CHAPTER 4

RESULTS AND DISCUSSION

This chapter presents and discusses the study's findings. The results of this study are based on data from 58 patients from H. Adam Malik, Dr. Pirngadi, and Haji Hospitals in Medan, Indonesia. The findings of this study are presented as follows: subjects' characteristics, pain intensity, pain acceptance, pain behaviors, and the relationships among pain intensity, pain acceptance, and pain behaviors among chronic cancer pain patients.

Results

Subject Characteristics

A total of 58 chronic cancer patients who met the inclusion criteria were recruited from medical, surgical, and gynecological wards of H. Adam Malik, Dr. Pirngadi, and Haji Hospitals in Medan, Indonesia. Age of the subjects ranged from 25 to 76 years (M = 48.27, SD = 11.28), with the majority being middle-adult (72.4%) and more than half were female (56.9%). Most of the

subjects were Moslem (72.4%), and were married (91.4%). The average educational level was primary school (31.0%) and only a few of the subjects had attained a bachelor's degree (8.6%). More than half of the subjects had no monthly income (51.7%) being in categories of unemployed or housewife. Only a few of them (3.4%) had monthly income more than 1,000,000 rupiah (equivalent to 109.89 US dollar) (Table 4).

Table 4

Frequency and percentage of subjects' demographics characteristics (N = 58)

Demographic Characteristics	Frequency	Percentage
Age (years)		
20 – 39	9	15.5
40 – 64	42	72.4
65 and above	7	12.1
(*M* = 48.27, *SD* = 11.28, *min-max* = 25-76)		
Gender		

Female	33	56.9
Male	25	43.1
Religion		
Islam	42	72.4
Christian	15	25.9
Catholic	1	1.7
Level of education		
No formal education	4	6.9
Primary school	18	31.0
Junior High School	16	27.6
Senior High School	15	25.9
College or above	5	8.6
Marital Status		
Married	53	91.4
Single	4	6.9
Widowed	1	1.7

Table 4 (continued)

Demographic Characteristics	Frequency	Percentage
Occupation		
None (unemployed, housewife)	30	51.7
Farmer	13	22.4
Private employer	10	17.3
Government employer	4	6.9
Businessman	1	1.7
Income per month		
None	30	51.7
< 500,000 Rupiah	15	25.9
500,000 to 1,000,000 Rupiah	11	19.0
> 1,000,000 Rupiah	2	3.4

Subjects in this study were diagnosed with cancer and experienced with some level of pain for more than three months. Cancer of nasopharynx (24.2%) and breast (22.4%) were the common cancer types and more than half of the subjects were in stage III (56.9%). In order to

treat the cancer, approximately one third of the subjects received chemotherapy (39.7%). On the sites of pain, approximately one third of the subjects reported pain in head and neck (36.2%), followed by breast (22.4%) and abdomen (22.4%). The Non-Steroid Anti-Inflammatory Drugs (NSAIDs) were the most prescribed to relieve pain among subjects. Almost one third of the subjects received Mefenamic acid (31.0%) as a pain medication in the past 24 hours. This also revealed that one twentieth of subjects were not prescribed with any pain medication. After confirmed with the nurses, it was revealed that those patients were not prescribed with pain medication because they were just admitted to the hospital or undergoing chemotherapy (Table 5).

Table 5

Frequency and percentage of subjects' disease-related characteristics (N = 58)

Disease-related Characteristics	Frequency	Percentage
Diagnosis: Cancer of		
Nasopharynx	14	24.2
Breast	13	22.4

Cervix	7	12.1
Ovary	5	8.7
Lung	3	5.2
Fibrosarcoma	2	3.4
Malignant lymphoma	2	3.4
Penis	2	3.4
Stomach	2	3.4
Others	8	13.8
Stage of Disease		
Stage II	11	19.0
Stage III	33	56.9
Stage IV	14	24.1
Cancer Treatments		
Chemotherapy	23	39.7
Surgery	8	13.8
Surgery and chemotherapy	6	10.3
None	21	36.2

Table 5 (continued)

Disease-related Characteristics	Frequency	Percentage
Sites of pain (including surgical sites)		
Head and neck	21	36.2
Breast	13	22.4
Abdomen	13	22.4
Pubis	4	6.9
Chest	3	5.2
Extremities	3	5.2
Penis	1	1.7
Pain Medication in the past 24 hours		
Opioid Analgesic Drugs:		
Tramadol	16	27.6
Codeine	2	3.5
Non-Opioid Analgesic Drugs:		
Mefenamic acid	18	31.0
Ketorolac	9	15.5

None	13	22.4

Pain Intensity

Subjects in this study experienced mild to moderate pain (*M* = 3.43, *SD* = 1.69). None of the subjects reported severe pain because they were not included in this study to prevent inducing excruciating pain during data collection procedure (Table 6).

