FACTORS ASSOCIATED WITH FUNCTIONAL RECOVERY AMONG PATIENTS WITH LOW BACK PAIN

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ABSTRACT

Low back pain (LBP) is a disease disturbing daily live activities among people in their early and late adult ages. Numbers of patients have been increasing in Vietnam in the past decade. Treatment of patients with LBP aim to restore their function to their optimum level. The aim of this study was to examine the functional recovery and the association between pain, the self – efficacy, anxiety and depression, comorbidity and functional recovery. Self – efficacy theory was used as a framework for this study. A descriptive correlational research was conducted among 126 patients with LBP in Rheumatology unit at Bach Mai hospital, Hanoi, Vietnam. The sample were 18 years and above. Data were collected by using patients' hospital record and interviewing them with interviewing forms. Spearman's rho was employed to test the association among all variables. The result showed that there was nearly equal distribution between males (52.4%) and females (47.6%), while the age of the patients ranged from 18 to 88 years. The average was 54.84years (SD = 17.11 years). Regarding the functional recovery, majority of the patients (69%) demonstrated moderate disability level whereas 7.9%. demonstrated severe disability. Patients with crippled or bed-bound level were not found. Pain was negatively medium correlated with functional recovery at r = - .556, p = .000, anxiety had a negative correlation with functional recovery (r = -.378, p =.000) and depression had a negative medium correlation with functional recovery (r = -.538, p=.000). Pain self – efficacy had positive medium correlation with functional recovery (r = .478, p =.000). Nevertheless, comorbidity had no correlation with functional recovery (p = .105). In conclusion, majority of the patients with LBP witnessed moderate and severe disability. In order to improve their functional recovery, it is recommended that nurses should assess and control patients' pain. The patients' anxiety and depression should be well managed. The patients' self-efficacy should be enhanced. A comprehensive guideline to improve patients' recovery should be developed and tested for its effectiveness through a quasi-experimental research.

KEY WORDS: FUNCTIONAL RECOVERY/ LOW BACK PAIN/ SELF – EFFICACY/ ANXIETY/, DEPRESSION AND COMORBIDITY

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LIST OF ABBREVIATIONS

LBP	Low back pain.
PSEQ	The Pain Self-Efficacy Questionnaire
NRS	Numerical Rating scale
HARS	Hamilton Anxiety Rating scale
HDRS	Hamilton Depression Rating scale
ODI	Oswestry Disability Index
TKA	Total Knee Arthroplasty
NSCLBP	nonspecific chronic low back pain

CHAPTER I
INTRODUCTION

1.1 Background and significance of the study

Low back pain (LBP) is a common disorder associated with the back's muscles and bones where have five lumbar vertebrae from L1 to L5, sometimes related to the sacrum. LBP may be classified by duration as acute (pain lasts less than 6 weeks), sub-chronic (6 to 12 weeks), or chronic (pain lasts more than 12 weeks and is typically referred to as being specific or non-specific (Andersson, 1999; Merskey and Bogduk, 1994).

LBP is global health problem in worldwide, The World Health Organization shows that 20% of the world population who have back pain experiences annually (Ehrlich, 2003) and approximately 36% for LBP (Hoy et al., 2010). The other study showed about 40% people who have LBP at some point of their lives (Hoy, Bain, Williams, et al., 2012). Besides that, 75% of patient with LBP complain after a 1- year follow-up, 30% of patients developed disabilities associated with work and daily activities as well as symptoms of anxiety and depression (Lam et al., 2007). In Asia, the lifetime prevalence of LBP is above 61.3 % in rural area in Korea (Hoy et al., 2014). In Viet Nam, 11.2% patient with LBP (Hoa et al., 2003). It can be said that LBP influences on normal function or activities of patients.

LBP influences on patient's physical activities. Motor skills of patients can impair markedly. Patients may have difficult movements of spine back like bending and rotation. LBP also has a significant impact on psychological well-being of people because it requires an individual with LBP to be involved in long-term treatment for many unpleasant symptoms that inhibit patients' normal physical functions. The common psychological problems include depression, anger, denial, helplessness, anxiety, loss of control, fear of death, and feeling of guilt (Bonner & Douglas, 2014). The high number of people suffering from LBP may cause a significant socioeconomic burden on health care systems, social care, and the government. The

cost of treatment and caring of people with LBP and the associated consequences of LBP is increasing every year. In the United States, a study of the 354 million patient visits per year for acute care, only 42% are seen by primary care providers: 28% are seen in the emergency room and 20% are seen by specialists *(*Weinick, 2010*)*. According to the Netherlands' report, more than 5 million patients saw general practitioners and over 1 million ones visited physiotherapists (Lambeek, Tulder, Swinkels, et al., 2011), which the annual economic burden for LBP increase to €3.5 billion, of which 12 % is direct costs for health care (for instance, care services utility, diagnosis, medicines, and treatment methods) and the indirect costs such as the day off work and disability were 88 % (Lambeek et al., 2011). As aforementioned, functional recovery after having LBP is an ultimate goal of every patient who suffers from this symptom. The details are describing below.

According to the extensive literature review, there are many factors related to functional recovery among patients with LBP. Self – efficacy is very important factor that improves functional recovery of patient with LBP (Kamper, Apeldoorn, Chiarotto, et al., 2014; Monticone, Ferrante, Rocca, et al., 2013). Moreover, self – efficacy can predict functional recovery. According to Bandura (1986), the self-efficacy is the belief in one's ability perform successful special task or behaviors to get desirable outcome. There are four components in self – efficacy theory including mastery experience, enactive attainment, vicarious experience, verbal persuasion and physiological feedback. The theory explains that when a person has mastery experience, he or she will have strong belief in his/her own capability with vicarious experience and external verbal persuasion from others (health care team, nurses, family members) so a person will response by any demonstration of the feedback. Therefore, self – efficacy can be used to explain the phenomena of patients with low back pain who should have confidence to perform activities to achieve the desired goals (physical function) very well. A research illustrated that a reduced self – efficacy is related an increased level of disability ($p < .001$) (Vieira et al., 2014). The other study showed that self - efficacy was significantly associated with positive associations with physical function at ($r = 0.5$), and psychological functioning ($r = 0.45$) *(*Ferreira - Valente, 2014). Moreover, recent studies have shown that self-efficacy approaches are effective in reducing pain, disability, and that they improve

work status, functional recovery of patients with LBP (Kamper, Apeldoorn, Chiarotto, et al., 2014; Monticone, Ferrante, Rocca, et al., 2013)

Pain intensity is often associated with disability and physical function (Nieto et al., 2009; Turner et al., 2004). Pain is associated with a range of psychological, physical, and social factors, (Gatchel et al., 2007; Waddell et al., 1992), factors which are also associated with disability. A research has shown that percentage of LBP patients majorly focus on pain and complaints of physical symptoms, and they are less paying attention to recovery of functional capacities (Buchbinder, 2008). Patients' attitudes concentrate on back pain and their illness' knowledge are vital of this problem. Particularly, cognitions such as fear avoidance beliefs and passive coping strategies play an important role in disabling LBP in many patients (Nicholas, Linton, Watson, et al., 2011). The high rates of disability and health care utility focus on pain, instead of functional recovery of LBP patients.

Anxiety and depression has been found among patients with chronic LBP and they were positively associated with physical and mental health (Sagheer et al., 2013; Bean et al., 2014). Depression was the most powerful factor related to disability of chronic LBP among depression, anxiety and somatic symptoms (Hung, Liu & Fu, 2015). Depression was present 21.4% of patients and associated with greater fear avoidance beliefs and lower self – efficacy (Vieira et al., 2014).

People with LBP have several comorbid condition which also have impact on their functional recovery. Comorbidity is associated with increased costs (Ritzwoller et al., 2006; Nimgade et al., 2010), negative functional status (Fanuele et al., 2000; Pinto-Meza et al., 2006). Robinson stated that diabetes might lead to increase to disc prolapse (Robinson et al., 1998). Dickens included that the correlation between depression and back pain behavior is difficult to determine (Dickens et al., 2002). McIntosh reported that the physical comorbidity such as hypertension, diabetes, chronic obstructive pulmonary disease, coronary artery disease, rheumatoid arthritis, non-spinal malignancy or any other non-spinal condition had no significantly different in outcomes. However, this clinical approach to chronic LBP with an associated physical comorbidity might initially seem more complex (McIntosh et al., 2011). In addition, a study showed that patients with chronic LBP had a greater comorbidity burden including a significantly higher ($p < 0.001$) frequency of musculoskeletal

(Gore, 2012). The other research described the presence of any comorbidity in patients with chronic LBP may be associated with a significantly longer duration of work disability (Ritzwoller et al., 2006).

In Vietnam, although there are 10% of people suffering from LBP (Hoa et at., 2003), the scientific study is still limited so that there is inadequate scientific evidence to support the phenomena of people with LBP. Accordingly, the clinical research in this matter is needed.

The consequences of LBP create an impact on patients' functions. Thus, identifying some factors such as pain, self – efficacy, anxiety and depression, comorbidity related to functional recovery as well as providing nursing care program will assist Vietnamese people with LBP to be able to recover their functions and health.

1.2 Research question

What are factors associated with functional recovery among patients with low back pain?

1.3 Purpose of the study

1.3.1 To evaluate the functional recovery among patients with LBP

1.3.2 To identify the association between pain, self – efficacy, anxiety and depression, comorbidity and functional recovery among patients with LBP.

1.4 Hypothesis

1.4.1 Self – efficacy is positively associated with functional recovery among patients with LBP.

1.4.2 Pain is negatively associated with functional recovery among patients with LBP.

1.4.3 Anxiety and depression are negatively associated with functional recovery among patients with LBP.

1.4.4 Comorbidity is negatively correlated with functional recovery among patients with LBP.

1.5 Conceptual framework

Self – efficacy theory (Bandura, 1986) is utilized as framework. When patients with LBP has mastery experience, he or she will have strong belief in his/her own capability with vicarious experience and external verbal persuasion from others (health care team, nurses, family members) so a person will response by any demonstration of the feedback. The feedback as proposed in self efficacy theory while applying in this study it refers to functional ability or so called functional recovery. There are some factors that correlated with functional recovery among patients with LBP. Those include pain, self – efficacy, anxiety and depression, and comorbidity. Patients with LBP can lead to disability. When patients have the belief in their ability they can perform successful special task or behaviors to get desirable outcome. Anxiety and depression may be found in chronic low back pain and correlated to functional recovery. When patients have anxiety or depression, their functional recovery decreases. Similar to co-morbidity, patients who have underlining chronic illness such as heart diseases, chronic kidney diseases, hypertension would have low functional recovery.

The relationship among independent variable and dependent variable is illustrated in the following conceptual framework that is modified from Self – efficacy theory (Bandura 1986).

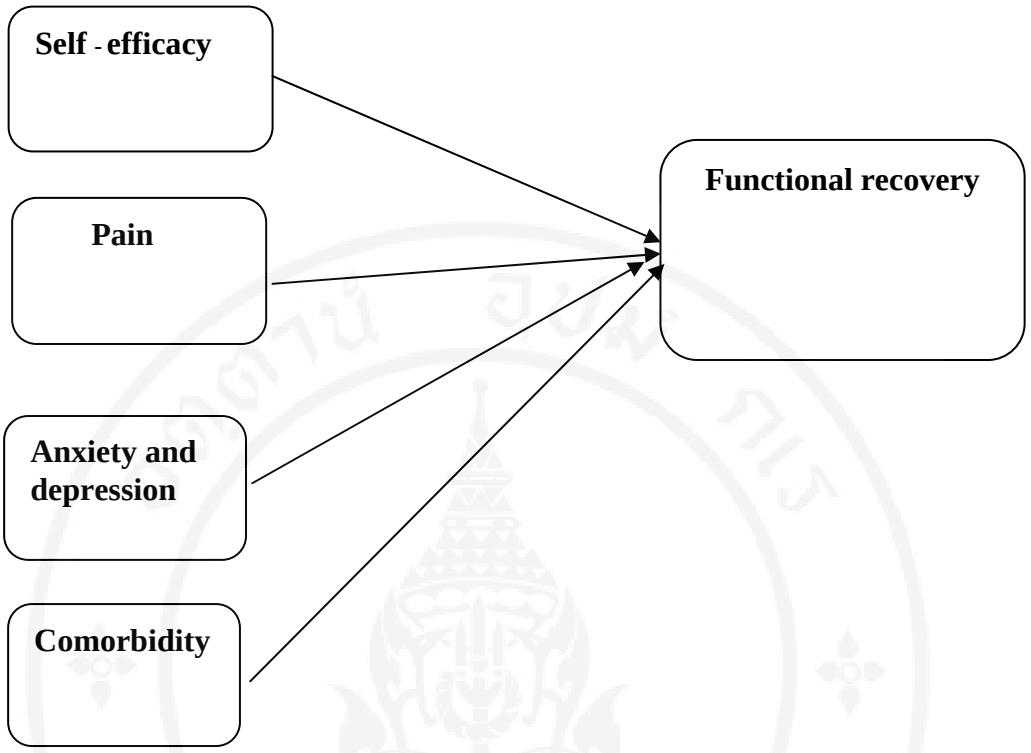

Figure 1.1 The framework of research study shows association between pain, self – efficacy, anxiety and depression, comorbidity and functional recovery of patients with LBP.

