Symptom Clusters and Functional Status of Women with Breast Cancer

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Abstract: This study aimed to explore symptom clusters across two symptom dimensions and their influences on functional status of women with breast cancer. Sample consisted of 320 Thai women diagnosed with breast cancer undergoing chemotherapy. They were purposively selected and evaluated for their symptom experiences and functional status. Factor analysis and multiple regression were used to examine symptom clusters and their significant effects on the functional status of the women.

Symptom clusters existed across the two symptom dimensions. Symptom clusters of symptom severity and those of symptom distress were not identical. Four symptom clusters existed in the dimension of symptom severity, with 50.1% variance explained in all the symptoms. The clusters were emotions related symptoms, GI and fatigue related symptoms, image related cutaneous symptoms, and pain related discomfort symptoms. The clusters significantly explained 19.8% of the variance in the functional status ($p<0.05$). Three symptom clusters were identified in the dimension of symptom distress, with 50.7% variance in all the symptoms. They were the clusters of emotions and pain related discomfort symptoms, GI and fatigue related symptoms, and image related cutaneous symptoms. The clusters significantly explained about 17.4% of variance in the functional status ($p<0.05$). GI and fatigue related symptom cluster was the strongest predictor cluster affecting the functional status in both dimensions of symptom severity and symptom distress.

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Background and significance

Breast cancer is reported as the most common cancer globally, as well as being the leading cause of cancer deaths in Thai women. Several studies addressed that women with breast cancer undergone chemotherapy experienced multiple symptoms rather than a single symptom.[1-4] About 13 of 28 symptoms were reported in more than 50 percent of the women during undergoing chemotherapy.[5]

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In addition, some symptoms were found as having association with each other. The examples of symptoms are such as the group of fatigue, nausea/vomiting, and depression,[6,7] pain and fatigue,[8] pain and depression[9] etc. Therefore, managing only a single symptom might not be sufficient and multiple symptoms having association to each other should be focused in particular.

The concept of symptom clusters has been proposed in oncology nursing research as a new frontier for symptom management.[10,11] Symptom clusters refer to "three or more concurrent symptoms that are related to each other and the clusters might have synergistic effects, multiplicative effects rather than additive effects, on individual outcomes.[12] Evidently, symptom clusters were found having synergistic effects on the functional status in oncology patients in general[12-14] and acted as a predictor of patient morbidity in patients with lung cancer.[15] However, the evidence of symptom clusters and their influences on individual outcomes in women with breast cancer undergoing chemotherapy are not many and the studies have been recently undertaken.[16-18] Symptom clusters in Thai women with breast cancer are also little known.

The impact of symptom experiences on individual outcomes has become a nursing concern. Previous studies show that either single or multiple symptoms can alter daily functions and quality of life of women with breast cancer.[9,17, 19-20] The common symptoms reported having an impact on individual outcomes are pain[22] nausea/vomiting,[20] and fatigue.[9,19,22-23] Knowing the symptoms or clusters that are clinically relevant might help in managing multiple symptoms more effectively.

However, there are some issues in measuring symptom clusters. For example, both symptom severity and symptom distress are commonly used to investigate symptom experiences of oncology patients. It is unclear whether symptom clusters and their consequences on individual outcomes exist differently across the two symptom dimensions. Investigating symptom clusters across cultural studies and across symptom dimensions are beneficial for future research on symptom management. Therefore, this study aimed to investigate the existence of symptom clusters and their consequences in women with breast cancer undergoing chemotherapy across the two symptom dimensions; severity and distress.

Conceptual framework and related literature

The Symptom Management Model (SMM), formulated and revised by a group of nurse scientists at the University of California, San Francisco, was used to guide this study.[24] The SMM acknowledges three interrelated components: (1) symptom experience, (2) symptom management strategies, and (3) symptom outcomes.[24-25] Symptom experience is defined as the interplay of an individual's perception of the symptoms or the evaluation to the meaning of the symptoms and the response to the symptoms. The evaluation of a symptom occurs when an individual characterizes the symptom including intensity, location, temporal nature, frequency, and the associated pattern of disability.[24-25] Human responses to the symptoms occur after the human perceived and evaluated symptoms. Symptom management refers to the actions taken by individuals, informal caregivers, and/or formal caregivers to alleviate the symptoms and avert or delay negative outcomes. Symptom outcomes are consequences of symptom experiences and symptom management strategies. This study focused on symptom experiences and symptom outcomes.

