

Factors affecting hope in a sample of fatigued breast cancer outpatients

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ABSTRACT

Objective: The aims of this study of women with breast cancer were: to describe the levels of hope and compare hope scores for these patients with a sample from the general Norwegian population; to describe the relationship between hope and fatigue; and finally to evaluate the effect of demographic and clinical characteristics and fatigue on hope.

Method: A total of 160 Norwegian outpatients with cancer and fatigue (>2.5 on a 0–10 scale) completed the Herth Hope Index (HHI), Fatigue Questionnaire (FQ), and Self-administered Comorbidity Questionnaire (SCQ).

Results: The mean age of the women was 55.3 years ($SD = 9.4$), 81% lived with someone, and 67% were employed. The most common comorbidities were back pain (42%), osteoarthritis (26%), and headache (19%). The fatigued breast cancer patients reported significantly higher total hope scores than the general Norwegian population ($p < .0001$). The difference was largest in the individual item “I can see a light in the tunnel,” to which the cancer sample reported the highest scores, but they also felt more “scared about the future.” Total hope score was negatively correlated with total fatigue (TF), mental fatigue (MF), and chronic fatigue (CF), but not with physical fatigue (PF). Demographic and clinical characteristics were not significantly related to hope, except that patients who were married or living with someone showed significantly higher total hope scores.

Significance of results: The higher levels of hope in breast cancer patients compared with the general Norwegian population may reflect a response shift in patients after getting a cancer diagnosis. The fact that a significant relationship was found between total hope scores and living arrangements may indicate that hope is easier to establish when patients have someone to relate to or receive support from. Hope and total fatigue were significantly, but weakly correlated.

KEYWORDS: Hope, HHI, Fatigued breast cancer patients

INTRODUCTION

Breast cancer is the most common cancer diagnosis in women from developed countries (Jemal et al., 2008) and is therefore a major health problem. Earlier research has revealed that some patients with

breast cancer adjust relatively well to the disease and its treatment, whereas others do not (Lee, 2001). For patients who do not adjust well, an important role for healthcare professionals is to promote better psychosocial adjustment to the disease and to treatments. Psychosocial adjustment to breast cancer fluctuates with the course of the disease and with treatments (Hoskins et al., 1996).

The level of hope in cancer patients has been measured in several studies (Herth, 2000; Ebright

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& Lyon, 2002; Chen, 2003; Hsu et al., 2003; Lai et al., 2003; Lin et al., 2003a, 2003b; Sanatani et al., 2008; Utne et al., 2008), and hope has been identified as an essential element in cancer patients' life (Nowotny, 1989; Rustoen & Hanestad, 1998; Rustoen et al., 1998; Felder, 2004). Hope is considered an effective coping strategy for cancer patients because it provides adaptive power to help patients get through difficult situations, achieve meaning, and achieve desired goals (Herth, 2000; Benzein et al., 2001; Ebright & Lyon, 2002; Reb, 2007). Several studies have focused on the significance of hope from the patients' perspective, for example, as a way of coping with terminal illness by acknowledging, accepting, and managing to fight the disease and the side effects of treatment (Ersek, 1992; Fryback, 1993). Hope has also been interpreted as an inner strength and an available resource for living in the present (Koopmeiners et al., 1997).

Fatigue is the most frequently reported side effect of cancer treatment, with a prevalence ranging from 25% to 99% at different times in treatment regimens and across different diagnostic groups (Donnelly et al., 1995; Servaes et al., 2002; Wratten et al., 2004; Von Ah et al., 2008). Fatigue has been identified as the most problematic side effect in women with breast cancer receiving adjuvant chemotherapy or radiation therapy (Irvine et al., 1994; Longman et al., 1999; Jacobsen et al., 1999; Hickok et al., 2005). Fatigue can persist for years after completion of treatment, disrupting daily functioning and negatively affecting quality of life (Andrykowski et al., 1998; Broeckel et al., 1998; Smets et al., 1998; Miaskowski & Lee, 1999).

