

## Pain Interference Level and its Effects on Patients' Quality of Life and Depression: A Study on Breast Cancer Survivors in Hospital Kuala Lumpur, Malaysia

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### ABSTRACT

**Introduction:** Cancer pain is a complex experience and is one of the most common and distressing symptom of breast cancer which affects patients' functioning in daily activities, their quality of life (QOL), and mood. Yet, there is a great lack of data on breast cancer and pain in Malaysia. **Methods:** A cross-sectional study using the Breast Cancer Patient Version of Quality of Life (QOL) Instrument (translated into Malay) and Depression Anxiety and Stress Scale (DASS) were conducted on 87 female breast cancer patients to investigate the impact of pain interference level on their quality of life and depressive level. **Results:** The patients were divided into 4 groups based on their rating of how pain and aches have been a problem to them (i.e not a problem [n=18 (20.7%)], mild[n=29 (33.3%)], moderate [n=18 (20.7%)] and severe [n=22(25.3%)]. Pain and aches were reported to be the most severe interference problems in QOL physical domain by patients (mean=5.8, SD=2.8), followed by fatigue (mean=6.0, SD=3.1) and sleep changes (mean=6.2, SD=3.5). Patients who reported that pain and aches had severely affected them showed significantly lower score on many aspects of quality of life ( $F_s > 5$ ,  $p < 0.005$ ;  $p < 0.0001$ ) and patients reported pain was not a problem at all demonstrated highest score on all aspects of QOL. Patients with most severe pain interference level showed highest depressive score [ $F(3, 84) = 3$ ,  $p < 0.05$ ]. **Conclusion:** The study underscores the impact of pain interference on patients' quality of life and depressive level. The pain assessment deserves significant attention and therefore a comprehensive biopsychosocial assessment of pain to rule out any related underlying issues is warranted in the management of breast cancer to ensure appropriate intervention given to the patients.

**Keywords:** Pain, breast cancer, quality of life, Malaysia, depression

### INTRODUCTION

Breast cancer is the commonest cancer in women and is the leading cause of cancer deaths among women worldwide.<sup>[1]</sup> In 2003, 3,738 new cases of breast cancer were reported, giving an age-standardized incidence rate (ASR) of 46.2 per 100,000 women<sup>[3]</sup>; which suggests that 1 in 20 women in Malaysia will develop breast cancer in her lifetime.<sup>[4]</sup> Despite improvements in oncology treatments and survival rates<sup>[5]</sup>, breast cancer is still experienced as life threatening and its treatments are associated with numerous highly aversive symptoms and adverse side effects. At least half of all breast cancer patients will experience emotional distress as part of their psychosocial problems related to the illness.<sup>[6]</sup> Among the psychological reactions documented are denial, anger, intense fear towards the disease and treatment process and preoccupation with thoughts of illness and death.<sup>[7]</sup> There is a variation of the prevalence of depressive disorders, ranging from 1.5 to 46%; and this is attributed to the differences in time evaluation, measurements and population studied<sup>[8,9]</sup>.

While psychological distress issues in breast cancer have been extensively documented in the body of literature, pain which is one of the common side effects of breast cancer and its treatment, has received less attention despite its significant effects on patients. As with distress, patients typically experience pain at some point of their treatment regardless of the stages of illness and treatment<sup>[10]</sup>. Pain in breast cancer has been associated with chemotherapy, radiotherapy,<sup>[11]</sup> surgery and hormonal therapy<sup>[12]</sup>. Known risk factors for pain in breast cancer may include age (<40 years), psychosocial factors, preoperative breast pain and acute postoperative pain intensity.<sup>[13]</sup> Almost half of the breast cancer patients reported experiencing pain<sup>[14]</sup> with scar pain and arm pain being the most common types reported by them. In another study, pain was stated to have occurred in 51% of breast cancer survivors 15 months after surgery.<sup>[15]</sup>

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A few studies have shown significant relationships between pain and psychological distress amongst breast cancer patients. For example, a study has indicated that patients who reported having more arm problems after surgery, including weakness, stiffness, pain, numbness, swelling causing restricted range of movement are more likely to experience higher psychological distress.<sup>[16]</sup> Another study showed that when compared those who reported pain and those who did not, breast cancer patients who complained of pain had significantly higher level depression, anger, total mood disturbance and lower psychological well being on their quality of life measures.<sup>[17]</sup> Similarly, significant positive associations were also found between pain interference level with function and patients' psychological and social well being as well as their mental health.<sup>[18]</sup> Additionally, it was documented that pain increases in breast cancer patients before death.<sup>[19]</sup> A critical review on cancer pain and psychological distress has provided evidence that the relationship between psychosocial factors and chronic cancer pain is considered strong for psychological distress, that is, increased distress is associated with more intense pain.<sup>[20]</sup>