1.6 Scope of the study

This study aims to assess factors associated with functional recovery among patients with LBP who come for the treatment as an in patients at Rheumatology ward, Bach Mai hospital, Hanoi, Vietnam**.**

1.7 Expected outcomes and benefits

1.7.1 Nurses can use this knowledge to improve functional recovery among patients with LBP during hospital stays.

1.7.2 Nurses as well as other health care teams can evaluate and develop guidelines for management of low back ache in clinical nursing practice effectively before treatment.

1.7.3 This knowledge can be used for the researchers in the other fields of low back ache studies.

1.8 Definition of terms

1.8.1 Pain Self- efficacy. According to Bandura (1986), the self- efficacy is the belief in one's ability perform successful special task or behaviors to get desirable outcome. In this study, based on self – efficacy theory, pain self - efficacy referred to the strong beliefs of patients with LBP in their own capacity to perform activities they pursue the desired goals. In this study, pain self - efficacy referred to the confidence patients have toward their management toward LBP and was measured by using The Pain Self-Efficacy Questionnaire (PSEQ) (Nicholas, 2007**).**

1.8.2 Pain referred to patients' perception on the level or intensity of pain they perceived at the lower back area. This pain perception is related to patients' pathology with the bony lumbar spine, lumbar discs, ligaments around those area, spinal cord, nerves, and muscles of the low back area. In this study, pain was measured by Numerical Rating Scale. Numerical rating scale (NRS) is a common pain scale being used in clinical practice as well as in clinical research. This pain scale was developed by McCaffery in the year 1968 (Bijur, , Latimer, Gallagher, 2003) and has been tested for its reliability in various group of patients including patients with acute and chronic pain showing the alpha Chronbach ranging from .8 to .91 (Koneti & Jones, 2016).

1.8.3 Anxiety/ depression are the mood disorders of patient. It referred to a feeling of unpleasant, uneasiness, uncertainty resulting from a real or perceived threat. The actual sources of anxiety may be unknown or known (Vacarolis, Carson, & Shoemaker, 2006, p. 213). In this study, Hamilton Anxiety Rating Scale (HARS) which is in the public domain will be used to measure the severity of symptoms of anxiety, which includes evaluation of 14 symptoms and signs. Depression can be measured by Hamilton Depression Rating Scale (HDRS) that is in the public domain. This scale is used to identify severity of depressive symptoms and including 17 items. The range of scores for depression severity are determined as: no depression, score

<10; mild depression, score 10–13; moderate depression, score 14–17; severe depression, score >17).

1.8.4 Comorbidity is other illnesses that the patients had before the study. There are many comorbidities that can exist for patients with chronic LBP. McIntosh stated that the physical comorbidity of patients with chronic LBP such as hypertension, diabetes, chronic obstructive pulmonary disease, coronary artery disease, rheumatoid arthritis, non-spinal malignancy or any other non-spinal condition (McIntosh et al.,2011). In this study, comorbidity will be measured by the form developed by the researcher. This form comprises items of common chronic diseases found among adult patients including hypertension, heart disease, renal disease and other chronic diseases.

1.8.5 Functional recovery is the ability to perform activities of daily living (Katz & Stroud, 1989). In this study, functional recovery refers to as an outcome measure in patient with LBP and will be measured by The Oswestry Disability Index (Fairbank, Couper & Davies, 1980) that is used to assess patient's disability with LBP by clinicians and researchers. There are ten parts which have been described limitation of daily living activities including 1) Pain Intensity, 2) Personal care, 3) Lifting, 4) Walking, 5) Sitting, 6) Standing, 7) Sleeping, 8) Social life 9) Travelling 10) Changing Degree of Pain. Each section has six statements and each statement described degree of difficulty in the activity.

CHAPTER II
LITERATURE REVIEW

This chapter provides a literature review of factors associated with functional recovery among patients with low back pain (LBP). The contents enhance the understanding of phenomena of functional recovery among patients with LBP based on self- efficacy theory as following 4 issues including the conclusion part:

2.1 Problems among patients with LBP

2.1.1 Incidence of LBP

2.1.2 Classification of LBP

2.1.3 Pathophysiology of LBP

2.1.4 Signs and symptoms of LBP

2.1.5 Treatment for LBP.

2.1.6 Impact of LBP

2.2 Functional recovery among patients with LBP

2.2.1 The concept of functional recovery

2.2.2 Functional recovery among patients with LBP

2.2.3 Measurement

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2.3.1 Self efficacy theory

2.3.2 Self efficacy theory and the patients with LBP

2.4 Factors associated with functional recovery among patients with LBP.

2.4.1 Self efficacy and its association with functional recovery among patients with LBP

2.4.2 Pain level and its association with functional recovery among patients with LBP

2.4.3 Anxiety/ depression and its association with functional recovery among patients with LBP

2.4.4 Comorbidity and its association with functional recovery among patients with LBP.

2.5 Conclusion

2.1 Problems among patients with LBP

2.1.1 Incidence of LBP

LBP is global health problem in worldwide, according to the World Health Organization shows that 20% of the world population who have back pain experiences annually (Ehrlich, 2003) and Hoy et al., 2010 also finds that approximately 36% for LBP. The prevalence of chronic LBP ranges between 9% and 21% and many studies have showed that this pain is related to most cases of disability and leave of absence from work (Webb et al., 2003; Freburger et al., 2009; Sá et al., 2008). Disability in patients with chronic LBP varies between 11% and 76% (Wynne-Jones et al., 2008; Côté et al., 2008). The literature reviews finds that about 40% people who have LBP at some point of their lives (Hoy, Bain, Williams, & al, 2012), 75% of patients with LBP complain after a 1- year follow-up and 30% of patients developed disabilities associated with work and daily activities as well as symptoms of anxiety and depression (Lam et al., 2007). In Asia, the lifetime prevalence of LBP is above 61.3% in rural area in Korea (Hoy, March, Brooks, & et, 2014). According to Sitthipornvorakul et al**.**, 2015, there were 14**%** workers with sedentary job experienced LBP**.** In China, back pain is a common problem among Chinese farmers and it was popular for females. A survey was conducted in 2008 in a Northern China, 38.4% famers reported back pain and two – thirds of farmers with back pain (66%) reported that back pain influenced on work quantity and quality (Liu et al., 2012). In Viet Nam, according to Nguyen Thi Minh Hoa, the prevalence of LBP was 11.2% (Hoa et al., 2003). Also, Nguyen Thi Thanh Thuy, 2014 described that prevalence of chronic pain was 31.04%. The more proportion of pain increased in women, elderly, unemployed, retired persons, people with poor education and low income. The popular location of pain was LBP with 28.93%. It can be said that LBP influences on normal function or daily activities of patients.

2.1.2 Classification and pathophysiology of low back pain

LBP was classified into 4 main categories; 1) Musculoskeletal or pain related to muscle and bone, 2) Inflammatory pain which associated with inflammatory mechanical process, 3) Malignancy or pain related with cancer cells, and 4) Infection or pain related with infectious process (Andersson, 1999; Merskey & Bogduk, 1994).

LBP is a common disorder associated with the back's muscles and bones which related with the position or alignment of back. Almost a half of people suffering with LBP was due to this cause. According to the duration of pain, LBP could be classified by 3 levels; acute LBP referred to pain that lasts less than 6 weeks, sub-chronic LBP referred to pain duration from 6 to 12 weeks, and chronic LBP referred to pain that lasted more than 12 weeks and related to specific or non-specific pain (Andersson, 1999; Merskey and Bogduk, 1994).

The lumbar includes five vertebrae (L1-L5), sometimes including the sacrum. The fibro-cartilaginous discs is between these vertebrae, which performs as a cushion between each vertebral disc and serves as a protector of the spinal cord. Ligaments and muscles of the back as well as abdominal muscles function to maintain stability of the spine. Facet joints or small joints in spinal column have functions on movement of the spine (Floyd & Thompson, 2008).

The muscles of multifidus of the lumbar are vital to keep the spine straight and stable when patient has movement of sitting, walking and lifting (Ebadi, Henschke, Ansari, & al, 2014). An issue with these muscles is occurred in patients with chronic LBP due to inappropriate uses of muscles to avoid the pain. The explanation is that, pain can only be released temporary and the chronic pain will continue to occur (Smith & Grimmer-Somers, 2010).

There is a gelatinous core surrounded by a fibrous ring in an intervertebral disc. Normally, the circulatory or nerves are not provided to most of the disc – blood and nervous systems but they are outside of the disc.

When people become older, their disc would loss flexibility and ability to absorb physical forces hence it will lead to decreased their capability to deal with physical forces or physical stress (Seco, Kovacs, & Urrutia, 2011). As a consequence, the ligaments of the spine will become thicken and the bony part of vertebrae will be enlarged. The space inside the spinal column become narrow. Major problems that

will take place include disc degeneration, herniated disc material and increased pressure on nerve root resulting in LBP (Seco et al., 2011; Middelkoop et al, 2010).

Pain sensation

Pain is an unpleasant feeling that was occurred when the body's tissues were damaged by internal or external reasons. There are four steps of feeling pain: transduction, transmission, perception, and modulation (Salzberg, 2012). Pain was detected by the nerve cell in the dorsal root ganglia and fibers. The signals of pain were transmitted to the spinal cord (Patel, 2010). From the beginning, the electrical signal from sensory nerve cells was transducted, which are triggered by pain-causing event. and carried to the posterior horn of spinal cord and then to the brain stem and another parts of brain namely thalamus and limbic system. The pain perception were processed in the brain via the pain signals and then the brain could increase or decrease the release of neurotransitters in order to alter the further nerve impulses. However, the pain sensation sometimes send the wrong signal and then the body may react inproperly, for example pain sensation occur without any extraneous stimuli and over pain sensation than normal level. Moreover, it includes the occurrence of pain from some event which is not related to pain. Those aforementioned can lead to chronic pain (Salzberg, 2012).

Degenerative process was not clear for the relationship between intervertebral disk degeneration and LBP. On the other hand, according to the biomechanical of the disk structure, when the chemical mediators released and there was change in sensitization of nerve endings. Moreover, neurovascular ingrowth into the degenerated disks could cause the development of pain. Most of the people suffered from nonspecific LBP and a degenerating disc or arthritis were most common issues. Degenerative disc disease could be caused by wear and tear or the collapse of the spinal discs, which could develop the changes of the construction of bone spurs. These changes were common with aging process and there was no pain and other symptoms. Therefore, the degeneration of disc was diagnosed by X-rays.

Facet joint arthroplasty related to inflammation of the joints linking the vertebrae and facet joints, which developed the bone spurs around the joint and might

lead to LBP. However, this inflammatory was popular for aging process and there was no symptoms.

Spondylolisthesis referred to one of the vertebras of the back spine stumbled. The major cause of spondylolisthesis was stress on the joints of back spine and might be related to inflammatory of facet joints. This problem could lead to LBP or no symptoms and it was seen on X-rays.

Herniated disc refered to wear and tear on the discs of the spine. These conditions were the extrusion of the soft inner tissue and the tear of the outer covering. The most common symptom was leg pain, sometimes, people dis not have no any symptoms so herniated disc was dignosed by X-rays.

Lumbar spinal stenosis referred to vertebral canal that was narrowed. The cause was due to the inflammatory of the damaged discs. The elderly was popular for spinal stenosis, which could develop neurogenic claudication. However, there were no any symptoms for this condition.

In younger people, LBP was very common in inflammation condition such as ankylosing spondylitis

Moreover, the work related to LBP such as driving or sitting and standing for a long time, heavy lifting or lifting improperly, poor posture. Psychological factors might associate with LBP such as tension, stress, the dissatisfaction of the job, boredom.

