[a]
I	22 (18.3)	22 (18.3)	25 (20.8)	
II	65 (54.2)	77 (64.2)	76 (63.3)	
III	33 (27.5)	21 (17.5)	15 (12.5)	
Unknown	0 (0)	0 (0)	4 (3.3)	
Treatments received				.000[a*]
S + C or R	29 (24.2)	23 (19.2)	27 (22.5)	
S + C + H	0 (0)	36 (30.0)	39 (32.5)	
S + C + R with/without H	91 (75.8)	61 (50.8)	54 (45.0)	

Note: [a] = Chi square; [b] = One-way analysis of variance (ANOVA); * = Significance at .05; S = Surgery; C = Chemotherapy; R = Radiation therapy; H = Hormone therapy

Thailand?"); and, general knowledge (i.e., "Who is the current prime minister of Thailand?"). Each correct response received a score of 1, while each incorrect response received a score of 0. A total score, which could range from 0 to 10, was obtained by summing the response values across all items. A score of less than eight suggested a degree of cognitive impairment.[20]

The researcher-developed Demographic Data Form was designed for gathering data related to: age; marital status; religion; educational length and type; occupation; economic status; name of hospital visited; type of health care coverage; problems with payment of medical fees and hospital visits; time since diagnosis (in months); stage of breast cancer; and, types of treatments received.

The Self-Rated Health Form was a single item-visual analogue scale used to measure perceived health status. The researcher modified the scale from the single-item Health-related Quality of Life VAS[22] for assessing health-related quality of life by modifying the question, "How would you judge your quality of life at the moment?," to "How would you rate your overall health at the present?" A single-item question to measure perceived health status is considered suitable for use because it is simple and creates minimal burden on subjects.[22] Each subject was required to rate her overall health status by marking a short horizontal line on a 100-millimeter vertical scale which started, at the bottom of the scale, with 0 = "poor health," and ended, at the top of the scale, with 100 = "excellent health." A score was obtained by measuring, in millimeters, from the bottom of the scale to the point where the subject placed a horizontal mark. A high score indicated a high level of perceived health status. Prior to use, in this study, the test-retest reliability of the scale was assessed, at a three-week interval with 14 breast cancer survivors, and found to be 0.81.

The 23-item, Thai version of Mishel's Uncertainty in Illness Scale-Community Form,[11] was used to measure uncertainty about illness. Examples of items from the scale were: "It is not clear what is going to happen to me"; and, "The effectiveness of the treatment is undetermined." Possible responses to each item ranged from 1 = "not at all close to my feelings" to 5 = "very close to my feelings." Items stated to suggest low uncertainty were reversed scored prior to calculating a total score. A total score, which could range from 23 to 115, was obtained by summing response values across all items. High scores suggested a high level of uncertainty about one's illness. Prior to use, in this study, the scale's reliability was assessed, using Cronbach's alpha, on 14 breast cancer survivors, and found to be 0.79. In the actual study, the reliabilities of the scale, for each phase of the subjects' survivorship, were found to be: 0.79 (acute phase); 0.78 (extended phase); and, 0.84 (permanent phase).

A modified version of the 49-item Ways of Coping Questionnaire-Cancer Version[4] was used to measure coping behaviors. The modified version of the questionnaire, which consisted of 36-items, was developed as a result of a factor analysis that yielded three types of coping behaviors (positive problem solving, escape/avoidance, and seeking social support).[4] Positive problem solving (16 items) included both cognitive and behavioral attempts to resolve a stressful event, while escape/avoidance (12 items) included both cognitive and behavioral strategies to reduce tension or avoid thinking about a problem. Seeking social support (8 items) included items containing efforts to resolve problems by using the assistance of others. Examples of items were: "I knew what had to be done, so I increased my efforts (positive problem solving)"; "I refused to believe it would happen (escape/ avoidance)"; and, "I asked a friend or relative I respected for advice (seeking social support)." Subjects were asked to indicate how often they had used the behavior, indicated in an item, to cope with their breast cancer-related stressful events during their specific survival phase. Possible responses ranged from 0 = "rarely" to 4 = "very often." A total score for each type of coping behaviors was obtained by summing the response values across relevant items. For positive problem solving the range for the total score was from 0 to 64, while the range for the total scores for escape/avoidance was from 0 to 48. For seeking social support, the range for the total score was 0 to 32. Prior to use in this study, the validity of the modified version of the questionnaire was examined by six experts (i.e., specialists in psychiatric nursing, cancer nursing, chronic illness nursing, caring for the chronically illness, psychiatry, and psychology). Based upon input from the experts, the PI revised the wording of several items. The revised version of the instruments was again reviewed by the same six experts who established an overall content validity index of 0.91. In addition, prior to use in this study, the internal reliability of the three coping behaviors, measured by