Despite its high prevalence and significant effects on patients well being that have been documented world-wide, there have been no published studies on cancer pain in Malaysia. The present study aims to investigate the impact of pain interference level on the many aspects of quality of life and depression level in breast cancer patients in a General Hospital in Malaysia. Generally, there are 2 dimensions of pain that have been widely researched, that is, 'sensory' and 'reactive'. The sensory dimension refers to the severity of pain whilst the reactive dimension refers to the degree to which pain interferes with the patient's function and quality of life<sup>[21]</sup>; and providing both dimensions will yield a useful representation of pain. However, it has been shown that pain severity, however measured, is probably not linearly related to interference with function<sup>[21, 22]</sup>; implying that it is equally important to address pain interference level with patients overall functioning in order to have a meaningful understanding of the impact of pain on patients' quality of life. This study therefore focuses on the reactive dimension of pain, that is, assessing the degree to which pain has been interfering with breast cancer patients' overall quality of life and its relations with their depressive level.

## METHODS

### *Participants and Setting*

A comparative cross-sectional study design was conducted amongst female breast cancer patients who were undergoing treatment in a general hospital in Malaysia, Hospital Kuala Lumpur. Subjects were recruited using purposive sampling from the breast cancer clinic, day care centre, radiology departments and wards of the Oncology and Radiotherapy Department, Hospital Kuala Lumpur. Data collection was carried out after the permission to conduct the study was obtained from the Hospital Director and the Head of Department of Oncology and Radiotherapy.

A study information sheet and an informed consent form were distributed and a set of self-administered questionnaires were given upon consent given by the patient to be involved in the study. In the case where the respondents were illiterate, the researchers (who had been trained by the first author to conduct an interview) would read the items to them and their responses were recorded in the questionnaire. The exclusion criteria were; non Malaysian patients, male breast cancer patients, patients who were also diagnosed with other types of cancer, patients who were not currently receiving treatment and patients who suffered from any mental illnesses. Confidentiality was assured by respondents' anonymity. The protocol for this study had been approved by the Universiti Putra Malaysia Ethics Committee, which conformed to the provisions of the 1995 Declaration of Helsinki.

### *Instruments*

The sample was administered using a questionnaire, that has been divided into 3 main sections. The first section was about patients' demographic and illness background data. The second section was the Breast Cancer Patient Version of QOL Instrument adopted from City of Hope<sup>[23]</sup> while the third section was 21-Depression, Anxiety and Stress Scales (DASS).<sup>[24]</sup> 'Back-translation' method was employed to translate these questionnaires into Malay language to accommodate patients' language preference in responding to the questionnaire. The second section of the questionnaire consisted of five aspects which were physical well-being (8 items), psychological well-being and patient's experience of illness and treatment (22 items), social well-being (9 items) and spiritual well-being (7 items). The scale used for each questions was ordinal scale which ranged from 0 to 10. The scoring was generally based on a scale from 0 which indicated worst outcome to 10, to indicate best outcome except for several items which have reverse anchors, indicating the requirements to be reversely coded to have a meaningful score.

The Principle Component Analysis using varimax rotation method was carried out on psychological and patient's experience of illness domain specifically to obtain a meaningful structure of this domain. Table 1 reveals an extraction of four distinct factors with two non-fitting items being removed. These factors, which had eigenvalues greater than one, accounted for 67.3 percent of the item variance. The four-factor solutions are labelled as 'illness-related matters', 'perception of satisfaction in life', 'self esteem and emotional distress' and 'cancer treatment matters'. Cronbach's coefficients were calculated to examine the reliability of each of the sub-domain and the alphas obtained reflect a

reasonably high inter-item consistency for each domain (Table 1). These subdomains will be used to further describe the results in this article. Cronbach alpha coefficients for other domains also yielded an acceptable inter-item consistency, that is physical (alpha=0.75), social (alpha=0.70) and spiritual (0.65). The total score for each domain was calculated by summing up the scores for all of the items in the respective domains.