The term symptom clusters are addressed differently from the term "syndrome" which includes signs, symptoms, and other characteristics specified a particular disease of illness.[26] The possible reasons behind the clustering of symptoms addressed are

shared etiology, symptom interactions, and symptoms stimulation of other symptoms.[20,26-28] However, research on symptom clusters is developmental and the consensus on its conceptual definition of symptom clusters is too early. The definition of symptom clusters may require refinement and more evidence to support the proposed definition.[29]

Studies of adults with cancer indicate that multiple symptoms occurring concurrently are commonly reported during breast cancer treatment. For example, women with early stage breast cancer receiving chemotherapy reported numerous side effects.[5] However, symptoms perceived as distress can vary from study to study. In the pilot study of Berger and Higginbotham,[9] pain, bowel discomfort and a lack of concentration were reported as the most distressing symptoms by 14 women with breast cancer receiving chemotherapy in the study. The study in Thai women of Leksawas, et al.[30] found that the level of symptom distress in the women undergoing breast cancer treatment was only mild. Nausea and vomiting was perceived as the most distressful symptom.

Studies focusing on symptom clusters in women with breast cancer undergoing chemotherapy is just beginning. Two studies conducted in Thai women identified similar interrelationship among the cluster of selected symptoms of fatigue, nausea/vomiting and insomnia during chemotherapy.[6-7] Congruently, the western study of Gaston-Johanson, et al.[25] reported an association between fatigue, pain, and depression. However, other symptoms might have correlation with these groups of symptoms if they are investigated. Additional research on the relationship of multiple symptoms occurring concurrently is needed to determine if there are patterns and structures of clustering of symptoms.

There are three reports investigating symptom clusters of women with breast cancer undergoing chemotherapy in particular. Using cluster analysis, Bender and her team[16] reported a common cluster including fatigue, a lack of energy, decreased physical strength/weakness, feeling depressed or blue, feeling anxious or nervous, and loss of concentration. As noted by Miaskowski and her team,[29] cluster analysis is beneficial to classify similar groups or clusters of participants who shared similar patterns of symptoms or variables. However, symptom grouping using this analytic method might not help to understand the interrelationship among the symptoms and their synergistic effects on individual outcomes.[10]

With different method of analysis from Bender, et al[16], Dodd and her team[17] used factor analysis to examine symptom clusters in women with breast cancer undergoing the second cycle of chemotherapy. The authors identified four clusters of symptoms which were sensational component, gastrointestinal-related component, cognitive and respiratory component, and pain and fatigue component. Kim[18] also reported two clusters of symptoms which were psycho-neurological symptom cluster and gastrointestinal symptom cluster in the similar group of patients. However, the two studies used only a single symptom dimension of symptom severity to investigate symptom experiences of the women in their studies. If symptom experiences are multidimensional, symptom clusters of symptom experiences might be multidimensional. Further investigation in this area is useful.

Symptom outcomes are addressed as consequence of symptom experiences.[25] This study focused specifically on the outcome of functional status which refers to individuals' actual performance of activities and tasks associated with their current life roles.[31] Previous studies showed that the numbers of symptom perceived distress were negatively related to cognitive activities in women newly diagnosed with breast cancer[32] and had negative relationship with quality of life of the women

receiving chemotherapy.[21,30] However, the correlation among those multiple symptoms are unclear and the consequences of these symptoms to individual outcomes are little known.

Symptoms were reported having negative and significant relationship with functional status of oncology patients in general in terms of both multiple symptoms and clustering of symptoms.[15,33-35] However, there is a lack of information on the key predictors influencing the functional status of the women. Examining key symptoms influencing on the functional status of women with breast cancer might help in identifying symptoms and clusters relevant to clinical practice.

The literature review revealed some unclear issues on underlying symptom dimensions of symptom clusters and insufficient information on the key symptoms and clusters influencing on functional status of the women with breast cancer undergoing chemotherapy. This study therefore aimed to explore different dimensions of symptom clusters in a specific group of women with breast cancer using symptom severity and symptom distress. Predictor clusters influencing the functional status of such women were also examined.

Methods

Design and sample

A cross-sectional descriptive design was used to examine symptom clusters and their influence on the functional status of 320 women with breast cancer undergoing chemotherapy who were purposively selected from the outpatient cancer clinics of four tertiary hospitals in Bangkok. Women were eligible if they were: 1) Thai women who were at least 18 years old, 2) diagnosed with breast cancer and receiving chemotherapy for breast cancer treatment, and 3) able to read and speak Thai. Participants were excluded from the study with the criteria of 1) having brain metastasis, and 2) having deteriorated physical functioning or illness and being unable to answer the questionnaires or being interviewed.

Instruments

Demographic data of participants were recorded. Details included questions about personal data and medical history.

