RESEARCH COMMUNICATION

Measuring Quality of Life in Thai Women with Breast Cancer

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Abstract

Breast cancer has become a commonly diagnosed disease among Thai women in the last decade, despite the fact that Thai women generally have a lower rates than their Western counterparts. With the rising incidence and survival rates, it is crucial for nurses to look at the long term quality of life of these patients. A broad range of instruments have been used in clinical trials among breast cancer patients in oncology, like the EORTC questionnaire including the general quality of life questions (QLQ-C30) and the breast cancer module (QLQ-BR23), and the FACT-B questionnaire consisting of both a generic part (FACT-G) and a breast cancer specific module. They have been shown to have good validity and reliability properties both for the English original and translations into various languages including Thai. A few studies on quality of life in Thai context exist, covering quality of life in women with breast cancer. Therefore, the purpose of this study was to find which standard measure of common Western quality of life scales is appropriate to assess quality of life in Thai women with breast cancer. Results revealed the Thai version of EORTC QLQ-C30 and FACT-G questionnaires to be reliable and valid to assess quality of life in general. The best fit for measuring quality of life in Thai women with breast cancer during adjuvant treatment should be the EORTC QLQ-C30/-BR23.

Keywords: Quality of life - breast cancer - Thai women

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Introduction

Breast cancer is the most common cancer among women worldwide as well as in Thailand. Although Thai women have significantly lower breast cancer incidence and mortality rates than women in Western countries, the incidence rate has been increasing gradually over the past few years (Vatanasapt et al., 2002; Wibulpolprasert et al., 2005; Sriplung, 2006). Women are now diagnosed with the disease earlier and live longer, thus, an individual woman living with breast cancer and its treatment is crucial to consider (Ferrell et al., 1997). Quality of life has become a well-accepted outcome measure for cancer patients, and an integral part of cancer patient management (King, 2006).

Measuring quality of life in breast cancer should focus clearly on specific, particular breast cancer-specific domains, rather than using more general questions (Bottomley, 2002; Varricchio, 2006). According to breast cancer is the most frequently diagnosed malignancy among North American and European women, there has been considerable research on the quality of life of women who have survived breast cancer over the past ten years. The majority of the available quality of life measurements have been developed in these countries. The field of oncology has seen a vast amount of test development and psychometric validation of cancer-specific questionnaires, such as the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 (EORTC QLQ-C30), which was originally devised by Aaronson and colleagues in the Netherlands (Aaronson et al., 1993; Fallowfield, 2002), and the Functional Assessment of Cancer Therapy General (FACT-G), which was developed by Cella and colleagues in the United States (Cella et al., 1993; Fallowfield, 2002). Both instruments have undergone rigorous validation, and have been translated and field-tested in approximately twenty-four different languages, making them suitable for use in multinational clinical trials of cancer therapy and to allow cross-cultural comparisons of people who come from diverse backgrounds (Aaronson, 1993; Cella et al., 1993; Bjordal et al., 2000; Fallowfield, 2002; Soni and Cella, 2002).

Few studies on quality of life in the Thai context exist, particularly relating to the quality of life in women with breast cancer. The initial English-language version of the FACT-G was translated into Thai using an iterative forward-backward translation process, and the translated questionnaire was administered to 364 cancer patients. The finding indicated that the Thai version of the FACT-G is a reliable and valid measure of quality of life in cancer patients and can be used in clinical trials and studies of outcomes research in oncology (Ratanatharathorn et al.,

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2001). The English version of the EORTC QLQ-C30 was translated into Thai, and the initial trial of the EORTC questionnaire in Thailand was conducted in 75 cancer patients. The trial reported that the Thai version of the EORTC QLQ-C30 is reliable and valid for using in Thai patients with cancer (Sirisinha et al., 2002). Subsequently, a study of a group of Thai patients who had undergone treatment for cancer suggested that both the Thai version of EORTC QLQ-C30 and FACT-G are reliable and valid (Silpakit et al., 2006). In the previous studies [17-19], the Thai version of EORTC QLQ-C30 and FACT-G entail the general core questionnaires to assess overall quality of life in Thai patients with cancer. However, the quality of life instrument to assess specifically for Thai women with breast cancer has not been reported yet. As a result, this study aimed to employ the EORTC QLQ-C30/-BR23 and the FACT-B questionnaires in order to test which questionnaire is appropriate for measuring quality of life in Thai women with breast cancer during adjuvant treatment.