the instrument, were assessed using 30 breast cancer survivors. The reliabilities were found to be 0.84 for positive problem-solving, 0.49 for escape/avoidance, 0.67 for seeking social support, and 0.76 for the total scale. For the actual study, the reliabilities, for each survival phase of the subjects, were: positive problem solving (0.79 - acute phase; 0.88 - extended phase; and, 0.87 - permanent phase); escape-avoidance (0.59 - acute phase; 0.61 - extended phase; and, 0.75 - permanent phase); and, seeking social support (0.75 - acute phase; 0.74 - extended phase; and, 0.89 - permanent phase).

A modified version of the Social Support Questionnaire[23] was used to assess social support resources. Modification of the instrument included establishment of only three categories of individuals from the original instrument's five categories. The three categories were: family members (i.e., spouse, parents, children, and close relatives); friends (i.e., schoolmates, breast-cancer peers, neighbors, co-workers, and distant relatives); and, health care providers. The questionnaire consisted of seven items: one measuring informational support; four measuring emotional support; and, two assessing tangible support. Examples of items from the questionnaire were: "How much did this person give you information, suggestions, and guidance that you found helpful? (informational support):" and, "How much do you feel you can confide in this person during your present illness? (emotional support)." The PI slightly modified one of the two tangible support items from "If you had to borrow 100 baht, how much could this person help you?" to "How much could this person help you if you needed some money?" Subjects were asked to rate the level of support they received, on each of the seven items, from family, friends and relatives, and health care providers, thus, creating 21 possible scores. Possible responses to each item were 0 = "not at all" to 4 = "a great deal." A total score, which could range from 0 to 84, was obtained by summing the 21 possible scores. High scores indicated a high level of perceived social support. Prior to use in this study, the questionnaire was pilot tested on 14 breast cancer survivors and the reliability was found to be 0.86. For the actual study, the reliabilities, for each of the phases of survivorship, were: 0.89 (acute phase); 0.88 (extended phase); and, 0.86 (permanent phase).

The 12- item, Thai version of Herth's Hope Index[24] was used to measure the subjects' level of hope. The instrument assessed three dimensions of hope (four items for each dimension): inner sense of temporality and future; inner positive readiness and expectancy; and, interconnectedness with self and others. Examples of items from the index included: "I have a sense of direction (inner sense of temporality and future)."; "I can see a light at the end of the tunnel (inner positive readiness and expectancy);" and, "I have faith that gives me comfort (interconnectedness with self and others)." Possible responses to each item ranged from 1 = "strongly disagree" to 4 = "strongly agree." Prior to calculating a total score, the two negatively stated items were reversed scored. The total score, which could range from 12 to 48, was obtained by summing the response values across all items. High scores suggested the presence of a high level of hope. Prior to use, in this study, the instrument was pilot tested on 14 breast cancer survivors and found to have a reliability of 0.84. For the actual study, the reliabilities, for each of the phases of survivorship, were: 0.74 (acute phase); 0.81 (extended phase); and, 0.82 (permanent phase).

