CHAPTER 4

RESULTS AND DISCUSSION

This chapter presents the findings of the quasi-experimental research which aimed to examine the effects of a supportive-educative nursing intervention on selfcare and quality of life among breast cancer survivors post diagnosis one to three years and disease-free. Findings of this study are presented in the four following sections.

Part I Demographic and Clinical Characteristics of Subjects

Part II Testing Hypothesis I: Comparison of self-care behavior scores at baseline, immediately post intervention and four weeks after completing intervention

Part III Testing Hypothesis II: Comparison of quality of life score at baseline, immediately post intervention and four weeks after completing intervention Part IV Intervention Feedback from Breast Cancer Survivors

Part 1 Demographic and Clinical Characteristics of Subjects

Demographic and Characteristic of the Subjects

The subjects in this study were breast cancer survivors post diagnosis one to three years and disease-free, living in the Northern part of Thailand. Initially, sixtytwo subjects met the criteria (20 in the experimental group, 42 in the control group). At the end of the study, it was found that only sixteen subjects in the experimental group fully participated in the intervention program. Four of them were unable to complete the program because of the health problem related to traveling after attending the first session (n=1), unavailable time (n=2), and health problem (n=1). The attrition rate of the experimental group was 20.00%. In the control group, only thirty-two subjects returned for all three assessments while ten of them did not complete all three assessments. The attrition rate of the control group was 23.81%. In conclusion, the final number of subjects was forty-eight subjects including 16 in the experimental group and 32 in the control group. The baseline of demographic characteristics and clinical characteristics of all subjects are depicted in Table 3 and 4.

The age of subjects in the experimental group ranged from 36.92 to 63.75 years of age, with a mean of 47.47 years (SD = 7.49). In the control group, age(s) ranged from 37.17 to 61.92 years of age, with a mean of 48.73 years (SD = 5.90). Exactly half of the subjects in the experimental group and 59.38 % of the subjects in the control group were 45 to 54 years of age. Approximately 75 % of the subjects in both groups were married and all of the subjects in the experimental group were Buddhists. In addition, 56.25 % of the subjects in the experimental group and 50 % of the subjects in the control group had completed grade one to grade six. In the experimental group, the mean level of educational attendance was 8.91 years (SD = 5.32), with a range of two to seventeen, while in the experimental group. The highest frequency of subjects' occupation in the experimental group was a housewife (50.00%) and almost 60 % of the

experimental group were either housewives (28.13%) or in government service (28.13%).

The majority of both groups (62.50% in the experimental group and 56.25% in the control group) had an average family income of less than 10,000 baht per month. Most of the subjects of both groups had their medical expenses covered by the 30-Baht Health Care Plan (68% in the experimental group and 59.38% in the control group). However, 31.25% of subjects in the experimental group and 40.62% of the control group either paid for their medical expenses completely themselves or with help from their family. Most of the members of both groups were perimenopausal at the time of diagnosis. The demographic characteristics of the subjects in both groups are presented in Table 3.

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Demographic Characteristics by Group

Variables	Experim	nental group	Contr	ol group =32
	Number	Percentage	Number	Percentage
	•			
Age (years)	00	6		
35-44	6	37.50	7	21.88
45-54		50.00	19	59.38
Bange	36.0	12.30	0	16.74
Maar CD	30.7	2-03.75	40.7	-01.92
Mean, SD.	4/.2	17, 7.49	48.7	3, 5.90
Wantai Status				
Single	\mathbf{O}	0.00	5	15.63
Married	12	75.00	25	78.12
Widowed, separated	4	25.00	2	6.25
Religious				
Buddhist	16	100.00	31	96.87
Muslim	0	0.00		3.13
Educational level				
Grade 1 to 6	9	56.25	16	50.00
Grade 7 to 12	3	18.75	4	12.50
> Grade 12		25.00	12	37.50
Range	<u> </u>	7 years	4 - 2	1 years
Mean, S.D.	8.9	1, 5.32	8.7	5, 5.47
Occupation				,
Housewife	8	50.00	9	28.13
Farmer	JIJ	6.25	4	12.50
Employee	1	6.25	2	6.25
Own business	Ch ₃ a	18.75	\mathbf{U}_{6}	18.74
Government service	_2	12.50	9	28.13
Retirement	$T S_0^-$	0.00	e îr	6.25

Demographic Characteristics by Group (continued)

	Experim	ental group	Contr	ol group
Variables		=16	<u> </u>	=32
	Number Percentage		Number	Percentage
Family income (baht per month		(2.50	10	56.25
<u><</u> 10,000 Bant	10	62.30		36.23
> 10,000	6	37.50	14	43.75
Medical expenditure				
30-Baht Health Care Plan	11	68.75	19	59.38
Total reimbursement	5	31.25	13	40.62
Menopausal status				
Perimenopasul	11	68.75	20	62.50
Postmenopausal	5	31.25	12	37.50

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The average length of time since diagnosis in the experimental group was 29.06 months (SD=6.04), with a range of 20-36 months while in the control group it was 24.59 months (SD=7.51), with a range of 12-36 months. The majority of subjects in the experimental group (68.75%) were in stage II disease, 25 % were in stage I, and 6.25 % were in stage III, while 84.38 % of those in the control group were in stage II, 9.38 % were in stage I, and 6.25 % were in stage III. Moreover, the majority of subjects in both groups had a cell type of invasive ductal carcinoma (93.75% in the experiment, 93.74% in the control group). Most of the subjects in both groups received modified radical mastectomy combined with chemotherapy and were currently receiving anti-estrogen drugs (56.25 % in the experimental group and 62.50 % in the control group). In addition, the majority of subjects in the experimental group (62.50%) received a CMF regimen and those of the control group (37.50%) received a FAC regimen. Half of the subjects in the experimental group (50%) and slightly over half in the control group (56.25%) reported no other health problems. The experimental group reported other health problems including (those) of thyroid, allergy, diabetes mellitus, migraine, peptic ulcer, and eye problems whereas the control group reported health problems including hypertension, thyroid, allergy, migraine, peptic ulcer, joint pain, dizziness, hypotension, and back pain. The details of clinical characteristics are illustrated in Table 4.

