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**Master's Thesis of Nursing Science**

**Patient-Related Factors to Pain  
Management among Mongolian  
Cancer Patients**

몽골 암환자의 통증 관리에 영향을 미치는 환자 관련 요인

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# Patient-Related Factors to Pain Management among Mongolian Cancer Patients

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이 논문을 간호학 석사 학위논문으로 제출함

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## **Abstract**

Pain is one of the most common symptoms of cancer and approximately 25-75% of cancer patients experience pain. A patient who is experiencing pain plays an important role in identifying and assessing pain as well as in managing it. This study aimed to identify levels of anxiety, depression, beliefs on pain and analgesics, pain intensity, pain interference and adequacy of a pain management index and to examine their relationships among Mongolian cancer patients.

A descriptive, cross-sectional design was used in this research. Data from convenience sampling of 145 cancer patients were collected from three hospitals and three hospices from February 19 to March 5, 2016. The independent t-test, one-way ANOVA, and Pearson's correlation were performed using the SPSS 23.0 program.

Among the participants, levels of both anxiety and depression were mild. Middle-aged patients were more anxious, while lung cancer patients, stage-IV cancer patients, and palliative care patients were more depressed. The highest concerns were fatalism, tolerance of analgesics, and monitoring disease progression. Patients who experienced cancer recurrence had fewer misbeliefs on pain and analgesics. Patients who were middle-aged, had completed high school education, lived in an urban setting, or were receiving hospice care reported higher levels of pain intensity and interferences.

Patients who were religious or were receiving curative treatment had less pain intensity. High-income patients reported more pain interference. Fifty (34.4%) patients were under-treated for pain control, and they had higher rates of anxiety, depression, concern on immune system, fear of addiction, pain intensity, and pain interference. Patients who were female, non-religious, diagnosed with lung or cervical cancer, or were receiving curative treatment were more likely to be inadequately treated for pain control.

As correlational study, patients who had higher levels of misbeliefs on pain and analgesics, pain intensity and interference were inadequately treated.

The findings of the present study can be used to enhance effective communication between patients and their health professionals, provide guidance for educating patients on their illness and pain, and develop interventions to reduce patient-related factors influencing inadequate pain management. This study enriches knowledge in pain management among Mongolian cancer patients and may help health care providers and patients be aware of patient-related factors influencing pain management.

Key words: Anxiety, Depression, Pain Severity, Pain Management, Cancer,  
Mongolia

Student ID: 2014-25137

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# **CHAPTER I. INTRODUCTION**

## **1.1 Background**

Pain is one of the most common symptoms of cancer patients (van den Beuken-van Everdingen et al., 2007) and can also influence a person's functioning (Gilson, Joranson, & Maurer, 2007) and quality of life (Breivik et al., 2009; Olufade, Gallicchio, MacDonald, & Helzlsouer, 2015). Nearly 25% of early stage cancer patients experience pain, and this increases to 60% during treatment and 75% in advanced stages (Fisch et al., 2012; van den Beuken-van Everdingen et al., 2007). Approximately 90% of cancer pain can be effectively controlled by pharmacological therapies which are guided by the World Health Organization (WHO, 1996), but patients are still experiencing pain (Jacox, Carr, & Payne, 1994; Yates et al., 2002).

Barriers to effective pain management are related to institutions, health care providers, patients, and their caregivers (Breivik et al., 2009). Institutional barriers are availability of capacity and policy of the organization, while health care provider-related barriers are lack of knowledge and misconceptions on effects of available medications (Pargeon & Hailey, 1999). Family members and caregivers of cancer patients have significant barriers towards pain management such as physiological distress, lack of knowledge, and attitudinal barriers, especially if the

patient is no longer able to meet his or her needs (McPherson, Hadjistavropoulos, Devereaux, & Lobchuk, 2014; Ovayolu, Ovayolu, Aytac, Serce, & Sevinc, 2015). Patient-related barriers are diverse including misconceptions on medication effects, poor communication with their health care providers, and their personal beliefs (Oldenmenger, Sillevius Smitt, van Dooren, Stoter, & van der Rijt, 2009). Emotional components of physical illness, especially anxiety and depression, may increase the distress of physical illness and negatively affect illness management (Snaith & Zigmond, 1994).

Researchers also emphasized that pain management depends on culture and health care system (Juarez, Ferrell, & Borneman, 1999; Valeberg et al., 2009). Patient-related perceived barriers of Asian cancer patients to pain management were notably higher than those of Western patients, especially for concerns about disease progression, tolerance, and fatalism (Chen, Tang, & Chen, 2012).

In Mongolia, cancer is the second (23.4%) leading cause of death. Almost 75.9% of cancer patients are diagnosed during advanced stages (III and IV) of disease and 64.3% of those survive for less than a year after the diagnosis (*Health Indicator of Mongolia* 2013). Few studies had investigated about patient-related factors of cancer pain management among Mongolian patients. Therefore, it is critical to identify patient-related factors in order to effectively treat and manage pain in Mongolian cancer patients.

## **1.2 Purpose of Study**

The purpose of this study was to identify the levels of anxiety, depression, beliefs on pain and analgesics, pain severity and pain management and to find correlations among these variables in the sample of Mongolian cancer patients.

**The specific aims of the study are to:**

- A. Identify levels of anxiety, depression, beliefs on pain and analgesics, severity of pain intensity and pain interference, and adequacy of pain management of the participants.
- B. Identify differences of the variables by demographic and disease-related characteristics.
- C. Identify correlations among the variables.

## **1.3 Definition of Terms**

### **1. Anxiety and Depression**

Conceptual definition of anxiety is the state of generalized anxiety not necessarily focused upon any situation. The concept covers the state of anxious mood, restlessness, and anxious thought (Snaith & Zigmond, 1994).

Conceptual definition of depression is the stage of grief, demoralization, low self-esteem, and pessimism (Snaith & Zigmond, 1994).

The Mongolian version of the Hospital Anxiety and Depression Scale, translated by the translation team of the present study, was used to assess levels of anxiety and depression of the participants.

### **2. Belief on Pain and Analgesics**

A patient's belief on pain and analgesics has eight different aspects: (a) concern that analgesics may block one's ability to monitor illness symptoms, (b) concerns about side effects of analgesics, (c) concern that analgesic tolerance may later diminish analgesic effectiveness, (d) fatalism about experiencing uncontrolled cancer pain, (e) belief that 'good' patients do not complain, (f) concerns about distracting health caregivers, (g) concern that pain medications may impair the immune system, and (h) fear of addiction to pain medication (Gunnarsdottir,

Donovan, Serlin, Voge, & Ward, 2002).

The Mongolian version of the Barrier Questionnaire-II, translated by a translation team of the present study, was used to assess patients' belief on pain and analgesics.

### **3. Pain Severity**

Pain intensity indicates level of pain such as worst, least, average and current (Charles . S Cleeland, 2009).

Pain interference is the level of impact of pain on functioning of general activity, mood, walking ability, normal work, relations with other people, sleep, and enjoyment of life (Cleeland, 2009).

The Brief Pain Inventory-Short Form (BPI-SF) was used to identify pain intensity and interference in this study. From this, the third and seventh questions were used to assess adequacy of pain management. (Note: the second and eighth questions were not used in the present study). The translation team translated the BPI-SF from English into Mongolian.

### **4. Pain Management**

Adequacy of pain management describes whether cancer pain is adequately treated or inadequately treated. Of the BPI-SF, the seventh question on type of pain medication and the third question of worst pain are used to compute pain

management index (Cleeland et al., 1994).

## CHAPTER II. LITERATURE REVIEW

### 1. Pain and Pain Management

Cancer influences patients and their families both emotionally and physically (Bultz & Carlson, 2006). Pain, one of the most common symptoms among cancer patients, is always subjective and “whatever the experiencing person says it is, existing whenever the experiencing person says” (McCaffery & Moss, 1968). The International Association for the Study of Pain defined pain as “an unpleasant sensory or emotional experience associated with actual or potential tissue damage or described in terms of such damage” (Merskey, H., & Bogduk, N., 1994).

Among the multiple guidelines on pain management, the 3-ladder pain medication guideline by the WHO is the gold standard for pain treatment and control. Unfortunately, many cancer patients are experiencing pain. Of cancer patients, 25% experience pain in the early stage of the disease, 60% during treatment, and 75% in advanced stages (Fisch et al., 2012; van den Beuken-van Everdingen et al., 2007). Breivik and colleagues found that 56% of their 5,084 European cancer research participants suffered moderate to severe pain, and 69% had difficulties with everyday activities (Breivik et al., 2009).

The barriers to optimal pain management are classified into three categories: systematic or institutional, professionals, and patient/family related barriers. At the institutional or systemic level, barriers are low priority given to cancer treatment,

problems of criteria or availability of culturally sensitive instruments for pain assessment, restrictive regulations or policies of controlled substances, and failure to hold healthcare professionals accountable for pain assessment (Ferrell, Coyle, & ebrary Inc., 2015; Sun et al., 2007). Health care professionals' barriers include poor knowledge about accurately identifying and assessing pain, lack of time and ability for reassessment, not using validated measurement tools, problems in communication with health care team members and patients, and bias in dealing with patients (Ferrell et al., 2015; Jacobsen, Sjogren, Moldrup, & Chrstrup, 2007). Patient/family/societal barriers are highly subjective and include the personal nature of pain experience, lack of awareness on the importance of reporting pain, poor communication with healthcare professionals and misconceptions about pain medication (Ferrell et al., 2015; Ward et al., 1993).

As a complex problem, pain considerably and differently decreases each person's quality of life and general functioning as well as that of their family or caregivers (Sun et al., 2012; Iwase et al., 2015). Under these circumstances, some studies focused on clarifying influential aspects of pain treatment and management and found that ineffective pain management involved not only problems of the health care provider, but also patients and their caregivers (Pargeon & Hailey, 1999).

## **2. Anxiety and Depression.**

Emotional difficulties such as depression, anger, distress, anxiety, decreased ability to concentrate, mood disturbance, and loss of control may be associated with a person's illness and can affect pain severity and management (Ferrell et al., 2015).

As well, emotional responses can be exacerbated by pain severity, illness and treatment settings. Cancer patients may view their disease as a fearful and lethal medical condition. Pain is one of the most afflicting and fearful symptoms of cancer patients (Bruera & Kim, 2003).

Among emotional difficulties, anxiety and depression are commonly used to evaluate distress from physical illness and decreased quality of life (DiMatteo, Lepper, & Croghan, 2000; Snaith & Zigmond, 1994). High levels of depression and anxiety adversely affect pain management and increase the level of suffering (Duffy & Valentine, 2011).