The third section was DASS-21 which measured the negative emotional states of depression (7 items), anxiety (7 items) and stress (7 items). Subjects were asked to use 4-point severity or frequency scales to rate the extent to which they had experienced each state over the past one week. The score of each question were obtained by multiplying the scale by two. Therefore, the scores for depression, anxiety and stress were calculated by summing the scores for the relevant items. Cronbach's alpha coefficients result suggested that the scales for depression, anxiety and stress in Malay language possessed excellent internal consistency that is, alpha = 0.96, alpha = 0.93, alpha = 0.93 respectively. However, only depression domain is reported in the present study.

**Table 1.** Factor Structure of Psychological Well-being and Patient's Experience of Illness and Treatment domain

Factors	Factor 1 (Illness-related matters)	Factor 2 (Perception of satisfaction in life)	Factor 3 (Self esteem and emotional distress)	Factor 4 (Cancer treatment matters)
Metastasis of cancer	.90			
Recurrence of cancer	.88			
Having a second cancer	.83			
Future diagnostic tests	.68			
Initial diagnosis	.51			
Satisfaction about life		.81		
Self usefulness		.74		
In control of things in life		.67		
Happiness		.65		
Quality of life		.47		
Difficulty in coping today due to treatment			.71	
Difficulty in coping today due to disease			.68	
Changes in self concept			.61	
Changes in appearance			.60	
Depression			.45	
Anxiety			.40	
Cancer radiation				.68
Completion of treatment				.65
Cancer surgery				.48
Cancer chemotherapy				.45
Percent Variance	38.38	11.81	9.06	8.05
Cronbach's alpha	0.92	0.81	0.84	6.05

*Analyses*

Data was tabulated in SPSS program version 18. The socio-demographic profile of samples from different groups were analysed using chi square test. The differences of quality of life between groups were analysed using ANOVA One-way with the application of Scheffe post-hoc for further group comparisons.

**Results**

Eighty-seven respondents were included in this study and the overall response rate was 90.6%. The patients were divided into 4 groups based on their rating of how pain and aches had been a problem to them [18 (20.7%) indicated pain not giving them problem at all, 29 (33.3%) as mild problem; 18 (20.7%) as moderate; and 22 (25.3%) as severe)]. The categorisation of pain interference level in the present study was a reverse score based on the study done by Serlin *et al* [21], that is, 10= no interference; 7-9 = mild interference; 5-6 = moderate; and 0-3 = severe.

As can be seen in Table 2, in terms of patients' demographic characteristics, there were no significant differences found between groups with respect to their age group, ethnicity, marital status, current stage of cancer and the presence of surgical treatment. Nonetheless, significant differences were found between pain interference level groups in relation to their occupational status and level of education. Specifically, most of the patients who reported having no pain interference and severe pain interference were unemployed. Items in physical domain were analysed and it was found that pain and aches were reported to be the most severe problems by patients (mean=5.8, SD=2.8), followed by fatigue (mean=6.0, SD=3.1) and sleep changes (mean=6.2, SD=3.5).

**Table 2.** Socio-demographic characteristics of patients according to pain interference levels

Demographic variables	Pain Interference Levels				$\chi^2$
	Not at all n (%)	Mild n (%)	Moderate n (%)	Severe n (%)	
<b>Age group</b>					
20-49	5 (27.8)	13 (44.8)	11 (61.1)	12 (54.5)	4.67 <sub>ns</sub>
50-79	13 (72.2)	16 (55.2)	7 (38.9)	10 (45.5)	
<b>Ethnic group</b>					
Malay	8 (44.4)	17 (58.6)	13 (72.2)	14 (63.6)	7.34 <sub>ns</sub>
Chinese	6 (33.3)	10 (34.5)	3 (16.7)	3 (13.6)	
Indian	4 (22.2)	2 (6.9)	2 (11.1)	5 (22.7)	
<b>Marital status</b>					
Married	14 (77.8)	22 (75.9)	15 (88.2)	20 (90.9)	2.63 <sub>ns</sub>
Not married	4 (22.2)	7 (24.1)	2 (11.8)	2 (9.1)	
<b>Occupational status</b>					
Employed	1 (5.6)	11 (37.9)	9 (50.0)	8 (36.4)	8.83*
Unemployed	17 (94.4)	18 (62.1)	9 (50.0)	14 (63.6)	
<b>Level of education</b>					
Primary	12 (66.7)	13 (44.8)	3 (16.7)	7 (31.8)	13.45*
Secondary	4 (22.2)	13 (44.8)	8 (44.4)	10 (45.5)	
Tertiary	2 (11.1)	3 (10.3)	7 (38.9)	5 (22.7)	
<b>Current stage of cancer</b>					
Stage 1	2 (11.1)	7 (24.1)	3 (16.7)	3 (13.6)	4.23 <sub>ns</sub>
Stage 2	9 (50.0)	8 (27.6)	6 (33.3)	7 (31.8)	
Stage 3	5 (27.8)	8 (27.6)	5 (27.8)	8 (36.4)	
Stage 4	2 (11.1)	6 (20.7)	4 (22.2)	4 (18.2)	
<b>Surgical treatment</b>					
Yes	16 (88.9)	22 (75.9)	15 (83.3)	19 (86.4)	1.65 <sub>ns</sub>
No	2 (11.1)	7 (24.1)	3 (16.7)	3 (13.6)	
N (%)	18 (20.7)	29 (33.3)	18 (20.7)	22 (25.3)	