The 13-item, Thai version of the Sense of Coherence Questionnaire-short form[25] was used to assess the level of the subjects' sense of coherence. Examples of questionnaire items were: "How often have you felt that what you have recently done had no meaning?"; and, "How often have you felt unsure about controlling situations in your life?" Each item had possible responses ranging from 1 = "not at all" to 5 = "a great deal." Prior to calculating the total score, the five negatively stated items were reversed scored. The total score, which could range from 13 to 65, was obtained by summing the response scores

across all items. A high score suggested the presence of a high level of a sense of coherence. Prior to use in this study, the questionnaire was pilot tested on 14 breast cancer survivors and found to have a reliability of 0.86. In the actual study, the reliabilities, for each phase of survivorship, were: 0.83 (acute phase); 0.75 (extended phase); and, 0.77 (permanent phase).

Procedure: After approval to conduct the study was obtained and potential subjects were identified, via their medical records, potential subjects were approached, in the outpatient clinic waiting room of each hospital, while waiting to be seen by their respective healthcare providers. Potential subjects were informed about the study and their ethical rights. Those consenting to participate signed a consent form. The subjects then were administered the Mental Status Questionnaire,[20] to determine if they met the inclusion criteria for cognitive functioning. Subjects scoring ≥ 8 on the instrument proceeded to the next step of data gathering. Those scoring ≥ 8 were thanked for their time and informed that they did not meet all of the inclusion criteria.

The next step in the data gathering process involved uninterrupted administration of the remaining instruments. The place (home or a private place in the various hospitals) and time of instrument administration were determined by the subjects. The PI read each subject each of the instruments, asked them to verbally respond and recorded their responses on their respective questionnaires. This method of instrument administration was selected so as to minimize the burden placed on the subjects regarding study involvement and to allow them time to think about their responses. The order of instrument administration was: the Self-Rated Health Form;[22] the Thai version of Mishel's Uncertainty in Illness Scale-Community Form;[11] a modified version of the Ways of Coping-Cancer;[4,] a modified version of the Social Support Questionnaire;[23] the Thai version of Herth's Hope Index;[24] the Thai version of the Sense of Coherence Questionnaire short-form;[25] and, the Demographic Data Form. The total time required for administration of the instruments was 45 to 50 minutes. Upon completion of the questionnaires, subjects were thanked for their time and given a small bag in appreciation for their participation.

Data Analysis: Descriptive statistics were used to assess the demographic characteristics of the subjects and examine the properties of the study variables.

Chi-square and one-way analysis of variance were used to test the difference of proportions and means between the survivorship phases of the subjects. Pearson's product moment correlation was used to determine the relationships among the study variables. Linear multiple regression analysis, with enter method, was used to examine the influences of the selected factors regressing on each type of coping behaviors. Statistical significance was set at the 0.05 level.

Results

Types of Adopted Coping Behavior: As shown in **Table 2**, across the subjects' three survivorship phases, the predominant type of adopted coping behavior was positive problem solving, followed by seeking social support. The least adopted coping behavior was escape/avoidance. Positive problem solving was found to be used most frequently in the extended and permanent phases of survivorship. Seeking social support was used more often in the acute phase of survivorship than in the extended and permanent phases. Within the extended and permanent phases, seeking social support was used more frequently in the extended phase than in permanent phase. No significant difference in the frequency of use of escape/avoidance was noted among the three survivorship phases.

Situations mentioned by the subjects as stressful were similar among the three phases of survivorship.

The three most frequently identified stressful situations, associated with breast cancer, indicated by the subjects at the acute, extended, and permanent phases were: concern about cancer recurrence (15.3%, 45.0%, & 48.9%, respectively); insecurity about the future or concerns about unsuccessful treatment (28.2%, 24.4%, & 27.5%, respectively); and, concern about cancer metastasis (26.7%, 12.2%, & 8.4% respectively). The remaining 1.5% to 6.1% of the subjects indicating other stressful situations including concerns about: poorer health; raising their children; self-care; suffering from chemotherapy; lack of income; and, attitudes of co-workers. Summarized descriptions of the subjects' thoughts about these stressful situations included: what they could change or do something about; what types of things required more information; and/or, if they must accept and get used to their circumstances.