Prior to analysis of data, the similarity of the two groups was confirmed by comparing demographic data, clinical conditions, baseline self-care behavior scores, and baseline quality of life. The results revealed that no significant differences were found between the two groups at the beginning of the intervention. The details of the confirmation of the similarity of the two groups are presented in Table I1-I7.

91

Variables	Experin	nental group n=16	Contr	Control group n=32		
978	Number	Percentage	Number	Percentage		
Time since diagnosis (month) 12-23	4	25.00	17	53.13		
24-35	3 8 2	50.00	11	34.37		
36	4	25.00	4	12.50		
Range	20-3	6 months	12 - 3	6 months		
Mean, SD.	29.	06, 6.04	24.5	59, 7.51		
TNM staging of cancer						
Stage1	4	25.00	3	9.37		
Stage2	11	68.75	27	84.38		
Stage3	1	6.25	2	6.25		
Cell type of malignancy Invasive ductal CA	15	93.75	32	93.74		
Tubular CA	123	6.25	A_0	0.00		
Mucious CA	0	0.00	1	3.13		
Unknown CA	0	0.00	1	3.13		
Type of Treatment						
MRM+CTX	3	18.75	2	6.25		
MRM+CTX+	9	56.25	20	62.50		
anti-estrogen drug						
MRM+CTX+RT	2	12.50	3	9.37		
MRM+CTX+RT+	2	12.50	7	21.88		
anti-estrogen drug						

Clinical Characteristics by Group

MRM = Modified Radical Mastectomy CTX = Chemotherapy RTX = Radiotherapy

Clinical Characteristics by Group (continued)

	Experim	ental group	Contr	ol group		
Variables	olo n	=16	n	n=32		
	Number	Percentage	Number	Percentage		
Chemotherapy regimen						
CMF	10	62.50	12	37.50		
FAC	4	25.00	- 14	43.75		
AC/EC	2	12.50	3	9.37		
FAC + Taxol	0	0.00	7	21.88		
Other health problems						
No	8	50.00	18	56.25		
Yes	87	50.00	14	43.75		

CMF = Cychophosphamine + Methrotaxate + 5-FU

AC = 5-FU + Adraimycin + Cychophosphamine

AC/EC = Adraimycin + Cychophosphamine/ Epirubicin + Cychophosphamine FAC+Taxol = 5-FU + Adraimycin + Cychophosphamine + Taxol (palitaxate)

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Part II: Testing Hypothesis I

Hypothesis 1: The score of self-care action used to relief health problems or concerns in breast cancer survivors receiving the supportive-educative nursing intervention are significantly higher than those receiving routine care immediately upon the completion of intervention and at four weeks post-intervention.

Research Finding

The first testing of the hypothesis involved sixteen subjects of the experimental group and eleven subjects of the control group who completed all three administrations of the self-care behavior questionnaires. For comparison of the two groups' mean scores of self-care behavior over the three times of evaluation, repeated measures analysis of variance was used. The finding demonstrated that there were no statistically significant differences between the self-care behavior scores by group (F = 0.78, p = .386). However, the finding revealed the influence of the group and time on self-care behaviors between the two groups (F = 6.21, p< .007). It illustrated evidence of a significant difference between the three times of self-care behavior in the experimental group (F = 9.27, p< .001). The finding is depicted in Table 5.

Baseline and Posttest Means and Standard Deviation for Self-care Behaviors by Group

		Tir	ne of e	valuat	tion		Time	effect	Gro	oup *	Gro eff	oup ect
Variable/Group	Tim	e 1	Tim	le 2	Tim	le 3			Time	effect		
0	Mean	SD	Mean	SD	Mean	SD	F	р	F	р	F	р
Experimental	1.85	0.18	2.74	0.25	2.62	0.30	9.27	.001**				
(n=16)												
Control (n=11)	2.48	0.22	1.93	0.30	1.95	0.36	2.12	.146 ^{ns}	6.21	.007**	0.78	.386 ^{ns}
6				<u> </u>								
Time 1 = Baselin	ne asse	ssmen	it 🔿									
Time 2 = Immed	liately	post-ii	nterven	tion								
Time $3 =$ Four w	veeks p	ost-in	tervent	ion								
^{ns} = no significan	nt, *p<.	05, **	* p<.01									

ลิขสิทธิ์มหาวิทฮาลัฮเชียงใหม่ Copyright © by Chiang Mai University All rights reserved Regarding the significant differences between the three times of self-care behavior in the experimental group, post hoc testing showed that the mean scores of self-care behavior immediately post-intervention (Time 2) were significantly higher than those at the baseline (Time1) (t = 3.68, p = .002). Moreover, there was significantly greater self-care behavior at four weeks post-intervention (Time 3) than that at baseline (t = 2.77, p = .014) as shown in Table 6.

Table 6

Comparison of Self-care Behavior in the Experimental Group (n=16) by Time

Variables	Mean difference	SD	t	df	p value
SCBT2-SCBT1	0.89	0.96	3.68	15	0.002**
SCBT3-SCBT2	-0.12	0.50	-0.99	15	0.338 ^{ns}
SCBT3-SCBT1	0.76	1.10	2.77	15	0.014**
SCBT2-SCBT1	= Self-care behavi	or between	n at baseline (T	Гime 1) a	nd

		immediately post-intervention (Time 2)
SCBT3-SCBT2	=	Self-care behavior between at four weeks post-intervention
		(Time 3) and immediately post-intervention (Time 2)
SCBT3-SCBT1	=	Self-care behavior between at baseline (Time 1) and at four

weeks post-intervention (Time 3)

^{ns} = no significant, * p<.05, ** p<.01

Copyright © by Chiang Mai University All rights reserved With regards to each point of evaluation, it was found that the self-care behavior score of the experimental group was lower than the control group at baseline (Time 1). However, the self-care behavior score of the experimental group increased from Time 1 to Time 2 and slightly decreased at Time 3. It is noticeable that the self-care behavior scores of the experimental group appeared to be higher than the experimental group at Time 2 and Time 3 as illustrated in Figure 3.