2.1.4 Signs and symptoms of LBP

Acute LBP was the most popular and it was associated with movements such as lifting, twisting, or forward-bending. The symptoms included:

Tenderness at a particular point to diffuse pain.

Sometimes, this condition was not related to movements, such as raising a leg, sitting or standing for a long time.

Pain may be radiated down the legs.

The age from 20 – 40 years were the most common for acute LBP with the first experience.

People with the repeated episodes were often more painful than the first experience.

Chronic LBP was related to sleep disorders such as difficult to fall asleep, disturbances during sleep, sleeping for a short time. Depression and anxiety might occur in this condition.

2.1.5 Treatment of LBP

In general, treatment for LBP can be divided into 2 methods. First is the method focusing on acute pain and the second is the method focusing on chronic pain. When patients with LBP develop serious nerve damage or changed in bodily structure, surgical procedures are recommended. There are some supportive evidences for treatment of LBP include:

Hot or cold packs*:* They may help ease pain and decrease inflammation for people with acute, sub-acute, or chronic pain, although they have not been proven to resolve low back injury quickly. Therefore, they allow for greater mobility among some patients.

Activity*:* limitation of bed rest should be suggested. Patients should do exercises and continue normal daily activities as soon as possible. However, patients should avoid movements that lead to pain. Many strong evidences indicate that persons who perform their activities without bed rest, they have better flexibility of lumbar spine than those who rested in bed for a week. Other research suggest that there are some secondary complications such as depression, decreased muscle tone, and blood clots in the legs due to the bed rest alone.

Strengthening exercises: beyond general daily activities, are not suggested for acute LBP, but they are effective for recovery from chronic or sub-acute lumbar pain. Maintaining and building muscle strength play important role in individuals with skeletal irregularities. The benefits of exercises may improve coordination and enhance proper posture and muscle balance. Evidence supports show that yoga is beneficial to ease chronic LBP.

Physical therapy programs: The core muscle groups that are supportive for lumbar spine may be stronger, the mobility and flexibility can be improved, as well as promoting proper positioning and posture.

Medications*:* A various medications are used to treat acute and chronic LBP. Some drugs may be unsafe during pregnancy, may interact with other

medications, causing side effects such as liver damage or gastrointestinal ulcers and bleeding. Health staff should give advice to patients before use.

2.1.6 Impact of LBP

LBP influences patient's physical activities. Motor skills of patients can impair markedly. Patients may have difficult movements of spine back like bending and rotation. Salvetti and the others conducted a cross-sectional study in 177 patients suffering with chronic LBP in one public and one private hospital in Sao Paulo, Brazil in the year 2008. The result illustrated that the age of participants was between 46 and 65 years (57.6%) and female is popular (72.3%). The prevalence of LBP related to intense pain (61.6%), which persisted for more than four years (63.3%) and a higher disability prevalence ratio was observed among patients with intense pain ($p<0.001$) (Salvetti et al., 2012**).**

LBP also has a significant impact on psychological well-being of people because it requires an individual with LBP to be involved in long-term treatment for many unpleasant symptoms that inhibit patients' normal physical functions. The common psychological problems include depression, anger, denial, helplessness, anxiety, loss of control, fear of death, and feeling of guilt (Bonner & Douglas, 2014). The study of Salvetti et al., 2012 showed that 36.7% of patients with LBP obtained scores compatible with dysphoria or depression, 33.3% were fatigued and high levels of fear-avoidance beliefs were observed (61.0%).

The high number of people suffering from LBP may cause a significant socioeconomic burden on health care systems, social care, and the government. The cost of treatment and caring of people with LBP and the associated consequences of LBP is increasing every year. In the United States, a study of the 354 million patient visits per year for acute care revealed that 20% of them needed to meet with orthopedic specialists for their treatment and 28% needed to be treated in an emergency room because they developed unexpected severe pain which led to very high medical expense, (Weinick, 2010*)*. The studies in the USA from the year 2006 to 2012 found that each year there are economic burden from patients with chronic LBP from direct and indirect cost. The direct cost includes medical expense, surgery and advance investigation while indirect cost refers to decreased work productivities from

sick leave or decreased hours of work per day (Dagenais et al., 2008; Juniper, Le, & Mladsi, 2009; Katz, 2006; Mehra, Hill, Nicholl, & Schadrack, 2011; Ritzwoller, Crounse, Shetterly, & Rublee, 2006; Gore et al., 2012).

According to the Netherlands' report, more than 5 million patients met with general practitioners and over 1 million ones visited physiotherapists (Lambeek, Tulder, Swinkels, & al, 2011), which the annual economic burden for LBP increase to €3.5 billion, of which 12 % is direct costs for health care (for instance, care services utility, diagnosis, medicines, and treatment methods) and the indirect costs such as the day off work and disability were 88 % (Lambeek et al., 2011). It can be concluded that LBP is an importance health problem effecting productivity of the people. People suffering with LBP demonstrated low productivity affecting socioeconomic status of the country. As aforementioned, functional recovery after having LBP is an ultimate goal of every patient who suffers from this symptom. The details are describing below.

2.2 Functional recovery among patients with LBP

2.2.1 The concept of functional recovery

Recovery is a process in which a person transit from stage of disorders, illness either physically or mentally or both to the stage of normalcy. A person who recover shows normal function or resuming the level of function at the same prior to the occurrence of disease or illness. The concepts of recovery can be conceptually viewed in both subjective or objective description. The objective view refers to the ways other people perceive while the subjective view refers to what a person perceives him or herself. Both view have common in the core concept such as: a process, a change, becoming or getting better from the previous stage. Definition of recovery from various literature are listed below:

"It can be concluded that a person has recovered when there are evidences to show that his or her illness does not affect his or her daily activities. He or she is able to maintain work, personal activities, social lives and interacts with friends, family members and social activities." (Liberman & Kopelowicz, 2005).

"In term of mental health recovery, it refers to a transition process of healing and transforming from being mentally disable to the stage of emotional or mental well- being. A person who recover from mental health problem shows the meaningful life according to his or her desire." (Consensus Conference of Substance Abuse & Mental Health Services Administration, 2005).

There is also definition of recovery that refers to returning to a previous health conditions or to achieve life satisfaction with minimum amount or limited resources (Davidson et al., 2005; Roberts & Wolfson, 2004).

In regard to functional recovery, there are various evidences supporting the concept and characteristics. Systematic review stated that functional recovery refers to the recovery of physical capability in performing the desired tasks. This systematic review including eleven trials with 565 participants with total knee arthroplasty (TKA), which was conducted to determine effectiveness of pre – operative physiotherapy-based interventions on outcomes among patients with TKA. This intervention can enhance strength and functional capability in order to optimize post-operative rehabilitation. Specifically, the findings showed that pre – operative physiotherapy – based interventions can improve sit-to-stand, stair climbing/ descending ability and standing balance post – TKA ($p \leq 0.05$) at 12 weeks after TKA but do not have a significant effect on self-reported function, self-reported pain levels, length of stay in the short-term (Simmons & Smith, 2013).

Another case series study also stated that functional recovery related to normal function in daily life as well as the functions in work life. The study was carried out to determine the effect of loco-motor training on treadmill for three participants (two males and one female) who have incomplete spinal cord injury. The results illustrated that gait training on treadmill can improve motor recovery and walking capability after training over four weeks on individuals with incomplete spinal cord injury (Anwer et al., 2014).

In addition, functional recovery is associated with the relationship in social function such as interpersonal relationship or social activities. The qualitative study that was performed in a tertiary-referral center in Paris, France including twenty five patients (11 men and 14 women), age ranged from 25 to 81 years. The aim of the study was to identify the impact on relationship between patients with chronic LBP

and family, friends, work colleagues. The authors found that the patients had negative self-perception in social interactions such as shame of being disable and asking someone to help and frustration related to difficulties to perform activities of daily living. Some patients felt they were not able to perform their social role at home and at work. Specifically, they were unable to care for their children or carrying heavy items such as luggage (Bailly et al., 2015).

In conclusion, there are many definitions of functional recovery that refer to various domains with purpose is to approach to daily activity normally. However, the functional recovery among patients with LBP major mentions to be as an outcome measure and will be defined the following part.

2.2.2 Functional recovery among patients with LBP

Recovery is commonly used to be as an outcome measure in LBP. According to systematic reviews, functional recovery from LBP required the complete absence of pain and was determined to base on low or zero scores on disability questionnaires or required a return to previous levels of self-rated function. Besides that, recovery also based on a combination of two or more domains, most commonly low scores on pain and disability measures (Steven et al, 2012).

Functional recovery of patients with LBP can lead to early phase, intermediate phase and late phase of recovery. Several studies have reported that acute LBP enhances within four weeks, with 75 – 90% recovery and a recurrent rate of 60% (Coste et al., 2004; Grotle et a., 2007). On the other hand, a small percentage of people with acute LBP progress to have chronic LBP (Waddell et al., 2003; 2004). The review of Iles and colleagues, 2009 illustrated that recovery expectations measured within three weeks of LBP patients with the onset pain and are a strong predictor of progression to chronic LBP.

The other study reported that a recovery pattern with no LBP after the few weeks. There was a distinction between very early recovery and recovery within a few weeks or between total recovery and recovery with some mild episodes during follow – up. The proportion labeled recovery ranged between 17% and 37%. (Kongsted et al., 2015)

The study findings of O'Sullivan et al., 2015 showed that at the baseline, based on the Oswestry Disability Index (ODI), the level of disability varied from low (ODI value < 20%) to moderate (ODI value < 20% - 40%) to high (ODI value >41%)

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2.2.3 Measurement

Patients' functional recovery can be measured by utilizing many instruments. These days many theorists have developed and test the functional recovery scales and tested for their psychometric property. Functional recovery can be measured by The ODI which is one of the most commonly used outcome measures to capture perceived disability in patients with LBP. The ODI has been translated and validated cross-culturally in patients with LBP as a reliable, valid and responsive measure of functional ability (Chapman et al., 2011; Payares et al., 2011; Denis and Fortin, 2012). In a review performed by Vianin (2008), the ODI demonstrated high test–retest reliability (r = 0.83 to 0.99), acceptable internal consistency and high levels of responsiveness with areas under the curve ranging from 0.72 to 0.94. In addition, a 50% improvement reported on the ODI has been used in several research studies to determine a successful response to treatment versus a failed response (Fritz et al., 2009). The ODI contains ten parts which have been described limitation of daily living activities including 1) Pain Intensity, 2) Personal care, 3) Lifting, 4) Walking, 5) Sitting, 6) Standing, 7) Sleeping, 8) Social life 9) Travelling 10) Changing degree of pain. Each section has six statements and each statement described degree of difficulty in the activity. The scores in this scale range between 0 and 5 and the total score varies from 0 to 100. The score is transformed to a percentage, with higher scores representing more disability.

2.3 Self - efficacy theory as a conceptual framework to explain functional recovery among patients with LBP.

2.3.1 Self efficacy theory

According to Bandura (1986), the self- efficacy is the belief in one's ability perform successful special task or behaviors to get desirable outcome. There are four components in self – efficacy theory including mastery experience or enactive attainment, vicarious experience, verbal persuasion and physiological feedback. The theory explains that when a person has mastery experience, he or she will have strong belief in his/her own capability with vicarious experience and external verbal persuasion from others (health care team, nurses, family members) so a person will response by any demonstration of the feedback.

Self-efficacy (Bandura, 1986) has been shown to effect on health practices as well as adaptation to illness and treatment. From the research, Bandura's theory of self – efficacy is applied in oncology patients. This theory suggests relationship between self – efficacy and cancer prevention and self – efficacy and adaptation to cancer. Cancer patients with strong self – efficacy is associated with increased adherence to treatment, increased self – care behaviors and decreased physical and psychological symptoms. The advanced practice nurse can give feedback to support patient's self – efficacy (Elise, 1997).

Self – efficacy theory was also applied in patients with diabetes. A research was carried out to determine the relationships between self – efficacy, self – care behavior, anxiety and depression for 201 Taiwanese patients with type 2 diabetes from diabetes clinics at three teaching hospitals in Taiwan. The results revealed that people with diabetes who had received diabetes health education, made clinical visits regularly, adherent treatment and no smoking illustrated a high self – efficacy score ($p < 0.05$). Self – efficacy among people with diabetes positively associated with illness duration ($p < 0.05$), treatment ($p < 0.01$), and self – care behavior ($p < 0.01$). Self – efficacy among patients with diabetes negatively associated with anxiety and depression ($p < 0.01$). Self – efficacy can predicted anxiety and depression ($p < 0.01$).