Although anxiety and depression are common symptoms among cancer patients, these experiences may be impacted by a patient's illness and personal characteristics. Research with 10,153 participants found that the rate of anxiety and depression was higher in women, especially women who were diagnosed with lung, gynecological or hematological cancer, and in young people.

### **3. Belief on Pain and Analgesics**

A patient's beliefs affects their thinking, decision making process, views of himself or herself, knowledge, attitudes, and beliefs the person has about the pain and its management (Ferrell et al., 2015). Beliefs about pain may be influenced by one's past experiences and feelings. A person's hesitation to use analgesics may be related to one's misunderstanding regarding the distinction between psychological addiction and physical dependence (Sherwood, Adams-McNeill, Starck, Nieto, & Thompson, 2000; Goebel et al., 2010). Desiring to reserve analgesic use for a time

when pain gets worse (Sherwood et al., 2000), preferring to bear the pain instead of dealing with side effects and potential impairment of the immune system, and using pain as an indicator of disease progression impact effective pain management (Gunnarsdottir et al., 2002). Not reporting pain is related to a person's will to be brave, beliefs that nothing can help, or not wanting to distract health care providers from curing cancer are also reasons that may affect pain management (Gunnarsdottir et al., 2002).

Patient-related factors could also differ based on variations in national health delivery systems, ethnicity, and culture (Edrington et al., 2009; Lebaron, Beck, Maurer, Black, & Palat, 2014). For example, cancer patients in Jordan held high levels of concern (mean of BQ=2.58) particularly for fear of addiction and side effects of pain medication (Al Qadire, 2012). Turkish cancer patients had high levels of concern on addiction and physical side effects (Bagcivan, Tosun, Komurcu, Akbayrak, & Ozet, 2009). Other highlighted barriers to effective pain management among Jordan cancer patients were communication concerns and fatalistic beliefs (Saifan, Bashayreh, Batiha, & AbuRuz, 2015). Among 144 Australian cancer patients, 56% reported pain as a distressing symptom which affected their emotional well-being. Of these patients, 39% tended to wait until pain became severe before taking medication, and 32% preferred to save pain medications for the worst pain (Yates et al., 2002). Taiwanese cancer patients showed higher barriers on tolerance (mean=4.17) and disease progression (mean=3.99) (Lin & Ward, 1995).

Pain intensity and interference with function directly influences a patient's quality of life and effective pain management. To accurately identify cancer pain,

assessment needs to include characteristics such as prevalence, severity, and interference with functioning as a result of cancer pain (Cleeland, 1991). A survey on pain impact on the life of breast cancer survivors revealed that pain exerted a negative impact on mood, normal work, and sleep (Ferreira et al., 2015).

Accurate and continuous pain assessment is the basis of effective pain treatment and enables healthcare professionals to do as much as possible for patients (McPherson et al., 2014). A comprehensive pain assessment should be performed at regular intervals whenever there is a change in the pain and after any modifications in the pain management plan. Given all these considerations, it is critical to understand cancer patient factors which play important roles in pain management.

## **CHAPTER III. METHODS**

### **1. Study Design**

This study used a descriptive, cross-sectional design to describe levels of anxiety, depression, beliefs on pain and analgesics, pain intensity, pain interference and pain management, and to examine relationships between these variables.

### **2. Setting and Sampling**

#### **2.1 Settings**

The data were collected from three hospitals and three hospices in Mongolia.

1. The National Cancer Center of Mongolia (NCC) is the tertiary hospital for cancer patients providing diagnosis, surgeries, radiation and chemotherapy, and palliative care. The NCC has capacity of 190 acute and 18 palliative care beds.
2. Bayangol District Hospital and Songdo hospitals are secondary health care facilities where the cancer patients are hospitalized or receive day care from the outpatient clinics.

3. Grace, Hope, and Agape hospices are capable of serving 20-60 patients, most of whom are cancer patients.

## **2.2 Eligibility criteria**

The inclusion criteria for the patients were: (a) diagnosed with cancer, (b) older than 18 years, (c) previously or still using an analgesic for cancer-related pain, (d) physically and mentally able to complete the procedures, and (e) willing to participate. Those who refused to participate for any reason were excluded without any judgment or penalty.

## **2.3 Sample size**

Convenience sampling methods were used. The G-power program was used to determine the proper sample size which could reveal significant results. The significance level for the study was set at alpha level 0.05, which means that there is 5% risk of making a Type I error and also there is at least a 95% chance of finding true significance. The effect size of 0.45 was chosen with  $\alpha=0.05$  and power of 0.80, indicating a sample size of 111 was required. Thirty percent was added to accommodate for attrition. This resulted in a final required sample size of 145.

## **3. Instruments**

In order to utilize conceptually and technically equivalent, and culturally and

linguistically appropriate instruments for the target population, translation from source language (English) to the target language (Mongolian) went through the process of the forward and backward translation model (Hilton & Skrutkowski, 2002). Forward translations from the English into Mongolian were performed by a bilingual Mongolian healthcare professional. Two healthcare professionals reviewed forward translations in Mongolian. Then another bilingual nurse, who was not aware of the original English versions, translated the reviewed versions into English. The researcher and authors of the questionnaires performed comparisons of the original version and back-translated version. When back translated versions were found insufficient, this process was repeated until maximum equivalence between the source language and back-translated versions were achieved.

The study variables of the present study were measured with three instruments.

Variables	Instruments	Items
Anxiety and depression	HADS	14
Beliefs on pain and analgesics	BQ-II	27
Pain severity and pain management	BPI-SF	7

## **1. Anxiety and Depression.**

*Hospital Anxiety and Depression Scale (HADS)* was used to assess anxiety and depression. The scale is a 14-item self-reported questionnaire which was developed by Zigmond and Snaith in 1983 to assess the psychological states of patients with physical problems (Zigmond & Snaith, 1983). Anxiety and depression are each measured using seven items that are rated using 0-3 scores (4-point Likert scale).

Scores can range from 0 to 21 on each subscale. A subscale score of 0-7 is considered as normal, 8-10 as mild, 11-14 as moderate and 15-21 as severe for both anxiety and depression. In this study, the total scale's internal consistency, evaluated with Cronbach's alpha, was 0.73. For anxiety and depression subscales it was 0.84 and 0.73 respectively.

## **2. Beliefs on Pain and Analgesics**

*Barriers Questionnaire-II (BQ-II).* Barriers Questionnaire (BQ) was developed to measure patient-related barriers to pain management (Ward et al., 1993). Due to changes in pain management and cancer treatment, BQ was revised and called the Barriers Questionnaire-II (BQ-II) (Gunnarsdottir et al., 2002). BQ-II is a 27-item self-report instrument that measures patients' beliefs about cancer pain and use of analgesics. Each item is rated on a Likert scale that ranges from zero (do not agree at all) to five (agree very much). The BQ-II includes eight subscales: (a) monitor-disease progression, (b) side effects, (c) tolerance, (d) fatalism, (e) desire to be a good patient, (f) distracting the health care provider, (g) immune system, and (h) addiction. Subscale and total BQ-II scores, calculated as the means of the individual items, can range from 0 to 5, with higher scores indicating higher levels of perceived barriers. Validity and reliability of original BQ-II are well established. The original copy of BQ-II's internal consistency was 0.89. In this study, Cronbach's alpha was 0.81.

## **3. Pain Severity**

*Brief Pain Inventory-Short Form (BPI-SF)* was developed by the Pain Research Group of the WHO Collaborating Center for Symptom Evaluation in Cancer Care (Cleeland & Ryan, 1994). The BPI-SF, a self-reported nine-item questionnaire was used to measure pain intensity and pain interferences, as well as to calculate a pain management index. As research results proved that the original BPI was too lengthy, the short form of BPI was developed and has been widely used in clinical and research applications (Cleeland, 2009). However, the second question on location of pain and eighth question on pain relief were not used for this study. The validity and reliability of the BPI-SF has been well established (de Andres Ares et al., 2015). Cronbach alpha of the instrument in this study was 0.86.

The pain intensity score was measured using a numerical scale, 0 (no pain) to 10 (pain as bad as one can imagine). A mean of total pain intensity was calculated as the mean of the worst, least, average, and current pain intensities from the BPI-SF, consistent with previous studies (Baker, O'Connor, & Krok, 2014; Charles . S Cleeland, 2009).

The pain interference score was measured by a numerical scale, 0 (no interference at all) to 10 (complete interference). A mean of total pain interference was calculated as the mean of seven interference items including interferences to general activity, mood, walking ability, normal work, relationships with other people, sleep, and enjoyment of life.

#### **4. Pain Management**

Adequacy of pain management was measured utilizing the Pain Management Index (PMI) method. The PMI was developed by Cleeland and colleagues (Cleeland et al., 1994). To compute the PMI, type of pain medication (obtained from BPI-SF question 7) and worst pain (obtained from BPI-SF question 3) are used. Medication type (categorization) is based on the WHO's ladder guideline for analgesics (WHO, 1996). No prescribed or used analgesic were categorized as 0, while non-opioid (NSAID) use, weak opioid (tramadol, codeine) use, and strong opioid (morphine) use are categorized as 1, 2, and 3 respectively. If the worst pain score is 0 (no pain), it is categorized as 0, while pain scores of 1-3 (mild), 4-7 (moderate pain), and 8-10 (severe pain) are categorized as 1, 2, and 3 respectively. The PMI is determined by subtracting the worst pain score from the analgesic score. A negative PMI scores means a patient's pain is under-medicated, while scores of zero or greater indicate adequate analgesics for pain.

#### **4. Data Collection Procedures**

An advertisement or flyers on the research were distributed in nursing stations of the selected hospitals and hospices in Mongolia.

A package of questionnaires was given to the patient. Questionnaire completion took place in a patient's room, nursing station, or in a place of the participant's choosing that was comfortable for the patient. Questionnaires were returned to the nursing station where the researcher was waiting, or the researcher collected them from the patients when they were done. The researcher was nearby the participants

to clarify any misconception or address any difficulties in reading the questionnaires. The researcher helped the patient if this was desired. Prior to distributing the questionnaire, the researcher reviewed information and obtained verbal or written informed consent from the participants. At the time of obtaining consent, the researcher asked participants if they were interested in meeting with the researcher again to know about research results. When the package of questionnaires was returned, the researcher checked each questionnaire for either missing parts or unreadable hand writing. It took approximately 15-20 minutes to complete the questionnaires.

## **5. Data Analysis**

Data was analyzed using the IBM Statistical Package for Social Sciences 23.0 version. Descriptive statistics included frequencies, percentage, means, and standard deviations. One-way ANOVA and independent t-tests were used to investigate associations between demographics, disease-related characteristics, level of anxiety, depression, beliefs on pain and analgesics, pain intensity, pain interference, and pain management. Pearson's correlation (bivariate) was used to examine relationships among main variables. The significance level was set at 0.05.