Higher score indicated more performance of self-care behaviors

Interestingly, the findings revealed that the experimental group tended to increase their self-care behavior scores between the beginning of the intervention and after the intervention ended (See Table 6). Moreover, although the experimental group had lower scores of self-care behavior than the control group at the beginning of the study, the experimental group appeared to have higher scores of self-care behavior than the control group at the beginning of the study, the experimental group appeared to have higher scores of self-care behavior than the control group after receiving intervention (Figure 3). Therefore, the mean difference of self-care behavior scores was reconsidered to explore the effect of intervention on self-care behavior by using Mann-Whitney *U* test. The results revealed that there were significant differences on the mean difference of self-care behavior between Time 2 and Time 1(Z = 3.09, p = .002) and between Time 3 and Time 1 (Z = 2.45, p = .014). Meanwhile, there was no significant difference between changing self-care behavior at Time 3 and Time 2 (Z = -1.19, p = .234) as shown in Table 7. Therefore, the original hypothesis was supported.

Table 7

Variable	Group	n	Mean rank	Sum of ranks	Z	p value
SCBT2-SCBT1	Experiment Control	16 11	17.91 8.32	286.50 91.50	3.08	.002**
SCBT3-SCBT2	Experiment Control	16 11	12.53 16.14	200.50 177.50	ive 1.19	.234 ^{ns}
SCBT3-SCBT1	Experiment Control	16 11	17.09 9.50	273.50 104.50	2.45	.014*

Comparison of the Mean Change of Self-care Behavior by Group

SCBT2-SCBT1 = Mean of the mean difference between Time 2 and Time 1 SCBT3-SCBT2 = Mean of the mean difference between Time 3 and Time 2 SCBT3-SCBT1 = Mean of the mean difference between Time 2 and Time 1 n^{s} = no significant, * p<.05, ** p<.01 Additionally, it is interesting to note that the predominant problem indicated by subjects in both experimental and control groups was fear of breast cancer recurrence which was evaluated by using the Self-care Behavior Log. Severity was ranged from slightly severe to very severe while distress ranged from very distressed to great distress. It is noticeable that the level of the severity and distress pattern in the experimental group tended to be decreased after participation in the intervention program, whereas in the control group, the level of the severity and distress pattern fluctuated during the time of intervention as shown in Figure 4.



Figure 4. Comparison of the mean score of the severity and distress level of fear of recurrence on the basis of time

Concerning self-care action, subjects in the experimental group reported that their self-care action could relieve their fear of recurrence. Upon the completion of intervention program, they reported the self-care action included physical care, mental and emotional care, and following a treatment plan (See Table 8). For the physical care, they mostly focused on the change of eating pattern by having healthy food and also avoiding carcinogenic food, as well as getting exercise, enough rest, and doing breast self-examination and/or with confirmation of husband or researcher. The issues of mental and emotional care including, *Tham jai* or *Plong* (referring to whatever will be, will be), self-support by letting go, distraction, and no over concern about the future event, stress management including relaxation, meditation, hold on to *Dharma*, and planning life including planning for family and setting life goals. They also were aware that they have to visit a doctor regularly and follow the physician's suggestions.

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Self-care Action for Relief of Fear of Recurrence

Self-care action (the number of responses)	Mean score of effectiveness
Physical care	
breast self-examination (n=2)	4.00
Exercise (n=10)	3.90
adjusted food pattern (n=13)	3.84
Take enough rest (n=3)	3.00
Mental and emotional care	
Tham jai or Plong (n=9)	3.56
Self-support	
distraction (n=7)	4.14
letting go (n=3)	4.00
no over concern (n=5)	3.60
fight against cancer (n=1)	3.56
Stress management	
relaxation (n=1)	4.00
hold on to Dharma or religion practice (n=6)	4.00
meditation (n=8)	2.75
Life plan (n=3)	4.67
Treatment concern (n=4)	3.50

0 = not relieved at all, 5 = completely relieved **All rights reserved**

Part III: Testing Hypothesis II

102

Hypothesis II: The score of quality of life in breast cancer survivors receiving the supportive-educative nursing intervention is significantly higher than those receiving routine care both immediately upon the completion of intervention and four weeks post-intervention.

Research Finding

Repeated measures analysis of variance was used to compare mean scores of quality of life between the two groups. A statistically significant difference between the two groups was found in the total of quality of life (F = 4.01, p = .05), and two dimensions including the physiological well-being dimension (F = 4.45, p = .04), and the psychological well-being dimension (F = 4.54, p = .038) as shown in Table 9. In contrast, the results revealed the mean scores of total quality of life and two dimensions, including physiological and psychological dimensions of quality of life, in the experimental group were statistically significantly lower than those in the control group. It was also found that the interaction of group and time had no effect on total quality of life and the four dimensions between two groups as seen in Table 9. Moreover, there was no effect of time in the experimental and control groups on total quality of life and the four dimensions. The finding did not support the original hypothesis.