In this study, the findings described that enhancing self – efficacy levels might decrease anxiety and depression (Wu et al., 2013).

2.3.2 Self efficacy theory and the patients with LBP

Based on self – efficacy theory, patients with LBP have strong beliefs in their ability they can perform daily activities successfully in order to get optimal outcomes although they have pain experience.

According to several recent papers, self – efficacy is very important factor that improves functional recovery of patients with LBP (Kamper, Apeldoom, Chiarotto et al., 2014; Monticone, Ferrante, Rocca et al., 2013).

In addition, disability was clearly related to self – efficacy, especially, as disability increased, self – efficacy reduced (Vieira et al., 2014).

Moreover, another study reported that a predominance of LBP patients with low self-efficacy (67.2%) was associated with high disability prevalence ratio among patients with intense pain ($p<0.001$) (Salvetti et al., 2012**).**

Self **–** efficacy is very important factor that can be predictive functional recovery**.** The research of Kimiko et al, 2011 showed that patients with LBP had low self – efficacy for functional activities witnessed lower physical activities.

In brief, self – efficacy is one of the most common factor that influences on patients with LBP and especially functional recovery of those. The next part will be mentioned to some factors that associated with functional recovery of patients with LBP.

2.4 Factors associated with functional recovery among patients with LBP

When the researcher implement extensive literature review, there are researches and articles support that the functional recovery is depending on various factors. Some factors will be described below:

2.4.1 Self efficacy and its associated with functional recovery among patients with LBP.

Self – efficacy is defined as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but judgments of what one can do with whatever skills one possesses" (Bandura, 1986).

Self – efficacy is vital factor that enhances functional recovery among patients with LBP. According to Ferreira - Valente, 2014, the study was performed on 324 Portuguese patients with chronic musculoskeletal pain. The aim of the research is sought to evaluate the importance of coping response, self – efficacy beliefs and social support to adjust to those. The results showed that self - efficacy was significantly associated with positive associations with physical function (r = .5) and psychological functioning (r = .45).

The self – efficacy is an important factor that can predict functional recovery. The research of Kimiko et al, 2011 accessed the preliminary reliability and validity of the Low Back Activity Confidence Scale (LoBACS) for 74 patients with LBP and lumbar surgery. Roland-Morris Disability Questionnaire (RMDQ) was used to access the functional limitations of participant associated with his or her LBP and The Modified Owestry Disability Index (MODI) was used to evaluate the perceived difficulty of various activities such as employment and homemaking activity. The findings described that mean (SD) of (RMDQ) is 28.62 (22.0) and range from 0 – 83 and mean (SD) of (MODI) is 23.96 (17.5) and range from 0 – 66. The authors also found that patients with low self – efficacy for functional activities experienced poorer physical performance.

On the other hand, higher levels of pain self – efficacy at baseline can predict less evaluated pain at discharge (p = 0.001) (Skidmore et al, 2015), and positive associated with levels of disability reduces (Woby et al, 2005).

The Pain Self – efficacy Questionnaire (PSEQ) is a 10 – item questionnaire, it is developed in the 1980s by Michael Nicholas to access the confidence people with ongoing pain have in performing activities while in pain. PSEQ is used to measure all persisting pain presentation. It consists a range of functions including household chores, socializing, work as well as coping with pain

without medication. It takes two minutes to complete (Nicholas 2007). Participants are asked to rate how confidently they can perform their activities at present in spite of pain. They will answer by circling number on a 7 - point Likert scale under each item, where 0 = not at all confident and 6 = completely confident. A total score, ranging from 0 to 60, is calculated by adding the score for each item. Higher scores reflect strong self – efficacy beliefs. The reliability and validity: Internal consistency is excellent (0.92 Cronbach's α) and test – retest reliability is high over a 3 – month period (Asghari and Nicholas 2001). The reflection of validity is high association with pain related to disability (Kaivento et al 1995). High PSEQ scores are related to functional level in clinic and it is significant for patients with chronic pain (Nicholas 2007). Higher self – efficacy is likely to enhance and maintain the long term effects of functional recovery (Keefe et al 2004). On the other hand, Patients with lower pain self – efficacy can predict risk of long – term disability and depression (Arnstein 1999).

2.4.2 Pain level and its associated with functional recovery among patients with LBP.

Pain refers to chronic LBP that pain persists 12 weeks or longer, even after initial injury or underlying cause of acute LBP has been treated (National Institute of Health, 2014).

Pain is major one of factors that associated with functional recovery among patients with LBP and pain intensity is often associated with physical function (Nieto et al., 2009; Turner et al., 2004).

A study describes that people who work in brick kiln in rural Southern India, have severe musculoskeletal pain that interferes with activities of daily living and reduces job satisfaction (Inbaraj et al., 2013). In addition, recovery expectations were associated significantly with pain catastrophizing ($r = -.41$, $p < .01$) and pain severity ($r = -.27$, $p < .01$) (Booth-Kewley et al., 2014).

The systematic review with meta-analysis of prospective inception cohort studies with acute or sub-acute non-specific LBP. The study included ten studies involving 4683 participants. The aim of the study was and outcome measure was absent from work at a given time point greater than 12 weeks after onset of pain due to

progression of chronic LBP. The results described that 59% of participants were male and the mean age in each study ranged from 35 to 43 years. The recovery expectations were significant greater odds of being absent from usual work in a given period more than 12 weeks after the onset pain OR 2.17 (95% CI 1.61 to 2.91) (Hallegraeff et al., 2012).

A multiple case-cohort study with the purpose was to examine the effectiveness of cognitive functional therapy (CFT) for people with disabling nonspecific chronic low back pain (NSCLBP) who were awaiting an appointment with a specialist medical consultant. The sample size of the study was 26 people (14 female and 12 male) provided consent form and entered the study. The findings reported that the mean age of participants were 44.3 years (SD ± 9.7), their mean NSCLBP duration was 141 months (SD ± 120), and their mean number of pain sites was 4.3 (SD ± 1.9). The effect of CFT intervention on functional disability of patients with NSCLBP was significantly reduced ($p<.001$). The researcher further described that more than a half of patients in the experimental group experienced less functional disability at the 1 year follow up visit. They also reported less pain comparing with the control group (O'Sullivan et al., 2015).

Beliefs of LBP can relate to development of disability of patients with LBP. A cross – sectional study investigated in 109 Chinese nurses and 165 Australian Caucasian nurses. The results illustrated that Chinese nurses with LBP higher level of fear avoidance beliefs and higher disability than Australian nurses with LBP. There were more negative back pain beliefs were significantly correlated with higher disability (Tan et al., 2015)

A cohort study with 1 – year follow –up was performed to identify prognostic factors among patients with nonspecific LBP of more than 6 months duration and degenerative lumbar osteoarthritis. The results showed that increased pain is related to disability at one year in patients with impaired fasting glucose tolerance (Wilkens et al., 2013)

Among patients with acute and chronic pain showing the alpha Cronbach ranging from .8 to .91 (Koneti & Jones, 2016). Recently, NRS is recommended for pain assessment in trauma patients both in pre hospital care and emergency room (Scholten, et al, 2015). NRS is a rating scale showing number reflecting severity of

pain from 0 to 10 in a horizontal line. Subjects will be asked to verbally rate their pain on this scale with “0” equal to no pain and “10” equal to worst possible pain.

The researcher will properly instruct the subject in how to rate their pain using the following statements:

1. I would like you to rate your pain on a scale from zero to ten.
2. ‘Zero’ means you have no pain at all.
3. ‘Ten’ means the worst possible pain you can image.
4. What number would you give to your pain?

The values on the pain scale correspond to pain levels as follows:

1 – 3 = mild pain

4 – 6 = moderate pain

7 – 10 = severe pain

2.4.3 Anxiety/ depression and its associated with functional recovery among patients with LBP.

Anxiety and depression refer to patients’ mood disorders/ emotional well-being in people with physical illness, minimizing contamination by physical symptoms.

Literature has shown that anxiety and depression has been found among patients with chronic LBP and they are positively associated with physical and mental health (Sagheer et al., 2013; Bean et al., 2014). Depression was the most powerful factor related to disability of chronic LBP among depression, anxiety and somatic symptoms (Hung, Liu & Fu, 2015). Depression should be evaluated when investing disability among patients with chronic LBP (International Journal of Psychiatry in Medicine, 2015).

The cross - section research was carried out on 564 patients with non - specific low back pain. Depression and anxiety were assessed with three instruments including Mini international Neuropsychiatric Interview, the Hospital Anxiety and depression Scale and Hopkins Symptom Checklist - 25. The research has been reported that prevalence of anxiety accounted for 12% and those of depression was 4% (Reme, Lie & Eriksen, 2014).

Besides that, the findings of Vieira et al., 2014 described the prevalence of depression (21.4%) among patients with LBP and it was associated with greater fear avoidance beliefs and lower self – efficacy. The other study also found that the significant relationship between depression and disability among chronic LBP at three health services in Sao Paulo state (Salvetti et al**.**, 2012). It has been demonstrated that chronic LBP patients reported greater pain intensity, greater blood pressure reactivity, and slower recovery time during an anger induction than a sadness induction as compared with pain-free participants, even when controlling for the effects of other negative emotions, such as sadness and anxiety (Burns, 2006).

In addition, a study was carried out on one hundred three LBP patients with the purpose of assessing risk for developing chronic pain, and psychosocial measures assessing anger, depression, anxiety, fear-avoidance, and pain-catastrophizing before and after 4 weeks of initiating physical therapy. The findings illustrated that significant relationship between measures of depression (r=0.59), anxiety (r=.31) and LBP outcomes in primary care settings (Nisenzon et al., 2014).

According to the study of O'Sullivan et al., 2015, reduced disability after recovery is primarily related to improvements in depression and anxiety. Therefore, the authors examined the effectiveness of Cognitive Functional Therapy intervention of patients with Nonspecific chronic LBP. The results in depression and anxiety were improved and statistically significant ($p < .0041$).

Hamilton Anxiety Rating Scale (HARS) is in the public domain and is used to measure the severity of symptoms of anxiety, which includes evaluation of 14 symptoms and signs. Each item is score on 5 - point scale, ranging from 0 (not present) to 4 (severe). 0 = Not present, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Very severe. The total of score is ranged from 0 to 56, under and equal 17 is mild severity, 18 – 24 is mild to moderate severity and 25 – 30 is moderate to severe. The time is administrated about 10-15 minutes. (Hamilton, 1960). Hamilton Depression Rating Scale (HDRS) is in the public domain and is used to identify severity of depressive symptoms and including 17 items. The range of scores for depression severity are determined as: no depression, score <10; mild depression, score 10–13; moderate depression, score 14–17; severe depression, score >17) It takes about 20 minutes (Hamilton, 1960).

2.4.4 Comorbidity and its associated with functional recovery among patients with LBP. People with LBP have several comorbid condition which also have impact on their functional recovery. A study showed that patients with chronic LBP had a greater comorbidity burden including a significantly higher ($p < 0.001$) frequency of musculoskeletal (Gore, 2012). The other research described the presence of any comorbidity in patients with CLBP may be associated with a significantly longer duration of work disability (Ritzwoller et al., 2006). In addition, another study determined the relationship between physical comorbidity and outcomes on 2777 patients with chronic LBP. This study was carried out at one of 48 physiotherapy clinics between January 2005 and September 2006. However, the findings illustrated that patients with LBP and a physical comorbidity (coronary, artery disease, hypertension, rheumatoid arthritis, diabetes, non-spinal malignancy, chronic obstructive pulmonary disease….) were not significant differences in outcomes compared with those with LBP only. In clinic, chronic LBP patients with associated physical comorbidity may be complex, but recovery is as favorable as with patients with uncomplicated chronic LBP (McIntosh et al., 2011).

In this study, comorbidity will be measured by the form developed by the researcher. This form comprises items of common chronic diseases found among adult patients including hypertension, heart disease, renal disease and other chronic diseases. Patients will be asked if they have had these chronic illness prior to the study. Also, the comorbidity can be collected from the patients' profiles.