Table 6

Frequency and percentage of subjects' pain intensity level (N = 58)

Items (range of score)	Frequency	Percentage
Mild pain (1-3)	31	53.4
Moderate pain (4-6)	27	46.6
(*M* = 3.43, *SD* = 1.69, *min-max* = 1-6)		

Pain Acceptance

The pain acceptance score was at a low level with a mean score of 35.55 (*SD* = 13.72). For the pain acceptance subscales, activity engagement was at low level scored from 3 to 38 (*M* = 17.36, *SD* = 9.29) while pain willingness was at moderate level, scored from 3 to 34 (*M* = 18.19, *SD* = 6.72). (Table 7)

Table 7

Range, mean, and standard deviation of subjects' pain acceptance, activity engagement, and pain willingness (N = 58)

Items	Range of score		*M*	*SD*	Level
	Possible score	Actual score			
Pain acceptance	0-80	13-66	35.55	13.72	Low
Activity engagement	0-44	3-38	17.36	9.29	Low
Pain willingness	0-36	3-34	18.19	6.72	Moderate

Overall, more than half of the subjects were at a low level of pain acceptance (53.5%), followed by a moderate level (31.0%). Pain acceptance was divided into two subscales: activity engagement and pain willingness. In this study, most of the subjects were in low level of activity engagement (41.0%), followed by a very low level (31.0%). For pain willingness, most of the subjects reported a moderate level (46.5%), followed by a low level (35.5%). (Table 8)

Table 8

Frequency and percentage of subjects' pain acceptance, activity engagement, and pain willingness (N = 58)

Item (range of score)	Frequency	Percentage
Pain Acceptance (CPAQ)		
Very low (0-20)	7	12.1
Low (21-40)	31	53.5
Moderate (41-60)	18	31.0
High (61-80)	2	3.4
Activity Engagement		
Very low (0-11)	18	31.0

Low (12-22)	24	41.0
Moderate (23-33)	13	22.4
High (34-44)	3	5.2
Pain Willingness		
Very low (0-9)	6	10.4
Low (10-18)	20	35.5
Moderate (19-27)	27	46.5
High (28-36)	3	8.6

For activity engagement, the three highest ranking items were: 1) Despite the pain, I am now sticking to a certain course in my life (*M* =2.79, *SD* =1.09), 2) It's a relief to realize that I don't have to change my pain to get on with my life (*M* =2.50, *SD* =1.16), and 3) Although things have changed, I am living a normal life despite my chronic pain (*M* =1.90, *SD* =1.41). The three lowest ranking of activity engagement items were: 1) It's not necessary for me to control my pain in order to handle my life well (*M* =.76, *SD* =1.03), 2) Controlling pain is less important than other goals in my life (*M* =.77, *SD* =.96), and 3) It's O.K. to experience pain (*M* =1.05, *SD* =1.22).

For pain willingness, the three highest ranking items were: 1) My worries and fears about what pain will do to me are true (*M* = 2.64, *SD* = 1.32), 2) I have to struggle to do things when I have pain (*M* = 2.21, *SD* = 1.31), and 3) I avoid putting myself in situations where pain might increase (*M* = 2.15, *SD* = 1.36). The three lowest ranking items of pain willingness were: 1) I will have better control over my life if I can control my negative thoughts about pain (M = 1.64, SD =1.16), 2) My thoughts and feeling about pain must change before I can take important steps in my life (M = 1.69, SD = 1.27), and 3) Keeping my pain level under control takes first priority whenever I am doing something (M = 1.86, SD = 1.30). (Table 9)

Table 9

Item mean score, standard deviation, and level of subjects' pain acceptance (N = 58)

	Items	Mean	*SD*	Level
Activity engagement				
12.	Despite the pain, I am now sticking to a certain course in my life	2.79	1.09	Moderate

Table 9 (continued)

	Items	Mean	*SD*	Level
19.	It's a relief to realize that I don't have to change my pain to get on with my life	2.50	1.16	Moderate
6.	Although things have changed, I am living a normal life despite my chronic pain	1.90	1.41	Low
1.	I am getting on with the business of living no matter what may level of pain is	1.64	1.41	Low
2.	My life is going well, even though I have chronic pain	1.62	1.47	Low
9.	I lead a full life even though I have chronic pain	1.53	1.43	Low
8.	There are many activities I do when I feel pain	1.40	1.45	Low
15.	When my pain increases, I can still take care of my responsibility	1.40	1.28	Low
3.	It's O.K. to experience pain	1.05	1.22	Low
10.	Controlling pain is less important than other goals in my life	.77	.96	Very low
5.	It's not necessary for me to control my pain in order to handle my life well	.76	1.03	Very low