Baseline and Posttest Means and Standard Deviation for Quality of Life by Group

		Tiı	ne of e	valuat	ion		Time	effect	Gro	up *	Gr	oup
Variable/Group	Time	e 1 o	Tim	e 2	Tim	e 3			Time	e effect	eff	fect
0	Mean	SD	Mean	SD	Mean	SD	F	р	F	р	F	р
Total quality of lif	ie											
Experiment (n=16)	5.67	0.37	5.61	0.31	5.58	0.31	0.11	.089 ^{ns}				
Control (n=32)	6.37	0.23	6.30	0.21	6.42	0.23	0.36	.701 ^{ns}	0.27	.765 ^{ns}	4.07	.050*
Physiological well	l-being	dimen	sion									
Experiment (n=16)	6.04	0.41	6.03	0.48	6.36	0.50	1.68	.204 ^{ns}				
Control (n=32)	7.10	0.32	7.19	0.27	7.17	0.29	0.07	.936 ^{ns}	0.43	.653 ^{ns}	4.45	.040*
Psychological wel	l-being	dimen	sion									
Experiment (n=16)	5.07	0.42	5.01	0.36	4.79	0.30	0.47	.627 ^{ns}				
Control (n=32)	6.04	0.29	5.76	0.28	5.93	0.30	1.23	.300 ^{ns}	0.70	.501 ^{ns}	4.54	.038*
Social well-being	dimensi	on										
Experiment (n=16)	6.26	0.52	6.10	0.42	6.35	0.50	0.25	.779 ^{ns}				
Control (n=32)	6.15	0.29	6.37	0.34	6.53	0.34	1.56	.219 ^{ns}	0.51	.599 ^{ns}	0.05	.827 ^{ns}
Spiritual well-beir	ng dimer	nsion										
Experiment (n=16)	6.37	0.34	6.44	0.31	6.16	0.28	0.57	.571 ^{ns}				
Control (n=32)	6.81	0.24	6.09	0.22	6.97	0.24	0.45	.641 ^{ns}	0.93	.397 ^{ns}	2.51	.120 ^{ns}

Time 2 = immediately post-intervention or 4 weeks after baseline Time 3 = post-intervention or 8 weeks after baseline ns = not significant, *p<.05, ** p<.01

Furthermore, the results revealed the mean scores of total quality of life at Time 3 (t = -2.16, p = .036), those of physiological well-being dimension at Time 2 (t = -2.28, p = .027), and those of psychological well-being dimensions at Time 3 (t = -2.38, p = .022) in the experimental group were statistically significant lower than those in the control group (See Table J1).

It is noticeable that the finding showed two trends. First, the scores of quality of life at Time 1 in the experimental group tended to be lower in almost all dimensions than those of the control group (See Table 9). Second, the nature of quality of life was entirely stable at different times as shown in Figure 5 to 9 (See Appendix J). Thus, the change of quality of life was considered to demonstrate the effect of intervention on quality of life by using Mann-Whitney U test. It is interesting to note that the results revealed that there were no statistically significant differences between mean differences of total quality of life or four dimensions at any point of evaluation time between the experimental group and the control group as illustrated in Table 10.

Table 10

Comparison of the Mean Change of Quality of Life by Group

Variables/Group	Experime	ental group	Contro	l group		
	(n=	=16)	(n=	=32)	_ Z	p value
	Mean	Sum of	Mean	Sum of		
	rank	ranks	rank	ranks		
Total quality of life						
Time 2-Time 1	24.97	399.50	24.27	776.50	16	.870
Time 3-Time 2	23.16	370.50	25.17	805.50	47	.638
Time 3-Time 1	22.22	355.50	25.64	820.50	80	.425
Physiological Well-I	being dime	insion				
Time 2-Time 1	23.75	380.00	24.88	796.00	26	.793
Time 3-Time 2	27.78	444.50	22.86	731.50	-1.15	.250
Time 3-Time 1	26.19	419.00	23.66	757.00	59	.555
Psychological well-	being dime	nsion				
Time 2-Time 1	25.47	407.50	24.02	768.50	34	.735
Time 3-Time 2	21.72	347.50	25.89	828.50	97	.330
Time 3-Time 1	23.69	379.00	24.91	797.00	28	.776
Social well-being di	mension					
Time 2-Time 1	22.44	359.00	25.53	817.00	72	.470
Time 3-Time 2	23.81	381.00	24.84	795.00	24	.809
Time 3-Time 1	21.38	342.00	26.06	834.00	-1.09	.274
Spiritual well-being	dimension					
Time 2-Time 1	23.88	382.00	24.81	794.00	22	.827
Time 3-Time 2	20.25	324.00	26.63	852.00	-1.49	.136
Time 3-Time 1	21.59	345.50	25.95	830.50	-1.02	.308

Regarding each item under quality of life between the experimental and the control group, using Mann-Whitney U test, the findings demonstrated that the experimental group had statistically significantly lower scores of quality of life than those of the control group in fives items, including fatigue, pain, happiness, fear of cancer metastasis, and interfered personal relationship immediately post-intervention (See Table 11). In addition, the experimental group had statistically significant lower scores of quality of life in appearance, depression, fear of second cancer, fear of cancer recurrence, fear of cancer metastasis, and hope than those of the control group (See Table 12) at four weeks after completion of intervention.

Table 11

Variable	Group	n	Mean rank	Sum of ranks	Z	p value
				1		
Fatigue	Experiment	16	17.59	281.50		
	Control	32	27.95	894.50	-2.45	.014*
Pain	Experiment	16	18.59	297.50		
	Control	32	27.45	878.50	-2.10	.036*
Happiness	Experiment	16	16.31	261.00		
	Control	32	28.59	915.00	-2.92	.003**
Fear of cancer metastasis	Experiment	16	19.31	309.00		
	Control	32	27.09	867.00	-1.99	.047*
Interfere personal	Experiment	16	30.88	494.00		
relationship	Control	32	21.31	682.00	-2.35	.019*

Comparison of the Quality of Life in Each Item by Group Immediately Post Intervention

Comparison of the Quality of Life in Each Item by Group at Four Weeks Post Intervention