Description of Study Variables: As shown in **Table 2**, the subjects, in all three phases, perceived their levels of health status, social support, hope, and sense of coherence to be high, while they perceived their level of uncertainty in illness to be moderate. When making comparisons among the three phases, perceived health status among acute-phase subjects was significantly lower than perceived health status among extended-phase subjects. In addition, uncertainty in illness among acute-phase subjects was significantly higher than uncertainty in illness among permanent-phase subjects. Level of perceived social support among subjects in the acute survival phase also was significantly higher than perceived social support among subjects in the extended and permanent phases of survival. Finally, level of hope and sense of coherence were not significantly different among subjects in the three phases.

Relationships among selected factors and each type of coping behavior: The findings revealed small to moderate relationships among five selected factors and each of the three types of coping behavior used by the subjects (see **Table 3**). Perceived health status was found to have no significant relationship, at any of the three phases of survivorship, with positive problem solving. Perceived health status was found to be negatively correlated with escape/avoidance and seeking social support at the permanent-phase. Uncertainty in illness, at all three phases of survivorship, had no relationship with positive problem solving, but was positively correlated, at all three phases, with escape/avoidance. Uncertainty in illness was found to be positively correlated, at all three phases, with seeking social support. Perceived social support was positively correlated with positive problem solving at the acute and extended phases of survivorship, and negatively correlated with escape/avoidance at the permanent phase. Perceived social support was found to be positively correlated, at the extended phase, with seeking social support. Hope, at all three phases of survivorship, was positively correlated with positive problem solving, while it was negatively correlated with escape/avoidance. No significant relationships were found between hope at any of the three phases regarding seeking social support. Sense of coherence was found to be positively correlated with positive problem solving at the acute and permanent phases. However, negative correlations were noted, at all three phases, between sense of coherence and escape/avoidance. Finally, sense of coherence was found to be negatively correlated with seeking social support at the acute and permanent phases of survivorship.

Predictors of each type of coping behavior: As shown in **Table 4**, hope was the only predictor, at the acute and extended phases of survivorship, for positive problem solving. However, at the permanent phase of survivorship, the predictors for positive problem solving were hope and perceived health status. Regarding escape/avoidance, uncertainty in illness and sense of coherence were its predictors at the acute

and permanent phases of survivorship. At the extended phase of survivorship, the predictors of escape/avoidance were uncertainty in illness, sense of coherence, and perceived health status. Finally, the predictors for seeking social support, at all three phases of survivorship, were uncertainty in illness and perceived social support.

Table 2 Types of Coping Behavior and Predicting Factors

Variables	Survival phase of the sample			Analysis of mean differences		
	Acute $\overline{X}$±SD (actual range) level	Extended $\overline{X}$±SD (actual range) level	Permanent $\overline{X}$±SD, (actual range) level	Acute VS Extended *p*	Acute VS Permanent *p*	Extended VS Permanent *p*
Positive problem solving	1.34±.17 (.85-1.97) moderate	1.44±.19 (.82-1.89) moderate	1.50±.26 (.93-2.08) moderate	-.10[b*]	-.16[b*]	-.06
Escape/ avoidance	.53±1.98 (0-1.14) low	.51±.22 (.04-1.42) low	.49±.28 (.00-1.22) low	.02	.04	.02
Seeking social support	1.01±.20 (.35-1.45) low	.84±.22 (.13-1.54) low	.76±.28 (.22-1.48) low	.17[b*]	.25[b*]	.08[b*]
Perceived health status	74.65±18.67 (0-100) high	80.99±15.63 (39-100) high	79.11±16.29 (36-100) high	-883.64[b*]	-603.17	280.47
Uncertainty in illness	59.92±8.36 (43-83) moderate	57.79±7.94 (40-80) moderate	55.44±9.39 (35-85) moderate	.14	30[b***]	.16
Perceived social support	64.91±9.98 (38-84) high	61.77±10.28 (27-84) high	61.68±10.29 (18-84) high	391.92[b*]	402.02[b*]	10.10
Hope	37.86±3.19 (30-48) high	38.97±3.61 (29-48) high	38.32±3.77 (30-48) high	-.01	-.00	.01
Sense of coherence	50.74±9.38 (20-65) high	52.51±7.48 (21-64) high	51.47±8.34 (21-64) high	-.19	-.07	.11