Several studies have shown that fatigue is associated with symptoms such as pain and dyspnea (Stone et al., 1999; Utne et al., 2008), depressed mood (Mock et al., 1997; Walker et al., 1997), and anxiety and depression (Stone et al., 2000). Patients with advanced cancer have described their experience of fatigue as affecting the physical, psychological, social, and spiritual aspects of their lives (Potter, 2004).

Despite the great number of studies on hope and on fatigue, little research has been reported on the relationship between fatigue and hope. In a recent review by Chi et al. (2007) it was noted that cancer patients' level of hope appears to be related to fatigue. Herth (1992) looked at the relationship between hope and fatigue in a small sample of ill adults, and fatigue significantly affected hope such that subjects who reported experiencing high levels of fatigue had significantly less hope than those experiencing moderate, little, or no fatigue. Benzein and Berg (2005) did not find any correlation between hope and fatigue in cancer patients receiving palliative care. A study of Korean women with breast cancer receiving che-

motherapy or radiation therapy found that after controlling for hope, fatigue uniquely accounted for 38% of the variance in psychosocial adjustment (Lee, 2001). After controlling for fatigue, hope uniquely accounted for 7% of the variance in psychosocial adjustment. However, there was no significant interaction between fatigue and hope in accounting for the variance in psychosocial adjustment (Lee, 2001).

Based on the significance of hope and fatigue in breast cancer patients, and given that previous research about hope and fatigue is limited and inconsistent, the aims of the present study in a sample of outpatients diagnosed with breast cancer (stage I or II) were

1. to describe the levels of hope and to compare their hope scores with level of hope in the general Norwegian population;
2. to describe the relationship between hope and fatigue in these patients; and
3. to evaluate the effect of demographic and clinical characteristics and fatigue on hope.

We hypothesize that feeling fatigued and with little energy will be a threat to hope, and give a patient less strength to meet challenges in the future.

METHOD

Sample and Methods of Data Collection

This study is part of a larger longitudinal study in which an intervention was given to a group of patients to reduce their fatigue. The data presented in this paper are baseline data before randomization. The patients were recruited from outpatient clinics at a university-based cancer center in Norway. After they had consented to participate they were given self-report questionnaires, which they filled in at home and mailed to the investigator (T.K.S.).

Women diagnosed with breast cancer (stage I or II) were eligible to participate in the study if they were > 18 years of age; able to read, write, and understand Norwegian; and gave written consent. As this study evaluated an intervention for fatigue, the participants had to have a fatigue score ≥ 2.5 on a numeric rating scale (NRS) (0–10, 0 = no fatigue, 10 = severe fatigue). Women with breast cancer stage I or II were recruited because the cancer prognosis for these stages is relatively good and treatment will mostly be defined as curative. All patients were receiving active treatment for cancer when they were recruited. After undergoing lumpectomy or total mastectomy they were receiving chemotherapy and/or radiotherapy,

and some were to receive hormone therapy for 5 years.

Instruments and Scoring Procedures

All patients completed self-administrated questionnaires about demographic and clinical characteristics, comorbidities, fatigue, and hope.

Demographic and Clinical Characteristics

The demographic questionnaire obtained information on age, marital status (married/partnered, unmarried/not partnered, divorced, widowed, separated), living status (alone, with husband/partner, children, parents, at an institution), educational level (primary school, secondary school, university/college) and employment status (paid work employment, self-employed, full time housework, education/military service, unemployed, disabled pensioner, old age pensioner, rehabilitation). For analytical purposes, marital status was dichotomized into married/partnered or not married/partnered, living status into living alone or not, and employment status into employed or unemployed. The clinical questionnaire obtained information on treatment (surgery, chemotherapy, radiotherapy, hormone therapy), and a Self administered Comorbidity Questionnaire (SCQ) obtained information about the presence of other diseases (Sangha et al., 2003).