Symptom experiences The tool used to assess symptom experiences in this study was the Memorial Symptoms Assessment Scale (MSAS). The MSAS was a multidimensional symptom assessment instrument developed by Portenoy et al.[34] The instrument captured symptom severity and distress of 32 symptoms. Symptom severity was rated using 4-point rating scale ranging from 1 (mild) to 4 (very severe). Symptom distress was rated using 5-point scale ranging from 0 (not at all) to 4 (very much). Reliability analysis for the back translated MSAS was reported with internal consistency of 0.96. The Pearson Correlation for one-day test-retest were significant with moderate relationship ranging from .82 to .88 ($p<0.05$) for their subscales.

Functional status Functional status of the women in this study was measured using the Inventory Functional Status-Cancer (IFS-CA) developed by Tulman, Fawcett, and McEvoy.[35] The IFS-CA is a 39-item questionnaire. It consists of four subscales of household and family, social and community, personal care, and occupational functions, with a 4-point rating scale ranging from 1 (not at all) to 4 (fully) for household, family, social, and community activities; and 1 (never) to 4 (all of the time) for personal care and occupational activities. Reliability analysis for the back translated IFS-CA in this study was reported with internal consistency of 0.89. Pearsons' r coefficients for one-day test-retest were equal to 0.46 ($p<0.05$) which were significant with mild to moderate relationship.

Data collection and analysis

After receiving approval from the institutional review board of the four hospitals, all the objectives and research plan were explained to the head nurses of the oncology clinics of each hospital. All participants who met the inclusion criteria were approached and informed about the study before the consent was obtained. Demographic data were obtained from both the participants and their outpatient medical records. Participants were asked to complete the MSAS and the IFS-CA after receiving chemotherapy for seven days and sent back to the investigators by postal mailing or returning to the researcher at the oncology clinic depending on their convenience.

Data analyses were done using factor analysis and multiple regressions. Assumptions for both analytic methods were made. Factor analysis was used to extract factors using Eigen value of 1.2 with Varimax rotation. Multiple regression was used to establish relative and predictive values between symptom clusters and the functional status of the women. Both symptom dimensions used similar analytic processes using The SPSS statistical program version 12.0.

Results

Participant Characteristics

A total of 320 women with breast cancer undergoing chemotherapy were ranged in age from 17 to 68 years, with a mean of 47.3 years (SD= 8.8). Time since diagnosis ranged from 1 to 168 months, with a mean of 13.3 months (SD=24.6). Almost 80 percent of the women had breast cancer stage II or over. About 60% of the participants were undergoing the combined regimen of Cyclophosphamide, Metrotrexate and either Adriamycin or 5-FU. Approximately, 37.9% had at least one co-morbid condition. Other clinical characteristics are summarized in **Table 1**.

Table 1 Clinical characteristics of participants

Variables		N	%
Diagnosis of breast cancer	Newly diagnosed	235	73.4
	Recurrent	85	26.6
Disease stages	Stage 1	26	8.1
	Stage 2	165	51.6
	Stage 3	88	27.5
	Stage 4	41	12.8
Previous surgery	None	44	13.8
	Lumpectomy	7	2.2
	Quandrantectomy	3	0.9
	Wide local excision	20	6.3
	Simple mastectomy	18	5.6
	Modified radical mastectomy	228	71.3
Chemotherapy regimen currently received	CAF	128	40.0
	AC	52	16.3
	CMF oral regimen	44	13.8
	Taxol low dose	28	8.8
	Taxol High dose	23	7.2
	CEF	18	5.6
	CMF classic regimen	16	5.0
	Taxotere	7	2.2
	Taxotere + AC	4	1.3

CMF = Cyclophosphamide, Metrotrexate, 5 FU AC = Adriamycin, Cyclophosphamide
CEF = Cyclophosphamide, Epirubicin, 5 FU

Symptom experiences

The result showed that the women with breast cancer reported 2 to 32 symptoms, with a mean of 17.4 symptoms (SD=7.2). Most participants reported experiencing various symptoms only occasionally. The mean symptom frequency scores ranged from 1.49-2.54 on scale of 1-4. The overall score of symptom severity was relatively mild to moderate level. The mean level of symptom severity scores ranged from 1.32-2.66 scale of 1-4. The women felt distressful to their symptoms in mild level. The mean level of symptom distress scores ranged from 0.50-1.83 on scale of 0-4.

Symptom clusters

Seven symptoms were excluded from the analysis according to their deviated distributions either skewness or kurtosis and very low prevalence. The symptoms were cough, problems with urination, diarrhea, sexual problems, itching, weight loss and swelling of arms and/or legs. A total of 25 symptoms were analyzed for factor structures of both symptom severity and symptom distress.