Pain Willingness

18.	My worries and fears about what pain will do to me are true	2.64	1.32	Moderate
20.	I have to struggle to do things when I have pain	2.21	1.31	Moderate
17.	I avoid putting myself in situations where pain might increase	2.15	1.36	Moderate
4.	I would gladly sacrifice important things in my life to control this pain better	2.10	1.37	Moderate
7.	I need to concentrate on getting rid of my pain	1.95	1.48	Low

Table 9 (continued)

	Items	Mean	*SD*	Level
14.	Before I can make any serious plan, I have to get some control over my pain	1.95	1.26	Low
13.	Keeping my pain level under control takes first priority whenever I am doing something	1.86	1.30	Low
11.	My thought and feeling about pain must change before I can take important steps in my life	1.69	1.27	Low
16.	I will have better control over my life if I can control my negative thought about pain	1.64	1.16	Low

Pain Behaviors

Approximately half of the subjects (48.3%) expressed a low level of pain behaviors and followed by a moderate level (43.1%). Only a few of them (8.6%) were at a high level of pain behaviors (Table 10).

Table 10

Frequency and percentage of subjects' pain behaviors (N = 58)

Item range of score	Frequency	Percentage
Pain behavior (PBOP)		
Low (0-3)	28	48.3
Moderate (4-7)	25	43.1
High (8-10)	5	8.6
(*M* = 3.84, *SD* = 2.28, *min-max* = 0-9)		

Five parameters of pain behaviors including: guarding, bracing, rubbing, grimacing, and sighing. Grimacing (*M* =1.52, *SD* =.66) and sighing (*M* =1.16, *SD* =.87) were the most frequent pain behaviors expressed by the subjects. While rubbing (*M* =.16, *SD* =.52) was the lowest occurrence among the subjects (Table 11).

Table 11

Range, mean, and standard deviation of subjects' pain behaviors parameters (N = 58)

Items	Actual score	Mean	SD	Level
Guarding	0-2	.76	.82	Moderate
Bracing	0-2	.26	.58	Low
Rubbing	0-2	.16	.52	Low
Grimacing	0-2	1.52	.66	High
Sighing	0-2	1.16	.87	Moderate

Additional information: The additional pain behavior parameters among patients with chronic cancer

Additionally, other pain behaviors were observed during the standardized protocol. These behaviors might be specific among Batak patients with chronic cancer pain. However, only one tenth (12.1%) of the subjects expressed the additional pain behaviors. Wording or saying God's name (5.2%) was expressed by subjects, followed by crying (3.4%). (Table 12)

Table 12

Frequency and percentage of subjects' additional pain behaviors parameters (N = 58)

Item	Frequency	Percentage
None	51	87.9
Crying	2	3.4
Wording (saying God name)	3	5.2
Crying and Wording	1	1.7
Crying and Yelling	1	1.7

The relationship among pain intensity, pain acceptance, and pain behaviors

This study was conducted to explore the correlation among pain intensity, pain acceptance, and pain behaviors in patients with chronic cancer pain. In this study, the correlation assumptions were tested. The assumption of normality was met and data were approximately linear. Therefore, the Pearson's moment correlation coefficient (r) was used to analyze the correlation of studied variables.

Table 13 shows the relationships among pain intensity, pain acceptance, and pain behaviors of the subjects. Pain intensity was correlated with pain acceptance (r =-.48, p <.01) and moderately correlated with pain behaviors (r =.59, p <.01). These findings suggested that subjects who reported high level of pain intensity had a low level of pain acceptance and expressed a high level of pain behaviors.

This study also found that pain acceptance was moderately correlated with pain behavior (r =-.59, p <.01). This finding suggested that subjects who have high level of pain acceptance also have a low level of pain behaviors. For the subscales of pain acceptance, activity engagement was correlated with pain intensity (r =-.45, p <.01) and moderately correlated with pain behaviors (r =-.50, p <.01). Pain willingness was correlated with pain intensity (r =-.36, p <.01) and

moderately correlated with pain behaviors (r =-.51, p <.01). These finding suggested that subjects with a high level of activity engagement and pain willingness, reported a low level pain intensity and expressed a low level of pain behaviors.