## **6. Ethical Consideration**

The research was approved by the Institutional Review Board of the Seoul National University (IRB NO.1602/002-007). Approvals for research undertaken in Mongolia were obtained from administrators, head nurses, or managers of hospitals

and hospices. Codes were used on completed questionnaires instead of recording identifying information. Permissions to use instruments were obtained from the authors. Each participant was informed through the written consent form and verbal explanation by the investigator.

Paper copies of the consent form, demographic data, questionnaires and field notes will be stored in locked file. Data will be kept for a period of at least 5 years.

## **CHAPTER IV. RESULTS**

### **1. Demographic and Disease-Related Characteristics of the Participants**

A convenience sample of 145 cancer patients participated in this study. Most of the participants (81.4%) were in a hospital setting. The majority (66.9%) of the participants were female. The mean age was 54.9 ( $\pm 12.3$ ) years old, ranging from 25 to 86. Seventy-eight (53.8%) participants had completed high school as their highest level of education, and 83 (57.2%) had religion. Among the participants, 91 (62.8%) had moderate monthly income and 107 (73.8%) were married. The majority (73.1%), were unemployed. Ninety (62.1%) of the participants lived in the city.

The most common types of cancer were liver (26.2%) and cervix (21.4%). Of the participants, 69 (47.6%) had stage-III cancer. “Cancer had reoccurred among 26 (17.9%) participants. Curative treatment was being given to 93 (64.1%) patients”. Twenty-seven (18.6%) had other medical issues besides cancer.

Table 1. Demographic and Disease-Related Characteristics of Participants

<b>Characteristics</b>	<b>Categories</b>	<b>Frequency</b>	<b>Percent</b>	<b>Mean (SD)</b>	<b>Range</b>
		<b>n</b>	<b>%</b>		
Gender	Male	48	33.1		
	Female	97	66.9		
Age (years)	18-40	21	14.5		
	41-65	97	66.9	54.9 (12.3)	25 - 86
	>65	27	18.6		
Education	Middle school	19	13.1		
	High school	78	53.8		
	College	34	23.4		
	Above college	8	5.5		
Religion	Yes	83	57.2		
	No	50	34.5		
Economic status (monthly income)	Low	41	28.3		
	Moderate	91	62.8		
	High	11	7.6		
Marital Status	Married	107	73.8		
	Others	31	21.4		
Employment	Employed	37	25.5		
	Unemployed	106	73.1		
Living area	Urban area	90	62.1		
	Rural area	53	36.6		
Institution	Hospital	118	81.4		
	Hospice	27	18.6		
Type of cancer	Liver	38	26.2		
	Lung	7	4.8		
	Stomach	26	17.9		
	Cervix	31	21.4		
	Others	43	29.7		
Stage of cancer	Stage I	13	9		
	Stage II	31	21.4		
	Stage III	69	47.6		
	Stage IV	21	14.5		

Recurrence	Yes	26	17.9
	No	118	81.4
Current treatment	Curative	93	64.1
	Palliative	51	35.2
Any other medical issues	Yes	27	18.6
	No	112	77.2

## 2. Level of Variables

### 2.1 Anxiety and Depression

As shown in table 2, the total mean of anxiety was 9.77 ( $\pm 2.51$ ) and the total mean of depression was 9.01 ( $\pm 4.31$ ).

Table 2. Levels of Anxiety and Depression

Variable	Mean	SD	Min-Max
Anxiety	9.77	2.51	4 - 16
Depression	9.01	4.31	1- 20

### 2.2 Beliefs on Pain and Analgesics

The total BQ-II mean score was 2.69 ( $\pm 0.63$ ). The highest concerns among participants were fatalism ( $3.27 \pm 0.99$ ), tolerance ( $3.13 \pm 1.0$ ]), and monitoring disease progression ( $2.92 \pm 1.08$ ). The lowest was distracting health professionals ( $2.16 \pm 1.14$ ).

Table 3. Levels of Beliefs on Pain and Analgesics

Variable	Category	Mean	SD	Min-Max
Belief on Pain and Analgesics	Monitor-disease progression	2.92	1.08	0.0 - 5.0
	Side effects	2.29	0.85	0.2 - 4.7
	Tolerance	3.13	1.08	0.3 - 5.0
	Fatalism	3.27	0.99	0.5 - 5.0
	Desire to be good	2.33	1.21	0.0 - 5.0
	Distracting health professionals	2.16	1.14	0.0 - 5.0

Immune system	2.72	1	0.3 - 5.0
Addiction	2.77	1.21	0.0 - 5.0
Total BQ-II <sup>a</sup> Score	2.69	0.63	0.8 - 4.5

<sup>a</sup> Barriers Questionnaire-II

### 2.3 Pain Severity

The mean of the total intensity was 3.69 ( $\pm 2.03$ ) and the mean of the total interference was 4.18 ( $\pm 2.52$ ).

Table 4. Levels of Pain Intensity and Interferences

Variable	Category	Mean	SD	Min-Max
Pain Intensity	Worst Pain	5.1	2.62	0.0 - 10.0
	Least Pain	2.55	2.02	0.0 - 10.0
	Average Pain	4.11	2.23	0.0 - 10.0
	Pain Now	2.88	2.35	0.0 - 9.0
The mean of the total intensity		3.69	2.03	0.0 - 8.5
Pain Interference	General activity	4.24	2.94	0.0 - 10.0
	Mood	4.09	3.05	0.0 - 10.0
	Walking ability	4.41	3.49	0.0 - 10.0
	Normal work	4.35	3.28	0.0 - 10.0
	Relationship with others	3.59	3.12	0.0 - 10.0
	Sleep	4.56	3.39	0.0 - 10.0
	Enjoyment of life	4.14	3.29	0.0 - 10.0
The mean of the total interference		4.18	2.52	0.0 - 0.9

### 2.4 Pain Management

#### 2.4.1 Pain Management Index

The PMI was determined by subtracting the worst pain score from the analgesic score, measured by the Brief Pain Inventory-Short Form. A negative PMI score (possible range of -3 to -1) indicates that a patient's pain is under-medicated, while scores of zero or greater (possible range of 0 to 3) indicates adequate analgesic use for pain control.

As shown in Table 5, fifty (34.4%) patients were under-treated.

Table 5. Pain Management Index

<b>Pain management Index</b>	<b>Frequency</b>		<b>Percent</b>
	<b>n</b>	<b>%</b>	
Under-treated	-2	6	4.1
	-1	44	30.3
Adequately treated	0	56	38.6
	1	29	20
	2	4	2.8

#### 2.4.2 Comparison of Variables by Pain Management Index

Patients whose pain was under-treated had higher anxiety ( $t=2.92, p=0.00$ ), and depression ( $t=2.49, p=0.01$ ). Under-treated patients had higher rates of misconception about the immune system ( $t=1.95, p=0.05$ ), and addiction ( $t=2.44, p=0.02$ ). In addition, under-treated patients had higher pain intensity ( $t=4.41, p=0.00$ ), and interference ( $t=2.46, p=0.02$ ).

Table 6. Comparison of Variables by Pain Management Index

Variable	Pain Management Index				<i>t</i>	<i>p</i>		
	Under-treated		Adequately treated					
	Mean	SD	Mean	SD				
Anxiety	10.62	2.42	9.34	2.51	2.92	0.00*		
Depression	10.24	4.57	8.36	4.12	2.49	0.01*		
Total BQ-II Score	2.73	0.55	2.56	0.63	1.59	0.11		
Side effects	2.31	0.77	2.22	0.9	0.61	0.54		
Tolerance	3.27	1.04	3.04	1.09	1.2	0.23		
Fatalism	3.11	0.85	3.33	1.06	-1.24	0.22		
Desire to be good	2.47	1.29	2.18	1.13	1.34	0.18		
Distracting health professionals	2.19	1.27	2.19	1.27	0.33	0.74		
Immune system	2.89	1.08	2.54	0.96	1.95	0.05*		
Addiction	3.11	1.24	2.59	1.2	2.44	0.02*		
The mean of the total intensity	4.69	1.89	3.19	1.94	4.41	0.00*		
The mean of the total interference	4.91	2.18	3.84	2.63	2.46	0.02*		

### 3. Differences of the Variables by Demographic and Disease-Related Characteristics

#### 3.1 Anxiety by Demographic and Disease-Related Characteristics

No differences were found in anxiety by demographic and disease-related characteristics, except for the age (Table 7). Post-hoc test showed that patients who were in the 41-65 age group had higher levels of anxiety than those in the 18-40 age group (*p*=0.00).

Table 7. Anxiety by Demographic/Disease-Related Characteristics

<b>Characteristics</b>	<b>Categories</b>	<b>Anxiety</b>			
		<b>Mean</b>	<b>SD</b>	<b>F/t</b>	<b>p</b>
Gender	Male	9.33	2.19	-1.46	0.15
	Female	9.98	2.65		
Age (years)	18-40 <sup>a</sup>	8.38	2.73	8.63	0.00*
	41-65 <sup>b</sup>	10.34	2.27		a < b
	>65	8.78	2.55		
Education	Middle school	10.21	2.82	0.82	0.48
	High school	9.54	2.59		
	College	9.79	2.31		
	Above college	10.75	1.67		
Religion	Yes	9.49	2.67	-1.21	0.23
	No	10.04	2.28		
Economic status (monthly income)	Low	10.22	2.72	1.00	0.37
	Moderate	9.55	2.50		
	Good	9.73	1.85		
Marital Status	Married	9.81	2.50	0.84	0.40
	Others	9.39	2.42		
Employment	Employed	9.81	3.06	0.20	0.84
	Unemployed	9.72	2.27		
Living area	Urban area	9.82	2.35	0.45	0.65
	Rural area	9.62	2.82		
Institution	Hospital	9.64	2.67	-1.22	0.23
	Hospice	10.30	1.56		
Type of cancer	Liver	9.08	3.00	1.59	0.18
	Lung	10.86	2.27		
	Stomach	10.35	1.87		
	Cervix	10.10	1.96		
	Others	9.60	2.69		
Stage of cancer	Stage I	9.00	2.31	2.44	0.07
	Stage II	9.16	2.49		
	Stage III	10.20	2.46		
	Stage IV	10.57	2.29		
Recurrence	Yes	9.92	2.54	-0.29	0.77
	No	9.76	2.50		
Current treatment	Curative	9.63	2.44	-0.88	0.38
	Palliative	10.02	2.68		

Any other medical issues	Yes	10.11	2.56	-0.82	0.41
	No	9.66	2.56		

### 3.2 Depression by Demographic and Disease-Related Characteristics

Depression was significantly different than type of cancer ( $F(4,140)=2.91$ ,  $p=0.02$ ), stage of cancer ( $F(3,130)=6.25$ ,  $p=0.00$ ), and current treatment ( $t=-1.95$ ,  $p=0.05$ ).