Symptom clusters by severity

Four factors of symptom severity were extracted, accounted for 50.1% of variance explained in all the symptoms. The clusters were emotion related symptoms (15.4%), GI and fatigue related symptoms (15.2%), image related cutaneous symptoms (9.9%) and pain related discomfort symptoms (9.7%) respectively. Cronbach's alpha coefficient demonstrated medium to high internal reliability in the clusters, with a coefficient ranging from 0.59 to 0.83. (See **Table** 2)

Table 2 A summary of symptom clusters by severity

Factor	Name	Symptoms	Factor loading	Alpha Cronbach (r2)	Total Variance (%)
1	Emotions related symptoms (9 symptoms)	Feeling sad	0.801	0.659	
		Worrying	0.710	0.694	
		Feeling irritable	0.642	0.611	
		Feeling nervous	0.617	0.662	
		I don't look like myself	0.582	0.485	
		Difficulty concentrating	0.494	0.444	
		Sleeping difficulty	0.435	0.511	
		Sweating	0.400	0.408	
		Constipation	0.400	0.424	
				0.83	**15.4**
2	GI and fatigue related symptoms (8 symptoms)	Vomiting	0.719	0.555	
		Lack of energy	.663	0.650	
		Lack of appetite	0.562	0.535	
		Dizziness	0.559	0.519	
		Feeling drowsy	0.503	0.470	
		Shortness of breath	0.465	0.515	
		Feeling bloated	0.427	0.531	
				0.83	**15.2**

Factor	Name	Symptoms	Factor loading	Alpha Cronbach (r2)	Total Variance (%)
3	Image related cutaneous symptoms (5 symptoms)	Hair loss	0.699	0.433	
		Changes in food taste	0.630	0.540	
		Mouth sore	0.597	0.492	
		Skin change	0.541	0.412	
		Difficulty swallowing	0.516	0.510	
				0.71	**9.9**
4	Pain related discomfort symptoms (3 symptoms)	Numbness/tingling	0.720	0.379	
		Pain	0.672	0.462	
		Dry mouth	0.600	0.361	
				0.59	**9.7**
Total		**25 symptoms**		**0.90**	**50.1**

Symptom clusters by distress

Three symptom clusters were identified in the dimension of symptom distress, with 50.7% variance in all symptoms. The clusters were emotions and pain related discomfort symptoms, GI and fatigue related symptoms, and image related cutaneous symptoms. The cluster accounted for the greatest proportion of variance in all symptoms was emotions and pain related discomfort symptoms (19.2%), followed by GI and fatigue related symptoms (17.9%), image related cutaneous symptoms (13.6%). Cronbach's alpha coefficient demonstrated high internal reliability within the clusters, with a coefficient ranging from 0.81 to 0.88 (see **Table** 3).

Table 3 A summary of symptom clusters by distress (N=318)

Factor	Name	Symptoms Within cluster	Factor loading	Alpha Cronbach (r2)	Total Variance (%)
1	Emotions and pain related discomfort symptoms (11 symptoms)	Feeling nervous	0.670	0.708	
		Difficulty concentrating	0.641	0.576	
		Worrying	0.634	0.684	
		Feeling sad	0.627	0.630	
		Numbness/tingling	0.594	0.431	
		Feeling irritable	0.553	0.655	
		Sleeping difficulty	0.547	0.567	
		Shortness of breath	0.514	0.612	
		Feeling bloated	0.495	0.612	
		Sweating	0.460	0.482	
		Pain	0.446	0.444	
				0.88	**19.2**

Factor	Name	Symptoms Within cluster	Factor loading	Alpha Cronbach (r^2)	Total Variance (%)
2	GI symptoms (6 symptoms)	Nausea	0.793	0.713	
		Vomiting	0.742	0.588	
		Lack of appetite	0.705	0.645	
		Lack of energy	0.625	0.712	
		Dizziness	0.598	0.620	
		Feeling drowsy	0.526	0.565	
				0.85	**17.9**
3	Image related cutaneous symptoms (8 symptoms)	Mouth sore	0.658	0.566	
		Hair loss	0.647	0.503	
		Skin change	0.614	0.530	
		Changes in food taste	0.585	0.571	
		Difficulty swallowing	0.545	0.613	
		I don't look like myself	0.536	0.562	
		Constipation	0.446	0.451	
		Dry mouth	0.417	0.527	
				0.81	**13.6**
Total		**25 symptoms**		**0.93**	**50.7**

Symptom clusters and functional status

Most participants reported their limited functional activities after receiving chemotherapy within a week. The scores were ranged from 1.34-3.55 on scale of 1-4. The mean of total functional scores was 2.465 (SD=0.52). Confounding factors that might have influences on functional scores were investigated. Pearson r correlation coefficients and Eta statistics were found to show no statistical significance in relation to effects of age, years at school, income, time after diagnosis, number of caregivers, total numbers of co-morbid conditions and stage of illness at diagnosis on functional scores.