Variable	Group	n	Mean rank	Sum of ranks	Ζ	p value
	10101	2				
Appearance	Experiment	16	17.97	287.50		
	Control	32	27.77	888.50	-2.32	.020*
Demain	Employed	16	10.16	200.50		
Depression	Experiment	10	18.10	290.50	0.04	0.0 5*
	Control	32	27.67	885.50	-2.24	.025*
Fear of second cancer	Experiment	16	18.72	299.50		
	Control	32	27.39	876.50	-2.19	.028*
Fear of cancer recurrence	Experiment	16	17.13	274.00		
	Control	32	28.19	902.00	-2.85	.004**
Fear of cancer metastasis	Experiment	16	17.84	285.50		
	Control	32	27.83	890.50	-2.60	.009**
Hope	Experiment	16	18 52	206 50		
Поре	Experiment	10	10.55	290.30	0.14	020*
	Control	- 52	27.48	879.50	-2.14	.032*

* p<.05, **p<.01

Part IV Intervention Feedback from Breast Cancer Survivors

In this part, the responses of the breast cancer survivors on the effect of a supportive-educative nursing intervention obtained from focus group discussion are described. The main purpose of focus group discussion, conducted at the end of the intervention, was to assess the ideas or feelings of breast cancer survivor towards the intervention. The findings revealed that the breast cancer survivors felt that they benefited from participation in the intervention. The benefits expressed by breast cancer survivors could be classified as a sense of awareness of self-care, self-

âð Co A management in daily life, being cheered up, increased self-value, and benefit recognition. The details of each category are described below.

Sense of Awareness of Self-care

The subjects expressed that they had sense of awareness resulting from participation in the intervention program. Sense of awareness refers to having to take care on their own. They expressed that there were many people who share the same problems or difficulty, thus, they were found similarities when comparing with others breast cancer survivors in the group. This resulted in a feeling that it is their own responsibility to take care of themselves as the expression. "We feel we are not only one who has problem. Other people have the same problems, too. Somebody has more problems than us. Therefore, we have to take care of ourselves. We have to manage with our problems. Where is the cause of the problem, we fix it. Otherwise, it will have impact to us, family, kids, and husband." (I.D.99)

Self-management in Daily Life

It is quite interesting to know that upon participation in the intervention, the subjects expressed that they gained useful knowledge to direct their practice in daily life's activities. Besides, all kinds of information were useful for their management to alleviate uncomfortable symptoms, and teach their children, in particular food and breast self-examination. They thought that these practices led them to decrease their risk of cancer recurrence and maintain their health status. The summary of each daily activity is presented in the following paragraph.

Manage daily lives' activities. The subjects expressed that they modified their daily lives' activities because they recognized the benefit of acquired knowledge and methods from the researcher and other breast cancer survivors. Their modification included their eating habits and exercise. In terms of eating behavior, the breast cancer survivors tried to have healthy food like anti-carcinogenic items and also avoid carcinogenic food in order to decrease their risk of cancer recurrence. One subject stated "Like you (the researcher's name) advice to practice. Say about food, we cannot avoid carcinogen substance in food. I try to do as you told me like vegetable, green vegetable, parsley, and fruits. Now, I try to eat vegetable or fruit everyday." (I.D. 99) Another subject pointed out, "In the past, I really like to have fermented bamboo shoot. I had it no more. Like grilled meat, no more. These cause of cancer. Ya having vegetable, eat chilly paste (Nam prik daeng) with lots of "Ma Korg" (Hog Palm) and have with boiled vegetable." (I.D. 105)

In terms of exercise, the subjects expressed that they had increased their amount of exercise after participating in the intervention program. They felt of better health than ever and needed no medication. The expression presented as, "In the past, I got fever, muai ($i d \partial \vartheta \vartheta = northern \ dialect \ of \ fever$). Presently, I do exercise, Paracetamol (Tylenol) almost never taken, hardly taken." (I.D. 105) Another subject expressed as, "I got new things into my life many things that I have never known. I have a will to do something like exercise. In the past, if I exercise I might die." (I.D.43) Alleviate uncomfortable symptoms. Subjects expressed that they had a chance to share their experience, gained knowledge, and learned from others in the group. Then, they made a decision and adjusted information to themselves in order to alleviate uncomfortable symptoms. These symptoms were sleep problems, hot flashes, and stress.

The subject indicated the alleviation of sleep problem as, "*I can meditate*. *I can. At night, if I cannot sleep, 3 A.M. or 2 A.M. I am not asleep. I meditate by sitting. I don't think of anything, too. Umm... for a while, I just fall asleep.*" (*I.D. 105*)

For hot flashes, the subject stated as, "Like me. When I experience hot flashes I try to hold my breath and breath in and out slowly. I feel better even though it is not disappear but it is better. Then I take a bit more soy milk (group agreed by saying Right and laugh). I never like soy milk but I have to take everyday, have two times in the morning and in the evening." (I.D.42)

In terms of stress alleviation, the subject expressed as, "Right, it is better than before participate in the group. Feel like stress in our life was decreased. Like we have opportunity to ventilate some like this. We can take care of our problems, although a heavier load of jobs than before. But our stress was decreased. We can manage it." (I.D.99)

They were obviously shown how to decrease their individual symptoms and stress. The uncomfortable symptoms were much better than before. This knowledge was gained from participation in the group.

Teach their children. The subjects expressed that they have taught their family members, especially their children how to decrease the risk of cancer, such as food to take and to teach their daughters to do breast self-examination regularly. This

resulted in decrease of their concern related to family members of having breast cancer in the future. The subjects expressed that statement as, "As your suggestion, I use it. I teach my kid in both daughter and son. They are thirteen and eleven years old. I told them to eat more vegetable for decreasing their risk to get cancer as me. I told them to eat more fruit with high vitamin C. something like this." (I.D. 99) With regards to breast self-examination performance, the subject pointed as, "Like me, I taught my daughter to do breast self-examination and told her to do regularly" (I.D. 163)

Being Cheered up

The subjects expressed their appreciation on telephone intervention and a self-help group in terms of being cheered up from the health care provider and other women who had encountered similar experiences. One subject expressed as, "Telephone... It's help. It has effected on us like emotional way, like we have consultant. Have encouragement. That still has someone follow, care about us, and remember us..." (I.D.99)