Lung cancer patients had higher levels of depression than cervix cancer patients ( $p=0.05$ ) as the post-hoc test shown.

According to post hoc test results, statistically significant differences between stage-IV and stage-I ( $p=0.00$ ), stage-II ( $p=0.05$ ), and stage-III ( $p=0.01$ ) showed that patients who had stage-IV cancer experienced higher levels of depression than those in other stages. Patients who were receiving palliative treatment had a higher level of depression ( $p=0.05$ ).

Table 8. Depression by Demographic/Disease-Related Characteristics

<b>Characteristics</b>	<b>Categories</b>	<b>Depression</b>			
		<b>Mean</b>	<b>SD</b>	<b>F/t</b>	<b>p</b>
Gender	Male	8.67	3.88	-0.68	0.50
	Female	9.19	4.51		
Age (years)	18-40	7.24	3.85	2.14	0.12
	41-65	9.36	4.34		
	>65	9.15	4.37		
Education	Middle school	9.74	4.21	1.86	0.14
	High school	8.72	4.40		
	College	8.53	4.30		
	Above college	12.13	2.80		
Religion	Yes	8.75	4.20	-0.62	0.54
	No	9.08	4.40		
Economic status (monthly income)	Low	9.41	4.31	0.84	0.43
	Moderate	8.68	4.33		
	Good	10.18	4.53		
Marital Status	Married	8.79	4.14	-0.62	0.54
	Others	9.32	4.57		
Employment	Employed	9.54	5.36	0.91	0.36
	Unemployed	8.80	3.79		
Living area	Urban area	8.86	4.15	-0.78	0.43
	Rural area	9.32	4.67		
Institution	Hospital	9.03	4.64	0.12	0.91
	Hospice	8.93	2.40		
Type of cancer	Liver	8.11	4.60	2.91	0.02*
	Lung <sup>a</sup>	12.71	4.03		a>b
	Stomach	9.08	3.36		
	Cervix <sup>b</sup>	7.90	3.86		
	Others	9.98	4.53		
Stage of cancer	Stage I <sup>a</sup>	5.92	3.07	6.25	0.00*
	Stage II <sup>b</sup>	9.00	4.31		a<d
	Stage III <sup>c</sup>	8.80	4.38		b<d
	Stage IV <sup>d</sup>	12.05	3.51		c<d
Recurrence	Yes	9.65	4.47	-0.78	0.43
	No	8.92	4.26		
Current treatment	Curative	8.51	4.20	-1.95	0.05*

	Palliative	9.96	4.42		
Any other medical issues	Yes	10.26	4.21	-1.79	0.13
	No	8.61	4.33		

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### **3.3 Belief on Pain and Analgesics by Demographic and Disease-Related Characteristics**

As shown in Table 9, a statistically significant difference ( $t=11.06, p=0.00$ ) was found in cancer recurrence. Patients with cancer recurrence had a lower level of misconception on pain and analgesics.

Table 9. Beliefs on Pain and Analgesics by Demographic/Disease-Related Characteristics

Characteristics	Categories	Beliefs on pain and analgesics			
		Mean	SD	F/t	p
Gender	Male	2.69	0.6	0.4	0.53
	Female	2.69	0.64		
Age (years)	18-40	2.64	0.69	1.04	0.36
	41-65	2.66	0.63		
	>65	2.85	0.56		
Education	Middle school	2.62	0.58	0.84	0.48
	High school	2.76	0.62		
	College	2.61	0.63		
	Above college	2.87	0.7		
Religion	Yes	2.63	0.61	0.08	0.78
	No	2.82	0.62		
Economic status (monthly income)	Low	2.7	0.64	0.01	0.99
	Moderate	2.69	0.64		
	Good	2.7	0.61		
Marital Status	Married	2.72	0.62	0.02	0.87
	Others	2.69	0.62		
Employment	Employed	2.63	0.73	2.28	0.13
	Unemployed	2.71	0.59		
Living area	Urban area	2.67	0.59	1.18	0.28
	Rural area	2.72	0.69		
Institution	Hospital	2.61	0.66	-0.26	0.80
	Hospice	2.65	0.45		
Type of cancer	Liver	2.67	0.72	0.29	0.88
	Lung	2.78	0.78		
	Stomach	2.8	0.45		
	Cervix	2.67	0.69		
	Others	2.65	0.58		
Stage of cancer	Stage I	2.58	0.38	0.57	0.64
	Stage II	2.79	0.53		
	Stage III	2.63	0.67		
	Stage IV	2.69	0.73		
Recurrence	Yes	2.57	0.91	11.06	0.00*
	No	2.72	0.55		
Current treatment	Curative	2.63	0.64	0.04	0.84
	Palliative	2.78	0.6		
Any other medical	Yes	2.66	0.69	0.47	0.49

issues	No	2.71	0.62
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### 3.4 Pain Intensity by Demographic and Disease-Related Characteristics

The independent t-test revealed statistically significant differences of pain intensity with religion ( $t=-2.491, p=0.01$ ) living area ( $t=2.96, p=0.00$ ), institution ( $t=-3.04, p=0.00$ ), and current treatment ( $t=1.83, p=0.01$ ). These findings signify that patients who were non-religious, lived in an urban area, or were receiving palliative care had higher intensity of pain. A statistically significant difference was found in institution ( $p=0.00$ ) indicating that patients from hospice had higher pain intensity ( $t=-3.04, p=0.00$ .) than those in hospice.

A statistically significant difference was found between pain intensity and age ( $F(2,142)=3.49, p=0.03$ ). Post hoc-test results showed that the 41-65 age range was different than the 18-40 age range ( $F(2,142)=0.50, p=0.03$ ). This indicates that 41-65 years old patients experienced higher pain intensity.

Significant differences between pain intensity and education ( $F(3,140)=0.05, p=0.03$ ) were noted between patients who obtained a middle school education versus a high school education ( $F(2,140)=0.50, p=0.03$ ). The group with high school graduate reported higher pain intensity than those with middle school graduates.

Table 10. Pain Intensity by Demographic and Disease-Related Characteristics

<b>Characteristics</b>	<b>Categories</b>	<b>Pain Interference</b>			
		<b>Mean</b>	<b>SD</b>	<b>F/t</b>	<b>p</b>
Gender	Male	3.61	1.96	0.72	0.76
	Female	3.72	2.07	0.72	
Age (years)	18-40 <sup>a</sup>	2.73	1.78	3.49	0.03*
	41-65 <sup>b</sup>	3.96	2.09		a<b
	>65 <sup>b</sup>	3.45	1.8		
Education	Middle school <sup>a</sup>	2.3	1.85	4.2	0.01*
	High school <sup>b</sup>	4.07	2.11		a<b
	College	3.6	1.78		
	Above college	3.88	1.32		
Religion	Yes	3.4	1.84	-2.49	0.01*
	No	4.55	2.4		
Economic status (monthly income)	Low	3.58	2.1	0.1	0.9
	Moderate	3.75	2.09		
	Good	3.64	1.25		
Marital Status	Married	3.81	2.02	1.05	0.29
	Others	3.37	2.09		
Employment	Employed	3.38	1.69	-1.18	0.24
	Unemployed	3.83	2.12		
Living area	Urban area	4.04	1.82	2.96	0.00*
	Rural area	3.02	2.22		
Institution	Hospital	3.45	1.99	-3.04	0.00*
	Hospice	4.73	1.89		
Type of cancer	Liver	3.23	1.77	1.42	0.23
	Lung	4.13	2.05		
	Stomach	3.37	2.02		
	Cervix	3.69	2.25		
	Others	4.2	2.04		
	Stage I	2.72	1.8	1	0.39
Stage of cancer	Stage II	3.6	2.41		
	Stage III	3.76	2.06		
	Stage IV	3.74	1.22		
	Yes	3.57	2.1	-2.84	0.26
Recurrence	No	4.07	1.58		
Current treatment	Curative	3.34	2.04	1.83	0.01*
	Palliative	4.32	1.89		
Any other medical	No	3.61	1.92	-0.89	0.38

issues	Yes	3.98	2.11
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### **3.5 Pain Interference by Demographic and Disease-Related Characteristics**

The independent t-test revealed statistically significant differences of pain interference with living area ( $t=4.65, p=0.03$ ) and institution ( $t=-2.73, p=0.01$ ). This signifies that patients who lived in urban areas and were receiving care from hospice had higher levels of pain interferences.

Statistically significant difference between pain interference and age group ( $F(2,142)=4.56, p=0.01$ ). More specifically, the 41-65 age group had a higher level of interference than the  $>65$  age group ( $F(2,142)=0.54, p=0.04$ ).

A significant difference was found in education ( $F(3,135)=3.13, p=0.03$ ) indicating patients with high school education reported a higher level of interference than those with middle school education. A statistically significant difference was found in economic status, showing that patients who had high income had higher interferences than those with moderate monthly income.

There were statistically significant differences between pain interference and living area ( $p=0.03$ ) and type of institution ( $p=0.01$ ).

Table 11. Pain Interference by Demographic and Disease-Related Characteristics

<b>Characteristics</b>	<b>Categories</b>	<b>Pain Interference</b>			
		<b>Mean</b>	<b>SD</b>	<b>F/t</b>	<b>p</b>
Gender	Male	3.57	2.26	1.22	0.27
	Female	4.48	2.6		
Age (years)	18-40	3.33	2.98	4.56	0.01*
	41-65 <sup>a</sup>	4.62	2.47		
	>65 <sup>b</sup>	3.29	1.96		a>b
Education	Middle school <sup>a</sup>	2.61	2.46	3.14	0.03*
	High school <sup>b</sup>	4.48	2.59		a<b
	College	4.29	2.06		
	Above college	4.54	2.05		
Religion	Yes	4.12	2.4	2.08	0.15
	No	4.48	2.71		
Economic status (monthly income)	Low	4.08	2.64	3.74	0.03*
	Moderate <sup>a</sup>	3.99	2.51		
	Good <sup>b</sup>	6.15	1.54		a<b
Marital Status	Married	4.06	2.38	2.22	0.14
	Others	4.53	2.81		
Employment	Employed	4.68	2.41	0.99	0.32
	Unemployed	4.02	2.53		
Living area	Urban area	4.65	2.34	4.65	0.03*
	Rural area	3.34	2.67		
Institution	Hospital	3.91	2.63	-2.73	0.01*
	Hospice	5.35	1.54		
Type of cancer	Liver	3.4	2.71	1.45	0.22
	Lung	5.1	2.17		
	Stomach	4.21	2.48		
	Cervix	4.43	2.52		
	Others	4.53	2.37		
Stage of cancer	Stage I	2.98	2.65	2.09	0.11
	Stage II	3.77	2.23		
	Stage III	4.4	2.61		
	Stage IV	4.93	2.46		
Recurrence	Yes	5.26	2.25	1.72	0.19
	No	3.93	2.53		
Current treatment	Curative	3.81	2.52	1.41	0.24

	Palliative	4.92	2.36		
Any other medical issues	No	4.2	2.53	0	0.98
	Yes	4.4	2.55		

### **3.6 Pain Management by Demographic and Disease-Related Characteristics**

A statistically significant difference were found in gender ( $t=4.01$ ,  $p=0.05$ ), religion ( $t=4.12$ ,  $p=0.04$ ), and current treatment ( $t=5.92$ ,  $p=0.02$ ) in terms of pain management (Table 12). These findings signify that female, non-religious, curative treatment receiving patients were more inadequately treated.