ns: P>0.05, \* P<0.05

**Table 3.** Comparisons of QOL domain mean scores according to pain interference levels

QOL domains and pain interference levels	Mean (SD)		95% CI for mean		F- statistic (df) <sup>a</sup>	p- value
Physical					15.1 (3)	0.0001 <sup>b</sup>
Not at all (G1)	53.1	-11.2	47.5	-58.6		
Mild (G2)	54.2	-7.73	51.3	-57.3		
Moderate (G3)	40.1	-11.1	34.4	-45.5		
Severe (G4)	35.6	-15.1	28.9	-42.2		
Illness-related matters					4.5 (3)	0.005 <sup>c</sup>
Not at all (G1)	21.9	-17.4	13.8 -	30.6		
Mild (G2)	20.1	-15.6	14.12 -	25.9		
Moderate (G3)	20.2	-16.3	12.1 -	28.3		
Severe (G4)	6.8	-11.3	8.9 -	11.12		
Perception of satisfaction in life					3.2 (3)	0.03
Not at all (G1)	35.8	-9.1	31.3	-40.4		
Mild (G2)	36.3	-9.1	32.8	-39.9		
Moderate (G3)	33.3	-10.9	27.8	-38.7		
Severe (G4)	28.2	-11.1	23.3	-33.2		
Self esteem and emotional distress					14.1 (3)	0.0001 <sup>d</sup>
Not at all (G1)	48.1	-13.2	41.5	-54.6		
Mild (G2)	42.9	-11.3	38.5	-47.3		
Moderate (G3)	35.1	-13.7	28.2	-41.8		
Severe (G4)	23.6	-14.2	17.3	-29.9		
Cancer treatment matters					6.6 (3)	0.0001 <sup>e</sup>
Not at all (G1)	32.3	-6.8	28.9	-35.7		
Mild (G2)	26.4	-9.8	22.7	-30.2		
Moderate (G3)	25.6	-8.1	21.6	-29.6		
Severe (G4)	19.1	-11.7	13.8	-24.2		
Social					7.1 (3)	0.0001 <sup>f</sup>
Not at all (G1)	62.8	-18.3	53.2	-71.4		
Mild (G2)	61.7	-14.3	56.3	-67.2		
Moderate (G3)	50.6	-17.9	41.7	-59.5		
Severe (G4)	44.2	-12.6	38.6	-49.7		
Spiritual					0.8 (3)	0.47
Not at all (G1)	45.6	-16.5	37.4	-53.9		
Mild (G2)	50.1	-10.4	46.1	-54		
Moderate (G3)	51.7	-11.1	46.23	-57.2		
Severe (G4)	49.1	-10.2	44.52	-53.5		
Depressive level					3.0 (3)	0.03
Not at all (G1)	6.6 (12.8)		.25 - 12.8			
Mild (G2)	12.8 (14.9)		7.13 - 18.5			
Moderate (G3)	16.8 (16.8)		8.39 - 25.6			
Severe (G4)	19.7 (12.8)		14.03 - 25.4			

<sup>a</sup>One-way ANOVA test was applied

Post-hoc Scheffe's procedure was administered with the application of Bonferonni type Correction for multiple comparison (p ≤ 0.01):