Additionally, they expressed that they had a chance to obtain mutual support, including sympathy and being cheered up being encouraged from participating in a self-help group. They expressed that only the one who had gone through a cancer experience could tell and understand about it. Moreover, they expressed that they were not the only one who had problems and might even be better off than another person in the group. As a result, their encouragement *(Kam-Lung-Jai)* to maintain their life was increased as, *"Like we come to join in the group. Sometime, if we never* come to the group, we may have like why we are more severe than others. Why others don't have anything? Why we are quite severe? When we come to the group. "Do you have pain here" "Yes, I am. The same. Like sister... (Name of I.D. 122) had told experiencing in the pain at chest. She tells that I am, too. Doctor told that this area is the cartilage. Finally, Umm this is normal. We are not the only one who has this problem." (I.D.108)

Added Self-value

The subjects expressed that the intervention provided an opportunity for them to help other members in the group which resulted in increasing their self- value as the statement, "*Participate in group, it is the way to help each other. To help other people, we feel good, too.*" (*I.D. 99*). Moreover, they felt they were still in a useful position to help other people in the community as a source in terms of providing information and emotional support. For example, when a person had found abnormal lump in their breast, a subject provided information and encouraged them to receive proper treatment. They also provided information to a newly diagnosed woman with breast cancer and her family to understand how to deal and care like this statement, "*I share my story and let her (wife of her husband's friend) know that many women were diagnosed with breast cancer. They all received treatment...She told me that she would go to see the doctor and received treatment. She accepted to receive surgery and treatment. I feel good that I can help her.*" (1.D. 43)

Benefit Recognition

Subjects indicated that, through telephone intervention, they obtained helpful information to take care of themselves. They directly gained information and were able to discuss their individual health problems or anxieties during the long period of each follow-up (three to four months) without coming to see the doctor. As a result, they could make decisions about taking care of themselves leading them to handle health problems and decrease doctor expenses. The subject expressed regarding to being recognized by others through telephone calls as the following expression, "Sometimes, we don't come to visit a doctor three or four months. It's a long time. During this time, if we have any problem, telephone would help. Sometimes, we have symptoms, we can ask for suggestion right away. In addition, if we have any problem and we have someone whom we trust and have someone who are knowledgeable and understand our problem to talk to and ask for information, our anxiety or anything all gone." (I.D.99) Another expression was as follows. "Good! Sometimes you call me. It is the time I anxious about this issue and I will have a chance to discuss instead of coming to the hospital. Come to see a doctor, you need a queue. It is right on time Ya " (I.D.167)

In summary, the findings reflected that breast cancer survivors obtained supporting benefit including informational and emotional supports. The provided supports geared them towards increasing their self-care ability, including sense of awareness in self-care, self-management in daily life, encouragement, self-value, and benefit recognition in order to maintain their health and happiness in their life.

DISCUSSION

Orem's Self-Care Deficit Nursing Theory was used as the conceptual framework when conducting the present study. It was used to develop nursing interventions and to test the effects of intervention on self-care and quality of life among breast cancer survivors, in particular ones who were post diagnosis one to three years and cancer free. The intervention was comprised of group education, a self-help group, and individual telephone intervention. This intervention was provided through helping methods namely guiding, supporting in both informational and emotional support, providing environment (a self-help group, motivation and opportunity to share their personal health problems or concerns), teaching, counseling, offering referral to appropriate resources, and promoting a positive attitude towards their disease and treatment.

The applicability of the study was evaluated in terms of possibility and workability. Possibility of the intervention was described by the impact of a supportive-educative nursing intervention program on either the change of self-care behavior or the change of quality of life between the two groups. In addition, the workability of the intervention can be affirmed by its applicability to actual health care services, such as the oncology clinic or the outpatient clinic offering care for breast cancer survivors. The details regarding the possibility and workability of intervention are presented as follows: Possibility of the Intervention

In this study, the findings indicated that the intervention program increased the self-care behavior of women in the experimental group; however, the effect on quality of life was not significant. The possibility would firstly discuss the effects of intervention on self-care behavior and follow by the effect of intervention on quality of life.

The Effects of Intervention on Self-care Behavior

By using repeated measure analysis, the findings revealed no statistically significant difference between the change of self-care behavior in the experimental and the control group at any point of evaluation time (See Table 5). However, the subjects in the experimental group were more likely to perform self-care behavior than those in the control group immediately upon the completion of intervention (See Table 6-7). The hypothesis that the experimental group significantly increased self-care behavior more than the control group was supported. The framework of this study was also empirically supported.

The effect of a supportive-educative nursing intervention might increase selfcare behavior by enhancing the subjects' self-care agency, which is the ability and knowledge to care for oneself. Although the present study did not directly measure the self-care agency, the ability to perform self-care and practice of self-care are closely related. It can be assumed that persons have their own ability at a certain level to perform self-care actions to meet their demands related to health deviation. These findings were in congruence with those of previous intervention studies based on Orem's Self-care deficit theory in other chronic illnesses (Folden, 1993; Krirkgulthorn, 2000). The study of Krirkgulthorn (2001) revealed that the subjects in the experimental group had increased self-care behavior after participating in a supportive-educative nursing intervention and had greatly improved self-care behaviors more than those who did not participate in the program. In addition, the finding of Folden (1993) indicated the effectiveness of supportive-educative nursing intervention on perception of self-care ability in elderly people after stroke episodes. The effects of the intervention on self-care ability could be explained as follows:

The first explanation is that the intervention may have increased the subjects' ability in terms of increasing their sense of awareness of the need to take responsibility for their own demand. Then, they performed self-care actions to serve that demand. In a self-help group, the subjects had an opportunity to share their opinions, feelings, and experiences in taking care of themselves in a secure environment with the other breast cancer survivors who had gone through similar experiences. The similarities of experiences were expressed and it evoked sympathy and empathy among group members. In addition, they also exchanged experiences and information within the group on how to reduce a given health problem or concern. Thus, they were easily to realized and acknowledge the fact of dealing with long-term effects of treatment and risk of cancer recurrence. As a result, they might gain self-enhancement through the comparison with worse-off others (Wills, 1985). Therefore, they came to realize that each of them had to take responsibility for their own self-care demand by applying what they have learned in a self-help group to their daily life. Moreover, the encouragement and advice through exchange and sharing

their own experiences among group would increase their self-esteem and lead to engage in their self-care practice (Hubbard, Muhlenkamp & Brown, 1984; Muhlenkamp & Sayles, 1986).