2.5 Conclusion

In conclusion, LBP is worldwide health problem. The most prominent problem places on the productivity of patients due to chronic persistent pain which inhibit their normal life and physical functions. The process of recovery from LBP can be well elaborated by self -efficacy theory. The theory proposes the belief in one's ability to perform successful special task or behaviors to get desirable outcomes. When an individual own his or her mastery experience or enactive attainment, vicarious experience, receives verbal persuasion and physiological feedback he or she will be able to obtain his or her expected goals. Applying this theory in patients with

LBP can be proposed that obtaining functional recovery is the desired goal while factors related to the goal are pain, self – efficacy, anxiety and depression and comorbidity. This study helps to identify factors associated with functional recovery and this will benefit for nurses to enhance functional recovery among patients with LBP as well as the quality of care. From that, nurses could provide nursing intervention programs in order to prevent and relieve LBP effectively. In addition, this study is meaningful to nursing practice in Viet Nam and it will depict a general picture of LBP in Vietnamese population.

CHAPTER III
METHODOLOGY

In this chapter, research design, population and sample of the study, studied instruments and their validity and reliability, data collection procedure, human right protection, data analysis and assumption of the statistic used in this study were consecutively presented.

3.1 Research design

The study was a descriptive correlational research, which aimed to investigate the associations between pain, self – efficacy, anxiety-depression, comorbidity and functional recovery among patients with low back pain (LBP) during hospital stay**.**

3.2 Population and sample of the study

3.2.1 The population of this study

Population of the study included both male and female in-patients with the age of 18 years and above who have been diagnosed LBP and admitted to Rheumatology department, Bach Mai hospital, Hanoi, Viet Nam.

3.2.2 The sample of the study

The sample was selected from the population following inclusion criteria:

(1) Able to communicate with the researcher in Vietnamese language. The exclusion criteria were as follow:

(1) Having pain from oncological origin,

(2) Receiving lumbar surgical less than 3 months prior to the data collection time.

(3) Incomplete fill out questionnaires.

Sample size:

The sample size in this study was calculated by using G*power version 3.1.9.2 program to determine the minimum number of participants needed for co-relational design (Faul, Erdfelder, Buchner, & Lang, 2009). The researcher tested the relationship among pain, self – efficacy, anxiety and depression, comorbidity and functional recovery among patients with low back pain. The level of significance α= 0.05, the power of the statistical test (Power 1- β= 0.8). There were four independence variables in this study and effect size for this study (f2=.099). Based on G*power, sample size was 126 patients.

3.3 Setting

Bach Mai hospital, the first special – category comprehensive general hospital of Vietnam, is an intensive health facility at the highest level of health system and is responsible for various important tasks in the health sector of the country. Bach Mai hospital established in 1911 with nearly 2000 beds, 2 Institutes, 8 Centers, 21 Clinical departments, 6 Para-clinical departments, 9 Functional departments, 1 Nursing college school. Its modern equipment and facilities help to fulfill the hospital's responsibility in performing a number of important tasks of the country's health sector: This hospital provide care and treatment at the highest level, training, scientific research, providing guidance and direction to health facilities of lower levels, disease and epidemic prevention and control, international cooperation, health economic management.

The research was conducted at the Rheumatology ward. Healthcare services are provided by the rheumatologist and nurses from 8:00 am.-4:00 pm every day. There are about 100 patients with muscle or joints diseases per day who are examined in the ward and among these reported about 20% patients with LBP (monthly report of Rheumatology unit at Bach Mai hospital). At the patient room,

there is one nurse and a physician who serve inpatient. The services include taking care, taking medicine, pain control, depression management and promoting social support. Therefore, the researcher collected data from every day.

3.4 Instruments

The instruments used for data collection included 5 parts as follows:

Part 1: Questionnaire demographic data of the patients

The general information of patients included address, occupation, age, gender, weigh, height, BMI, date of admission, the hospital that patient had treatment before, marital status, education level, payment method, income, diagnosis, duration of illness, comorbidity, past and current treatment method, trauma and surgery, habits and metal status.

Part 2: Numerical Rating Scale (NRS)

Pain level of subjects in this study was measured by Numerical rating scale (NRS). NRS was a common pain scale used in clinical practice as well as in clinical research. This pain scale was developed by McCaffery in the year 1968 (Bijur, , Latimer, Gallagher, 2003) and had been tested for its reliability in various group of patients including patients with acute and chronic pain, which showed the Cronbach's alpha ranging from .8 to .91 (Koneti & Jones, 2016). Recently, NRS is recommended for pain assessment in trauma patients both in pre hospital care and emergency room (Scholten, et al, 2015). NRS is a rating scale showing number reflecting severity of pain from 0 to 10 in a horizontal line. Subjects were asked to verbally rate their pain on this scale with "0" equal to no pain and "10" equal to worst possible pain.

The researcher properly instructed the subject in how to rate their pain using the following statements:

1. I would like you to rate your pain on a scale from zero to ten.
2. 'Zero' means you have no pain at all.
3. 'Ten' means the worst possible pain you can image.
4. What number would you give to your pain?

The values on the pain scale correspond to pain levels as follows:

1 – 3 = mild pain

4 – 6 = moderate pain

7 – 10 = severe pain

Part 3: The Pain Self efficacy Questionnaire (PSEQ)

The Pain Self – efficacy Questionnaire (PSEQ) was a 10 – item questionnaire, it was developed in the 1980s by Michael Nicholas to access the confidence that the patients having in performing activities as in pain. PSEQ was used to measure all persisting pain presentation. It consisted a range of functions including household chores, socializing, work as well as coping with pain without medication. It took two minutes to complete (Nicholas 2007). Participants were asked to rate how confidently they could perform their activities at present in spite of pain. They answered by circling number on a 7 - point Likert scale under each item, where 0 = not at all confident and 6 = completely confident. A total score, ranging from 0 to 60, was calculated by adding the score for each item. Higher scores reflected strong self – efficacy beliefs. The reliability and validity: Internal consistency was excellent (Cronbach's α = .92) and test – retest reliability was high over a 3 – month period (Asghari and Nicholas 2001). The reflection of validity was high association with pain related to disability (Kaivento et al 1995). High PSEQ scores were related to functional level in clinic and it was significant for patients with chronic pain (Nicholas 2007). Higher self – efficacy was likely to enhance and maintain the long term effects of functional recovery (Keefe et al 2004). On the other hand, Patients with lower pain self – efficacy could predict risk of long – term disability and depression (Arnstein 1999).

Part 4: Hamilton Anxiety Rating scale (HARS) and Hamilton Depression Rating Scale (HDRS)

Hamilton Anxiety Rating Scale (HAM- A) was in the public domain and had been used to measure the severity of symptoms of anxiety, which included evaluation of 14 symptoms and signs. Each item was score on 5 - point scale, ranging from 0 (not present) to 4 (severe). 0 = Not present, 1 = Mild, 2 = Moderate, 3 =

Severe, 4 = Very severe. The total of score was ranged from 0 to 56, under and equal 17 was mild severity, 18 – 24 was mild to moderate severity and 25 – 30 was moderate to severe. The time was administrated about 10-15 minutes. (Hamilton, 1960).

Hamilton Depression Rating Scale (HAM-D) was in the public domain and was used to identify severity of depressive symptoms and including 17 items. The range of scores for depression severity were determined as: no depression, score <10; mild depression, score 10–13; moderate depression, score 14–17; severe depression, score >17) It took about 20 minutes to complete the scale (Hamilton, 1960).

Part 5: The Oswestry Disability Index (ODI) derived from the Oswestry Low Back Pain Questionnaire that was used to assess patient's disability with LBP by clinicians and researchers. This questionnaire was validated and was first published by Jeremy Fairbank in 1980. There were ten parts which had been described limitation of daily living activities including 1) Pain Intensity, 2) Personal care, 3) Lifting, 4) Walking, 5) Sitting, 6) Standing, 7) Sleeping, 8) Social life 9) Travelling 10) Change degree of pain. Each section has six statements and each statement described degree of difficulty in the activity. The scores in this scale ranged between 0 and 5 and the total score varied from 0 to 100. The score was transformed to a percentage, with higher scores representing more disability. Specifically, the interpretation is following:

0% to 20%: minimal disability: The patient could cope with most living activities. Usually no treatment is indicated apart from advice on lifting sitting and exercise;

21%-40%: moderate disability: The patient experienced more pain and difficulty with sitting lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means.

41%-60%: severe disability. Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation.

61%-80%: crippled. Back pain impinges on all aspects of the patient's life. Positive intervention is required.

81%-100%: These patients are either bed-bound or exaggerating their symptoms.

The ODI had been translated and validated cross-culturally in patients with LBP as a reliable, valid and responsive measure of functional ability (Chapman et al., 2011; Payares et al., 2011; Denis and Fortin, 2012). In a review performed by Vianin (2008), the ODI demonstrated high test–retest reliability (r = 0.83 to 0.99).

3.5 Instrument Reliability and Validity

3.5.1 Instrument Validity

The instrument of this study included questionnaire demographic data of the patients, Numerical Rating scale (NRS), the Pain Self efficacy Questionnaire (PSEQ), Hamilton Anxiety Rating Scale (HARS) and Hamilton Depression Rating Scale (HDRS) and The Oswestry Disability Index (ODI). These instruments were translated into Vietnamese by English teacher and verified by 5 experts including doctors, head nurse, nurses in order to confirm the feasibility and the understanding of the contents for using in patients with LBP during the hospital stay.

3.5.2 Instrument Reliability

After obtain the IRB approval, NRS, PSEQ, HARS, HDRS, ODI were used in- patients with LBP who had characteristic similar to the studied sample as aforementioned. The reliability by Cronbach's alpha coefficient were employed to test each instrument reliability for 30 patients and for the whole sample (n = 126) (table 3.5.2).

Table 3.1 Reliability of scales **(**n= 30 and n=126**)**

Scale	**N of Items**	**Cronbach's Alpha (n = 30)**	**Cronbach's Alpha (n = 126)**
Pain Self - efficacy	10	.831	.891
HAM-A	14	.659	.769
HAM-D	17	.717	.669
Owestry Disability Questionnaire	10	.624	.846

3.6 Data collection

3.6.1 The data collection was conducted in the following sequences:

1) After getting the approval and receiving permission to data collection, the researcher met the director of Bach Mai hospital, head of department and head nurse of Rheumatology department in order to explain the purpose for data collection. Then, the head nurse introduced researcher to target population (inpatient center).

2) After that, the research assistant self – introduced, make a relationship with the patients. The researcher established relationship with patients about the objectives of the study, data collection procedure and ask for research cooperation as well as signing consent form. When the patients volunteered for the study, the researcher collected some demographic data from medical record form.

3) The researcher organized the private room to interview the subjects or asked them to do questionnaire by themselves. Then, she used five questionnaires for data collection. The questionnaires were 1) Demographic data questionnaire with 20 items. 2) NRS (one item). 3) PSEQ with 10 items 4) HARS with 14 items – HDRS with 17 items 5) The ODI with 10 domains. Total questionnaires include 72 items and the total time for data collection was about 30 – 45 minutes.

3.7 Protection of human rights

In this research, the researcher strictly concerned on human rights and ethical issues throughout the research process by:

3.7.1 The researcher collected the data after receiving approval from Institutional Review Board of Nursing faculty, Mahidol University and Institutional of Review Board of SMP, Hanoi National University.

3.7.2 The researcher self - introduced to the participants at Rheumatology ward, informed the patients about the research objective and all data collection process. The researcher explained the purpose of the study, the research procedure, benefits, risks, types of questionnaire, length of time to complete the questionnaires, and the right to refuse participation in the study anytime**.** If the patients withdraw from the research project and will not influence on their treatment or caring process. After patients agreed to join in the research process, they were invited to sign their name in the consent form.

.37.3 This research did not cause any risk to the patients physical health. The data collection process took time about 30 to 45 minutes. Although the patients did not get any benefit from this research but the results were expected to produce benefit for other patients who have the same health care problem as the sample.

3.7.4 All contents were kept confidential, only the researcher and the research team were able to get access to the data. Any content related to data that presented in the thesis or any publication would be anonymous. In case of ones who withdraw themselves from the research, all data would be deleted from the database and would not be used as any part of the research. In this research all patients who agreed to join in the study did not withdraw themselves.

3.7.5 In case of further questions or more explanation, the participants were told that they were able to ask the researcher at any time throughout the research process.

3.7.6 After the participants clearly understood the research process and agreed to join in the research, they were invited to sign their name in the consent form.

3.8 Data analysis

Using computer program.

1) The descriptive statistics in terms of frequency, percentage, mean, standard deviation, and range were used to describe general information and study variables, including pain, self – efficacy, anxiety and depression, comorbidity and functional recovery.