There was a significant differences between pain management index and type of cancer ( $F(4,135)=5.92$ ,  $p=0.002$ ). A Tukey's post hoc test revealed that stomach cancer was significantly different than cervix cancer ( $p=0.008$ ), and other cancers ( $p=0.002$ ).

Table 12. Pain Management Index by Demographic/Disease-Related Characteristics

Characteristics	Categories	Pain Management Index			
		Mean	SD	F/t	p
Gender	Male	0.0	0.87	4.01	0.05*
	Female	-0.17	0.96		
Age (years)	18-40	0.0	0.78	0.36	0.7
	41-65	-0.13	0.93		
	>65	-0.22	0.89		
Education	Middle school	0.11	0.99	0.49	0.69
	High school	-0.15	0.91		
	College	-0.15	0.76		
	Above college	-0.25	1.04		
Religion	Yes	-0.01	0.91	4.12	0.04*
	No	-0.24	0.99		
Economic status (monthly income)	Low	-0.08	1.05	0.89	0.42
	Moderate	-0.18	0.77		
	Good	0.18	1.25		
Marital Status	Married	-0.14	0.93	0.52	0.47
	Others	-0.06	0.96		
Employment	Employed	-0.17	1.01	0.41	0.52
	Unemployed	-0.1	0.9		
Living area	Urban area	-0.22	0.91	0.48	0.49
	Rural area	0.08	0.95		
Institution	Hospital	-0.08	0.97	0.90	0.37
	Hospice	-0.26	0.71		
Type of cancer	Liver	0.03	0.62	4.17	.00*
	Lung	-0.43	0.79		
	Stomach <sup>a</sup>	0.4	0.82		a>b
	Cervix <sup>b</sup>	-0.33	1.12		a>c
	Others <sup>c</sup>	-0.37	0.85		
Stage of cancer	Stage I	0.0	0.82	1.04	0.38
	Stage II	-0.13	0.9		
	Stage III	-0.2	0.95		
	Stage IV	0.19	0.81		
Recurrence	Yes	-0.12	0.73	2.28	0.13
	No	-0.11	0.98		
Current treatment	Curative	-0.14	1.02	5.92	0.02*
	Palliative	-0.06	0.76		
Any other medical	No	-0.08	0.91	0.52	0.47

issues	Yes	-0.22	1.05
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#### 4. Correlations among the Variables

As shown in Table 13, Pearson's correlation analysis revealed significant relationships between anxiety and depression ( $r=0.66$ ,  $p=0.00$ ), anxiety and total pain intensity ( $r=0.17$ ,  $p=0.004$ ) and anxiety and total pain interference ( $r=0.34$ ,  $p=0.00$ ). These relationships signify that patients who had high levels of anxiety had higher levels of depression, pain intensity, and interferences.

Statistically significant correlation between depression and total interferences ( $r=0.29$ ,  $p=0.00$ ) signifies that patients who were more depressed had higher level of interferences.

Total BQ-II scores were significantly correlated with total pain intensity ( $r=0.33$ ,  $p=0.00$ ), and total pain interference, ( $r=0.21$ ,  $p=0.00$ ). These correlations signify that patients who had a higher level of misbelief on pain and analgesics had higher levels of pain intensity and interference. Moreover, the total BQ-II score was significantly and negatively correlated with PMI, and it signified that persons who had higher levels of misbeliefs on pain and analgesics had lower levels of PMI.

Total pain intensity was significantly and positively correlated with total pain interference ( $r=0.55$ ,  $p=0.00$ ), and negatively with PMI ( $r=-0.47$ ,  $p=0.00$ ). These findings signify that higher levels of pain intensity correlated with higher levels of pain interference and lower levels of PMI.

A significant negative correlation between PMI and total pain interference ( $r=-0.19$ ,  $p=0.02$ ) signifies that lower pain management index scores were related to higher levels of pain interference.

Table 13. Bivariate Correlations among Variables

Variables	Anxiety	Depression	BQ-II <sup>a</sup> Score	Pain Intensity	Pain Interference	PMI <sup>b</sup>
	r (p)					
Anxiety	1	0.66** 0.00	0.12 0.17	0.17* 0.05	0.34** 0.00	-0.128 0.13
Depression		1	0.04 0.66	0.09 0.26	0.29** 0.00	-0.08 0.33
BQ-II <sup>a</sup> Score			1	0.33** 0.00	0.21* 0.01	-0.21* 0.01
Pain Intensity				1	0.55** 0.00	-0.47** 0.00
Pain Interference					1	-0.19* 0.02
PMI <sup>b</sup>						1

\*\*. Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

<sup>a</sup> Barriers Questionnaire-II

<sup>b</sup> Pain Management Index

## **CHAPTER V. DISCUSSION**

This study aimed to describe patient-related factors impacting optimal pain management among Mongolian cancer patients and to determine their correlations.

This study showed that level of anxiety ( $9.77 \pm 2.51$ ) and the level of depression, ( $9.01 \pm 4.31$ ) were mild in Mongolian cancer patients.

Older patients who were 41-65 years old had a higher level of anxiety than patients who were 18-40 years old. An explanation for this may be that middle-aged patients are concerned about their health more than the younger because younger people tend to heal faster than older people. As well as when people get older, their health gradually gets worse.

Of the participants in this study, lung cancer patients had statistically higher levels of depression than patients other types of cancer, which is consistent with previous studies that described lung cancer patients as experiencing greater amounts of psychological distress (Carlsen, Jensen, Jacobsen, Krasnik, & Johansen, 2005; Montazeri, Milroy, Hole, McEwen, & Gillis, 2001). Findings that people who had advanced cancer and were receiving palliative care had a higher level of depression could be explained by palliative care patients becoming more distressed at the end of life.

In the present study, the mean score of BQ-II,  $2.69 (\pm 0.63)$ , showed moderate levels of misbeliefs on pain and analgesics. Using the same BQ-II scale, the overall mean of beliefs on pain and analgesics was  $2.3 (\pm 0.74)$  among Denmark patients,

2.5 ( $\pm 0.83$ ) in Lithuania patients and 2.5 ( $\pm 0.6$ ) in Chinese American patients (Edrington et al., 2009). As Chen et al analyzed, Asian patients are more likely to have greater concerns on tolerance, monitoring disease progress, and addiction (Chen et al., 2012), while Western patients tend to have greater concerns regarding addiction, side effects, and medication tolerance (Dawson et al., 2005; Edrington et al., 2009). However, in this study, the highest concerns were fatalism 3.27 ( $\pm 0.99$ ), tolerance 3.13 ( $\pm 1.08$ ), and monitoring disease progression 2.92 ( $\pm 1.08$ ). Interestingly, the mean scores of the lowest concern, distracting health professionals, 2.16 ( $\pm 1.14$ ) among Mongolian cancer patients, was still higher than the result of the studies in other countries. This may indicate that Mongolian cancer patients lack information or knowledge about pain and analgesics, feel afraid or that it is inappropriate to make a request of caregivers, or that a higher ratio of patients to health professionals complicates communication and treatment. Although the significant correlation between beliefs on pain and analgesics and cancer recurrence ( $t=11.06$ ,  $p=0.00$ ), indicated patients with cancer recurrence had fewer misbeliefs on pain and analgesics, the level of misbeliefs among them was still high.

In the present study, the mean of total pain intensity, 3.69 ( $\pm 2.03$ ), showed a mild level of pain. Significant differences of pain intensity between age ( $F(2,142)=3.49$ ,  $p=0.03$ ), education ( $F(3,140)=0.50$ ,  $p=0.03$ ), religiousness ( $t = -2.491$ ,  $p=0.01$ ), living area ( $t=2.96$ ,  $p=0.00$ ), and current treatment ( $t=1.83$ ,  $p=0.01$ ), led to several considerations to reduce pain intensity of cancer patients in Mongolia .

Patients in the 41-65 age group had higher pain intensity than those in the 18-40

age group ( $F=(2,142)=3.49$ ,  $p=0.03$ ). A statistically significant difference between pain intensity and education ( $F(3,140)=0.50$ ,  $p=0.03$ ), was consistent with previous studies and an explanation for this could be that as patients have more information or education, they become more sensitive to their illness. Of the participants, non-religious patients had a higher degree of pain intensity than the religious ones. Religious patients may be more reluctant to report their pain, and their reluctance might be related to fatalistic beliefs. A number of research studies have also shown that faith (spiritual or religious beliefs) positively helps patients to cope with pain (Koenig, King, & Carson, 2012). In addition, spirituality positively impacts the quality of life of cancer patients, including at the end-of-life (Efficace & Marrone, 2002). An explanation for urban patients' high level of pain intensity may be that they are more open to share their pain and illness with their health care professionals. Because of these differences, health professionals need to take greater care with patients who have education up to middle school, are religious, or are from a rural area in order to assess pain accurately. Palliative care patients' higher level of pain intensity may be affected by stage of disease. This finding was consistent with previous studies (Fisch et al., 2012; van den Beuken-van Everdingen et al., 2007).