Herth Hope Index (HHI)

Hope was measured using the Norwegian version of the Herth Hope Index (HHI-N) (Wahl et al., 2004). The HHI is based on the definition of hope developed by Dufault and Martocchio (1985). It was selected for this study because it is short and easy to use (Herth, 1992). The HHI (12 items) measures various dimensions of hope using a 4-point Likert scale that ranges from strongly disagree (1) to strongly agree (4) with items 3 and 6 reverse coded. The scale gives a total HHI score that ranges from 12 to 48, as well as single item scores that range from 1 to 4 (Herth, 1992). A higher score denotes higher levels of hope. The scale has been used widely (Herth, 2000; Ebright & Lyon, 2002; Chen, 2003; Hsu et al., 2003; Lai et al., 2003; Lin et al., 2003a, 2003b). Construct validity (Herth, 1992), divergent validity (Gibson, 1999; Beckie et al., 2001), internal consistency (Lin et al., 2003a), and test–retest correlations (Herth, 1992) were reported to be satisfactory in different samples. The HHI-N showed satisfactory reliability (Cronbach's α 0.81) (Wahl et al., 2004) and discriminated between different subgroups of participants (Rus-

toen et al., 2003). In the present study the Cronbach's α for the global score was 0.86.

Fatigue

A numeric rating scale (NRS) (0 to 10, where 0 = no fatigue and 10 = severe fatigue) was used as a screening instrument to measure fatigue related to inclusion into the study.

Fatigue questionnaire (FQ)

The FQ is an 11-item questionnaire designed to measure fatigue severity and to detect chronic fatigue (Chalder et al., 1993), and was originally developed to measure fatigue in patients with chronic fatigue syndrome or myalgic encephalomyelitis (Wessely & Powell, 1989; Butler et al., 1991). It consists of two domains: physical fatigue (PF, 7 items), covering physical problems such as tiredness, need for rest, feeling sleepy or drowsy, problems in getting started, lack of energy, lack of muscle strength or feeling weak; and mental fatigue (MF, 4 items) covering cognitive difficulties such as difficulty in concentration, slips of the tongue when speaking, difficulties in finding the correct words, and memory problems. The sum of these 11 items is designated total fatigue (TF). Each item has four response choices: "less than usual," "same as usual," "more than usual" and "much more than usual." In this study the responses were scored on a Likert Scale (0-1-2-3) for PF, MF, and TF, with higher scores implying more fatigue. In addition to the FQ (11 items), two additional items ask about the duration and the extent of fatigue for identification of chronic fatigue. For the duration, 0 = < 1 week, 1 = < 3 months, 2 = between 3 and 6 months, and 3 = \geq 6 months. For the extent, 0 = 25% of the time, 1 = 50% of the time, 2 = 75% of the time, and 3 = all the time. A dichotomized scale (0–0, 1–1) was used in the definition of chronic fatigue. Based on earlier results from validation studies, chronic fatigue (CF) was defined by a dichotomized score of \geq 4 and a duration of \geq 6 months (Chalder et al., 1993; Wessely, 1995).

The FQ is well validated internationally, has shown good psychometric properties, and has also been used in Norwegian samples (Loge et al., 1998; Morriss et al., 1998). The reliability of FQ was assessed by estimates of internal consistencies of the questionnaire. In the present study the Cronbach's α was 0.84 for PF, 0.81 for MF, and 0.87 for TF, confirming the findings of a previous study (Chalder et al., 1993).

Ethics

The study was approved by the Regional Committee for Medical Research Ethics, Norway (Registration

number: 200500327-10/IAY/400), Norwegian Data Inspectorate and the Norwegian Radium Hospital. All patients gave written consent to participate in the study. The study is registered in ClinicalTrials.gov. ID: NCT00927433.