2) Pearson's product moment correlation was used to examine association between pain, self – efficacy, anxiety and depression, comorbidity and functional recovery among patients with LBP

CHAPTER IV
RESULT

This descriptive correlational study was conducted to examine the relationship between pain, self – efficacy, anxiety and depression, comorbidity and functional recovery among patients with low back pain who aged 18 – 88 years old in Rheumatology unit at Bach Mai hospital from August to October, 2016. The findings were presented in descriptive statistic as follows:

1. The demographic data of patients with LBP
2. The information related to illness and treatment
3. The correlation between pain, self – efficacy, anxiety and depression, comorbidity and functional recovery among patients with LBP

4.1 The demographic data of patients with LBP

The sample includes 126 patients with LBP. The demographic data were collected including age, gender, BMI, marital status, educational level, occupation and income. It can be seen from the Table 4.1 the findings illustrated that a nearly equal distribution between males (52.4%) and females (47.6%). The age of patients with LBP ranged from 18 to 88 years. The average was 54.84 (SD±17.11 years). The most popular age was more than 60 years old with 46.8% while the age of 18-35 years old was the least popular with 15.9%. BMI was calculated as the weight by kilograms divided into the square of the height by meters (kg/m^2). In this study, the resulted described that the mean of BMI was 21.03 (SD±3.2), the minimum of BMI was 13.24 and the maximum was 29.63. The samples of overweight were 16.7% and 8.7% of those were obese. Most of the patients lived in city (57.9%) and only 0.8% lived in the Mountain region. The highest percentage of patients who were married with 70.6%. The educational level at secondary made up the greatest proportion (35.7%). The occupation of patients were common in famer and retired with 31% while only 2.4%

were professional. 28% earned monthly incomes from 100 - 200 USD. The majority of them (92.1%) had governmental insurance while the rest did not have any kind of insurance and had to pay for the treatment expense by themselves (table 4.1).

Table 4.1 The characteristic of patients with LBP **(**n=126**)**

Characteristics	**Number**	**Percentage**
Gender		
Male	66	52.4
Female	60	47.6
Age (years)		
18-35 years	20	15.9
36-59 years	47	37.3
Above 60	59	46.8
Min =18		
Max = 88		
Mean ± SD = 54.84 ± 17.11		
Weight (kg)		
Min = 31		
Max = 75		
Mean ± SD = 52.69 ± 9.49		
Height (m)		
Min = 1.2		
Max = 1.75		
Mean ± SD = 1.58 ± 0.08		
BMI		
<18.5	30	23.8
18.5 - 22.9	59	46.8
23 - 24.9	21	16.7
≥25	11	8.7

Table 4.1 The characteristic of patients with LBP **(**n=126**)** (cont.)

Characteristics	Number	Percentage
Location of resident		
City	73	57.9
Rural	52	41.3
Mountain	1	.8
Marital status		
Married	89	70.6
Single	18	14.3
Divorce	1	.8
Separated	16	12.7
Others	2	1.6
Educational Level		
Primary	28	22.2
Secondary	45	35.7
high school	26	20.6
2 years certificate	5	4.0
College	9	7.1
Bachelor	12	9.5
Others	1	.8
Occupation		
professional	3	2.4
Worker	7	5.6
home worker	3	2.4
Famer	39	31.0
Salesperson	4	3.2
Retire	39	31.0
Other	31	24.6

Table 4.1 The characteristic of patients with LBP **(**n=126**)** (cont.)

Characteristics	Number	Percentage
Income per month		
no income	27	21.4
1 - 100 USD	32	25.4
101 - 200 USD	36	28.6
201 – 300	13	10.3
Min = 0		
Max = 1800		
Mean ± SD = 152.76 ± 264**.**4		
Insurance		
Yes	116	92.1
No	10	7.9

4.2 The information related to illness and treatment

It can be clearly that patients had LBP with less than 12 months occupied with the largest percentage 50% while those with more than 120 months made up the lowest one 11.1%. The mean of duration of LBP was 56.57 (SD± 91**.**07**)** the minimum of duration of LBP was 1 month and the maximum was 576 months. Most patients had the length of staying at hospital with less than 7 days (85%). The mean and standard deviation of this was 5.19 ± 2**.**41, the minimum of staying at hospital was 2 days and the maximum was 16 days. The percentage of patients with LBP that caused by alkylosing spondylitis were 21.4% while by no cause for LBP made up the highest percentage 49.2%. Before treatment, patients who did not use physical therapy and injection made up higher proportion with 73.8% and 78.6%, respectively. Most of the patients had low back pain that radiation to up and down such as radiation to arm, shoulder and leg. The majority radiation to leg was 65.9% (table 4,2).

Table 4.2 The characteristics of illness and treatment **(**n=126**)**

Characteristics	Number	Percentage
Duration of LBP		
less than 12 months	63	50.0
12-36 months	17	13.5
37-60 months	13	10.3
61-120 months	19	15.1
More than 120 months	14	11.1
Min = 1		
Max= 576		
Mean ± SD = 56.57 ± 91.07		
Length of staying at hospital		
Less than 7 days	108	85.7
7 days to 14 days	17	13.5
15 days to 21 days	1	.8
Min = 2		
Max= 16		
Mean ± SD = 5.19 ± 2.41		
Diagnosis		
Lumbar spine collapse	3	2.4
Alkylosing spondylitis	27	21.4
Spine dics herniation	10	7.9
Osteoporosis	14	11.1
Lumbar spine degeneration	9	7.1
LBP no cause	62	49.2
Medicine		
Yes	22	17.5
No	104	82.5

Table 4.2 The characteristics of illness and treatment **(**n=126**)** (cont.)

Characteristics	Number	Percentage
Physical therapy		
Yes	33	26.2
No	93	73.8
Injection		
Yes	27	21.4
No	99	78.6
Radiation		
Yes	85	67.5
No	41	32.5
Leg pain		
Yes	83	65.9
No	43	34.1
Bowel pain		
Yes	4	3.2
No	122	96.8

4.3 The functional recovery among patients with LBP

The majority of sample suffered with moderate and severe pain with the percentage of 51.6 and 42.1 respectively. The mean and SD scores of pain self-efficacy was 32 ± 12**.**6**.** Majority of them showed mild to moderate anxiety (56.3%), mild (34.1%) and moderate depression (26.2%). It is important to note that 11.1 % and 4% showed severe and very severe depression. The comorbidity showed that 62.7% patients with LBP has no comorbidity and 37.3% has comorbidity. Hypertension disease made up first with 23% and peptic ulcer disease occupied second about 11.9% while only 0.8% for COPD disease. There were 29.4% patients who have one comorbidity, 7.1% having two comorbidity, 0.8% having four comorbidity. In regard to functional recovery, majority of the sample (69 %) demonstrated moderate disability level whereas 7.9%. demonstrated severe disability. However, sample with crippled or bed-bound level were not found (table 4.3).

Table 4.3 The functional recovery among patients with LBP **(**n = 126**).**

Characteristics	**Number**	**Percentage**
Level of pain		
1-3 mild pain	8	6.3
4-6 moderate pain	65	51.6
7-10 severe pain	53	42.1
Min = 1		
Max = 10		
Mean ± SD = 4.89 ± 1.82		
Pain self – efficacy		
Min = 0		
Max = 60		
Mean ± SD = 32 ± 12.6		
HAMA		
No anxiety	21	16.7
Mild to moderate anxiety	71	56.3
Severe anxiety	34	27.0
Min = 0		
Max = 35		
Mean ± SD = 15.06 ± 7.87		
HAMD		
No depression	31	24.6
Mild depression	43	34.1
Moderate depression	33	26.2
Severe depression	14	11.1
Very severe depression	5	4.0
Min = 2		
Max = 26		
Mean ± SD = 12.4 ± 5.54		

Table 4.3 The functional recovery among patients with LBP **(**n = 126**).** (cont.)

Characteristics	**Number**	**Percentage**
Comorbidity		
No comorbidity	79	62.7
Has comorbidity	47*	37.3
Hypertension	29	23
Heart disease	2	1.6
COPD	1	0.8
Renal disease	4	3.2
Diabetes Type 2	8	6.3
Peptic ulcers	15	11.9
Having 1 co morbidity	37	29.4
Having 2 co morbidity	9	7.1
Having 3 co morbidity	-	-
Having 4 co morbidity	1	0.8
ODQ		
Minimal disability	29	23.0
Moderate disability	87	69.0
Severe disability	10	7.9
Crippled	-	-
Bed bound	-	-

Min = 0

Max = 44

Mean ± SD = 26.39 ± 10.48

* One patient had one or more than one diseases

4.4 The correlation between pain level, pain self – efficacy, anxiety and depression, comorbidity and functional recovery among patients with LBP

Before using Pearson's Product Moment correlation, the assumption was tested. All variables were assessed for their normal distribution. The results showed that all variables except for functional recovery scores were in the form of normal distribution. Therefore, Spearman's rho was employed to test all variables' correlation with functional recovery.

The result illustrated that pain was negative medium correlate with functional recovery at r = - .556, p = .000, anxiety had negative correlation with functional recovery (r = -.456, p =.000). Depression had negative medium correlation with functional recovery (r = -.579, p =.000). Pain self – efficacy had positive medium correlation with functional recovery (r = .478, p =.000). Nevertheless, comorbidity had no correlation with functional recovery (p = .105).

Table 4.4 Correlation between pain, pain self - efficacy, anxiety, depression, co morbidity and functional recovery **(**n= 126**)**

	1	2	3	4	5	6
1. Pain	1.00					
2. self - efficacy	-.212*	1.00				
3. anxiety	.319*	-.234**	1.00			
4. depression	.440**	-.297**	.667**	1.00		
5. comorbidity	.008	-.139	-.165*	.011	1.00	
6. functional recovery	-.556**	.478**	-.456**	-.579**	.105	1.00

**** p < .01**

CHAPTER V
DISCUSSION

In this chapter, the researcher will present the discussion of this research findings relevance to the studied objectives.

5.1 The functional recovery among patients with low back pain (LBP)

The functional recovery in this study was in the average score of 26.39 (SD± 10.48). Majority of the sample (69%) demonstrated moderate disability level whereas 7.9% demonstrated severe disability however, sample with crippled or bed-bound level were not found. This finding reflected that in general patients with LBP experienced disability in some levels. More evidences from this finding showed that these patients had to alter the way of body cleansing or dressing (19.8%) and 22.2% were unable to perform personal care without help. They also had limitation in walking and changing position, 8.7% patients could not sit on any chair, 18.3% had to use cane for walking and 22.2% spent their time in bed most of time and 28.6% avoided standing because it increased their suffering from LBP. Having LBP also disturbed them in all their form of travel (46.8%).

The explanation on this finding is that chronic pain at rest and pain on movement prevented them from performing daily live activities and inhibit them to travel or maintain their routine social functions eventually patients will become more psychological distress or more frustration due to difficulties in performing routine functions (Bailly, Foltz, Rozenberg, Fautrel, Gossec, 2015; Shaw, Hartvigsen, Woiszwillo, Linton & Reme, 2016). Moreover, the majority of patients (46.8%) in this study were 60 so that the functional ability and social function also declined with aging process. Similar to what found in the study of Friedman and the other among 295 patients with LBP who came to emergency department of Montefiore Medical Center, the academic medical center for the Albert Einstein College of Medicine in the

Bronx, New York, USA. The study of Friedman and the others found that majority of patients with LBP suffered with functional impairment which related to their daily activities**.** Three months after emergency department visit, 65**%** of these patients still had functional impairment which led them to poor emotional and physical distress (Friedman, Gensler, Yoon, Nerenberg, Holden, Bijur & Gallagher, 2016).

The other possible explanation of this finding is that almost 30% of the studied sample were overweight (16.7% were overweight and 8.7% were obese). Being overweight and obese led them to functional impairment because of the weight baring problems, declined in body movement and increased risk on degenerative of lumbar disc which eventually worsen the status of LBP (Stienen, Joswig, Smoll, Corniola, Schaller, Hildebrandt & Gautschi, 2016). Stienen,et al.(2016) further explained that among 375 patients in their study, overweight and obese patients suffered more with emotional and psychological distress and a large number of them could not engage in regular social activities.

5.2 The relationship between pain, self – efficacy, anxiety and depression, comorbidity and functional recovery among patients with LBP

5.2.1 The relationship between pain level and functional recovery

The finding revealed that pain level was negatively medium correlated with functional recovery at r = - .556, p = .000 which mean that patients who had high level of pain demonstrated low level of functional recovery. The majority of sample in this study suffered with moderate and severe pain (51.6% and 42.1% respectively). Most of the patients had LBP that radiation to up and down such as radiation to arm, shoulder and leg. The majority radiation to leg was 65.9%. Pain in the aforementioned pattern was an obstacle to patients' functional ability.