The second explanation is that subjects who received a supportive-educative nursing intervention may have gained social support in terms of adequacy and availability of resources provided by the researcher. Adequacy and availability resources included both informational and emotional support. Hanucharurnkul (1989) pointed out that social support, a basic conditioning factor influencing self-care ability and self-care demand (Orem, 1995), was a strong predictor of self-care. Social support could facilitate self-care by enhancing motivation or self-esteem to engage in self-care practice. Support from another might serve to encourage a person to sustain their self-care effort (Hanucharurnkul, 1989; Muhlenkamp & Sayles, 1986). This finding was also consistent with the findings of Hubbard et al., (1984), and Muhlenkamp and Sayles (1986), who reported that social support is positively associated with a high level of self-care practice in chronically ill patients, elderly, and normal health adults, respectively.

The third explanation is that receiving both informational and emotional support from the researcher and the group of women encountered with similar experiences may increase self-care behavior by facilitating the subjects to make decisions about the performance of self-care on their own. Decision-making about self-care could be explained by two mechanisms.

The first mechanism is that the subjects were guided to effective self-care actions related to their health problem or concern by receiving information of either modern medicine or traditional medicine. The researcher also encouraged them with

116

the statement that their health deviation experiences were common experiences among breast cancer survivors and tried to motivate them to consistently perform effective self-care action. The finding was in congruence with the study of Dodd (1983), which showed that patients who received self-effective management techniques performed more self-care behavior than patients who received none. It may be explained that the additional information given was directly related to an increased in self-care. Moreover, Cobb (as cited in Hanuchrurnkul, 1989) explained that subjects who receive support will develop greater self-confidence and feelings of autonomy, and thus they are likely to attempt to control and modify their own environment. The second mechanism is that the subjects may also learn other effective self-care practices from the group, and then they make a decision to apply them to their daily life. The finding was supported by Orem (2001) who said that selfcare behaviors can be learned.

From data analysis, there were no statistically significant differences in selfcare behavior between Time 2 and Time 3, but the self-care behavior at Time 3 was statistically significantly higher than at baseline. The findings appeared to show the effectiveness of the intervention at four weeks post completing intervention. However, the mean score was slightly decreased at Time 3 (see Figure 3). The decline of self-care behavior at Time 3 could be explained by Orem (2001) on self-care operations. Self-care operations are the idea that before persons can maintain an appropriate action, they have to gain knowledge of the course of self-care actions and their effectiveness and desirability. Effective processes of performing self-care include sufficient knowledge of appropriate self-care to enable decision-making about which self-care actions to take or what to avoid. Then, they perform ongoing action to

117

meet their demand. They also monitor their abilities and evaluate the effect of selfcare actions, as well as make judgments and decisions.

The fluctuation of self-care behavior between Time 1 and Time 3 (see Figure 3) was shown in the control group. However, they also continued highly effective self-care actions or changed self-care actions when the use of one could not relieve their health problem or concern. The self-care actions were considered as therapeutic actions. The finding could be explained by saying that the subjects in the control group who received routine care also had the abilities to make decisions about performing self-care actions. However, they may lack effective self-care information and encouragement to perform the self-care action to deal with their health problem or concern. Thus, the subjects in the control group may perform activities based on trial and error, and then make decisions on selection of self-care behaviors to be continued. As a result, the severity or distress of health problem and concern in the control group showed a constant or high level.

To summarize, the effect of a supportive-educative nursing intervention could enhance the potential of breast cancer survivors by increasing their self-care ability to perform self-care. The major helping strategy intervention is providing adequate information and emotional support. This supported by Orem's (1995) assertion that adequate knowledge was a necessary prerequisite to perform appropriate self-care action. The increase in self-care ability is rooted in a sense of awareness of how to take care of themselves, and they also received social support, and then moved to increase their decision-making. It can be referred to as the achievement of ten power components and capabilities for self-care operations in Orem's point of view. Then, they deliberately perform self-care actions, such as managing daily lives' activities and alleviation of uncomfortable symptoms as shown in the feedback from the focus group discussion.

The Effect of Intervention on Quality of Life

The findings indicated that the experimental group showed lower scores of total quality of life, physiology well-being dimension, and psychological well-being dimension than the control group. However, there were no statistically significant changes in total quality of life and the four dimensions between the two groups (See Table 9). Therefore, the finding did not support the hypothesis. This could be explained by the following four rationales:

The first rationale is that the subjects in the experimental group had suffered from the long-term side effects of treatment (See Appendix I, Table 17) such as fatigue, poorer health status, change in their appearance, depression, and fear of metastasis more than in the control group before entering the intervention program. These side effects caused poor quality of life which is supported by evidence of the negative correlation between quality of life and fatigue (Bower et al, 2000; King et al, 2000), depression (Soivong & Chanprasit, 2004; Weitzner et al., 1997), body image (Thors et al., 2001), and fear of recurrence (Soivong & Chanprasit, 2004). Although the intervention possibly helped them to deal with their health deviations, they still experienced those side effects at a certain level and more suffering than in the control group (See Table 11 and Table 12). Therefore, the quality of life may be less likely to dramatically change in a short time period. The finding was similar to the previous studies, using Orem's Self-Care Deficit Nursing Theory as the conceptual framework,

119

which tested the effect of supportive educative nursing intervention on quality of life among head and neck cancer patients (Kaweewong, 1990) and colorectal and anal cancer patients undergoing treatments (Jirajarus, 1996). The finding of both studies revealed no effect of the intervention on quality of life. The authors argued that although the subjects received intervention and performed self-care behaviors, the severe side-effects of treatment still existed. Thus, the subjects had negative impressions of cancer treatment and quality of life.