Materials and Methods

This study was conducted in three hospitals where the project gained ethical approval. One was the National Cancer Institute of Thailand, and two were university hospitals: Siriraj Hospital, Mahidol University, and Chulalongkorn Hospital, Chulalongkorn University. A longitudinal study used the two quality of life questionnaires at three points in time over a period of 12 months. The first data point was immediately after either mastectomy or breast-conserving surgery, but before commencing adjuvant treatment; the second data point was during treatment with adjuvant therapies at 6-8 weeks intra-treatment, and the third was a week to a month after the treatments were completed. A total of 112 breast cancer women participated in phase 1, 110 cases in phase 2, and 95 cases in phase 3.

Instruments

There are two Western questionnaires used worldwide for measuring quality of life, specifically for women with breast cancer. These are the European Organisation for Research and Treatment of Cancer (EORTC) and the Functional Assessment of Cancer Therapy (FACT) questionnaires. Both were employed in this study in the translated Thai versions. Firstly, the EORTC questionnaire comprises two parts; the core questionnaire (QLQ-C30), and the breast cancer-specific questionnaire (QLQ-BR23). The QLQ-C30 is a thirty item questionnaire and the QLQ-BR23 is a twenty-three item questionnaire (EORTC Data Centre, 2001). Secondly, the FACT-B was used to measure both general cancer and breast cancer specifically (FACT, 2006). The FACT-B also has two parts, which are a twenty-seven item core questionnaire, and a ten item breast cancer-specific questionnaire. The scores of both questionnaires were ordinal scales, which ranked from the smallest to the largest. For the EORTC questionnaire, score 1 was assigned to not at all, 2 to a little, 3 to quite a bit, and 4 to very much. In the FACT questionnaire, score 0 was assigned to not at all, 1 to a little bit, 2 to somewhat, 3 to quite a bit, and 4 to very much.

Statistical methods

Reliability analysis can be used to measure the internal consistency of the EORTC and the FACT questionnaires. A Cronbach's alpha coefficient at or over 0.70 is generally regarded as acceptable, and over 0.80 as a good criterion for internal consistent reliability (Aaronson, 1993; Sprangers et al., 1996; Bredart et al., 2005; Howitt and Cramer, 2005). The factor analysis was used to assess the factor construct validity to indicate whether the questionnaires were conceptually equivalent when applied to Thai women with breast cancer. Principal components factor analysis was conducted on each of the subscales of the two questionnaires due to the limitations of sample size. The factor analysis was run on phase 1 which included 112 participants. The correlation coefficients were used examine the relationships between two questions of the EORTC and the FACT questionnaires. Spearman's correlation (ϱ) was used to analyse the correlation of the two questions that had similar meanings from the different questionnaires. Pearson correlation (r) was computed to study the relationship between the subscales of the two questionnaires that measured similar aspects.

Results

The results included the reliability estimates using Cronbach's alpha coefficients, the factor analysis, the correlation of each similar item of the EORTC and the FACT questionnaires, and the comparisons between the two questionnaires for measuring quality of life in Thai women with breast cancer.

Reliability

There were two considerations for the reliability analyses: the reliability of the EORTC and the FACT questionnaires, and the reliability of the scales within the EORTC and the FACT questionnaires. According to question 35 of the EORTC QLQ-C30, which is 'Answer this question only if you had any hair loss: Were you upset by the loss of your hair?', was answered by only a few participants in phase 1; therefore, this item was excluded from the reliability analysis of breast cancer module questionnaire.