The mean of total pain interference ( $4.18 \pm 2.52$ ), indicated that participants experienced moderate pain interference. Pain interference was different in age group, education, monthly income and living area, also requires discussion. Patients in the 41-65 age group had a higher level of interference than groups of older or younger age. One possible reason for this is that they have higher level of

responsibility for their family and works. Patients over 65 years old may be calmer because they have less responsibilities and more time for themselves. As well, 18-40 year old patients may have more energy to deal with pain interference

There are two possible explanations for differences in education in terms of pain interference. First, more highly educated patients may better identify their interference level of pain. In contrast, patients who are less academically prepared may lack confidence and therefore reluctant to report pain. A second reason is that more highly educated people may experience greater fear about losing their position in society and their pain disturbs their role and participation in diverse social networks. These reasons may be connected to statistically significant differences to pain interference and economic status, ( $F(2,140)=3.74$ ,  $p=0.03$ ). People who have lower income or higher income reported higher levels of pain interference than the people with middle income. Moreover, people with high income may require more care and attention from others. Low-income patients may worry about losing their vital income, while high-income patients may be concerned about losing their good economic status or job. Permanent living area of the participants had a significant influence on both pain intensity and pain interference. Higher levels of pain interferences in urban patients could be explained by their boarder networks and communication with others. An additional consideration is that this research was conducted in urban health care facilities, thus those who live in the urban center may be more comfortable and knowledgeable about the health care system in the city than those who come from the rural areas. It could be proved by another study that patients from rural areas stated they didn't understand the hospital system in the

city and were afraid to ask anyone (Battsetseg, 2016).

Previous studies showed many cancer patients experienced pain and that pain treatments were insufficient. In the present study, 50 of 140 respondents were under-treated for their pain. Pain management was different in as per statistics in gender, religion, type of cancer, and current treatment.

In addition, patients who had undertreated pain were more anxious, depressed, and had higher levels of concern about their immune system, addiction to pain medication, pain intensity, and pain interference. Several practice and research implications can be drawn from these findings. A finding that cancer pain of female participants was less well treated than that of men ( $p=0.05$ ) could be explained by female patients having a high level of pain intensity related to their diagnosis. In a previous study, female patients tended to have higher levels of pain intensity and interferences with diagnoses such as cervix and breast cancers. Of the research respondents, religious patients had better pain management than non-religious patients. This may signify that spiritual care is important in surviving and overcoming cancer. A statistically significant difference between PMI and current treatment, signified that patients who were receiving curative treatment tended to be under-treated. It might be that early stage cancer patients do not have enough information on their illness and options for pain management. As well, patients who are receiving palliative care might be more resigned to deal with their pain and prescribed analgesics.

Results showing that patients with under-treated pain had higher levels of anxiety, depression, misbeliefs about their immune system and addiction, pain

intensity and pain interference and this demonstrates the need to develop interventions to assist patients to manage their psychological distress and to educate patients on their illness and effects of their pain medication.

As a result of correlational study, pain management was correlated with beliefs on pain and analgesics, pain intensity and pain interference.

The results of this study demonstrate the need to enhance cancer patients' effective communication with their health professionals, provide more information to patients about their illness and pain, and teach them ways to manage impacting factors in order to attain optimal pain management.

This study has two limitations. First, this descriptive study was limited by convenience sampling. Second, the PMI was computed from patient's reports of pain medication use. Data were collected on drug type but not drug dose. The PMI does not take into consideration to adjuvant medications or non-pharmacologic approaches. The PMI didn't assess the adequacy of prescribed analgesics.

## **CHAPTER VI. CONCLUSION**

This is the first known study to evaluate patient-related factors to pain management among Mongolian cancer patients. Data from a convenience sample of 145 cancer patients were collected from 3 hospitals and 3 hospices.

Summary of major findings includes:

1. Of participants, the majority of the participants were female, 97 (66.9%); held secondary education, 78 (53.8%); were religious (57.2%); and were married, 107 (73.8%). Although many identified themselves as having a moderate economic level (62.8%), 106 participants (73.1%) were unemployed. The majority (62.1%) of the participants lived in urban areas. The most common types of cancer were liver, n=38 (26.2%), and cervix, n=31 (21.4%). Of them, 69 (47.6%) patients were at stage-III and 31 (21.4%) were at stage-II. Cancer had reoccurred in 26 (17.9%) participants. Ninety-three (64.1%) patients were taking curative treatment. Twenty-seven (18.6%) had other medical issues.
2. The total mean of anxiety was 9.77 ( $\pm 2.51$ ). Patients who were in the 41-65 age group were more anxious,  $p=0.00$ .
3. The total mean of depression was 9.01 ( $\pm 4.31$ ). Lung cancer patients had higher levels of depression,  $p=0.05$ . A statistically significant difference ( $F(3,130)=6.25, p=0.00$ ), was revealed between depression and cancer stage.

Patients who were receiving palliative treatment had a higher level of depression ( $p=0.05$ ).

4. The total mean of the misbeliefs on pain and analgesics was 2.69 ( $\pm 0.63$ ). The highest concerns were fatalism 3.27 ( $\pm 0.99$ ) and tolerance 3.13 ( $\pm 1.08$ ). Patients with cancer recurrence had a lower level of misconception on pain and analgesics.
5. The mean of total intensity was 3.69 ( $\pm 2.03$ ). Patients who were in the 41-65 age group ( $F(2,142)=0.50, p=0.03$ ), held high school education ( $F(3,140)=0.50, p=0.03$ ), were non-religious ( $t=-2.491, p=0.01$ ), lived in an urban area ( $t=2.96, p=0.00$ ), or were receiving palliative care ( $t=1.83, p=0.01$ ), had higher intensity of pain.
6. The mean of total interference was 4.14 ( $\pm 2.52$ ). Patients who were in the 41-65 age group ( $F(2,142)=4.56, p=0.01$ ), held higher education ( $F(3,135)=3.13, p=0.00$ ), had high income ( $F(2,140)=0.80, p=0.02$ ), and lived in an urban area ( $F(1,140)=4.65, p=0.03$ ), had higher interference of pain with actions.
7. Of the participants, fifty (43.4%) were under-treated for pain control. Patients whose pain was under-treated had higher levels of anxiety ( $t=2.92, p=0.00$ ), depression ( $t=2.49, p=0.01$ ), misconceptions about their immune system ( $t=1.95, p=0.05$ ) and addictions ( $t=2.44, p=0.02$ ), pain intensity ( $t=4.41, p=0.00$ ), and interference ( $t=2.46, p=0.02$ ). Statistically significant differences between pain management index and gender ( $t=4.01, p=0.05$ )

religiousness ( $t=4.12, p=0.04$ ), type of cancer ( $F(4,135)=5.92, p=0.02$ ) and current treatment ( $t=5.92, p=0.02$ ), were revealed.

8. Anxiety was significantly correlated with depression ( $r=0.66, p=0.00$ ), total pain intensity ( $r=0.17, p=0.04$ ) and total interference ( $r=0.34, p=0.00$ ).

Depression was significantly correlated with total interferences ( $r=0.29, p=0.00$ ). Total BQ-II scores were significantly correlated with total pain intensity ( $r=0.33, p=0.00$ ), and total pain interference ( $r=0.21, p=0.00$ ).

Total pain intensity was significantly correlated with total pain interference ( $r=0.55, p=0.00$ ). There were statistically significant negative correlations between PMI and total BQ-II score ( $r = -0.21, p=0.01$ ), PMI and total pain intensity ( $r = -0.46, p=0.00$ ), and PMI and total pain interference ( $r = -0.19, p=0.02$ ).

Findings from the current study demonstrate a need to improve patients' knowledge and beliefs on pain and pain management. This study enriches current knowledge regarding pain management among Mongolian cancer patients and may help health care givers and patients be aware of patient-related factors influencing pain management.

### **Suggestions for Further Research**

This study is the first known attempt to describe patient-related factors related to pain management among cancer patients in Mongolia. Therefore, more research on barriers and factors influencing pain management are needed to

understand factors impacting pain management and find solutions to overcome inefficient pain management among cancer patients.

Pain is subjective, so data collection depends on patient reports. Also, some cancers are more painful than others, so further research on these types of cancer should be considered. In this study, pain medication data was obtained mostly from patients. Additional research may utilize more comprehensive approaches. Subsequent researchers are needed to consider qualitative interviews which, although time intensive, are likely to provide rich information about pain and barriers to optimal pain management.

This study was the first occasion in which the three data collection instruments were translated into Mongolian and utilized for a Mongolian population. This study's translation team agreed that the translated instruments' meaning, wording, reliability and validity were good. Any further researcher using one of these questionnaires should also consider reliability of the translations. In addition, validated short forms of the BQ-II, which has 8 questions, would be preferred if the BQ-II is to be used with other questionnaires. Completing a long questionnaire was a big challenge for the patients, especially those experiencing pain. As the items on the HADS are in-depth and thoughtful, it is important to consider the environment and situation when using this questionnaire. Observation of patient reactions before and after completion of the HADS may be useful.

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## **APPENDIX A: Informed Consent**

**Principal Investigator Name:** Oyunbileg Bayarsaikhan, a master degree student of the Seoul National University.

**Title of Project:** Patient-Related Barriers to Pain Management among Mongolian Cancer Patients

### **Introduction**

I am Oyunbileg Bayarsaikhan, studying at Graduate School of the Seoul National University. We are doing research on patient-related factors to effective pain management which is very common among cancer patients. If you are diagnosed with cancer, older than 18 years old, must have been, or still using analgesics for cancer-related pain, able to complete the procedures, and willing to participate, you are being asked to participate in a research study. Your participation in this research is voluntary. It is your choice whether to participate or not. Whether you choose to participate or not, all the services you receive at this clinic will continue and nothing will change. You don't have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about research. Please ask questions if there is anything you do not understand.

### **Purpose of the research**

Cancer is one of common diseases in Mongolia. Cancer patient experiences many symptoms through their disease stages regarding to communication, therapy acceptance, financial situations as well as their belief and knowledge on disease. This study is designed to determine patient-related barriers to effective pain management.

### **Procedures and Protocol**

After you have read this form and agreed to participate, the researcher will give you a package of questionnaires and pencil. At time of completion, if there is any question, you can ask from the researcher who will be nearby you or at the nursing post. If you need any assistance to read and complete the questionnaire, you can ask from the researcher or anyone who wants to help you. After completing questionnaire, you should return the questionnaire to the researcher. If you do not want or cannot complete the questionnaires, it is O.K (There is no penalty or judgement)

### **Duration**

It will take approximately 15-20 minutes to complete questionnaires if you do it once. You can have break to finish the questionnaires.

### **Possible Risks**

You will spend your time to complete the questionnaire. You may feel discomfort when you completing the survey.

### **Possible Benefits**

There may not be any benefit to you for participating in this research, but your participation is likely to help us to describe patient-related factors to effective pain management.

### **Reimbursements**

You will not receive any compensation for your participation in this research.

### **Confidentiality**

The information that we collect from this research project will be kept confidential. Information about you that will be collected during the research will be put away and no-one but the researchers will be able to see it. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone except research advisor. The research data will be moved to and analyzed in Korea as well as published in Korea and Mongolia.