Table 13

The relationship among pain intensity, pain acceptance, and pain behaviors of the subjects (N = 58)

Variables	Correlation				
	Pain Intensity	Pain Acceptance	Activity Engagement	Pain Willingness	Pain Behaviors
Pain intensity	1				
Pain acceptance	-.48**	1			
Activity engagement	-.45**	.90**	1		
Pain willingness	-.36**	.80**	.46**	1	
Pain behaviors	.59**	-.59**	-.50**	-.51**	1

** (p < .01)

Among five parameters of pain behaviors, guarding and grimacing were constantly associated with all variables (Table 14). Guarding was low correlated with pain intensity (r = .40, p<.01), pain acceptance (r =-.48, p<.01), activity engagement (r =-.33, p<.05), and moderately correlated with pain willingness (r =-.53, p<.01). Grimacing was moderately correlated with pain intensity (r =-.52, p<.01), pain acceptance (r =-.51, p<.01), activity engagement (r =-.50, p<.01), and low correlated with pain willingness (r =-.34, p<.01). Sighing was moderately correlated with pain intensity (r =-.49, p<.01), and low correlated with pain acceptance (r =-.42, p<.01), and activity engagement (r =-.45, p<.01), but was not correlated with pain willingness. Rubbing was low correlated with pain acceptance (r =-.29, p<.05) and pain willingness (r =-.34, p<.01), but was not correlated with pain intensity and activity engagement. However, none of the studied variables were found to be correlated with bracing behavior.

Table 14

The relationship among pain intensity, pain acceptance, pain behaviors parameter of the subjects (N = 58)

Variables	Guarding	Bracing	Rubbing	Grimacing	Sighing
Pain intensity	.40**	.24	.20	.52**	. 49**
Pain acceptance	-.48**	-.17	-.29*	-.51**	-.42**
Activity engagement	-.33*	-.10	-.18	-.50**	-.45**
Pain willingness	-.53**	-.21	-.34**	-.34**	-.23

* (p<.05), ** (p < .01)

Discussion

This study explored the level of pain intensity, pain acceptance, and pain behaviors. Also, this study examined the relationship among pain intensity, pain acceptance, and pain behavior of patients with chronic cancer pain. 58 patients were recruited purposively from H. Adam Malik, Dr. Pirngadi, and Haji Hospitals in Medan, Indonesia.

Subjects' Characteristics

The results of this study on demographic data showed subjects' age ranged from 25 to 76 years old with average age 48.27 years (*SD* = 11.28). A majority of the subjects (72.9%) were in the middle adult (40–64 years old) and there were females than males (56.9% female and 43.1% male). Cancer of nasopharynx (24.2%) and breast (22.4%) were the most frequent diagnoses among the subjects. Among male subjects, the prevalence of nasopharyngeal cancer was high, while females were mostly diagnosed with breast cancer, followed by cervical cancer (Table 2). Both nasopharyngeal and breast cancer were the second rank of cancer prevalence among male and female in Indonesia (Tjindarbumi & Mangunkusumo, 2002).

Concerning severity of the disease, majority of the subjects were in advanced stage of the cancer (56.9% in stage III and 24.1% in stage IV). These stages are considered to be the late stage of the cancer. Constantly, Poorwo and Suhardy (1992 as cited in Tjindarbumi & Mangunkusumo, 2002) stated that 60 to 70% of cancer patients in Indonesia seek medical treatment when it is already too late. Perhaps, the level of education and socioeconomic level contributes to this situation. Most of the subjects were at the low level of educational background (31.0% primary school and 27.6% junior high school). Subjects might not know the seriousness of the disease and

how to treat the disease or they might tend to seek traditional treatments at early stage of cancer. The finding showed that more than half of the subjects had no monthly income (51.7%) and one fourth of the subjects (25.9%) had monthly income under 500,000 Rupiah (equal to 54.94 US Dollar). The low level of education and economic status might prevent the subjects from seeking medical treatments early.

For cancer treatments, more than one third of the subjects received chemotherapy (39.75%). Chemotherapy has proved to have good efficacy in cancer treatments. For a certain types of cancer such as nasopharyngeal cancer, radiotherapy and its combination with other therapy has shown to have a good result. The finding of this study revealed that none of the subjects received radiotherapy for their treatment including those subjects with nasopharyngeal cancer. After confirmation with hospital staff, it was found that none of the cancer patients of any type of cancer received radiotherapy due to an absence of the radiotherapy facilities. One hospital had had a radiotherapy facility, but this facility was already out of service.

Pain Intensity

The pain intensity in this study was described in terms of "current" pain. Pain intensity was low with an average score of 3.43 (*SD* = 1.69). More than half of the subjects were experiencing low pain (53.4%), followed by moderate pain (46.6%). As mentioned earlier, most of the subjects in this study were at an advanced stage (stage III and IV), which could lead to painful condition. In advanced stage of cancer, approximately 70% of cancer patients experience pain (Bressia et al., 1992 as cited in Shanon et al., 1995). Moreover, pain intensity tends to increase when cancer has metastasized to the bone (Twycross et al., 1996 as cited in Davis, 2003; Spiegel et al., 1994). Interestingly, the finding of this study demonstrated different results. Most of the subjects were experiencing mild to moderate pain even though the stage of the cancer was advanced.