Table 3 Correlations between Predicting Factors and Each Type of Coping Behavior

Predicting factors	Types of coping behavior								
	Positive problem solving			Escape/ avoidance			Seeking social support		
	Survival phases			Survival phases			Survival phases		
	acute	extended	permanent	acute	extended	permanent	acute	extended	permanent
Perceived health status	.09	.04	-.07	-.05	.02	-.24**	-.09	-.08	-.25**
Uncertainty in illness	-.09	-.08	-.07	.51**	.44**	.54**	.30**	.29**	.40**
Perceived social support	.24**	21*	.14	-.12	.01	-.21*	.14	.34**	.01
Hope	.40**	.38**	.39**	-.41**	-.20*	-.36**	-.07	-.10	-.10
Sense of Coherence	.21*	.15	.19*	-.45**	-.34**	-.43**	-.23*	-.17	-.22*

Table 4 Predictors of Each Type of Coping Behavior

Survival phases	Types of Coping Behavior								
	Positive problem solving			Escape/avoidance			Seeking social support		
	Predictors	β	Adj R^2	Predictors	β	Adj R^2	Predictors	β	Adj R^2
Acute	hope	.43	.16	uncertainty in illness	.36	.31	uncertainty in illness	.31	.13
				sense of coherence	-.23		perceived social support	.23	
Extended	hope	.37	.13	uncertainty in illness	.43	.27	perceived social support	.41	.21
				sense of coherence	-.29		uncertainty in illness	.28	
				perceived health status	.22				
Permanent	hope	.47	.17	uncertainty in illness	.42	.31	uncertainty in illness	.40	.18
	perceived health status	-.19		sense of coherence	-.21		perceived social support	.18	

Discussion

The findings support the study framework that uncertainty in illness, perceived health status, hope, sense of coherence, and perceived social support are determinants of particular coping behaviors dealing with breast cancer-related stressful situations among Thais. The most frequently used coping behavior, by subjects in all three phases of survivorship, was positive problem solving. Seeking social support was used less, with escape/avoidance being used the least. The predominant use of problem solving, as a coping behavior, was consistent with prior findings regarding cancer survivors at the acute phase,[5] extended phase,[4, 8] and permanent phase.[9] The most stressful situations, among the subjects, related to dealing with breast cancer (i.e., cancer recurrence, insecurity about the future, concerns about unsuccessful treatment, and cancer metastasis) were consistent with previous studies.[8] The findings suggest that most subjects viewed their stressful situations as manageable, with expected positive outcomes. Although breast cancer can be a fatalistic disease, its meaning can evolve in a positive manner, through the survival process.[26]

The fact that positive problem solving was the most frequently implemented coping behavior, in this study, may have been due to the subjects' age, religious beliefs/practices, and confidence in the competency of their physicians. The average age of the subjects was over 50 years, which has been categorized as a category for 'older' survivors.[8, 27] Older breast cancer survivors have been found to experience less distress and better psychosocial adjustment, as well as a higher sense of well-being, than younger survivors.[27] Religious beliefs/practices have been reported to be associated with positive coping behavior because of focusing on the good aspects of life.[6] Buddhist beliefs, which were held by most subjects in this study, have been recognized as influencing the way people cope.[19] Some subjects believed that breast cancer resulted from their own karma and this belief led to calm acceptance of the cancer diagnosis and adverse effects of its treatment. Confidence in the competency of one's physician is prevalent among Thai people and, thus, most likely facilitates their use of positive problem solving. The fact that the subjects had a high level of confidence in the competency of their physicians may have helped them to directly solve their problems and maintain their positive beliefs.