Reliability of the EORTC and the FACT questionnaires

Cronbach's alpha coefficients (α) for the multi-item scales of the EORTC QLQ-C30 in phases 1, 2, and 3 were 0.84, 0.89, and 0.85 respectively, which exceeded the 0.70 criterion for internal consistent reliability. For QLQ-BR23, the coefficients in phases 1, 2, and 3 were 0.71, 0.75, and 0.58 respectively. For the EORTC QLQ-C30 plus QLQ-BR23 questionnaire, most items were scored 1 to 4, except the global health status scores, which were scored 1 to 7. The coefficients for the multi-item scales of this questionnaire, which excluded the global health status questions in phases 1, 2, and 3, were 0.82, 0.89 and 0.82 respectively. There was high internal consistency in both the FACT-G and the FACT-B, with coefficients of more than 0.80 in the three phases. The majority of scales met the 0.70 criterion for internal consistency reliability, except breast additional subscales in the three phases, which were

Table 1. Cronbach's α Coefficients of the EORTC and the FACT for the three Phases

Scale	Number of Items	Cronbach's α Coefficients Phase 1	Phase 3	Phase 3
EORTC	51	0.82	0.89	0.82
EORTC QLQ-C30	30	0.84	0.89	0.85
Global Health Status	2	0.89	0.87	0.92
Functional Scales	15	0.76	0.82	0.75
Physical Functioning	5	0.53+	0.69	0.69
Role Functioning	2	0.87	0.76	0.63+
Emotional Functioning	4	0.75	0.80	0.64+
Cognitive Functioning	2	0.46+	0.72	0.75
Social Functioning	2	0.61+	0.52+	0.35+
Symptom Scales	13	0.78	0.81	0.77
Fatigue	3	0.67+	0.83	0.68+
Nausea and Vomiting	2	0.81	0.69	NA
Pain	2	0.65+	0.58+	0.48+
EORTC QLQ-BR23	23	0.71	0.75	0.58
Functional Scales	8	0.77	0.72	0.47
Body Image	4	0.76	0.71	0.73
Sexual Functioning	2	0.89	0.91	1.00
Symptom Scales	15	0.73	0.72	0.68
Systemic Therapy Side Effects	7	0.66+	0.69	0.65+
Breast Symptoms	4	0.54+	0.37+	0.50+
Arm Symptoms	3	0.75	0.67+	0.56+
FACT-G	27	0.88	0.91	0.86
Physical Well-being	7	0.77	0.87	0.73
Social/Family Well-being	7	0.74	0.82	0.82
Emotional Well-being	6	0.71	0.77	0.46+
Functional Well-being	7	0.83	0.85	0.85
FACT-B	37	0.89	0.92	0.86
Breast Subscales	10	0.48+	0.67+	0.26+

+ Coefficient does not meet minimum criteria

0.48, 0.67, and 0.26, and the emotional well-being scale, which was 0.46 in phase 3. The breast additional subscales had very low coefficients (see Table 1).

Reliability for scales within the EORTC and the FACT questionnaires

To measure the consistency of the scales of the EORTC and the FACT questionnaires, the separated reliability analyses for scales were conducted for phase 1. The overall α for the functional scales of QLQ-C30 was 0.76. Most values had total correlations above 0.30, which were acceptable (Field, 2005). However, the total correlations of items 5 (need help), 6 (limited doing), and 25 (remembering) were below 0.30, which indicated fairly weak internal consistency. The most inadequate item was question 25; if omitted this question would increase α from 0.76 to 0.77. Nevertheless, this increase was not dramatic, and both values reflected a reasonable degree of reliability in the functional scales. The overall α for the symptom scales of QLQ-C30 was 0.78, and strong for ability test. Items 8 (short of breath), 9 (pain), and 28 (financial difficulties) had total correlations below 0.30. Question 28 was 0.12, which if omitted would increase α overall from 0.78 to 0.79.