<sup>b</sup>G1 vs G3, p < 0.001; G1 vs G4, G2 vs G3, G2 vs G4, p < 0.0001

<sup>c</sup>G1 vs G4, G2 vs G4, G3 vs G4, p < 0.05

<sup>d</sup>G1 vs G3, G3 vs G4, p < 0.05; G1 vs G4, G2 vs G4, p < 0.0001

<sup>e</sup>G1 vs G4, p < 0.05; G2 vs G4, p < 0.0001

<sup>f</sup>G1 vs G4, p < 0.05; G2 vs G4, p < 0.0001

Table 3 illustrates significant differences found between levels of pain interference groups reported by patients in most of the quality of life domains. For physical domain, patients who reported pain as severely interfering with their life scored the lowest in the QOL score [not at all=53.1, severe=35.6;  $F(3, 84)=15.1, p<0.05$ ]. Post-hoc Scheffe's analysis revealed that patients who stated that pain and aches was not a problem to them scored significantly lower than those who reported that pain and aches was affecting them moderately and severely. Likewise, in terms of matters regarding illness and treatment, patients who rated that pain and aches were severely affecting them scored significantly lower in their QOL than those who reported it as not a problem, mild or moderate. This pattern was also true in matters involving patients' perception of satisfaction in life. That is, patients who were affected severely by pain and aches scored significantly lower score in QOL as compared to their counterparts who rated pain as not a problem or affected by pain in mild or moderate level.

Table 3 also shows that Quality of Life scores on issues regarding self esteem and emotional distress were found to be significantly different amongst pain interference groups. Specifically, Post Scheffe's analysis indicated that those who felt that pain has been severely interfering them had significantly lower QOL scores on self esteem and emotional distress in comparison to those who were not affected at all, mildly and moderately affected by the pain and aches. Similarly, patients who were severely affected by pain reported significantly lower quality of life scores on matters regarding cancer treatment as well as in the social domain. Nonetheless, there was no significant difference between groups in spiritual domain of quality of life. With regards to patients' depressive level, those who felt that pain was not a problem at all reported significantly lower scores on depression as compared to those who reported their pain as interfering with their life in mild, moderate or severe manner.

Pearson correlation coefficients analyses were carried out to examine the relationship between individual items in the physical domain and other domains in the quality of life. Table 4 illustrates that amongst the physical items, pain and aches as well as fatigue were found to be correlated positively with every other domain in quality of life ( $r = 0.28 - 0.58, p<0.01, p<0.05$ ).

**Table 4.** Relationships between physical domain items and other domains of QOL

Items	Illness-related matters	Perception of satisfaction in life	Self esteem and emotional distress	Cancer treatment matters	Social	Spiritual
Fatigue	.35**	.28**	.56**	.33**	.44**	-0.09
Appetite changes	.23*	0.19	.43**	0.19	.33**	-0.09
Pain and aches	.32**	.28**	.58**	.43**	.44**	-0.07
Sleep changes	0.21	0.2	.57**	.29**	.49**	-0.19
Weight gain	0.17	0.12	.33**	.24*	.28**	-0.12
Vaginal dryness/ menopausal symptoms	.33**	.23*	.41**	.23*	.24*	-0.04
Menstrual changes/fertility	0.04	0.07	.29**	0.04	0.19	-0.06

\*\*  $p<0.01$ ; \* $p<0.05$  (2-tailed)

A series of multiple linear regressions using stepwise method were conducted to further ascertain the proportion of each individual item in physical domain that significantly contributed to the patients' severity of quality of life level in other domains. As can be seen in Table 5, with respect to illness-related matters, fatigue and pain aches were accounted for 18% of the variance in level of quality of life. Pain and aches were found as the only physical domain that was accounted for 18% of the variance in the perception of satisfaction in life. For self esteem and emotional distress, 47% of the variability was significantly explained by three physical items namely, pain aches, fatigue and menstrual changes ( $b=2.1, CI, 2.56 - 17.45; p<0.0001$ ); ( $b=1.4, CI, .45-2.42; p<0.005$ ); ( $b=.91, CI, .21-1.61; p<0.01$ ) respectively. This suggests that of all these physical items, pain and aches made the largest unique contribution to the proportion explained. Similarly, pain and aches were the only physical item associated with cancer treatment matters, accounted for 20% of the score variance. With regard to social domain, sleep changes accounted for 27% of the score

variance. For the overall quality of life score, two physical items were found to be significantly associated with its score, namely pain and aches as well as fatigue, both accounting for 37% of its variance. As shown in Table 5, pain and aches contributed largely to the variance ( $b=6.89$ , CI, 3.36- 10.41;  $p< 0.0001$ ) as compared to fatigue ( $b=4.68$ , CI, 1.16-8.21;  $p<0.01$ ). With regards to depressive domain, pain and aches together with menopausal symptoms were found to explain the 20% of the score variance in the level of depression.