Each of the five selected factors was found to be correlated with at least one of the three types of coping behaviors. Perceived health status was found to have no relationship with positive problem solving, which was inconsistent with prior research that found the use of positive problem solving (i.e., problem-focused coping, positive reframing) to be positively correlated with vitality (energy and fatigue).[28] Perceived health status, at the permanent phase of survivorship, was found to have a small negative relationship with escape/avoidance, which was consistent with prior research that noted that low physical health was related to the use of avoidance coping.[29] However, the small negative relationship found at the permanent phase of survivorship, in this study, between perceived health status and seeking social support, suggested that health status might not assist in seeking support from others or the normal life circumstances, during the permanent phase, might reduce the need for assistance from others.

Uncertainty in illness, at all three phases of survivorship, was found to have no relationship with positive problem solving, but was positively correlated with escape/avoidance and seeking social support. The findings were consistent with prior research that noted a higher level of uncertainty in illness enhanced the sense of danger, hindered the ability to use personal resources, and was related to the use of escape/avoidance.[30] Also, a negative psychological state has been found to be related to the use of cognitive-behavioral escape/avoidance.[5] The positive relationship between uncertainty in illness and seeking social support, found in this study, also suggested that

uncertain circumstances reduce the sense of control to manage difficult situations[30] and induces individuals to seek assistance from others.[6]

The fact that perceived social support was found to be positively correlated with positive problem solving, at the acute and extended phases of survivorship, and seeking social support, at the extended phase, was consistent with prior research, as was the finding that perceived social support was negatively correlated with escape/avoidance at the permanent phase. Prior research has noted that the perception of more available sources of informational support, emotional support, and tangible support were associated with the use of problem solving, positive reappraisal, confrontive coping, and seeking social support.[31] The most significant correlates of the use of problem-focused coping has been found to be informational support, whereas less informational support has been reported to be associated with the use of escape/avoidance, distancing, and accepting responsibility.[31] In addition, it has been reported that people who live alone use more support seeking behavior and escape/avoidance coping behavior than those who live with others.[6]

The fact that hope was found to have a positive relationship with positive problem solving and a negative relationship with escape/avoidance, at all three phases of survivorship, was consistent with prior research that noted a positive relationship between hope and a sense of opportunity[9] and the use of optimistic and confrontive coping bheaviors.[32]Hope was found, in this study, to have no relationship with the use of seeking social support suggesting that hope is a within-person power[15] that drives individuals to confront problems themselves.

The fact that sense of coherence was found to be positively correlated with positive problem solving, at the acute and permanent phases of survivorship, but negatively correlated with escape/avoidance, at all three phases of survivorship, and seeking social support , at the acute and permanent phases of survivorship, was consistent with prior research. Prior studies have noted that a sense of coherence is positively correlated with self-esteem, perception of control, and optimism,[33]as well as coping ability and quality of life.[34] Thus breast cancer survivors with a strong sense of coherence are likely to take an active role in dealing with their stressful situations.

The findings revealed the important role that hope played in regards to predicting the use of positive problem solving. This finding adds to the confirmation of earlier studies that have found hope to have a positive relationship with engagement-orientated coping, such as positive reappraisal,[9] and optimistic and confrontive coping behaviors.[32] Those with hope can view their situations in a positive manner, which can contribute to their readiness to take action, keep going, and work to accomplish a task/goal.[35]

Uncertainty in illness, at all three phases of survivorship, was a predictor of escape/ avoidance. These findings are consistent with prior findings that have indicated that having a low sense of control over one's circumstances is associated with both engagement and disengagement coping.[13] For example, some people choose escape/avoidance to minimize the demands of uncertain situations, while others search for more information from friends, relatives, or physicians to find other ways to interpret their circumstances. Uncertainty in illness has been found to be positively correlated with harm and threat appraisal among American breast cancer survivors.[9] Such appraisals have been found to influence one's use of wishful thinking.[30]

In addition, uncertainty in illness was found, in this study, to be a predictor of seeking social support. When confronted with uncertain conditions, which can be difficult to tolerate, induce a low sense of control, and heighten emotional distress, one may seek out others for assistance. Previous studies have indicated that seeking social support can be the best way of coping when one experiences emotional distress (i.e., anxiety, depression, and anger).[8]