Several factors contribute to the low level of pain intensity. In this study, chronic cancer patients who experienced a high level of pain intensity were not included to prevent inducing excruciating pain during data collection. Moreover, this study revealed that more than half of the subjects (52.3%) were diagnosed with cancer of nasopharynx (24.2%), breast (22.4%), and lung

(5.2%). In fact, nasopharyngeal, breast and lung cancer are painless in nature. Pain in nasopharyngeal cancer was rarely reported by the patients and might be caused by a feeling fullness or ringing in the ears or headache. On the other hand, breast cancer may not cause any pain or discomfort in early stage of the disease. Pain in breast cancer tends to increase when the tumor has metastasized especially to the bone. This condition contributed 80% of the pain incidence and was usually characterized with moderate to severe pain (Cherny & Foley, 1996 as cited in Van Leeuwen & Travis, 2005). In this study, no data found to support the occurrence of cancer metastases. In lung cancer, pain usually visceral and appears unrelated to direct invasion of local structure. The symptom of pain also secondary to peripheral growth of the primary tumor. Therefore, pain intensity was considered low in this study.

Turk and colleagues (1998) confirmed that the relationship between pain intensity and the extent of disease may not be linear and showed conflicting results. Individual threshold may contribute to the degree of pain reported, and be affected by a variety of factors, such as physical comfort, mood, medications, and social environment, thus causing perceived intensity of pain to increase or decrease (McGuire & Sheidler, 1993). According to Daut and Cleeland (1982), the

prevalence and severity of the cancer pain varies among individuals depending on type of tumor, stage of the disease, the location of metastases, and treatment adequacy. The finding revealed that the majority of the subjects (77.6%) were prescribed various pain medications to lessen their pain (Table 4). Medication is one of the factors affecting the intensity of pain, even though the pain intensity depends primarily on the etiology of the pain (McGuire & Sheilder, 1993). The pain medication taken by the subjects were non-opioid analgesic drugs (46.5%) or opioid analgesic (31.1%). In mild to moderate pain, WHO recommends the use of mono-therapy (NSAID, paracetamol, and aspirin) for pain relief and in combination with opioid for moderate to severe pain (Table 1). The finding of this study revealed that most of the subjects were prescribed non-steroid anti-inflammatory drugs (NSAIDs). NSAIDs are commonly accepted as a component of cancer-related pain treatment (Mercandante, 2001 as cited in Rodriguez, Contreras, Galvez et al., 2003).

Concerning demographic data, this study did not find an influence of age and gender on pain intensity. Age has been recognized as an important factor influencing pain intensity. Older patients were more likely to experience lower pain intensity, were more able to tolerate pain, and

had less control of pain (Badeau et al., 2004; Yates et al., 2002; McMillan 1989). The finding of this study showed that senior age patients (65 years old and above) reported a lower pain score (M = 2.85, SD = 1.57) compared to middle adult (M = 3.57, SD = 1.71) or young adult (M = 3.22, SD = 1.78). However, different age groups were not significantly different in pain intensity (F =.60, p =.55) (Table B2). Congruently, Stein and Miech (1993) reported that there was no difference between younger and older patients in reporting of pain intensity among cancer patients. This finding may be related to the small sample size and a restriction of the range of the score of pain intensity (score 7 and above were not included).

Gender is believed to play a role in response to pain intensity. Females were more likely to report recurrent pain, severe level of pain, and longer duration of pain compared to males (Unruh, 1996). Females also experienced more visceral pain and were more concerned about the effect of the pain (Vallerand & Polomano, 2000). The finding of this study revealed that most female subjects were diagnosed with breast cancer while males were diagnosed with nasopharyngeal cancer. Moreover, some subjects also received surgical therapy that might contribute to increasing pain. However, there was no sex difference in the mean scores of pain

intensity between female and male subjects in this study (t =-.43, p =.67) (Table B3). Consistently, Edrington and colleagues (2004) and Hirsh and colleagues (2006) found no significant sex differences in mean pain intensity scores. The differences between males and females in pain experience are poorly understood (Robinson et al., 2001). The differences were considered small and existed only for certain forms of stimulation and situations such as with the presence of disease, experimental or clinical setting, and nutritional status (Barkley, 1999).

Pain Acceptance

This study has demonstrated that pain acceptance scores ranged from 13 to 66 with the average score of 35.55 (SD = 13.72) and more than half of the subjects were in a low level of pain acceptance (53.5%), followed by moderate level (31.0%). On the pain acceptance subscales, activity engagement was low with an average score of 17.36 (SD = 9.29) and pain willingness was moderate with an average score of 18.19 (SD = 6.72).