**Table 5.** Physical domain items associated significantly with other domains of QOL

Domains	Significant physical domain item(s)	R <sup>2</sup>	b	(95% CI)	P value
Illness-related matters	Fatigue	0.18	1.5	(.38, 2.5)	0.008
	Pain and aches		1.4	(1.7, 2.6)	0.02
Perception of satisfaction in life	Pain and aches	0.16	0.94	(.26, 1.62)	0.008
	Pain and aches		0.47	2.1	(2.56, 17.45)
Self esteem and emotional distress	Fatigue	0.47	1.4	(.45, 2.42)	0.005
	Menstrual changes		0.91	(.21, 1.61)	0.01
Cancer treatment matters	Pain and aches	0.2	0.42	(.80, 2.10)	0.0001
Social	Sleep changes	0.27	1.66	(.56, 2.7)	0.004
Overall quality of life	Pain and aches	0.37	6.89	(3.36, 10.41)	0.0001
	Fatigue		4.68	(1.16, 8.21)	0.01
Depressive level	Menopausal symptoms	0.2	0.53	(.80, 2.4)	0.01
	Pain and aches		0.42	(.71, 1.94)	0.01

<sup>b</sup> Adjusted regression coefficient

R<sup>2</sup> coefficient of determination

Stepwise multiple linear regression method applied for every model; model assumptions are fulfilled.

There were no interactions amongst independent variables. No multicollinearity detected.

## DISCUSSION

The present study reported the impact of pain interference level on the quality of life and depression of the breast cancer patients in a hospital in Malaysia. As mentioned earlier, previous studies have focused on the relationship between psychological factors and quality of life, without taking into consideration some physical symptoms such as pain. To our knowledge, this is the first study in Malaysia that examined the effects of pain interference level on patient's quality of life and depression in breast cancer patients. Pain has been reported to be a mild to severe problem for approximately 79% of the respondents in this study. Other outcomes consistently showed that the reported level of interference pain in patients' life corresponds to the level of psychological disturbance experienced by them. This is independent of the patients' age group, ethnicity, marital status, current stage of cancer and the presence of surgical treatment. Similarly, the pain and aches were found to affect other domains of quality of life, namely, illness-related matters, perception of satisfaction in life, self esteem and emotional distress, cancer treatment matters and the overall quality of life as reported by patients.

The most common issues reported by patients in the physical domain of quality of life are pain, fatigue and sleep changes. This finding lends support to a study undertaken by Rukiye *et al* which asserted that patients suffered from pain, anorexia and fatigue, which did not only shorten their lives, but also decreased their quality of life [25]. Approximately 79.3% of the patients in this study reported having pain interfering ranging from mild to moderate with their life regardless the stage they were at. Whilst the literature has documented that the prevalences of persistent pain after breast cancer surgery is between 20% to 65% [13, 26], the pain interference level in this study was reported to be slightly higher than in previous findings. There may be a few explanation for this: firstly, reported pain severity and its relationship with pain interference has been found to be non-linear [21]; secondly, not all the pain reported by patients will become chronic in nature, that is, for some patients, the pain is likely to subside within three months. It is noteworthy that the present study did not examine the pain severity and duration of pain (chronicity of pain as studied

by previous research) experienced by the patients. Furthermore, the present study suggests that the patients reported pain interference level regardless of the cancer stage and the presence of surgery in their treatment.