### **Sharing the Results**

Although the knowledge we get from this research will be shared with public, your private (personal) information will not be shared with anyone.

### **Right to Refuse or Withdraw**

You may stop participating in the research at any time that you wish without any penalty or judgement affect to your treatment.

OR

You do not have to take part in this research if you do not wish to do so. You may also stop participating in the research at any time you choose.

### **Whom to Contact**

As a research subject, if you have any questions, you may ask or contact now or later to Oyunbileg.B, a researcher at 8686-0535 and [bilgae2013mgl@gmail.com](mailto:bilgae2013mgl@gmail.com). If you have any inquiries related to participants right, you may contact with the Institutional Research Board of Seoul National University at [irb@snu.ac.kr](mailto:irb@snu.ac.kr).

### **Certificate of Consent**

**I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research. I agree researcher can use information from a survey that I filled. I have a right to withdraw from the research any time without any harm, justice and penalty. A copy of the Informed Consent was given to me.**

**Print Name of Participant** \_\_\_\_\_

**Signature of Participant** \_\_\_\_\_

**Print Name of Researcher: Oyunbileg.B**

**Signature of Researcher** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Day/month/year**

## **APPENDIX B: Demographic and Disease-Related Information**

Hospital/ Hospice name:

Date:

**ID #:**

### **Demographic questions**

1. Gender:                    Male ( )                    Female( )
2. Age:                         ( )
3. Education:                 ≥middle school ( )      High school ( )  
                                    College ( )              Above college ( )
4. Marital status:             Single ( ) Married ( ) Divorced ( ) Widow ( )
5. Religion:                  Yes ( ) No ( )
6. Monthly income:          High ( )                  Moderate ( ),      High ( )
7. Employment:              Employed ( )              Unemployed ( )
8. Living place:              Urban ( )                Rural ( )

### **Disease-related questions**

9. Diagnose: \_\_\_\_\_
10. Stage of disease:    I ( )    II ( )    III ( )    IV ( )
11. Have you ever experienced cancer recurrence or relapse?   Yes ( ) No ( )
12. Current treatment:    operation ( )    chemo ( )  
                                  radiation ( )    others ( )
13. Do you have any medical issues?              Yes ( ), No ( )

## **APPENDIX C: Barriers Questionnaire- II**

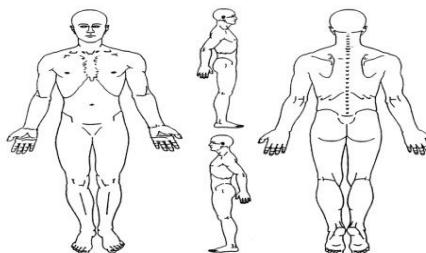
Indicate your opinion about the following statements using the scale below:  
 0= “don’t agree at all”, 5 = “agree very much”

		0	1	2	3	4	5
1	Cancer pain can be relieved	<input type="radio"/>					
2	There is a danger of becoming addicted to pain medicine	<input type="radio"/>					
3	Drowsiness from pain medicine is difficult to control	<input type="radio"/>					
4	Pain medicine weakens the immune system	<input type="radio"/>					
5	Confusion from pain medicine cannot be controlled	<input type="radio"/>					
6	When you use pain medicine your body becomes used to its effects and pretty soon it will not work any more	<input type="radio"/>					
7	Using pain medicine blocks your ability to know if you have any new pain	<input type="radio"/>					
8	Pain medicine can effectively control cancer pain	<input type="radio"/>					
9	Many people with cancer get addicted to pain medicine	<input type="radio"/>					
10	Nausea from pain medicine cannot be relieved	<input type="radio"/>					
11	It is important to be strong by not talking about pain	<input type="radio"/>					
12	It is important for the doctor to focus on curing illness, and not waste time controlling pain	<input type="radio"/>					
13	Using pain medicine can harm your immune system	<input type="radio"/>					
14	Pain medicine makes you say or do embarrassing things	<input type="radio"/>					
15	If you take pain medicine when you have some pain, then it might not work as well if the pain becomes worse	<input type="radio"/>					
16	Pain medicine can keep you from knowing what is going on in your body	<input type="radio"/>					
17	Constipation from pain medicine cannot be relieved	<input type="radio"/>					
18	If doctors have to deal with pain they will not concentrate on curing the disease	<input type="radio"/>					
19	Pain medicine can hurt your immune system	<input type="radio"/>					

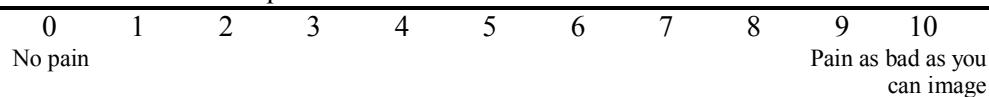
- 20 It is easier to put up with pain than with the side effects that come from pain medicine      ○ ○ ○ ○ ○ ○
- 21 If you use pain medicine now, it will not work as well if you need it later      ○ ○ ○ ○ ○ ○
- 22 Pain medicine can mask changes in your health      ○ ○ ○ ○ ○ ○
- 23 Pain medicine is very addictive      ○ ○ ○ ○ ○ ○
- 24 Medicine can relieve cancer pain      ○ ○ ○ ○ ○ ○
- 25 Doctors might find it annoying to be told about pain      ○ ○ ○ ○ ○ ○
- 26 Reports of pain could distract a doctor from curing the cancer      ○ ○ ○ ○ ○ ○
- 27 If I talk about pain, people will think I am a complainer      ○ ○ ○ ○ ○ ○
-

## **APPENDIX D: Brief Pain Inventory-SF**

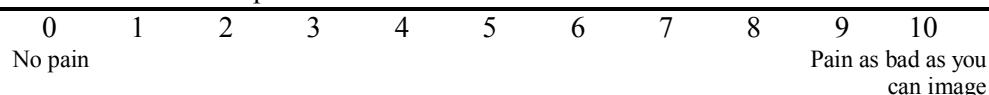
1. Throughout our lives, most of us have had pain from time to time (such as minor headaches, sprains, and toothaches). Have you had pain other than these everyday kinds of pain today?
  - a. Yes
  - b. No
2. On the diagram, shade in the areas where you feel pain. Put an X on the area that hurts the most.



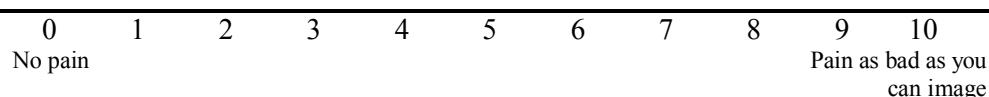
3. Please rate your pain by circling the one number that best describes your pain at its **WORST** in the past 24 hours.



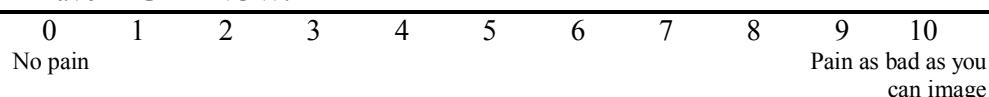
4. Please rate your pain by circling the one number that best describes your pain at its **LEAST** in the past 24 hours.



5. Please rate your pain by circling the one number that best describes your pain on the **AVERAGE**.

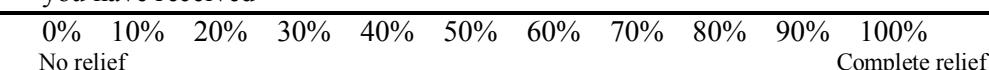


6. Please rate your pain by circling the one number that tells how much pain you have **RIGHT NOW**.



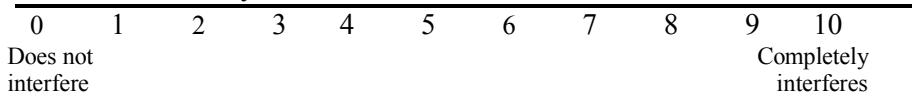
7. What **treatments or medications** are you receiving for your pain?

8. In the past 24 hours, how much **RELIEF**s have pain treatments or medications provided? Please circle the one percentage that most shows how much RELIEF you have received

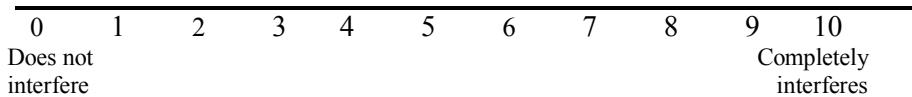


9. Circle the one number that describes how, during the past 24 hours, **PAIN HAS INTERFERED** with your:

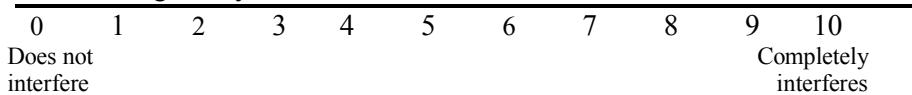
a. General activity



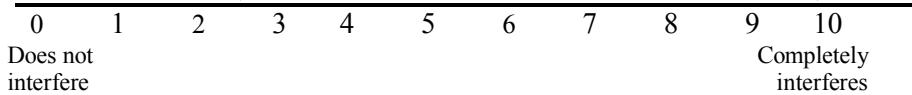
b. Mood



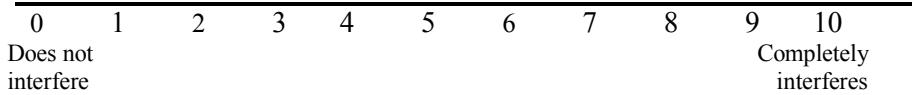
c. Walking ability



d. Normal work (includes both work outside home and housework)



e. Relations with other people



f. Sleepy



g. Enjoyment of life



## **APPENDIX E: Hospital Anxiety and Depression**

Tick the box beside the reply that is closest to how you have been feeling in the past week. Don't take too long over your replies: your immediate is best