Statistical Analysis

Data were analysed using SPSS Version 15.0 for Windows software (SPSS Inc., Chicago, IL). Descriptive statistics and frequency distributions were used to evaluate demographic, clinical, and fatigue characteristics, as well as levels of hope. Cronbach's α was employed to determine the reliability of the instruments. Pearson's product moment correlations were calculated to explore relationships between fatigue (FQ) and level of hope (HHI). One-way ANOVA was employed to compare levels of hope across subgroups marital-, living-, and employment dichotomized status. One-sample t tests were employed to determine if individual-item and global scores on the total HHI score differed between the cancer outpatients with fatigue and the Norwegian general population. The variables that were significantly correlated with total HHI score in outpatients with fatigue were entered in a regression model, using total HHI score as the dependent variable. A p value $< .05$ was considered statistically significant.

RESULTS

Recruitment Procedures

The recruitment procedures are shown in Figure 1. A total of 415 patients were asked to participate in the study. Of these, 255 were not included in the study for varying reasons, mainly because they had a fatigue score < 2.5 ($n = 149$). The final number of patients included in the study was 160, which gave a response rate of 60.2%.

After obtaining informed consent, the patients were asked to complete the Patient Information Questionnaire, the FQ, and the HHI and to return the questionnaires within a couple of days. One reminder was mailed.

Demographic Characteristics

The mean age of the patients was 55.3 years ($SD = 9.4$), with a range from 25 to 77 years. As shown in Table 1, 37% of the sample was between 51 and 60 years. Half of the sample had university or college education, 70% were married/partnered, 81% lived with someone, and 67% were employed.

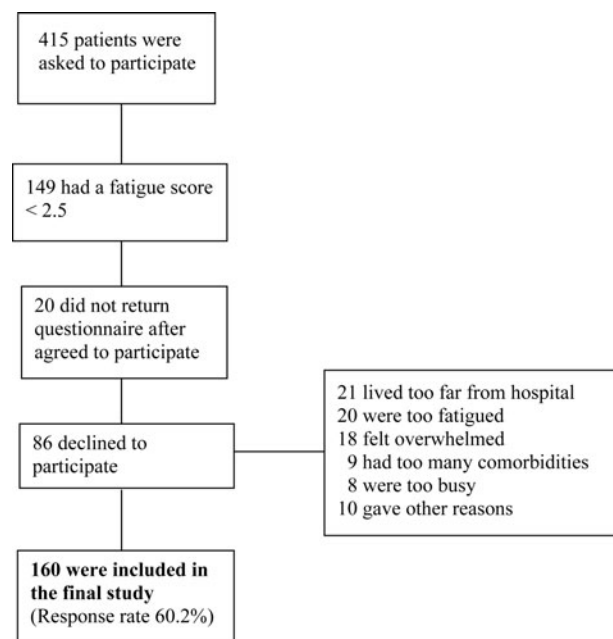


Fig. 1. Information on sample selection and exclusions.

Table 1. Demographic characteristics compared with the total HHI score ($n = 160$)

Demographic characteristics	Demographic characteristics		Total hope score		
	<i>n</i>	%	Mean	<i>SD</i>	<i>p</i> values*
Age					
≤50 years	50	31.6	39.6	(4.9)	
51–60 years	58	36.7	37.9	(5.5)	
≥61 years	50	31.6	39.2	(5.5)	0.21
Education					
Primary	55	34.8	38.6	(5.3)	
Secondary	24	15.2	38.9	(5.4)	
University or college	79	50.0	38.9	(5.4)	0.94
Marital status					
Married/partnered	111	70.3	39.7	(4.8)	
Not married/partnered	47	29.7	36.9	(6.1)	0.003
Live alone					
Yes	30	9.4	35.5	(6.2)	
No	125	80.6	39.5	(4.9)	< 0.001
Employment					
Employed	105	66.6	38.9	(5.3)	
Not employed	53	33.4	38.6	(5.6)	0.73

*The boldface values are significant at the .05 level.