For QLQ-BR23, the values of total correlations for the functional scales were all above 0.30, which were strong. None of the items would increase the reliability if omitted, because all values after deletion were less than the overall α of 0.77. The overall α for the symptom scales of QLQ-BR23 was 0.73. Most values had total correlations above 0.30, except for items 33 (eyes painful), 34 (lost hair), 36 (feel ill), and 37 (hot flushes), which were below 0.30. The weakest item was question 34 (lost hair), for which the correlation was 0.03. If this question was deleted, α would increase from 0.73 to 0.74. However, this increase was not dramatic, and both values reflected a reasonable degree of reliability.

For the FACT questionnaire, the overall α of the physical well-being scales was 0.77. Most items had total correlations above 0.30, only question GP2 (nausea) was 0.22. If this question was omitted, α would increase from 0.77 to 0.79. The overall α for the social/family well-being scales was 0.74, for which most items had total correlations above 0.30. The exception was item GS7 (sex life) which was below 0.30. If this question was deleted, α would be increased from 0.74 to 0.79. For the emotional well-being scales, most items had total correlations above 0.30, except for item GE2 (coping with illness), which was 0.28. Nevertheless, deleting this item, overall α was not changed, because it would be the same as 0.71, and the item also has theoretical importance.

The overall α for the functional well-being was excellent at 0.83. The values of total correlations were all above 0.30, which were moderately strong. For the additional concerns of the FACT-B questionnaire, the overall α was 0.48, which was considerably lower than 0.70. Six from ten items had total correlations below 0.30. If either question B4 (sexually attractive) or B9 (feel like a woman) were deleted, overall α would be increased from 0.48 to 0.54. Thus, the overall α was 0.60 after deleting two questions, which was lower than 0.70. It could be suggested that each item of the additional concerns did not correlate properly with the total scores.

Factor analysis

The current study found that fourteen new factors were extracted from the fifty-three original questions of the EORTC, and twelve factors from the thirty-seven questions of the FACT questionnaires. Some items which loaded into the new factors were similar to the components of the original scales. For example, psychological domains consisted of four items, as in the emotional functioning scale. Despite the fact that some items were not extracted exactly as in the original scales, they tended to be loaded into factors that consisted of similar items. Therefore, both the EORTC QLQ-C30/-BR23 and the FACT-B were considered to be conceptually cross-cultural equivalent questionnaires for Thai women with breast cancer during treatment.

Correlations between the EORTC and the FACT questionnaires by similar items

Table 2 displays the correlations between both questionnaires, by items for which the EORTC was ranged from question number 1 to number 53, and then each question was matched with the questions of the FACT. For the EORTC, the QLQ-C30 consisted of questions 1 to 30, and the QLQ-BR23 consisted questions 31 to 53. For the FACT, the core questionnaire (FACT-G) consisted of questions GP1-7, GS1-7, GE1-6, and GF1-7. The

Table 2. Spearman Correlations Compare Each Similar Item between the EORTC and the FACT-B; Phases 1, 2, and 3