The second rationale was that it could be explained in terms of the broad concept of quality of life. Multiple factors affect quality of life. One of the multiple factors was their environment. During the intervention, they were in two types of environment: an intervention environment and home environment. At the intervention environment, it was an arrangement of a temporary environment, in which they had a chance to gain emotional and informational support from the researcher and self-help group members. The subjects with different family backgrounds got together in the group. They shared a variety of situations in their lives (See Appendix D) related to the issues of support, financial problems, and responsibility in the family. Some were in a good state of having support from the family, but others had taken multiple responsibilities in the family. Some have financial problems and low family income, but others had support from their retirement salary or their family member. As they come home to resume the same routine daily life, it is the burden to them. They have extra responsibilities to work on in their lives.

The finding supported Orem's point of view (2001) about environment that human beings are never isolated from their environment and they exist in them. Human environments are analyzed and understood in terms of physical, chemical, biological, and social features, which may be interactive. Certain environments are continuously or periodically interactive with human being in their time-place localization. It is empirical that environmental conditions can positively or negatively affect the lives, health, and well-being of individuals, families, and communities. It is apparent that the consequence of breast cancer and how they affect quality of life likely will vary depending on their way of life (Sammarco, 2001). Thus, the quality of life has intertwined with the background of individuals. However, the study focused only on how the subjects deal with the disease, and the treatment. Some of them may have unsolved problems in their personal and family lives. Therefore, the positive change in quality of life is hardly obtained in this study.

The last explanation is that the present study was limited to small sample size and non-randomization to allocate subjects into either the experimental group or the control group as a result of unforeseen problems during sample recruitment. The final number of subject was forty-eight subjects, including 16 in the experimental group and 32 in the control group, which with power analysis was power = .60, significant = .05, and effect size = .80. The small sample size may not be strong enough to demonstrate the effects of intervention on outcome and there is risk reaching the misleading conclusion of Type II error. In addition, the lack of randomization of the subjects also participated on a self-selected basis. It may be expected that they already had existing health problems and/or concerns due to the effects of primary treatment and risk of cancer recurrence and they needed help to find a solution. Thus, the effect of intervention on the change of quality of life between the two groups was not clearly demonstrated.

121

Workability

Although the statistics failed to demonstrate the significance of the intervention program, the feedback from the focus group discussion among breast cancer survivors showed the workability of the intervention. The feedback consisted of gaining the benefits from participation in the intervention that led to their practices on each strategy. With regards to the gained benefits, the subjects expressed that they had obtained sense of awareness in self-care; self-management in daily life including management of their daily lives' activities and alleviation of uncomfortable symptoms, being cheered up by the health care provider and other breast cancer survivors; increased self-value from support of others group members and providing health information to other people in the community; and benefit recognition. The details of the feedback information were presented in Part IV.

Furthermore, the subjects stated with regard to two times calling within one month that it was appropriate and sufficient for them to gain personal extra help in both emotional and informational support. This was the shortest period of time that individuals can adjust or change their self-care action to meet their demand (Nantachaipan, 1996; Tantayotai, 1997). Therefore, the two times telephone intervention may be the least number of follow-up. Additionally, the finding was similar to the study of Cox and Wilson (2003) on the impact of telephone follow-up. It was profitable in two ways: one as the component of continuity of care and another as a useful strategy to monitor and support individuals after completing primary treatment, provide immediate care, and maintain contact with health care providers. For the frequency of a self-help group, the subjects agreed that the four times sessions made it feasible for them to fully participate. It could be a sufficient number of times to provide a non-threatening environment and opportunity to share experiences and feeling among persons who have had similar experience as well as increase self-value and benefit recognition. The finding is in congruence with the study of Pakwilai (2002) who found an increase in self-esteem in breast cancer patients receiving radiotherapy and the study of Rasmeeloung-on (1992) which showed that the head and neck cancer patients undergoing radiotherapy perceived gaining benefits from joining the self-help group. It is interesting to note that the session of more than four times should be reconsidered for the persons who were far away from the intervention site and had a responsibility to take care of family members.

Furthermore, the subjects in the experimental group raised unexpected topics during the self-help group session and asked the researcher to elaborate on each issue (See Appendix D). They were four topics, namely, 1) how to relieve symptoms, including hot flashes, sleep problems, cramps, and discomfort of an affected arm, 2) details on the stages of breast cancer and treatment, 3) types of food to consume, and 4) the use of edible herbs. It could be emphasized that they deliberated on how to increase their chance of survival and prevent cancer recurrence (Boon et al., 2000), or were hoping for a cure from alternative methods, such as the use of foods and/or herbs (Morris et al., 2000). This finding supported Orem's point of view (2001) about the self-care agent that the breast cancer survivors performed purposive action to maintain their lives.

Conclusion

In conclusion, a supportive educative nursing intervention demonstrated a positive effect on self-care behavior, but failed to show a positive effect on quality of life. The finding also provided partial support of the conceptual framework of the present study. The major effect of a supportive-educative nursing intervention on self-care behaviors is enhancing self-care ability in terms of an increased sense of awareness in self-care, increasing social support, and improving their ability to make decisions. For quality of life, the intervention may affect their quality of life at a certain level, but they still experienced long-term consequences and lived in the same environment of family life. Therefore, the present study did not show a highly positive change in quality of life. The small sample size and non-randomization could not demonstrate the effect of intervention on self-care behavior. However, the subjects perceived and expressed benefit from participation in the intervention. The benefits described were a sense of awareness in self-care, self-management in daily life, being cheered up, added self-value, and benefit recognition.

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