Clinical and Treatment Characteristics

Of the 160 patients included in this study, 155 responded to the SCQ. Approximately one third of patients (30.3%) had no comorbidities. The mean number of comorbidities was 1.5 ($SD = 1.5$) with a range of 0–8. Half of the patients had one or two

comorbidities (24.5% each), and 32 patients had three or more (20.7%). The most common comorbidities were back pain ($n = 66$), osteoarthritis ($n = 33$), headache ($n = 29$), high blood pressure ($n = 29$), and depression ($n = 26$). Anemia or other blood diseases were reported by four patients.

The treatment characteristics of patients are summarized in Table 2. All had had surgery, mainly lumpectomy (65.1%), nearly all received radiotherapy (98.7%), and ~ 50% of the patients had received chemotherapy (57.2%), whereas 61.4% had received hormone therapy. At the time of filling in the questionnaires (baseline) patients had undergone surgery, completed chemotherapy, were about to receive the last of 25 daily radiation therapy treatments, and were in the first year of 5 years of hormone therapy.

Level of Hope

As outlined in Table 3, the mean total hope score measured by HHI was 38.9 ($SD = 5.4$). Mean scores for individual items on the HHI ranged from 2.3 ($SD = 1.1$) on the item “I have a faith that gives me comfort” to 3.6 ($SD = 0.6$) on the item “I can recall happy/joyful times.”

The differences between the HHI scores for outpatients with fatigue and the general Norwegian population are also listed in Table 3. Cancer outpatients

with fatigue had significantly higher scores than the general Norwegian population in 6 of the 12 individual HHI items. However, cancer outpatients reported significantly lower scores on the item “I feel scared about my future” than did the general population.

Fatigue Scores

The mean fatigue score measured by the NRS as a screening into the study was 6.1 ($SD = 1.7$), range 3–10. Nearly half (47%) had a score of ≥ 7 . Mean fatigue scores measured by FQ were for PF 13.7 ($SD = 3.2$), range 4–21; MF 6.1 ($SD = 2.1$), range 2–12; and TF 19.8 ($SD = 4.6$), range 6–33. As shown in Table 2, 35% of the sample reported CF.

Relationships between Hope and Fatigue

Total HHI score was significantly negatively correlated with TF ($r = -0.18$, $p < 0.05$); the more fatigued the patients were, the lower their hope score. Total HHI score was also negatively correlated with MF ($r = -0.22$, $p < 0.005$) and CF ($r = -0.18$, $p < 0.05$). However, no significant correlations were found between total HHI score and PF score ($r = -0.12$, $p = 0.15$).

The Effect of Demographic and Clinical Characteristics and Fatigue on Hope

The only demographic variables that were significantly correlated with total HHI score were marital status and living status (Table 1). No significant correlations were found between total HHI score and any of the treatment or comorbidity characteristics (Table 2). The variables that were significantly correlated with total HHI score in fatigued breast cancer patients are shown in Table 4. When entering both marital status and living alone into the model, marital status was removed and living alone explained 9% of the variance of hope. TF and living alone explained 13% of the variance of hope.

DISCUSSION

The mean total HHI score was 38.9 ($SD = 5.4$) in the present study, which is relatively high compared with other studies worldwide. The level of hope using HHI has been reported to vary from 30.8 (Hsu et al., 2003) to 40.3 (Ebright & Lyon, 2002). However, our score is similar to those in other studies from Scandinavia. Results from palliative care patients in Sweden showed a mean total HHI score of 39.6 ($SD = 5.7$) (Benzein & Berg, 2005), and a study from Norway investigating hope in cancer patients with pain showed a mean total HHI score of 38.0 ($SD = 4.3$) (Utne et al.,

Table 2. Treatment characteristics, comorbidity and chronic fatigue compared with Total Hope Score (HHI) ($n=160$)