EORTC		FACT-B		Phase 1		Phase 2		Phase 3	
				ϱ	p-value	ϱ	p-value	ϱ	p-value
1	Do you have any trouble doing strenuous activities, like carrying a heavy shopping bag or a suitcase?	GF1	I am able to work (include work at home).	0.15	0.12	0.38	<0.001	0.23	0.02
2	Do you have any trouble taking a long walk?		-						
3	Do you have any trouble taking a short walk outside of the house?		-						
4	Do you need to stay in bed or a chair during the day?	GP7	I am forced to spend time in bed.	0.59	<0.001	0.68	<0.001	0.71	<0.001
5	Do you need help with eating, dressing, washing yourself or using the toilet?		-						
6	Were you limited in doing either your work or other daily activities?	GF1	I am able to work (include work at home).	0.13	0.16	0.32	<0.001 [b]	0.34	0.001
		GF2	My work (include work at home) is fulfilling.	0.17	0.07	0.29	0.002	0.26	0.01
7	Were you limited in pursuing your hobbies or other leisure time activities?	GF3	I am able to enjoy life.	0.19	0.05	0.38	<0.001	0.27	0.01
8	Were you short of breath?	B1	I have been short of breath.	0.41	<0.001	0.43	<0.001	0.30	0.003
9	Have you had pain?	GP4	I have pain.	0.39	<0.001	0.66	<0.001	0.67	<0.001
		P2	I have certain parts of my body where I experience significant pain.	0.43	<0.001	0.51	<0.001	0.58	<0.001
10	Did you need to rest?	GP7	I am forced to spend time in bed.	0.25	0.01	0.25	0.01	0.38	<0.001
11	Have you had trouble sleeping?	GF5	I am sleeping well.	0.58	<0.001	0.65	<0.001	0.38	<0.001
12	Have you felt weak?	GP1	I have a lack of energy.	0.52	<0.001	0.59	<0.001	0.41	<0.001
13	Have you lacked appetite?								
14	Have you felt nauseated?	GP2	I have nausea.	0.69	<0.001	0.77	<0.001	0.79	<0.001
15	Have you vomited?	GP2	I have nausea.	0.56	<0.001	0.53	<0.001	NA	NA
16	Have you been constipated?								
17	Have you had diarrhoea?								
18	Were you tired?	GP1	I have a lack of energy.	0.43	<0.001	0.55	<0.001	0.36	<0.001
19	Did pain interfere with your daily activities?	GP5	I am bothered by side effects of treatment.	0.49	<0.001	0.27	0.01	0.34	0.001
20	Have you had difficulty in concentrating on things, like reading a newspaper or watching television?	GF6	I am enjoying the things I usually do for fun.	0.19	0.05	0.41	<0.001	0.15	0.15
21	Did you feel tense?	GE4	I feel nervous.	0.37	<0.001	0.44	<0.001	0.32	0.002
		B7	I worry about the effect of stress on my illness.	0.39	<0.001	0.38	<0.001	0.52	<0.001
22	Did you worry?	B6	I worry that other members of my family might someday get the same illness I have.	0.03	0.72	0.186	0.05	0.16	0.12
		B7	I worry about the effect of stress on my illness.	0.43	<0.001	0.39	<0.001	0.44	<0.001
23	Did you feel irritable?	GE4	I feel nervous.	0.68	<0.001	0.34	<0.001	0.21	0.05
24	Did you feel depressed?	GE2	I feel sad.	0.17	0.07	-0.24	0.01	-0.11	0.31
25	Have you had difficulty remembering things?								
26	Has your physical condition or medical treatment interfered with your family life?	GP3	Because of my physical condition, I have trouble meeting the needs of my family.	0.40	<0.001	0.60	<0.001	0.46	<0.001
		GS2	I get emotional support from my family.	0.08	0.42	0.11	0.28	0.21	0.04
		GS4	My family has accepted my illness.	0.13	0.17	0.08	0.39	0.14	0.17
		GS5	I am satisfied with family communication about my illness.	-0.02	0.82	0.07	0.44	0.19	0.06