The causes of LBP were Lumbar spine collapse, alkylosing spondylitis, spine disc herniation, osteoporosis, lumbar spine degeneration. Patients with no cause made up the highest percentage 49.2%. These causes may lead patients to have

disability that limits patients' ability to do usual work activities and also to contribute to the period absent from usual work (Burdorf et al 1996, Severens et al 2000, Frederiksson et al 1998). Besides that, several studies stated that acute LBP improves with four weeks, with 75 – 90% recovery and the rate of relapse was 60% (Coste et al 2004, Grotle et al 2007). Nevertheless, a little percentage of patients with acute lumbar pain develop to chronic LBP (Waddell et al 2003, Waddell et al 2004). Many studies have showed that this pain is related to most cases of disability and leave of absence from work (Webb et al., 2003; Freburger et al., 2009; Sá et al., 2008). Disability in patients with chronic LBP varies between 11% and 76% (Wynne-Jones et al., 2008; Côté et al., 2008).

There are many causes of LBP. However, it was found that the age of people is one main reason of LBP in particular among people with the age over than 85 years most people. The other cause of LBP is called specific LBP which are LBP occurring from degeneration of spine such as degenerating disc, arthritis or degeneration of ligaments or weakness of back muscle. According to the mechanism between intervertebral disk degeneration and LBP is not clear. The biomechanical of the disc structure, sensitization of nerve endings will be change by release of chemical mediators, and neurovascular ingrowth into the degenerated disks can cause the development of pain (Burgos-Vargas, 2012).

5.2.2 The relationship between pain self -efficacy and functional recovery

The pain self-efficacy score ranged from 0 to 60 and the mean score and standard deviation were 32 ± 12.6**.** In this study, the results revealed that Pain self – efficacy had positive medium correlation with functional recovery (r = .478, p =.000). It meant that patients with LBP who had their strong beliefs in their own capacity would be able to perform functional activities leading to increased functional recovery and became more healthier than those who had low pain self- efficacy. In this study, patients who were completely confident to do most of household chore such as tidying – up, washing dishes made up low percentage with 3.2% while those were not completely confident experienced a high proportion with 16.7%. According to enjoying their hobbies, the percentage of completed confidence was 3.2% whereas

those of uncompleted confidence was 19.8%. There were 4% patients could be completely confident to socialize with their friends or member family. Majority of patients could not suffer from pain without medicines (38.9%). Most of the patients assumed that they were painful, so they did not want to do anything and they always depend on their family. Other research pointed out some patients felt they were unable to perform their social role, both at home and at work. Some participants reported that they were not able to carry a child or to care for children which made them feel that they could not fulfill their roles. Some male participants stated a perceived loss of masculinity due to the impossibility to carry heavy items like luggage while they travelled with their families. These brought them the feeling of guilty and shameful leading them to have poor self image (Bailly et al 2015). The findings of Florian showed that the perception of pain self – efficacy was similar to our study. However, a study illustrated that despite the pain, some participants enjoyed to social with their friends or family members because having social activities that were effective ways to concentrate on something else and forget the pain (Bailly et al 2015).

Perception of self is vital for functional recovery, Bailly et al (2015) conducted a qualitative research in 25 patients with LBP and found that they reported a negative self-perception in social reintegration and felt shameful in their disabilities and their uncontrolled pain. This unhealthy perception or low self- efficacy led to negative sense of self including feeling of unsupported, loss of identity, low confidence in pursuing social roles at home or at work. The authors of this study further stated that these patients needed support and help in pain management from family and friends.

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5.2.3 The relationship between anxiety and depression and functional recovery

A half of the patients (50%) experienced LBP less than 12 months and 11.1% had LBP more than 12 months. About 37.3% of them had comorbidity and hypertension was the most comorbidity disease found (23%). The mean scores of pain self-efficacy was 32 **(**SD ± 12.6**).** Majority of them showed mild to moderate anxiety (56.3%), 11.1 % and 4% suffered with severe and very severe depression.

According to this study, the findings illustrated that anxiety had negative low correlation with functional recovery (r = -.378, p =.000). It means that when patients had severe anxiety they got greater disability. The research of Bean et al showed that patients with LBP were more anxiety were more disable …(Bean, et al 2014). Majority of them showed mild to moderate anxiety (56.3%) whereas the level of severe anxiety made up with 27%. These results were higher those of previous studies. A research has been reported that prevalence of anxiety accounted for 12% (Reme, Lie & Eriksen, 2014). The explanation of this phenomenal, patients could not predict the progression of low back pain as well as they met some other symptoms such as difficulty in sleeping, loss of appetite. Specifically, for patients' anxious mood or tension indicated that 15.1 % severe anxiety and 6.3% severe tension. There were 24.6% patients who found very difficult in falling asleep, broken sleep, unsatisfaction sleep or nightmares and more than 50% participants were unable to fall asleep because of pain when he or she got out of bed at early in the night and early hours of the morning. At severe anxiety level, patients worried about the symptoms related to cardiovascular, respiratoty and gatrointestination with 7.1%, 6.3% and 14.3%, respectively, The one of the most common symptoms was drying mouth.

In addition, the findings described that depression had negative medium correlation with functional recovery (r = -.538, p =.000). That means patients were more depression were more disable. The research of Bean et al showed that patients with LBP had a strong relationship with disability (Bean, et al 2014). It is important to note that 34.1% mild depression, 11.1 % and 4% showed severe and very severe depression. The percentage of mild depression level of this study was higher than previous studies, for example, depression was present 21.4% of patients (Vieira et al., 2014). The research of Pinheiro et al (2016) carried out systematic review to investigate the effect of depression on the course of acute and subacute LBP. The result pointed out symptoms of depression were negatively associated with the course of recovery at all time ($p<.01$) and the feelings of depression were associated with longer time to recovery (Henschke et al, 2008). The other study illustrated that significant relationship between measures of depression (r=0.59), anxiety (r=0.31) and LBP outcomes in primary care settings (Nisenzon et al., 2014). Specifically, according to the depression mood with sadness, hopeless, helpless and worthless, 3.2% patients

reported virtually only these feeling states in his/her spontaneous verbal and non-verbal communication while more than 20% patients could answer these feelings by questioning and by verbal communication. 41.3% patients did not found difficulty in performing activity, work or hobbies but 5.6% participants who had to stop working due to pain. 48.4% patients complained about loss of appetite and heavy feelings in abdomen, 4.8% found difficulty in eating so that's why 39.7% assumed that weight loss associated with pain.

It is not completely understood the mechanism underlying the association between depression and LBP. It is possible that relationship between these conditions is the antecedent model, which proposes that symptoms of depression contribute to the development and maintenance of pain. According to this model, high levels of depression weaken the patient's ability to deal and cope with the current LBP problem (Fishbain et al 1997). Besides that, chronic LBP made them to stay in hospital for many times, which caused patients sadness and hopeless. Many researches showed that the rate of relapse was 60% (Coste et al 2004, Grotle et al 2007).

The findings in this study also stated that there was positive medium associated between anxiety and depression ($r = .527$, $p = .000$). It means that when patients with LBP were more anxious, their depression may develop. A study showed that most of the participants stated that anxiety correlated to fear of the future because they were not able to predict progression of the disease, with unexpected relapses

5.2.4 The relationship between comorbidity and functional recovery

In this study, about 37.3% of patients had comorbidity and hypertension was the most comorbidity disease found (23%). It also revealed that co morbidity had no correlation with functional recovery among patients with LBP ($p = .105$). This result was similar to many previous researches (McIntosh et al., 2011; Beeckmans, et al.,2016). In contrarily, it was not relevant to the study of Gore (2012) which found that among patients with LBP, comorbidity played vital roles in functional recovery. The explanation of this present study is that; patients who had comorbidities were in relatively small numbers (37.3%) and they did not have severe comorbidity diseases. Hypertension was found as the highest number. Among those who have comorbidity (47 patients), only 1 of them had 4 comorbidities which included hypertension, type 2

diabetes, COPD and gastric ulcers, 9 patients had 2 disease which include hypertension and peptic ulcers while 37 patients had only one disease. In addition, these patients received proper treatment to control their disease and regularly attend the clinic so that the effect of comorbidities on functional recovery was not found. Further research to explore the relationship between comorbidity and functional recovery among patients with LBP is still needed with more sample size and more patients who have more severity of comorbid diseases.

5.3 Conclusion

In conclusion, it can be stated that the results of this study complied with the concept of self - efficacy theory in that when patients with LBP perceived in their own self efficacy, they owned the confidence and believed that they are able to obtain their functional recovery. Many factors affect their self - efficacy were pain level ($r = -.212$, $p < .01$), anxiety ($r = -.184$, $p < .01$), and depression ($r = -285$, $p < .01$). Accordingly, to facilitate functional recovery among patients with LBP, nurses should take serious consideration to enhance patients' pain self-efficacy or their confidence to manage pain and deal with pain when it occurs. Any pain management techniques including pharmacological and non-pharmacological pain management should be provided. Other factors that should be managed and control to increase patients' pain self-efficacy are level of pain, anxiety and depression. These measures would assist patients with LBP obtain their fully functional recovery.

CHAPTER VI
CONCLUSION

6.1 Conclusion of the study

This descriptive correlational study aimed to examine the relationship between pain, self – efficacy, anxiety and depression, comorbidity and functional recovery among patients with low back pain (LBP) who aged 18 – 88 years old in Rheumatology unit from August to October, 2016. Self- efficacy theory was utilized as a framework of this study. The sample size in this study was calculated by using G*power version 3.1.9.2 program to determine the minimum number of participants needed for co-relational design. The sample calculation yielded 126 sample. The research setting was the Rheumatology ward, a center specializing in Bach Mai hospital, Hanoi, Viet Nam.

After obtained approval from Institutional Review Board of Nursing faculty, Mahidol University and Institutional of Review Board of SMP, Vietnam National University, Hanoi, Vietnam. The researcher used 5 instruments; the demographic data questionnaire, Numerical Rating Scale (NRS), The Pain Self efficacy Questionnaire (PSEQ), Hamilton Depression Rating Scale (HDRS) and Hamilton Anxiety Rating scale (HARS) and The Oswestry Disability Index (ODI) derived from the Oswestry Low Back Pain Questionnaire to collect data. All instruments were tested for their validity and reliability as clearly explained in chapter 3. Cronbach's alpha coefficient of The Pain Self efficacy Questionnaire, Hamilton Depression Rating Scale, Hamilton Anxiety Rating scale, and The Oswestry Disability Index were .89, .77, .67 and .85 respectively. The 126 sample were selected according to the inclusion criteria. The researcher collected data by herself from 8.00 am to 4.00 pm every day until the sample reached the target of the studied sample size. For each sample the researcher spent 30 to 45 minutes on interviewing and collected some data from their patients' records. During data collection, there was no adverse event among

the sample. All sample recruited in the study remained throughout the study process with no attrition.

Data analysis was conducted by using SPSS computer program. The descriptive statistics were used to describe general information and study variables, including pain, self – efficacy, anxiety and depression, comorbidity and functional recovery. The assumption of Pearson' Product Moment Correlation was tested and it was found that all variables were not in normal distribution. Accordingly, Spearman's rho was used to examine correlation between pain level, pain self – efficacy, anxiety and depression, comorbidity and functional recovery among patients with LBP.

The findings are summarized as follows:

Within 126 patients, there were 52.4 % of female 47.6 % of male with the ages ranged from 18 to 88 years. The average age was 54.84 (SD = 17.11 years). The most prominent age group was more than 60 years old with 46.8%. Most of the patients lived in Hanoi (57.9%) were married (70.6%) and had governmental insurance (92.1%).

A half of the patients (50%) experienced LBP less than 12 months and 11.1% had LBP more than 12 months. About 37.3% of them had comorbidity and hypertension was the most comorbidity disease found (23%). The majority of sample suffered with moderate and severe pain (51.6% and 42.1% respectively). The mean scores of pain self-efficacy was 32 **(**SD ± 12**.**6**).** Most of the patients had low back pain that radiation to up and down such as radiation to arm, shoulder and leg. The majority radiation to leg was 65.9%. Majority of them showed mild to moderate anxiety (56.3%), 11.1 % and 4% suffered with severe and very severe depression.

Regarding functional recovery, majority of the sample (69%) demonstrated moderate disability level whereas 7.9% demonstrated severe disability. Sample with crippled or bed-bound level were not found.