	Treatment		Hope (total score)		
	<i>n</i>	%	Mean	(<i>SD</i>)	<i>p</i> value*
Surgery					
Mastectomy	52	34.9	39.1	(4.8)	0.70
Lumpectomy	97	65.1	38.8	(5.7)	
Chemotherapy					
Yes	83	57.2	39.0	(5.1)	0.53
No	62	42.8	38.4	(5.4)	
Radiotherapy					
Yes	156	98.7	38.9	(5.4)	0.72
No	2	1.3	37.5	(3.5)	
Hormone therapy					
Yes	89	61.4	38.9	(5.4)	0.74
No	56	38.6	38.6	(5.2)	
Comorbidity					
0	47	30.3	39.9	(4.9)	0.11
1	38	24.5	39.5	(5.1)	
2	38	24.5	38.7	(6.2)	
≥ 3	32	20.7	37.0	(5.1)	
Chronic fatigue					
Yes	56	35.0	37.6	(5.3)	0.03*
No	104	65.0	39.5	(5.3)	

*The boldface values are significant at the 0.05 level.

Table 3. Individual item and total scores for the Herth Hope Index (HHI) in cancer outpatients with fatigue compared to the general Norwegian population

Individual items ^a	General Norwegian population (n = 1,825)	Breast cancer with fatigue (n = 160)		Statistics	
	Mean	Mean	(SD)	p value*	(CI for difference)
1 I have a positive outlook towards life	3.2	3.4	(0.7)	0.002	(0.06, 0.27)
2 I have short, intermediate, and/or long range goals	3.1	3.3	(0.7)	0.001	(0.08, 0.28)
3 I feel all alone ^c	3.4	3.3	(0.9)	0.360	(-0.20, 0.07)
4 I can see a light in a tunnel	3.0	3.3	(0.7)	< 0.001	(0.18, 0.42)
5 I have a faith that gives me comfort	2.4	2.3	(1.1)	0.449	(-0.23, 0.10)
6 I feel scared about my future ^c	2.9	2.7	(0.9)	0.001	(-0.38, -0.10)
7 I can recall happy/joyful times	3.5	3.6	(0.6)	0.076	(0.00, 0.17)
8 I have deep inner strength	3.2	3.4	(0.6)	< 0.0001	(0.13, 0.32)
9 I am able to give and receive caring/love	3.3	3.5	(0.6)	< 0.0001	(0.15, 0.32)
10 I have a sense of direction	3.0	3.1	(0.7)	0.144	(-0.03, 0.20)
11 I believe that each day has potential	3.2	3.4	(0.6)	< 0.0001	(0.10, 0.28)
12 I feel my life has value and worth	3.3	3.5	(0.6)	< 0.0001	(0.12, 0.32)
Total HHI scores ^b	36.7 (4.2)	38.9	(5.4)	< 0.0001	(1.31, 2.99)

^aScores can range from 1 (strongly disagree) to 4 (strongly agree) with higher scores indicating higher levels of hope.

^bScores are reversed coded.

^cScores can range from 12 to 48 with higher scores indicating higher levels of hope.

*The boldface values are significant at the 0.05 level.

Table 4. Regression analysis with Hope Global Score as the dependent variable with stepwise entry of independent variables (n = 152)

	B	SE _B	t	p values*	R ² change
Live alone	-4.18	1.05	-3.97	0.000	0.09
Total Fatigue	-0.23	0.09	-2.56	0.012	0.04
Total R ² = 13%					

*Values are significant at the 0.05 level.

2008). Another Norwegian study examined hope in patients with heart failure and obtained a mean total HHI score of 37.7 (SD = 5.3) (Rustoen et al., 2005).

Some of the literature suggests that the concept of hope is culture specific (Hsu et al., 2003; Lin et al., 2003a; Rustoen et al., 2003; Utne et al., 2008). When comparing results from the present study and a Korean study with women with breast cancer, the mean total HHI score measured in the Korean study was 35.7 (SD = 4.45) (Lee, 2001) compared with 38.9 in the present study. The effect size was 0.31. Field (2005) explained an effect size of 0.3 as a medium difference. Whether this effect size is large enough to explain a cultural difference is questionable. The HHI was developed in the United States,

and used in other parts of the world after being translated into different languages. More research is needed to explore possible culturally-specific issues related to hope and its measurement.