With stepwise analysis, four clusters of symptom severity (GI and fatigue related symptoms, pain related discomfort symptoms, and emotions related symptoms) have significantly negative relationship with functional status ($p<0.05$). They all together explained 19.8% of the variance in the functional status (see **Table 4**).

Table 4 Model of Symptom Clusters of Symptom Severity Affecting Functional Status (N=301)

Clusters	Model				
	B	Std. Error	Beta	t	Sig.
(Constant)	2.469	.027		92.312	.000
Emotions related symptoms	-.111	.027	-.216	-4.153	.000
GI and fatigue related symptoms	-.152	.027	-.295	-5.674	.000
Image related cutaneous changes	-.058	.027	-.113	-2.176	.030
Pain related discomfort symptoms	-.117	.027	-.226	-4.352	.000
R^2	.198				
Adjust R^2	.186				
F change	18.28				
P	.000				

Three clusters of symptom distress were also found having significant influence on the functional status of the women in this study, accounted for 17.4% variance of the functional status ($p<0.05$) (see **Table 5**). GI and fatigue related symptoms were the significant symptom cluster explaining the greatest proportion of the variance in the functional status in both dimensions of symptom severity and symptom distress.

Table 5 Models of Symptom Clusters of Symptom Distress on Affecting Functional Status (N=319)

Clusters	B	Std. Error	Beta	t	Sig.
(Constant)	2.469	.026		93.863	.000
GI and fatigue related symptoms	-.150	.026	-.290	-5.675	.000
Emotions and pain related discomfort symptoms	-.139	.026	-.269	-5.260	.000
Image related cutaneous changes	-.069	.026	-.134	-2.620	.009
R^2	.174				
Adjust R^2	.167				
F change	6.867				
P	0.009				

Discussion

This study aimed to investigate symptom clusters and their influence on the functional status of women with breast cancer undergoing chemotherapy across two symptom dimensions of symptom severity and symptom distress.

The findings from this study supported previous studies that symptom clusters existed in this group of women across cultural studies.[16-18] However, the structures of symptom clustering are various even in homogenous sample. The different existence might be from the mismatch between the sample's conditions and the methodology used in each study. The samples in all three studies were receiving no specific chemotherapy treatment regimens and different time points which the adverse effects could be various. Uses of different assessment tools to evaluate symptoms may also results in different construction of symptom clusters.[13]

Important information revealed in this study was that symptom clusters were not identical across symptom dimensions. Symptom clusters by symptom distress is little known. Only the study of Sarna and Bretcht[36] that examined symptom clusters in women with advanced lung cancer using symptom distress scores. The different existence of symptom clusters between symptom severity and symptom distress might be discussed with their conceptual differences described in the SMM[25] and the operationalized concept of symptom distress by Goodle and Nail.[37]

Symptom clusters might be meaningless if they have no influence on individual outcomes. The results of this study supported the proposed statement that symptom clusters might affect on individual outcomes.[12,17,29] However, small effects were found when the factor scores of four clusters of symptom severity all together explained only about 19.8% of the variance in the functional status. Similar to the clusters of symptom severity, a small effect of symptom distress on the functional status was identified and accounted for only 17.4% of the variance in the functional status. These small effects might be discussed with several reasons. For example, the current study found that most

women experienced symptom severity and distress only in mild to moderate levels and their functional activities were not too much limited.

Noticeably, the results of this study revealed that emotional symptoms were explained the greatest variance in all symptoms across two symptom dimensions. However, the cluster is not a significant predictor explaining the largest variance to the functional status of the women with breast cancer in this study. Therefore, symptom clusters explaining the greatest variance in all symptoms might not be necessary to be the significant symptom cluster influencing the functional status of the women.