		GS6	I feel close to my partner (or the person who is my main support).	-0.04	0.65	0.06	0.54	0.27	0.01
27	Has your physical condition or medical treatment interfered with your social activities?	GS1	I feel close to my friends.	0.14	0.15	0.11	0.27	-0.02	0.85
28	Has your physical condition or medical treatment caused you financial difficulties?								
29	How would you rate your overall health during the past week?	GP6	I feel ill.	0.31	0.001	0.41	<0.001	0.47	<0.001
30	How would you rate your overall quality of life during the past week?	GF7	I am content with the quality of my life right now	0.38	<0.001	0.45	<0.001	0.30	0.003
31	Did you have a dry mouth?								
32	Did food and drink taste different than usual?								
33	Were your eyes painful, irritated or watery?								
34	Have you lost any hair?	B5	I am bothered by hair loss.	0.16	0.09	0.25	0.01	0.19	0.06
35	Answer this question only if you had any hair loss: Were you upset by the loss of your hair?	B5	I am bothered by hair loss.	0.76	<0.001	0.78	<0.001	0.52	0.10
36	Did you feel ill or unwell?	GP6	I feel ill.	0.31	0.001	0.63	<0.001	0.59	<0.001
37	Did you have hot flushes?								
38	Did you have headaches?								
39	Have you felt physically less attractive as a result of your disease or treatment?	B4	I feel sexually attractive	0.29	<0.001	0.13	0.17	0.44	<0.001
40	Have you been feeling less feminine as a result of your disease or treatment?	B9	I am able to feel like a woman.	0.25	0.01	0.18	0.06	-0.13	0.21
41	Did you find it difficult to look at yourself naked?	B2	I am self-conscious about the way I dress.	0.42	<0.001	0.43	<0.001	0.47	<0.001
42	Have you been dissatisfied with your body?	B2	I am self-conscious about the way I dress.	0.31	<0.001	0.33	<0.001	0.36	<0.001
43	Were you worried about your health in the future?	GE5	I worry about dying	0.46	<0.001	0.39	<0.001	0.37	<0.001
44	To what extent were you interested in sex?	GS7	I am satisfied with my sex life.	0.42	<0.001	0.57	<0.001	0.65	<0.001
45	To what extent were you sexually active? (with or without intercourse)	GS7	I am satisfied with my sex life.	0.40	0.001	0.62	<0.001	0.65	<0.001
46	Answer this question only if you have been sexually active: to what extent was sex enjoyable for you?	GS7	I am satisfied with my sex life.	0.51	<0.001	0.59	<0.001	0.72	<0.001
47	Did you have any pain in your arm or shoulder?	B3	One or both of my arms are swollen or tender.	0.52	<0.001	0.54	<0.001	0.76	<0.001
48	Did you have a swollen arm or hand?	B3	One or both of my arms are swollen or tender.	0.36	<0.001	0.43	<0.001	0.35	<0.001
49	Was it difficult to raise your arm or to move it sideways?	B3	One or both of my arms are swollen or tender.	0.52	<0.001	0.53	<0.001	0.35	<0.001
50	Have you had any pain in the area of your affected breast?	B3	One or both of my arms are swollen or tender.	0.32	<0.001	0.54	<0.001	0.69	<0.001
51	Was the area of your affected breast swollen?	B3	One or both of my arms are swollen or tender.	0.42	<0.001	0.31	<0.001	0.15	0.15
52	Was the area of your affected breast oversensitive?	B3	One or both of my arms are swollen or tender.	0.23	0.01	0.29	0.002	0.29	0.003
53	Have you had skin problems on or in the area of your affected breast (e.g., itchy, dry, flaky)?	B3	One or both of my arms are swollen or tender.	0.07	0.47	0.15	0.11	0.41	<0.001
		GE2	I am satisfied with how I am coping with my illness.						
		GE3	I am losing hope in the fight against my illness.						
		GF4	I have accepted my illness.						
		B8	I am bothered by a change in weight.						

Table 3. Pearson Correlation between the Subscales of the EORTC QLQ-C30 and the FACT-G

Common to Both Scales		Phase 1		Phase 2		Phase 3	
EORTC QLQ-C30	FACT-G	r	P-value	r	P-value	r	P-value
Physical Functioning (5 items)	Physical Well-Being (7 items)	0.54	<0.001	0.51	<0.001	0.60	<0.001
Role Functioning (2 items)	Functional Well-Being (7 items)	0.19	0.12	0.39	<0.001	0.37	<0.001
Emotional Functioning (4 items)	Emotional Well-Being (6 items)	0.65	<0.001	0.64	<0.001	0.49	<0.001
Social Functioning (2 items)	Social/Family Well-Being (7 items)	0.06	0.51	-0.01	0.16	-0.12	0.24

Table 4. Mean, Standard Deviation (SD), and Range of the Administrations for the Two Questionnaires (minutes)