The breast cancer patients in the present study reported a significantly higher total HHI score than the general Norwegian population, and they also reported significantly higher hope scores than the general Norwegian population in 6 of the 12 individual items (Table 3). The mean total HHI score was higher by 2.2 in the breast cancer group (38.9 vs. 36.7). These findings are consistent with previous studies of patients with heart failure and cancer. Patients with heart failure reported significantly higher total HHI score (37.7) than the general Norwegian population (Rustoen et al., 2005). A recent study (Utne et al., 2008) comparing hope in cancer patients in pain with the general Norwegian population also showed a significantly higher mean total HHI score for the cancer patients (38.0 vs. 36.7). In fact, the total HHI score for the fatigued breast cancer patients was slightly higher (38.9) than for either heart failure patients or cancer patients in pain. This may reflect patients' adaptation to a life-threatening chronic disease. Although having a serious or chronic illness can undermine hope, the changes that can occur in patients' lives, with a redefining of priorities, may result in higher levels of hope and an increased awareness of

hope despite negative circumstances. The higher level of hope may also reflect a response shift in patients' evaluation of hope, which means a change in the meaning of one's self-evaluation as a result of changes in values or internal standards (Schwartz & Sprangers, 1999). Response shift is used to explain higher levels of quality of life reported by patients even with the occurrence of disease progression. The concept of a response shift in hope was described initially by Rustoen et al. (2005) in patients with heart failure.

When comparing the breast cancer patients' ratings of the individual items on the HHI to those of the general Norwegian population, the largest difference was on the item "I can see a light in the tunnel" (Table 3). The fatigued breast cancer patients had higher scores than the general Norwegian population on this item, although they felt more "scared about the future." This was also reported by cancer patients in pain (Utne et al., 2008) and might be an expression of the cancer patients' experiences of being cancer survivors. The fear of the disease reappearing is described as one of the biggest fears when going back to hospital for medical follow-up visits (Brooks et al., 2002; Osse et al., 2005).

On the other six HHI items where differences were found, the fatigued breast cancer patients scored higher than the general Norwegian population. "Having a deep inner strength" was the only one of these six items that was reported as also being significantly higher in cancer patients in pain (Utne et al., 2008). "I have a faith that gives me comfort" was significantly higher both in cancer patients in pain and in the general Norwegian population, compared with fatigued breast cancer patients. The breast cancer group was a homogeneous group (stage I or II), whereas the cancer patient group in pain was a group with different cancer diagnoses and prognoses. Therefore, the higher total HHI score in the fatigued breast cancer group can be related to the fact that, for this patient group, having a relatively good prognosis counted for more than having a faith. However, the finding that the hope score was higher in breast cancer patients than in the general Norwegian population can also be explained by the fact that the cancer group was a homogenous group (breast cancer stage I or II) with relatively good prognoses, and that they just had finished radiation therapy.

The study reveals that fatigue is a great problem for those women who experience it, as they have a mean fatigue score of 6.1, with 35% reporting CF. This is well known from the literature, as fatigue has been identified as the most problematic side effect in women with breast cancer receiving adjuvant chemotherapy or radiation therapy (Irvine et al., 1994; Jacobsen et al., 1999; Longman et al., 1999; Hickok et al., 2005).

Number of comorbidities was not related to hope in the present study. This might be caused by the fact that patients reported chronic conditions such as back pain, osteoarthritis, and headache most frequently. They might have lived with these conditions for a long time. The patients who reported being depressed had lower hope scores than those who were not depressed ($p < 0.001$). Hopelessness is widely seen as the opposite of hope (Benzein & Berg, 2005), and in psychiatric contexts hopelessness is associated with depression and the desire for hastened death (Breitbart et al., 2000).