Activity engagement in this study refers to the degree of activities in life without influence from the level of pain. Approximately half of the subjects were at a low level of activity

engagement (41.0%), followed by a very low level (31.0%). Concerning on the items of activity engagement, the items ranged from very low to moderate level. Two items was rated very low by subjects including item 5 (It's not necessary for me to control my pain in order to handle my life well [*M* = .76, *SD* = 1.03]) and item 10 (Controlling pain is less important than other goals in my life [*M* = .77, *SD* = .96]). These findings suggested that controlling pain such as taking medication or seeking the available treatment are necessary for subjects in order to handle their life, and controlling their pain is the most important goal in their life.

Among Indonesians, people tend to take rest, spend all their time in bed and reduce their activities when they have a disease. They may ask permission from workplace or avoid housework, and they leave everything to the family members to support them. Therefore, the activity engagement was considered to be at a low level.

On the other hand, pain willingness in this study refers to the absence of attempt to avoid or control the pain. Approximately half of the subjects were at a moderate level of pain willingness (46.5%), followed by a low level (35.5%). Pain willingness is not simply to have less pain but having a full life with pain presence. Bland and Henning (2004) stated that patients with

chronic pain may redefine themselves and incorporate the new limitation into their present capability. In this study, pain willingness ranged from low to moderate level. Four items of pain willingness were rated moderately including item 18 (My worries and fears about what pain will do to me are true [*M* = 2.64, *SD* = 1.32]), item 20 (I have to struggle to do things when I have pain [*M* = 2.21, *SD* = 1.31]), item 17 (I avoid putting myself in situations where pain might increase [*M* = 2.15, *SD* = 1.36]), and item 4 (I would gladly sacrifice important things in my life to control this pain better [*M* = 2.10, *SD* = 1.37]).

Pain willingness also may be influenced by economic level. This study revealed that the economic level was low. More than half of the subjects had no monthly income (51.7%) being in categories of unemployed or housewife. Only a few of them (3.4%) had monthly income more than 1,000,000 rupiah (equivalent to 109.89 US dollar) (Table 4). Within this condition, the economic level may be a burden for obtaining advanced treatments. Therefore, subjects may have no choice and they have to be willing to have pain in their life. Moreover, this study also revealed that more than two third of the subjects (72.4%) were Moslems. Moslems believed that sickness and diseases are as a test from the God. Facing and accepting the disease are a part of the

worship. Therefore, pain willingness in this study was moderate and relatively higher compared to activity engagement.

Concerning demographic data, this study found that pain acceptance and the subscales were significantly different in different stages of cancer (pain acceptance [F = 4.65, p = .01], activity engagement [F = 3.17, p = .05], and pain willingness [F= 3.62, p = .03]) (Table B3). Severity of the disease has been found to influence disability and affect patients' functional status. These findings suggest that those patients who had advanced disease were more likely to have difficulties to accept the pain thus lowering their ability to engage in several activities and be less willing to have pain. However, this study did not find any differences of gender, age, or educational background in pain acceptance and the subscales.

Gender, as mentioned previously, has a role in pain experience. Several studies have found that gender was a significant predictor of disabilities (McCracken, 1998; Unruh, 1996). Females seem to have lower pain thresholds, a greater ability to discriminate painful sensations, higher pain ratings, and a lower tolerance for pain. However, the roles of gender in pain acceptance were considered not different. Similarly, this study found that pain acceptance and the

subscales were not significantly different between male and female subjects (pain acceptance [t =.73, p =.46], activity engagement [t =.22, p =.82], and pain willingness [t =1.20, p =.24]) (Table B1). This finding is supported by previous study; McCraken (2005b) and McCracken (1998) found that pain acceptance scores were not significantly correlated with gender.

Age has been found to influence the thought process. Older age people seem to have more experiences in their life, which thus contribute to the maturation of thought and affection. Yates and colleagues (2002) reported that older patients were more willing to tolerate pain and perceived less control over their pain among cancer patients. However, in this study, there was no significant difference between younger and older age in pain acceptance and the subscales (pain acceptance [F =1.48, p =.15], activity engagement [F =1.27, p =.26], and pain willingness [F =1.70, p =.08]) (Table B2). The finding of this study demonstrated a different result from previous study. Two factors may contribute to this finding. First, the sample size of this study was relatively small. Second, a restriction of age range that most of the subjects (72.3%) were at middle adult age (40-64 years old), this finding may contribute to a non-significant difference in thought process.