	Phase 1			Phase 2			Phase 3		
	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range
EORTC (53 items)	16.3	3.02	15	13.0	2.65	10	13.4	2.42	10
FACT (37 items)	14.4	2.37	10	11.9	2.34	10	12.0	2.32	10
Total (90 items)	30.8	4.85	25	24.8	4.28	20	25.0	4.04	15

additional subscales of the FACT-B consisted of B1-9 and P2. The phrasing of the items of the two questionnaires was different, as the EORTC QLQ-C30/BR23 uses questions, and the FACT-B uses statements. The inverse questions were transformed into the same directions before being reported; such as, question 11 of the QLQ-C30 'Have you had trouble sleeping?', and question GF5 of the FACT 'I am sleeping well'. Some questions were matched more than once, but some questions were not matched to any item of the other questionnaire. Most of the paired items were significantly correlated, which thirty pairs were consistently significantly correlated for all three phases. Eight pairs had the significant relation at two points in time, and six pairs had the significant correlations at only one time. Some generic core questions were matched with the breast subscales such as question 8 of the QLQ-C30 'Were you short of breath?', and question B1 of the FACT-B 'I have been short of breath'; question 36 of the QLQ-BR23 'Did you feel ill or unwell?', and question GP6 of the FACT-G 'I feel ill'.

The correlations between the subscales of EORTC QLQ-C30 and FACT-G

The common scales to both instruments were analysed, including four subscales of functional scales of the EORTC, and four scales of the FACT-B. All the FACT-G scores were converted to a common range of 0 to 100, as for the EORTC scores. The results listed in table 3 show that there were significantly correlated results between physical functioning of the EORTC and physical well-being of the FACT consistently during the three phases. In a similar vein, the emotional functioning of the EORTC and emotional well-being of the FACT were significantly correlated for the three phases. There were significant correlations between role functioning of the EORTC and functional well-being of the FACT for phases 2 and 3. There was no significant correlation between social functioning of the EORTC and social/family well-being of the FACT.

Comparison of measuring quality of life in Thai women with breast cancer between the EORTC and the FACT questionnaires

It was found that the participants administered the 53 questions of the EORTC QLQ-C30/-BR23 for phases 1, 2 and 3, averaged 16.33 (SD 3.02), 12.97 (SD 2.65) and 13.41 (SD 2.42) minutes respectively. The average times for answering the 37 questions of the FACT-B were 14.43 (SD 2.37), 11.94 (SD 2.34) and 12.01 (SD 2.32) minutes respectively. The participants spent time on the text for the FACT less than for the EORTC (see Table 4).

Discussion

The overall of EORTC QLQ-C30 questionnaire was high reliability, with one exception; the reliability coefficients were low for cognitive functioning in phase 1. This finding was similar to the studies in English-speaking countries and Europe, in which α coefficients for cognitive functioning were lower than the other scales (Aaronson et al., 1993; Kemmler et al., 1999; Carlsson et al., 2001). However, the reliabilities of cognitive functioning were acceptable in phases 2 and 3. In a similar vein, Aaronson et al. [11] studied a quality of life instrument for use in international clinical trials in oncology, and found that Cronbach's α coefficients of cognitive functioning were 0.54 before treatment and 0.73 during treatment. There was fairly low internal consistency of social functioning in phases 1 and 2, and the lowest was in phase 3. These results were contrary to the findings of some previous studies, which stated that Cronbach's α coefficients of social functioning met 0.70 criteria (Aaronson et al., 1993; Kemmler et al., 1999; Carlsson et al., 2001). For QLQ-BR 23, the coefficients for sexual functioning were very high in all phases, which were similar to the studies of Iranian women with breast cancer (Montazeri et al., 2000), and in Dutch, Spanish and American breast cancer patients (Sprangers et al., 1996).

For the FACT questionnaire, the majority of scales met the 0.70 criterion for internal consistency reliability, except breast additional subscales in the three phases, which were 0.48, 0.67, and 0.26, and the emotional well-being scale, which was 0.46 in phase 3. The breast additional subscales had very low coefficients. It has been suggested that this scale is only complementary to the FACT-G, and it is never used individually (Brady et al., 1997). When combined with other scales, the coefficients

were high. Noticeably, the coefficients were very low only in phase 3; thus, the FACT-B questionnaire seemed to be good at the beginning, and during treatment, but was of no use for the purposes of measurement at the end of treatment.