In addition, symptom clusters revealed in this study are more likely treatment-related symptom clusters, particularly GI and fatigue related symptoms. GI symptoms (such as nausea, vomiting, lack of appetite) and fatigue related symptoms were reported as common adverse effects of the standard chemotherapy regimen using the combination of cyclophosphamide, metrotexate, 5-FU, and doxorubicin[5,38-39] Congruently, GI and fatigue are identified as clusters in breast cancer patients undergoing chemotherapy in the study of Dodd, et al [17] and Kim.[18]

It was thought that the cluster of emotions related symptoms might not relate to chemotherapy treatment alone. Unfortunately, several oncology studies focused mainly only on physical symptoms when investigating symptom clusters of multiple symptoms. Psychological symptom clusters were reported in a few studies of non-specific groups of cancer.[13,34]

Conceptually, functional status are commonly related to the capacity to perform activities and their actual activities the individuals perform.[40] The cluster of GI and fatigue related symptoms was found to be the significant predictor across two symptom dimensions in this study. Possible explanation to this result is that the symptoms in the GI and fatigue related cluster are directly related to energy resources and abilities to perform actual physical activities of the women.

Some limitations was found when the test-retest reliability for the IFS-CA was considerately low (r=.374 to .486). This might be explained with the complexity of how to determine functional status of individuals. For example, the instrument was developed to focus only on the activities that the women performed before having illness and the levels of the activities during undergoing chemotherapy. Not all IFS-CA items were engaged in by all women. The mean score was then was calculated based on the number of relevant items. Therefore, if the activities of the test-retest are mismatched, they were excluded when calculated. This could affect the mean score of the functional level and might produce low level of relationship between test and retest.

Conclusions and recommendations

The findings suggested that the women with breast cancer experienced both multiple symptoms concurrently occurred and multiple symptom dimensions. In addition, several symptoms were interrelated and aggregated in three or four major groups. The possible etiologies of symptom clustering were more likely related to the adverse effects of treatment. Also symptom clusters and their consequences exist differently across two symptom dimensions of symptom severity and symptom distress.

Recommendations were made to both nursing practices and research. For nursing practice, assessment of symptoms commonly occurring in the women during their treatment should be initiated. GI and fatigue related symptoms should be the target symptoms being evaluated. The regular use of multidimensional and comprehensive symptom assessment tool is also suggested.

For nursing research, the investigation on the concept of symptom clusters still require both theoretical-driven and patient-driven strategies. Therefore, some other dimensions of symptom experience should be investigated in future research. They are symptom occurrences, symptom frequency and total symptom scores. Knowledge derived in these areas will help in identifying and assessing symptom clusters in cancer patients. In addition, the impacts of symptom clusters on other individual outcomes should be investigated simultaneously when investigating symptom clusters.

Another challenge is to investigate symptom cluster using patient-driven strategy. The concept of symptom clusters relies heavily on the interplay among multiple symptoms whereas clinical practices rely heavily on what multiple symptoms the oncology patients experienced in their day to day living and who will be the high risk groups. Future studies examining symptom clusters by using cluster analysis is beneficial to demonstrate clusters of participants who shared similar patterns of symptoms.

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References

1. Junda T. Living with breast cancer: Thai women's perspective. **Thai J Nurs Res.** 2004; 8(3): 208-222.
2. Leksawus N., Lawantrakul N., & Choompradit S. Distress of breast cancer patients receiving chemotherapy. **The Thai Journal of Nursing Council,** 2004; 4(3): 37-50.
3. Beisecker A., Cook MR, Ashworth J, Hayes J, Brecheisen M, Helmig L, Hyland S, Selenke D. Side effects of adjuvant chemotherapy: perceptions of node-negative breast cancer patients, **Psycho-Oncology.** 1999; 6: 5- 93.
4. Johansson K, Ingvar C, Albertsson M, Ekdahl C. Arm lymphoedema, shoulder mobility and muscle strength after breast cancer treatment-A prospective 2-year study. **Advances in Physiotherapy.** 2001; 3: 55-66.
5. Sitzia J. Huggins L. Side effects of cyclophosphamide, metrotrexate, and 5-fluouracil (CMF) chemotherapy for breast cancer. **Cancer Practice.** 1998; 6(1): 13-21.
6. Pritsanapanurungsie P, Hanucharoenkul S, Ratanatharatorn V. Patterns of fatigue, related factors, and self-care actions among breast cancer patients receiving chemotherapy. **Rama Nurs Journal.** 2001; 2: 97-100.
7. Soivong P, Hanucharurnkul S, Ratanatharatorn V. Patterns of nausea and vomiting, associated factors, and self-care among beast cancer patients receiving chemotherapy. **Ramathibodi Nursing Journal** 1996; 21(1): 5-12.
8. Gaston-Johanston F, Fall-Dickson JM, Bakos AB, Kenedy MJ. Fatigue, pain and depression in pre-autotransplant breast cancer patients. **Cancer Practice,** 1999; 7(5): 240-247.
9. Berger AM, Higginbatham P. Correlates of fatigue during and following adjuvant breast cancer chemotherapy: A pilot study. **Oncology Nursing Forum.** 2000; 27(9): 1443-1448.
10. Dodd MJ, Miaskowski C, Lee K. Occurrence of symptom clusters. **J Natl Cancer Inst Monogr.** 2004; 32: 76-78.
11. Miaskowski C, Dodd ML, Lee K. Symptom clusters: the new frontier in symptom management research. **J Natl Cancer Inst Monogr.** 2004; 32: 17- 21.
12. Dodd MJ, Miaskowski C, Paul SM. Symptom clusters and their effect on the functional status of patients with cancer. **Oncology Nursing Forum.** 2001a; 28(3): 465-470.
13. Chen M, Tseng H. Symptom clusters in cancer patients. **Support Care Cancer.** 2005; 14: 825-830.
14. Wang SX, et. al. Longitudinal study of the relationship between chemoradiation therapy for non-small-cell lung cancer and patient symptoms. **Journal of Clinical Oncology.** 2006; 24(27): 4485-4491.
15. Gift AG, Jablonski A, Stommel M, Given CW. Symptom clusters in elderly patients with lung cancer. **Oncology Nursing Forum.** 2004; 31(2): 203-210.
16. Bender C, Ergun FS, Rosenzweig MQ, Cohen SM, Sereika SM. Symptom clusters in breast cancer across 3 phases of the disease. **Cancer Nursing.** 2005; 28(3): 219-225.