The findings suggested that uncertainty in illness was influenced by the presence of a sense of coherence in terms of whether the subjects, in all three phases, used escape/avoidance or seeking social support as a coping behavior. When a low sense of coherence was present, along with uncertainty in illness, the subjects appeared to use escape/avoidance, rather than seeking social support. This finding is consistent with previous studies that have found that parents of disabled children, who had a low sense of coherence, frequently use escape/avoidance coping.[36, 37] However, another study revealed that breast cancer survivors, who had a low sense of coherence, preferred to use emotional support and religion.[38] Cancer survivors with a low sense of coherence also have been found to feel overwhelmed by stressful situations, resulting in feelings of hopelessness or apathy, and a loss of motivation to change stressful situations.[39] Regarding prediction of the use of social support as a coping behavior, subjects, in all three phases of survivorship, were found to have a high level of uncertainty in illness, along with perceived social support. Prior findings have noted that, after a breast cancer diagnosis, the perception of having available supportive care[40] or a support group[6] can lead to use of social support.

The finding that perceived health status, only at the permanent phase of survivorship, was a negative predictor of positive problem solving, may have been related to the context of permanent survival. The five-year mark, after a cancer diagnosis, may provide breast cancer survivors with the perception that their cancer has been arrested. However, they may continue to fear that their health status continues to be diminished. Therefore, the perception of a low level of health status can lead breast cancer survivors to engage in positive problem solving via continued and prompt treatment.

Perceived health status, as a positive predictor of escape/avoidance coping behavior, was found only at the extended phase of survivorship. This may have been due to the need of the extended phase survivors to restore their health, while finding ways to re-enter day-to-day life. The extended survival phase is a period of completion of rigorous treatment, as well as a period of watchful and scheduled health examinations.[1] It is also a time for cancer survivors to adjust to new normal lives.[2] Perception of an acceptable health status might allow them to keep themselves in comfortable circumstances, which, in turn, may fit more easily with a passive style of coping, such as escape/avoidance. However, this idea is inconsistent with the findings of a study of nurses that revealed poor physical health to be associated with avoidance coping.[29]

Limitations and Recommendations

When applying the findings, the limitations of the study need to be taken into consideration. The modified WOC-CA, originally developed for use in western cultures, contained some items that required a cultural-based way of thinking. Thus, the responses of the subjects, in this study, may not be comparable to the responses of subjects in other studies, especially those conducted among subjects from a western culture. Social support has been reported in the literature as having a positive effect on engagement-oriented coping behaviors. However, the findings of this study revealed a relatively small predicting power of social support, suggesting that other dimensions of social support might need to be explored. In addition, there was a difference in how health status was measured, in this study, compared to prior studies. This factor could limit a comparison of findings from this study to previous research.

Longitudinal studies on cancer survivors are needed in the future in order to obtain a full picture of the patterns of coping, and their determinants, that are thought to evolve overtime across all three survival phases. Measures of coping, in future studies on coping with cancer, particularly those using Thai populations, should contain common strategies mentioned by the subjects, in this study, that have not been included in

the existing coping measures (i.e., religious beliefs and downward comparison). Also, factor analysis should be performed on data from the coping measures in order to appropriately categorize the empirical coping factors. With respect to further studies regarding social support, other dimensions of social support (i.e., quality of social support, mismatch of social support, and constraints of support seeking) might provide valuable data. In addition, other aspects of health status (i.e., actual energy or fatigue) might provide an increased understanding of the role this factor plays with respect to coping.

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พฤติกรรมการเผชิญความเครียดและปัจจัยทำนายในแต่ละระยะของผู้รอดชีวิตจากมะเร็งเต้านม