It appears that both the EORTC and the FACT questionnaires used in the current study were reliable for testing Thai women with breast cancer in general. The EORTC QLQ-C30 and the FACT-G were found to measure consistently all three phases, for which the coefficients were higher than 0.80. For EORTC QLQ-BR23, the internal consistency was fairly weak in phase 3; however, it was considered to be reliable to test before and during adjuvant therapies. Similar to the FACT, the coefficients of breast additional subscales did not meet 0.70 for all three phases, and it had very weak reliability in phase 3. However, when additional subscales were combined with FACT-G, the coefficients were higher than 0.80 for all three phases. Subsequently, to measure quality of life in Thai women with breast cancer, the instruments should consist of both general quality of life items, and specific breast cancer items. There were a few items on both questionnaires where correlation values were below 0.30; however, these items are theoretically important for measuring quality of life in women with breast cancer during treatment, although some items were not statistically significant to reliability and validity.

The results from this correlational analysis demonstrate that there was a considerably good fit between the EORTC and the FACT questionnaires for the subscales that had similar meaning. The social functioning of the EORTC QLQ-C30 did not correlate to the social/family well-being of the FACT-G. The two questions of EORTC social functioning both addressed the social role implications of physical conditions. In contrast, the social/family well-being subscale of the FACT-G consisted of 7 questions focused on social support and emotional closeness. Moreover, each pair of the comparisons consisted of the difference not only in the number of items, but also the meaning of some items. The physical functioning of the EORTC consisted of 5 items, however only question 4 (stay in bed or chair) matched question GP7 (spend time in bed) of physical well-being in the FACT.

The items of the EORTC QLQ-C30 seemed to concentrate largely on the physical domain, even in social functioning (questions 26, 27) and role functioning (questions 6, 7). The FACT-G functioning well-being, on the other hand, was much broader in scope and covered both activity (work) and rest (sleep), as well as life enjoyment, aspects which did not need to be related to physical functioning. There were seven questions about the digestive system in the EORTC, compared to one in the FACT (question GP2: 'I have nausea').

For additional questions for particular to breast cancer, both the EORTC QLQ-BR23 and the FACT-B had additional concerns that consisted of items covering body image, sexual domain, side effects of treatment, and arm symptoms. However, the FACT seemed to lack concentration on systemic therapy side effects, as did the EORTC such as breast symptoms, dry mouth, hot flushes, and headache.

According to the numbers of questions, the EORTC questionnaire had more details than the FACT questionnaire. For physical functioning, questions 2 (trouble long walk), 3 (trouble short walk), and 5 (need help with eating, dressing) were not in the FACT. There was one question about financial circumstances in the EORTC, but this was not in the FACT. The FACT had one question regarding the sexual domain, GS7 'I am satisfied with my sex life', while there were three questions in the EORTC. For the breast-specific domain, there was only one question in the FACT which asked about swollen arms, however, seven questions of QLQ-BR23 asked about arm and breast symptoms.

In conclusion, the quantitative instruments of both the EORTC and the FACT questionnaires used to study quality of life in Thai women with breast cancer displayed strong reliability. The FACT-G seemed to be the instrument with the more desirable properties for measuring quality of life in general, because it consists of a somewhat broader coverage of the various dimensions considered important for a person's quality of life: physical, social/family, emotional, and functional well-being. To measure quality of life of breast cancer patients, the FACT-G should be complemented with breast-specific additional concerns, which a whole questionnaire is called FACT-B. However, particularly for a study on breast cancer during adjuvant treatment, the EORTC QLQ-C30/-BR23 questionnaire could be strongly focussed on physical functioning and clinical symptoms more than the FACT-B is. The results from this study demonstrate that the best fit for measuring the quality of life in Thai women with breast cancer during adjuvant treatment should be the EORTC QLQ-C30/-BR23.

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