17. Dodd MJ, Cho MH, Cooper B, Miaskowski C, Lee KA & Bank K. Advancing our knowledge of symptom clusters. **The Journal of Supportive Oncology.** 2005; 3(6): 30-31 (Supp. 4).
18. Kim HJ. Treatment-Related Symptom Clusters in Breast Cancer: A Secondary Analysis. **Dissertation.** 2006; University of Pennsylvania.
19. Berger AM, Walker SN. An explanatory model of fatigue in women receiving adjuvant breast cancer chemotherapy. **Nursing Research.** 2001; 50(1): 42-52.
20. Lee J, Dibble S, Pickett M, Luce J. Chemotherapy-induced nausea/vomiting and functional status in women treated for breast cancer. **Cancer Nursing.** 2005; 28 (4): 249-255.
21. Longman AL, Bradenn CJ, Mishel MH. Side-effects burden, psychological adjustment and life quality in women with breast cancer: Pattern of association over time. **Oncology Nursing Forum.** 1999; 26(5): 909-915.
22. Gaston-Johanston F, Fall-Dickson JM, Bakos AB, Kenedy MJ. Fatigue, pain and depression in pre-autotransplant breast cancer patients. **Cancer Practice.** 1999; 7(5): 240-247.
23. Irevine D, Leslie V, Jane G, Bubela N. Fatigue in women with breast cancer receiving radiation therapy. **Cancer Nursing.** 1998; 21(2): 127-135.
24. The University of California, San Francisco School of Nursing Symptom Management Faculty Group. A model for symptom management. **IMAGE: Journal of Nursing Scholarship.** 1994; 26(4): 272-276.
25. Dodd M J, et. al. Advancing the science of symptom management. **Journal of Advanced Nursing.** 2001b; 33 (5): 668-676.
26. Kim HJ, McGuire DB, Tulman L, Barsevick AM. Symptom clusters: concept analysis and clinical implications for cancer nursing. **Cancer Nursing.** 2005; 28(4): 270-282.
27. Armstrong TS, Cohen MZ, Ericksen LR, Hickey JV. Symptom clusters in oncology patients and implications for symptom research in people with primary brain tumors. **Journal of Nursing Scholarship.** 2004; 36: 197-206.
28. Cleeland CS, Bennett GJ, Dantzer R, Dougherty PM, Dunn AJ, Meyers CA, et al. Are the symptoms of cancer and cancer treatment due to a shared biologic mechanism? A cytokine-immunologic model of cancer. **Cancer.** 2003; 97(11): 2919-2925.
29. Miaskowski C, Aouizerat, BE, Dodd M, Cooper B. Conceptual issues in symptom clusters research and their implications for quality of life assessment in patients with cancer. **J Natl Cancer Inst Monogr.** 2007. 37: 39-46.
30. Leksawus N, Lawantrakul N, Choompradit S. Distress of breast cancer patients receiving chemotherapy. **The Thai Journal of Nursing Council.** 1999; 14(3): 37-50.
31. Richmond T, Tang ST, Tulman L, Fawcett J, McCorkle R. Chapter 8. Measuring function. In M. Frank-Stromborg & S. J.Olson. (Eds) 3 edition. (pp. 83-99). **Instruments for Clinical Health Care Research.** 2004; Jones and Bartlett Publishers: Sadbury.
32. Cimprich B. Pretreatment symptom distress in women newly diagnosed with breast cancer. **Cancer Nursing.** 1999; 22(3): 185-194.
33. Chen M, Tseng C. Cancer symptom clusters: A validation study. **Journal of Pain and Symptom Management.** 2007; (in press).
34. Portenoy RK, Thaler HT, Kornblith AB, Lepore J, Friedlander-Klar H, Kiyasu E, et al. The Memorial Symptom Assessment Scale: an instrument for the evaluation of symptom prevalence, characteristics, and distress. **Eur J Cancer.** 1994; 30A: 1226-36.
35. Tulman L, Fawcett J, McEvoy M. Development of the inventory of functional status-Cancer. **Cancer Nursing.** 1991; 14(5): 254-260.
36. Sarna L, Brecht ML. Dimensions of symptom distress in women with advanced lung cancer: a factor analysis. **Heart Lung.** 1998; 26: 23-30.
37. Goodle TT, Nail LM. Operationalizing symptom distress in adults with cancer: A literature synthesis. **Oncology Nursing Forum.** 2005; 32 (2): E42-E47.
38. Dibble SL, Casey K, Nussey B, Israel J, Luice J. Chemotherapy-induced vomiting in women treated for breast cancer. **Oncology Nursing Forum.** 2004;. 31 (1): E1-E8.
39. Boehmke MM. Measurement of symptom distress in women with early-stage breast cancer. **Cancer Nursing,** 2004; 27 (2): 144-152.
40. Fawcett J, Tulman L, Samarel N. Enhancing function in life transitions and serious illness. **Adv Prac Nurs Q.** 1995;1(3): 50-57.