Education can influence the maturation of thought process through knowledge. Knowledge is an important aspect of the cognitive dimension. Knowledge can affect patients' perceptions to pain and the interventions (McGuire & Sheilder, 1993). McCracken (2005b) found that pain acceptance and its subscale have a very low correlation with the years of education (pain acceptance [r = .18, p <.01], activity engagement [r = .17, p <.05], and pain willingness [r = .14, p<.05]). In this study, the educational levels did not significantly influence the pain acceptance and the subscales. Educational levels did not significantly different in pain acceptance or the subscales (pain acceptance [F =.75, p =.56], activity engagement [F =1.53, p =.20], and pain willingness [F =1.03, p =.40]) (Table B4). The small sample size of this study may contribute to this finding. In fact, the relationship between educational levels and pain acceptance was considered very low. Moreover, pain acceptance is a mental exercise and involves an active or ongoing process and not simply a decision to disengage from struggling with pain (McCracken & Eccleston, 2003). Therefore, this study found no different pain acceptance level in different levels of education.

Pain Behaviors

Pain behaviors are overt and observable behaviors (Fordyce, 1976). In this study, pain behaviors refer to observable behaviors that cancer patients exhibit in response to the pain including guarding, bracing, rubbing, grimacing, and sighing, when they engage with a certain level of pain. This study demonstrated that the expressions of pain behaviors were at a low level with an average score of 3.84 (*SD* = 2.28). Approximately half of the subjects expressed with low pain behaviors (48.3%), followed by moderate (43.1%). Several factors may contribute to the low level of pain behaviors including the intensity of pain and culture.

According to Fordyce (1976), pain could produce a certain behavior to communicate the pain to others. Additionally, Pilowski (1994) stated that the presence of pain is often signaled by some kind of visible or audible behavior. Pain behaviors are influenced by the level of pain intensity, and pain behaviors have a positive relationship with pain intensity. Previous studies demonstrated that pain behaviors associated with the pain intensity (Ahles et al., 1983; Asghary & Nicholas, 2001; Buckelew et al., 1994; Wilkie et al., 1992). Patients who are experiencing a high level of pain intensity, also express a high level of pain behaviors. In this study, it was revealed

that more than half of the subjects were in a low level of pain intensity. Therefore, they expressed a low level of pain behaviors.

Ethnic group and culture differ in expression of pain behaviors (Lofvander & Furhoff, 2002). Western cultures are quite different from eastern cultures. People from eastern cultures tend to be more stoic and less acceptable of pain-related impairment whereas people from western cultures are more liberal, permissive, and pluralistic. This study conducted in Indonesia where the ethnic culture differs from western countries. Moreover, there was a tradition for men in Batak society to "stand up" whenever they are suffering. It was "shameful" if other people, especially those who are not family members or relatives, find out that they are suffering. These conditions somehow contribute to the low level of pain behaviors in subjects of this study.

Among five parameters of pain behaviors, grimacing (M =1.52, SD =.66) and sighing (M =1.16, SD =.87) were the most frequent pain behaviors expressed by the subjects (Table 10). Grimacing behavior was defined in this study as an obvious facial expression of pain that may include furrowed brow, narrowed eyes, tightened lips, corners of mouth pulled back, and clenched teeth. Frequent grimacing, sighing, or guarding behaviors may indicate that subjects

were experiencing higher level of pain intensity. These behaviors may vary among individuals and the underlying diseases. For example, in patients with rheumatoid arthritis, Anderson and colleagues (1988) observed that patients demonstrated frequent guarding, passive rubbing, and rigidity as expressions of their pain. Chronic cancer pain is considered different from other types of non-cancer chronic pain such as low back pain or migraine. It is no longer a symptom of tissue injury, but a condition in which pain and pain behaviors become the primary disease processes (Sternbach, 1990). Foley (1979 as cited in Ahles et al., 1983) confirmed that the sources of pain in cancer disease are broad and affect multiple sites of the body. Some subjects were unable or found it difficult to identify the site of the pain. Therefore, subjects expressed mostly with grimacing, sighing and/or guarding behaviors when experiencing pain while other behaviors such as rubbing, which is associated with the affected area, were more likely to be less expressed by the subjects.

Concerning demographic data, this study did not find an influence of gender or age on pain behaviors. Gender may contribute to the performance of pain behavior. However, this study found that there was no difference between female and male subjects in pain behaviors (t =-.48, p

=.64) (Table B1). In contrast, several studies demonstrated that gender was associated with performance of pain behaviors. These studies found that women were more likely to exhibit pain behaviors, and reported more avoidance, and longer duration of pain behaviors compared to men (Keefe et al., 2000; Sullivan et al., 2000; Philips & Jahanshahi, 1986).

With age, again, this study found no significant difference among senior age, middle adult, or young adult in pain behavior (F =1.39, p =.256) (Table B2). This may be because of the inclusion criterion related to age specified adult and above, consisting of young adult, middle adult and senior age. These age categories might be similar in the ability to tolerate pain and the low control of pain. Moreover, this study did not find any significant difference in demographic data due to the small sample. This study included only 58 subjects, which was considered an inadequate sample size to perform subgroup analysis.