The present study indicated that patients who were affected severely by pain and aches scored significantly lower score in most of the QOL domains as compared to their counterparts who rated pain as not a problem or affected by pain in mild or moderate level. Likewise, patients who indicated having mild to moderate pain reported higher level of depressive symptoms compared to those who did not. These findings are in line with the ones found in the previous studies, which asserted that women who developed chronic pain after breast cancer surgery demonstrate diminished health-related quality of life, including impaired physical functioning and increased psychological distress<sup>[14, 27, 28]</sup>. As mentioned earlier, there are only a few studies that examine the relationship between pain and quality of life in breast cancer patients. Nonetheless the current findings lend support to the results found in earlier studies on these matters. Ferrell *et al* revealed that the amount of pain reported by patients has linear relationship with the social well-being domain<sup>[29]</sup>. In other words, this implies that those patients with higher level of pain were having poorer social well-being. Another study which studied the relationship between pain and life stress in women with recurrent breast cancer found that there is an association between pain and overall life stress<sup>[30]</sup>.

In line with the current findings, it was also found that 47% of the patients studied reported experiencing cancer-related pain and these patients indicated high scores in mood disturbance and lower level of quality of life as well as functional status compared to those without pain<sup>[17]</sup>. This is also consistent with the findings obtained from a study that examine pain and psychological status in Hong Kong. Physical symptoms such as pain and fatigue were found to be related with patients' level of anxiety and depression. Patients under treatment were found to have inadequate social support, experienced higher levels of symptoms and were more likely to have a poorer quality of life<sup>[31]</sup>. Likewise, breast cancer patients reported symptoms of distress corresponding to the amount of pain that they experienced following surgical treatment at three months and the pain persisted at eighteen months follow up<sup>[16]</sup>. Other studies also concur with the present study's result, that is, pain had a significant component affecting different aspects of patients' quality of life. Pain severity was found to have a positive correlation with patients' emotional, psychosocial and mental health. Similarly, higher pain frequency was associated with lower level of psychosocial scores; whilst the high level of pain interference was associated with lower functional ability and poorer psychological health status<sup>[18]</sup>. In another study, it was established that patients with pain were more likely to report low levels of social activity and became less resilient in their social networking as compared to those without pain. Similarly, patients with low levels of social activity and social support were more likely to report pain and impaired functional level compared to those with high levels of social activity<sup>[32]</sup>. A somewhat inconsistent finding was found in a study on breast cancer patients who were scheduled for autotransplantation; it was indicated that there was no relationship between types of coping strategies and overall pain intensity. This study also showed that level of catastrophizing, which is usually present in people with anxiety and depression was not related to pain intensity, sensory and affective pain<sup>[33]</sup>. On the other hand, a study on breast cancer patients who had undergone surgery reported that the level of catastrophizing had a linear relationship with pain intensity<sup>[34]</sup>. The discrepancy in findings could be attributed to the experience of treatment; those who were scheduled for transplant had no real experience of treatment effects whilst those who had undergone surgery and experienced the surgery effects were more able to relate their level of catastrophe with matters regarding pain.

The strength of this study is that it has brought into attention the importance of addressing pain issues in the assessment and management of breast cancer patients. More importantly, pain was found to be one of the physical symptoms that affects patients' quality of life and level of depression. Thus, the clinicians must not only inquire about pain intensity of interference level, but should also assess and monitor factors associated with pain. In addition, this study focused on how much the pain has affected people's life as compared to previous studies that focused much on the pain severity and duration. Whilst this can be a limitation, it can also be a strength as it has been emphasized that the amount of pain severity is not necessarily followed by the level of interference experienced by patients<sup>[21]</sup>. That way, it can be asserted that examining the level of interference will be more meaningful in the context of studying patients' level of quality of life.

The main limitation of this study is that its generalizability to other patients. This study was carried out in a hospital setting and it is probably generalizable to only hospital-based patients. Furthermore, the sample is relatively small and it is a cross-sectional study that only assesses pain after primary treatment was given. Hence it did not provide information on if and how the reported pain interference level will subside or substantiate with time since breast cancer treatment. The study also had no information about pertinent issues related to the pain such as pain intensity, duration, pain sites and types that can be pertinent to issues regarding to quality of life and depression. Thus it is highly recommended for future studies to address those pain issues in order to obtain more meaningful study results.

## CONCLUSION

The present study found that approximately 79% of breast cancer patients reported pain interference level ranging from mild to severe in Hospital Kuala Lumpur. The reported level of pain interference in patients' life corresponded to



the level of psychological disturbance experienced by them. This is independent of the patients' age group, ethnicity, marital status, current stage of cancer and the presence of surgical treatment. Pain and aches were found to affect patients' other domains of quality of life, namely, illness-related matters, perception of satisfaction in life, self esteem and emotional distress, cancer treatment matters and the overall quality of life as well as level of depression.

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