กลุ่มอาการและความสามารถในการทำกิจกรรมของสตรีที่เป็นมะเร็งเต้านม

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บทคัดย่อ: การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษากลุ่มอาการ และอิทธิพลของกลุ่มอาการต่อความสามารถในการทำกิจกรรมของผู้ป่วยเป็นมะเร็งเต้านม กลุ่มตัวอย่างจำนวน 320 คนเป็นหญิงไทยที่ป่วยเป็นมะเร็งเต้านมและอยู่ในระหว่างการรักษาด้วยยาเคมีบำบัด คัดเลือกโดยการสุ่มแบบเจาะจง วิเคราะห์ข้อมูลโดยใช้สถิติการวิเคราะห์ปัจจัย และการวิเคราะห์ความถดถอยเชิงพหุ

ผลการวิเคราะห์พบว่ากลุ่มอาการของความรุนแรงและกลุ่มอาการของความทุกข์ทรมานมีความแตกต่างกัน ในการวิเคราะห์จัดกลุ่ม สามารถจำแนกกลุ่มอาการด้านความรุนแรงออกเป็น 4 กลุ่ม อธิบายความแปรปรวนของอาการทั้งหมดได้ร้อยละ 50.1 คือกลุ่มอาการทางอารมณ์ กลุ่มอาการด้านทางเดินอาหารและอาการอ่อนล้า กลุ่มอาการด้านภาพลักษณ์และการเปลี่ยนแปลงผิวหนัง และกลุ่มอาการด้านความเจ็บปวดและความไม่สุขสบาย ทั้ง 4 กลุ่มอาการมีอิทธิพลอย่างมีนัยสำคัญทางสถิติ ($p<0.05$) คิดเป็นร้อยละ 19.8 ของความแปรปรวนทั้งหมดของความสามารถในการทำกิจกรรม กลุ่มอาการด้านความทุกข์ทรมานจำแนกออกเป็น 3 กลุ่ม อธิบายความแปรปรวนของอาการทั้งหมดได้ร้อยละ 50.7 คือกลุ่มอาการด้านอารมณ์และความเจ็บปวด กลุ่มอาการด้านทางเดินอาหารและอาการอ่อนล้า กลุ่มอาการด้านภาพลักษณ์และการเปลี่ยนแปลงผิวหนัง ทั้ง 3 กลุ่มอาการมีอิทธิพลอย่างมีนัยสำคัญทางสถิติ ($p<0.05$) คิดเป็นร้อยละ 17.4 ของความแปรปรวนทั้งหมดของความสามารถในการทำกิจกรรม กลุ่มอาการทางเดินอาหารและอาการอ่อนล้า เป็นกลุ่มอาการที่มีอิทธิพลต่อความสามารถในการทำกิจกรรมมากที่สุดทั้งในด้านความรุนแรงของอาการและความทุกข์ทรมานจากอาการ

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