Relationships among Pain Intensity, Pain Acceptance, and Pain Behaviors

Generally, the finding of this study demonstrated that pain intensity, pain acceptance, and pain behaviors were significantly correlated (Table 13). Pain intensity was correlated with pain

acceptance (r =-.48. p <.01). This result shows that subjects who have higher pain acceptance reported lower pain intensity. According to Gate Control Theory (Melzack & Wall, 1965), the brain has a function to evaluate and modulate pain impulses, and through cognitive processes, will alter the transmission of pain intensity. Therefore, pain can be modified by how patients think of their pain, their expectation, and the meaning of pain in their life. As mentioned previously, pain acceptance is associated with cognitive processes. Pain acceptance is self-awareness and involves disengagement from struggling with pain (McCracken & Eccleston, 2003). For pain acceptance subscale, activity engagement and pain willingness were significantly correlated with pain intensity. Pain intensity was correlated with activity engagement (r =-.45, p <.01) and pain willingness (r =-.36, p <.01). This finding was supported by evidence from previous studies. A high level of pain acceptance was associated with a low level of pain intensity (McCracken, 2005b; McCracken, 1998; McCracken & Eccleston 2003). Similarly, the findings from previous studies showed that correlation between pain intensity and pain acceptance was relatively low. McCracken (1998) confirmed that pain acceptance is not functioning to have low

level of pain, but addresses an effort to better adjust in patients' functioning despite pain by involving cognitive processes.

This study also found pain intensity was moderately correlated with pain behaviors (r =.59, p <.01). This finding reflects that those subjects with a high level of pain intensity expressed more pain behaviors. The presence of pain is signaled by visible or audible behaviors (Pilowski, 1994). Fordyce (1976) stated that pain behavior is the way patients communicate to others that they are experiencing pain. Similarly, previous studies have shown that pain behaviors have a positive association with pain intensity (Ahles et al, 1983; Asghari & Nicholas, 2001; Buckelew et al., 1994). In chronic pain, when pain occurs, patients may respond to the pain in various ways such as guarding, rubbing, bracing, grimacing, and sighing. Among these pain behaviors, pain intensity was moderately correlated with grimacing (r =.52, p<.01), sighing (r =.49, p<.01) and had a low correlation with guarding behavior (r =.40, p<.01).

Furthermore, this study found that the pain acceptance was moderately correlated with pain behaviors (r =-.59, p <.01). As mentioned earlier, pain behaviors might be affected by several pain consequences and involve a learning process in the context of individual and social

environments (Fordyce, 1976; 1978). Turk and colleagues (1983 as cited in McCracken, 2005a) confirmed that patients' interpretation, beliefs, and cognitive processes may influence the manifestation of the overt behaviors. The overt behaviors such as facial grimacing, guarding, and sighing, may be expressed because of the patient's attempt to control the pain. Those behaviors are more likely to be maintained within the maladaptive cognitive processes (Turk & Flor, 1999). By contrast, patients who recognized their limitations and realized that living was not only facing the pain and finally accept their pain without interfering with the valuable things in their lives, have demonstrated a better adjustment to pain and expressed lower pain behaviors. This study found that pain acceptance subscales, activity engagement and pain willingness, were significantly associated with pain behaviors. Pain behaviors were moderately correlated with activity engagement (r =-.50, p <.01) and pain willingness (r =- .51, p <.01). The results reflected that subjects who have a high level of pain behaviors are more likely to engage in a low level of activity and pain willingness. Previous studies showed that pain acceptance and the subscales were correlated with pain behaviors. Pain acceptance was found to be correlated with less depression and overt pain behaviors (Jacob et al., 1993 as cited in McCracken & Eccleston,

2003), less avoidance and disability, and more daily uptime (McCracken, 1998), better mental health (Viane et al., 2003), and less attention to pain (Viane et al., 2004). In this study, the dimension of pain behaviors may differ from previous studies. Almost all parameters of pain behaviors have a strong correlation with pain acceptance and the subscales (Table 14). This finding suggested that those subjects who had a low level of pain acceptance were more likely to express frequent grimacing, sighing, or guarding behaviors.

In Summary, the findings of this study show that pain intensity, pain acceptance, and pain behaviors were at low level. When subjects were experiencing pain, they were able to accept their pain and expressed low pain behaviors. Those subjects with a high level of pain intensity could be identified through their behaviors, which were frequent grimacing, sighing, or guarding behaviors. On the other hand, subjects who had a high level of pain acceptance expressed less frequent pain behaviors.