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บทคัดย่อ: การศึกษาความสัมพันธ์เชิงทำนายครั้งนี้เพื่อระบุชนิดของพฤติกรรมการเผชิญความเครียด ของผู้รอดชีวิตจากมะเร็งเต้านมในแต่ละระยะของการใช้ชีวิตอยู่กับมะเร็งเต้านม เพื่อตรวจสอบความสัมพันธ์ ระหว่างปัจจัยที่เลือกสรรได้แก่ ความรู้สึกไม่แน่นอนในความเจ็บป่วย การรับรู้ภาวะสุขภาพ ความหวัง ความเข้มแข็งในการมองโลก และการรับรู้ความเพียงพอของแหล่งสนับสนุนทางสังคม กับพฤติกรรมการเผชิญความเครียดแต่ละชนิดได้แก่ การแก้ปัญหาเชิงบวก การหนีหรือเลี่ยงปัญหาและการสนับสนุนทางสังคม รวมทั้งเพื่อศึกษาอำนาจในการทำนายของปัจจัยที่เลือกสรรดังกล่าวต่อพฤติกรรมการเผชิญความเครียดแต่ละชนิด กลุ่มตัวอย่างได้แก่ ผู้รอดชีวิตจากมะเร็งเต้านม 360 คน ที่อยู่ในระยะเฉียบพลัน ระยะเฝ้าระวังและระยะหลังได้รับการวินิจฉัยครบห้าปี ซึ่งได้รับการรักษาจากโรงพยาบาลหนึ่งในสามแห่งที่เป็นสถานที่เก็บข้อมูลในงานวิจัยนี้ เครื่องมือที่ใช้ในการเก็บข้อมูล มีแปดฉบับ วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา การวิเคราะห์ความแตกต่างของค่าเฉลี่ย สถิติสหสัมพันธ์เพียร์สันและการวิเคราะห์สหสัมพันธ์พหุคูณ

ผลการศึกษาพบว่าผู้รอดชีวิตจากมะเร็งเต้านมทุกระยะเลือกใช้พฤติกรรมการเผชิญความเครียดชนิดการแก้ปัญหาเชิงบวกมากที่สุด รองลงมาคือวิธีการสนับสนุนทางสังคมและวิธีการหนีหรือเลี่ยงปัญหาตามลำดับ ปัจจัยทำนายพฤติกรรมการเผชิญความเครียดแต่ละชนิดพบว่าคล้ายคลึงกันในแต่ละระยะโดยความหวังเป็นปัจจัยทำนายพฤติกรรมการเผชิญความเครียดชนิดการแก้ปัญหาเชิงบวกในระยะเฉียบพลันและเฝ้าระวัง ในขณะที่ความหวังกับการรับรู้ภาวะสุขภาพร่วมกันทำนายพฤติกรรมการเผชิญความเครียดชนิดการแก้ปัญหาเชิงบวกในระยะหลังได้รับการวินิจฉัยโรคครบห้าปี ความรู้สึกไม่แน่นอนในความเจ็บป่วยกับความเข้มแข็งในการมองโลกร่วมกันทำนายพฤติกรรมการเผชิญความเครียดแบบการหนีหรือเลี่ยงปัญหาในระยะเฉียบพลันและระยะหลังได้รับการวินิจฉัยโรคครบห้าปี ในขณะที่ความรู้สึกไม่แน่นอนในความเจ็บป่วย ความเข้มแข็งในการมองโลกและการรับรู้ภาวะสุขภาพร่วมกันทำนายพฤติกรรมการเผชิญความเครียดแบบการหนีหรือหลีกเลี่ยงปัญหาในระยะเฝ้าระวัง อย่างไรก็ตาม ความรู้สึกไม่แน่นอนในความเจ็บป่วยและการรับรู้ความพอเพียงของแหล่งสนับสนุนทางสังคมร่วมกันทำนายพฤติกรรมการเผชิญความเครียดแบบการสนับสนุนทางสังคมในทั้งสามระยะของการใช้ชีวิตอยู่กับมะเร็งเต้านม ผลการศึกษาครั้งนี้บ่งชี้ว่าการช่วยให้ผู้รอดชีวิตจากมะเร็งเต้านมชาวไทยมีพฤติกรรมการเผชิญความเครียดที่ส่งเสริมการปรับตัว ทำได้โดยการจัดการอย่างเหมาะสมกับแต่ละปัจจัยทำนายของพฤติกรรมการเผชิญความเครียดแต่ละชนิดดังกล่าว

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