D	A		D	A	
		<b>I feel tense or 'wound up':</b>			<b>I feel as if I am slowed down:</b>
3		Most of the time	3		Nearly all the time
2		A lot of the time	2		Very often
1		From time to time, occasionally	1		Sometimes
0		Not at all	0		Not at all
		<b>still enjoy the things I used to enjoy:</b>			<b>I get a sort of frightened feeling like 'butterflies' in the stomach:</b>
0		Definitely as much	0		Not at all
1		Not quite so much	1		Occasionally
2		Only a little	2		Quite Often
3		Hardly at all	3		Very often
		<b>I get a sort of frightened feeling as if something awful is about to happen:</b>			<b>I have lost interest in my appearance:</b>
3		Very definitely and quite badly	3		Definitely
2		Yes, but not too badly	2		I don't take as much care as I should
1		A little, but it doesn't worry me	1		I may not take quite as much care
0		Not at all	0		I take just as much care as ever
		<b>I can laugh and see the funny side of things:</b>			<b>I feel restless as I have to be on the move:</b>
0		As much as I always could	0		Very much indeed
1		Not quite so much now	1		Quite a lot
2		Definitely not so much now	2		Not very much
3		Not at all	3		Not at all
		<b>Worrying thoughts go through my mind:</b>			<b>I look forward with enjoyment to things:</b>
0		A great deal of the time	0		As much as I ever did
1		A lot of the time	1		Rather less than I used to
2		From time to time, but not too often	2		Definitely less than I used to
3		Only occasionally	3		Hardly at all
		<b>I feel cheerful:</b>			<b>I get sudden feelings of panic:</b>
3		Not at all	3		Very often indeed
2		Not often	2		Quite often
1		Sometimes	1		Not very often
0		Most of the time	0		Not at all
		<b>can sit at ease and feel relaxed:</b>			<b>I can enjoy a good book or radio or TV program:</b>
0		Definitely	0		Often
1		Usually	1		Sometimes
2		Not Often	2		Not often
3		Not at all	3		Very seldom

## **APPENDIX F: Institutional Review Board Approval**

### **심의결과 통보서**

수신

책임연구자	이름: Bayarsaikhan Oyunbil	소속: School of Nursing	직위: 석사과정
지원기관	해당없음		

과제정보

승인번호	IRB No. 1602/002-007		
연구과제명	몽골 암환자의 통증 관리에 환자과 관련된 요인		
연구종류	학위 논문 연구, 설문조사		
심의종류	신속심의		
심의일자	2016-02-12		
심의대상	연구계획서(재심의), 연구참여자용 동의서 또는 동의서 면제 사유서, 연구참여자 모집 광고		
심의결과	승인		
승인일자	2016-02-12	승인유효기간	2017-02-11
정기보고주기	12개월		
심의의견	1. 심의결과 제출하신 연구계획에 대해 승인합니다. 2. 연구자께서는 승인된 문서를 사용하여 연구를 진행하시기 바라며, 만일 연구진행 과정에서 계획상에 변경사항(연구자 변경, 연구내용 변경 등)이 발생할 경우 본 위원회에 변경신청을 하여 승인 받은 후 연구를 진행하여 주십시오. 3. 유효기간 내 연구가 끝났을 경우 <u>종료 보고서를 제출하여야</u> 하며, 승인유효기간 이후에도 연구를 계속하고자 할 경우, <u>2017-01-12까지</u> 지속심의를 받도록 하여 주십시오.		

2016년 02월 12일

서울대학교 생명윤리위원회 위원장



본 위원회가 승인한 연구를 수행하는 연구자들은 다음의 사항을 준수해야 합니다.

1. 반드시 계획서에 따라 연구를 수행해야 합니다.
2. 위원회의 승인을 받은 연구참여자 동의서를 사용해야 합니다.
3. 모국어가 한국어가 아닌 연구참여자에게는 승인된 동의서를 연구참여자의 모국어로 번역하여 사용해야 하며 번역본은 인증 및 위원회의 승인을 거쳐야 합니다.
4. 연구참여자 보호를 위해 불가피한 경우를 제외하고는 연구 진행중의 변경에 대해서는 위원회의 사전 승인을 받아야 합니다. 연구참여자의 보호를 위해 취해진 응급상황에서의 변경에 대해서는 즉각 위원회에 보고해야 합니다.

5. 위원회에서 승인 받은 계획서에 따라 등록된 연구참여자의 사망, 입원, 심각한 질병에 대하여는 위원회에 서면으로 보고해야 합니다.
6. 임상시험 또는 연구참여자의 안전에 대해 유해한 영향을 미칠 수 있는 새로운 정보는 즉각 위원회에 보고해야 합니다.
7. 위원회의 요구가 있을 때에는 연구의 진행과 관련된 사항에 관하여 위원회에 보고해야 합니다.
8. 연구참여자 모집광고는 사용 전에 위원회로부터 승인을 받아야 합니다.
9. 강제 혹은 부당한 영향력이 없는 상태에서 충분한 설명에 근거하여 연구참여자로부터 동의를 받아야 하며, 잠재적인 연구참여자에 대해서 연구 참여 여부를 숙려할 수 있도록 충분한 기회를 제공해야 합니다.

## **APPENDIX G: Permissions from Authors**

### A. Permission from Sandra E Ward, the author of the Barriers Questionnaire

The screenshot shows a Gmail inbox with one unread email. The subject of the email is "Permission Request For BQ-II". The email is from "Oyunbileg Bayarsaikhan <bilgae2013mgl@gmail.com>" and was sent on "Jan 7". The body of the email reads:

Dear Sandra E. Ward

I, Oyunbileg Bayarsaikhan, am a graduate student from the College of Nursing at Seoul National University in Korea. I am writing my master's dissertation, entitled Patient-Related Factors to Pain Management among Mongolian Cancer Patients, which will describe factors impacting pain management. My dissertation advisor Yi, Mungsun, RN, DNS, can be reached at [doram@smu.ac.kr](mailto:doram@smu.ac.kr).

To measure cognitive factors to pain management in cancer patients, I would like your permission to use the Barriers Questionnaire-II (BQ-II) under the following conditions:

- I will use the surveys only for my research study and will not sell or use them with any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the instrument.
- I will send a copy of my completed research study to your attention upon completion of the study.

As above mentioned, our subjects are Mongolians. But there is no research or study which used the BQ-II in Mongolian language, so that I and my colleague, Tsolmon Tumurtoogoo, a nursing faculty of the International Ulaanbaatar University. Mongolia did forward and back translations (attached). Forward translation from English into Mongolian was done by me and back translation from Mongolian into English by Tsolmon Tumurtoogoo, who can be reached at [tsomko\\_ts@yahoo.com](mailto:tsomko_ts@yahoo.com). If it is required or there is any mistake, please let us know what we have to do.

If for some reason you do not own the copyright for the BQ-II, I would appreciate any information you can provide concerning the proper person or company with whom I should inquire.

Please respond in writing to indicate whether permission is granted and inform me of any fees or conditions that may be required.

Thank you for your time and consideration of this request. I look forward to hearing back from you at your earliest convenience.

Sincerely,  
Oyunbileg Bayarsaikhan  
[bilgae2013mgl@gmail.com](mailto:bilgae2013mgl@gmail.com)  
82-010-5962-8866

The screenshot shows a Gmail inbox with one unread email. The subject of the email is "Permission Request For BQ-II". The email is from "SANDRA E WARD <sward@wisc.edu>" and was sent on "Jan 7". The body of the email reads:

Hello Ms. Bayarsaikhan,

You have my permission to use the BQII in your work. I have attached a list of articles that may prove useful although you may already know about most of them.

I do not see any problems in the back translation that you attached.

Best wishes in your work,  
Sandy

Sandra Ward, PhD, RN, FAAN  
Helen Denne Schulte Professor Emerita

**From:** Oyunbileg Bayarsaikhan <[bilgae2013mgl@gmail.com](mailto:bilgae2013mgl@gmail.com)>  
**Sent:** Wednesday, January 6, 2016 12:37 PM  
**To:** SANDRA E WARD  
**Subject:** Permission Request For BQ-II

B. Permission of the Brief Pain Inventory from the Mendoza Tito R, who is in charge of the instruments, which belongs to MD Anderson organization.

The screenshot shows a Gmail inbox interface. The top bar displays the Google logo and the email address tmendoza@mdanderson.org. Below the bar, the 'Gmail' dropdown menu is visible, along with standard toolbar icons for reply, forward, delete, and move to inbox. A 'COMPOSE' button is on the left. The left sidebar lists 'Inbox (1)', 'Starred', 'Important', 'Sent Mail', 'Drafts (5)', 'Circles', and 'Notes'. Below the sidebar is a user profile for 'Oyunbileg' with a dropdown arrow and a search icon. The main inbox area shows one unread email from 'Mendoza, Tito R <tmendoza@mdanderson.org>' with the subject 'Re-BPI Forward a...'. The email body contains the following text:

Mendoza, Tito R <tmendoza@mdanderson.org>  
to me ▾  
Dear Oyunbileg,  
The new forward translation looks good. I think it is ready for use.  
Good luck with your project.  
Regards.  
Tito

Below the email, there is a file attachment link: <Re-BPI Forward and Back Translation.xlsx>

C. Permission on Hospital Anxiety and Depression Scale, which belong to  
“GL-Assessment” Organization.

- 
- (b) If the Licensee shall at any time be in breach of any of the terms and conditions of this Agreement and if capable of being remedied, such breach is not remedied within 15 days of receipt of written notice thereof; or
- (c) If the Licensee is declared insolvent or bankrupt or goes into liquidation (other than voluntary liquidation for the purpose of reconstruction only) or if a Receiver is appointed or if the Licensee is subject to any similar event anywhere in the world.

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17. This Agreement shall be governed by and construed in all respects in accordance with English Law and the courts of England and Wales shall have exclusive jurisdiction to settle any dispute arising out of or in connection with this Agreement, its subject matter and formation, including non-contractual disputes or claims.

**AS WITNESS THE HANDS OF THE PARTIES**  
hereto the day and year first above written

Signed on behalf of GL Assessment Limited

*Sonam* ..... 18/02/2016 ..... (SCREEN)

Signed by the Licensee: Please print this page, sign, and attach this signature page as a scanned document along with your typed User Agreement form, sent as a Word doc

User's Signature (handwritten): <i>Bilgac</i>	Company/Organisation Stamp (if applicable):
Title: <i>master's student</i>	
Company/Organisation: <i>Nursing College</i> <i>Seoul National University</i>	
Date: <i>2016.02.02</i>	



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Ms. Oyunbileg Bayarsaikhan  
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Nurse Dormitory 128 ho  
Daehak-ro  
Jongno-gu  
SEOUL  
South Korea  
117-799

## Quotation

Document no. SQH0002225

Date	Customer	Reference
16/02/2016	127856	BAYARSAIKHAN1602

Product Ref	Product	Qty	Unit Price	Disc %	Disc Amt	Total
9781406069211	Permissions - Dr R P Snaith -50% - No VAT	1	58.00	0.00	0.00	58.00
9780708715123	HADS: Manual	1	45.00	0.00	0.00	45.00

Tax base	Rate	Tax amount	Total Exc Tax	103.00 GBP
			Delivery	10.95
			Tax amount	0.00
			Total Inc Tax	113.95 GBP

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