Studies examining the relationship between hope and fatigue in cancer patients are limited. Previous research has shown a correlation between hope and fatigue among patients (Herth, 1992), but another study did not find a significant correlation in patients but rather in their caregivers (Benzein & Berg, 2005). The present study found significant negative correlations between hope and TF, MF, and CF, but not between hope and PF. As TF on FQ is the sum of MF and PF, it is likely that MF is the factor that adversely affects hope. Patients experiencing difficulties in concentrating, experiencing slips of the tongue, having problems in finding the right words, and having problems with their memory are likely to experience lower levels of hope. Those who reported CF also had lower total HHI scores than other patients. This can be explained by the fact that, by definition, CF has a duration of ≥ 6 months, and long-lasting fatigue is more tiring than fatigue that lasts a relatively short period of time. It is interesting that having PF was not related to hope in women with breast cancer. An explanation could be that health-care providers are more likely to explain to patients the physical symptoms of fatigue, such as tiredness, sleepiness, drowsiness, and lack of energy, than the mental symptoms. Patients may be expecting the physical symptoms, and because they might be more familiar they could be less frightening than the more unknown cognitive symptoms. Another speculation is that the cognitive symptoms are more likely to affect cancer patients' concerns about the future. A study investigating problems that cancer patients experienced and their unmet needs (Osse et al., 2005) concluded that one of the most prevalent problems was coping with the unpredictability of the future.

A Korean study (Lee, 2001) used the HHI for measuring hope and the Piper Fatigue Scale for measuring fatigue looked at fatigue and hope in relationship to psychosocial adjustment in women with breast cancer. They did not find any significant interaction between fatigue and hope in accounting for the variance in psychosocial adjustment. In the present study, the correlations between hope and

TF were weak even when they were significantly related. Furthermore, fatigue explained only a little of the variance in hope (Table 4). More research is needed to explore further the relationship between hope and fatigue.

In looking at the relationships between hope and demographic, and clinical characteristics in fatigued breast cancer patients, significant correlations were found only between total HHI score and the demographic characteristics of marital status and living alone. Patients not living alone showed more hope than patients living alone. Relationships with family and friends are often emphasized in relation to hope (Rustoen et al., 1998). In a descriptive study, Raleigh (1992) showed that relationships with family and friends are two of the most important sources of hope in people with cancer. People close to the patient can provide valuable support, and it is often stressed that hope is strengthened by the knowledge that others will help if necessary (Rustoen et al., 1998). The fact that hope was significantly related neither to treatment nor to comorbidity characteristics is also shown in other studies (Sanatani et al., 2008; Utne et al., 2008).

The limitations of this study must be noted. First, the response rate was only 60.2% and the sample was only outpatient women with breast cancer stage I or II. Therefore, the findings may not be generalizable to all cancer patients with fatigue. Second, the patients in this study were fairly healthy, although they had a fatigue score of 6.1, which can influence their total HHI score. Scores might be different for patients with breast cancer in more advanced stages. Further studies, therefore, need to include patients with breast cancer at all stages, as well as additional fatigue characteristics and other psychosocial variables that may mediate or moderate the relationships between hope and fatigue.

CONCLUSIONS

The Norwegian fatigued breast cancer patients reported significantly higher total HHI scores than did the general Norwegian population. The HHI scores for the fatigued breast cancer patients were fairly similar to those from other Scandinavian studies; however, the hope score for this patient group was somewhat higher than the results of a Korean study. The current study is one of the first studies examining the relationship between hope and fatigue in breast cancer patients. Total HHI score was moderately negatively correlated with TF and MF, but not with PF. Except for living status, there was no significant correlation between demographical and clinical characteristics and hope. Patients living with someone had significantly higher total HHI scores. As

hope is shown to be of importance for cancer patients, more research should be done to further examine the relationship between hope and fatigue in women with breast cancer. Given the high level of fatigue in women with breast cancer, further research is needed, with a focus on psychosocial matters and coping, possibly to strengthen these women's abilities to meet challenges in the future.

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