Pain level was negatively medium correlated with functional recovery at r = - .556, p = .000, anxiety had negative correlation with functional recovery (r = -.378, p = .000)., depression had negative medium correlation with functional recovery (r = -.538, p = .000). Pain self – efficacy had positive medium correlation with functional

recovery (r = .478, p = .000). Nevertheless, comorbidity had no correlation with functional recovery (p = .105).

The results of this study complied with the concept of self -efficacy theory in that when patients with LBP perceived in their own self efficacy, they owned the confidence and able to obtain their functional recovery.

6.2 Implications of Research Findings

6.2.1 Implications for nursing practice

In order to enhance patients with LBP to obtain their full functional recovery the following measures have to be performed by nurses;

1. Improve patients' self-efficacy by providing them with knowledge to avoid inappropriate position leading to more back pain. Knowledge about back muscle exercise is also necessary for these patients.

2. This study found that majority of patients with LBP were in their old age. Accordingly, their self-efficacy should be enhanced through their family care givers. Nurses should provide them with knowledge on appropriate exercise and positioning to prevent patients from LBP and strengthening back muscles. Moreover, nurses should provide information to family caregivers to support the patients by encouraging, empowering and supporting with tangible and intangible resources.

3. Among patients who show their readiness to learn, improve their self-efficacy by encouraging them with empowered feedback toward their performance during their hospital follow up visit. The empowering interaction between nurses and patients will increase patients' self - confidence leading to increased self-efficacy.

4. Develop guidelines to decrease and control patients' pain in particular, pain during movement.

5. Provide routine assessment on patients' anxiety and depression by using HDRS and HARS during patients' follow up visit to identify level

of anxiety and depression. Patients whose scores show that they experience anxiety or depression have to be referred to the specialist practitioners for proper management.

6. Assess patients' functional recovery by using The ODI during patients' follow up visit to monitor the patients' progress in their functional recovery. Identify and manage ones who have problems with recovering progress while maintain ones who show good progress.

6.2.2 Implications for further study

1. Clinical practice guidelines to improve functional recovery among patients with LBP should be developed and tested for its effectiveness by using quasi experimental research.

2. The ODI in Vietnamese version should be tested in its psychometric property by using in adequate numbers of patients, advanced statistic such as factor analysis should be employed to test the psychometric property of ODI in Vietnamese context.

3.This study was conducted among in patients with LBP, further study patients with LBP who come for the follow up visit in the out-patient department should be included. This will give the broader picture about patients suffering with LBP.

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APPENDIX

LIST OF EXPERTS

1. Prof. Truong Viet Dung. Chair of Independent Ethic Committee, Ministry of Health, Viet Nam
2. Dr. Hoang Van Dung. Doctor of Rheumatology Unit, Bach Mai hospital.
3. Bachelor. Bui Minh Thu. Head nurse of Bach Mai hospital.
4. Bachelor. Tran Ngoc Xuyen. Head nurse of Rheumatology unit.
5. Bachelor. Bui Minh Phuong. Nurse of Rheumatology unit.

INSTRUMENT (English version)

Part 1. General information of the patients

The following questions related to your personal information. Please tick (√) or fill in blanks in the following questions:

1. Gender: ☐ Male ☐ Female
2. Age: ..... years old (current age in Western calendar)
3. Weight (Kg) Height (m) BMI (kg/m^2)
4. Location of residence: City ☐ Rural ☐ Mautain ☐
5. Name of hospital before to Bach Mai hospital:
6. Marital status:
   - ☐ Married ☐ Single
   - ☐ Separated ☐ Divorced ☐ Widowed
7. What is your highest education level?
   - ☐ Primary school (level 1 to 5) ☐ Secondary school (level 6 to 9)
   - ☐ High school (level 10 to 12) ☐ Two years certificate
   - ☐ College (3 years) ☐ Bachelor (University)
   - ☐ Others (please specify) .....
8. What is your occupation?
   - ☐ Professional ☐ Farmer
   - ☐ Industrial worker ☐ Salesperson
   - ☐ Home worker ☐ Retired
   - ☐ Other jobs (please specify).....
9. How much of your income and your family income per month?
   - Your income per month: .....VND
   - Your family income per month: .....VND
10. Do you have your health insurance? Yes ☐ No ☐

If yes, please indicate how much it covers for your treatment? ..... (percent)

11. How long you have been diagnosed with LBP? ..... (years)
12. How long do you take time off work due to LBP..... (days)

Part 2: Information related to illness and treatment

1. When did you admit to hospital?

2. How long do you have low back pain?

3. Diagnosis:

Date of diagnosis:

4. Which level of your pain?

5. Which comorbidity do you have?

5.1 Hypertension O no O yes ……..for how long?

Treatment: Always ☐ Sometime ☐ No ☐

5.2 Heart disease O no O yes ……..for how long?

Treatment: Allway ☐ Sometime ☐ No ☐

5.3 COPD O no O yes ……..for how long?

Treatment: Always ☐ Sometime ☐ No ☐

5.4 Renal disease O no O yes ……..for how long?

Treatment: Always ☐ Sometime ☐ No ☐

5.5 Others please describe:……

……

6. What treatment method have you had?

☐ Medication

☐ Physical therapy

☐ Injection

☐ Surgery

☐ Diet Nutrition

☐ Other……

7. Which medicines have you used?

☐ Aspirin

☐ Oxycotin

☐ NSAID

☐ Other….

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8. Asociated Signs and Symptoms

☐ Radiation up, down

☐ Leg pain

☐ Bowel and bladder

9. Which trauma or surgery have you had?

10. Do you have any habits such as:

Smorking: Allway ☐ Often ☐ Sometime ☐ Occationary ☐ Never ☐

Alcolhol: Allway ☐ Often☐ Sometime ☐ Occationary ☐ Never ☐

Exercise: Allway ☐ Often☐ Sometime ☐ Occationary ☐ Never ☐

Part 3: Numerical Rating Scale (NRS)

I would like you to rate your pain on a scale from zero to ten. 'Zero' means you have no pain at all. 'Ten' means the worst possible pain you can image. What number would you give to your pain?

0	1	2	3	4	5	6	7	8	9	10

No pain **The worst possible pain**

Part 4: The Pain Self efficacy Quetionnaire (PSEQ)

No	Item	0	1	2	3	4	5	6
1	I can enjoy things, despite the pain.							
2	I can do most of the household chores (e.g. tidying-up, washing dishes, etc.), despite the pain							
3	I can socialise with my friends or family members as often as I used to do, despite the pain.							

4	I can cope with my pain in most situations							
5	I can do some form of work, despite the pain. ("work" includes housework, paid and unpaid work).							
6	I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite pain.							
7	I can cope with my pain without medication.							
8	I can still accomplish most of my goals in life, despite the pain.							
9	I can live a normal lifestyle, despite the pain.							
10	I can gradually become more active, despite the pain.							

Note: Not at all Completely Confident confident: 0; Completely Confident: 6

Part 5: Hamilton Anxiety Rating Scale (HAM-A)

Below is a list of phrases that describe certain feeling that people have. Rate the patients by finding the answer which best describes the extent to which he/she has these conditions. Select one of the five responses for each of the fourteen questions.

0 = Not present, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Very severe.

	Content	0 Not present	1 Mild	2 Moderate	3 Severe	4 Very severe
1	Anxious mood Worries, anticipation of the worst, fearful anticipation, irritability					

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2	Tension Feelings of tension, fatigability, startle response, moved to tears easily, trembling, feelings of restlessness, inability to relax.					
3	Fears Of dark, of strangers, of being left alone, of animals, of traffic, of crowds.					
4	Insomnia Difficulty in falling asleep, broken sleep, unsatisfying sleep and fatigue on waking, dreams, nightmares, night terrors.					
5	Intellectual Difficulty in concentration, poor memory.					
6	Depressed mood Loss of interest, lack of pleasure in hobbies, depression, early waking, diurnal swing.					
7	Somatic (muscular) Pains and aches, twitching, stiffness, myoclonic jerks, grinding of teeth, unsteady voice, increased muscular tone.					
8	Somatic (sensory) Tinnitus, blurring of vision, hot and cold flushes, feelings of weakness, pricking sensation.					
9	Cardiovascular symptoms					

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	Tachycardia, palpitations, pain in chest, throbbing of vessels, fainting feelings, missing beat.					
10	Respiratory symptoms Pressure or constriction in chest, choking feelings, sighing, dyspnea.					
11	Gastrointestinal symptoms Difficulty in swallowing, wind abdominal pain, burning sensations, abdominal fullness, nausea, vomiting, borborygmi, looseness of bowels, loss of weight, constipation.					
12	Genitourinary symptoms Frequency of micturition, urgency of micturition, amenorrhea, menorrhagia, development of frigidity, premature ejaculation, loss of libido, impotence.					
13	Autonomic symptoms Dry mouth, flushing, pallor, tendency to sweat, giddiness, tension headache, raising of hair.					
14	Behavior at interview Fidgeting, restlessness or pacing, tremor of hands, furrowed brow, strained face, sighing or rapid respiration, facial pallor, swallowing, etc.					

Hamilton Depression Rating Scale (HDRS)

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7

	Content	Score
1	Depressed mood *(sadness, hopeless, helpless, worthless)*	
	Absent.	0
	These feeling states indicated only on questioning.	1
	These feeling states spontaneously reported verbally	2
	Communicates feeling states non-verbally, i.e. through facial expression, posture, voice and tendency to weep.	3
	Patient reports virtually only these feeling states in his/her spontaneous verbal and non-verbal communication.	4
2	Feelings of guilt	
	Absent.	0
	Self reproach, feels he/she has let people down.	1
	Ideas of guilt or rumination over past errors or sinful deeds.	2
	Present illness is a punishment. Delusions of guilt.	3
	Hears accusatory or denunciatory voices and/or experiences threatening visual hallucinations.	4
3	Suicide	
	Absent.	0
	Feels life is not worth living.	1
	Wishes he/she were dead or any thoughts of possible death to self.	2
	Ideas or gestures of suicide.	3
	Attempts at suicide (any serious attempt rate 4).	4
4	Insomnia: Early in the night	
	No difficulty falling asleep.	0
	Complains of occasional difficulty falling asleep, i.e. more than 1/2 hour.	1
	Complains of nightly difficulty falling asleep.	2
5	Insomnia: Middle of the night	
	No difficulty.	0
	Patient complains of being restless and disturbed during the night.	1
	Waking during the night – any getting out of bed rates 2 (except for	2

Instrument version 16 June 2016

	purposes of voiding).	
6	Insomnia: Early hours of the morning	
	No difficulty.	0
	Waking in early hours of the morning but goes back to sleep.	1
	Unable to fall asleep again if he/she gets out of bed.	2
7	Work and activities	
	No difficulty.	0
	Thoughts and feelings of incapacity, fatigue or weakness related to activities, work or hobbies.	1
	Loss of interest in activity, hobbies or work – either directly reported by the patient or indirect in listlessness, indecision and vacillation (feels he/she has to push self to work or activities).	2
	Decrease in actual time spent in activities or decrease in productivity. Rate 3 if the patient does not spend at least three hours a day in activities (job or hobbies) excluding routine chores.	3
	Stopped working because of present illness. Rate 4 if patient engages in no activities except routine chores, or if patient fails to perform routine chores unassisted.	4
8	Retardation (slowness of thought and speech, impaired ability to concentrate, decreased motor activity)	
	Normal speech and thought.	0
	Slight retardation during the interview.	1
	Obvious retardation during the interview.	2
	Interview difficult.	3
	Complete stupor.	4
9	Agitation	
	None.	0
	Fidgetiness.	1
	Playing with hands, hair, etc.	2
	Moving about, can't sit still.	3
	Hand wringing, nail biting, hair-pulling, biting of lips.	4

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10	Anxiety psychic	
	No difficulty.	0
	Subjective tension and irritability.	1
	Worrying about minor matters.	2
	Apprehensive attitude apparent in face or speech.	3
	Fears expressed without questioning.	4
11	Anxiety somatic (physiological concomitants of anxiety) such as: gastro-intestinal – dry mouth, wind, indigestion, diarrhea, cramps, belching cardio-vascular – palpitations, headaches respiratory – hyperventilation, sighing urinary frequency sweating	
	Absent	
	Mild.	1
	Moderate.	2
	Severe.	3
	Incapacitating.	4
12	Somatic symptoms gastrointestinal	
	None.	0
	Loss of appetite but eating without staff encouragement. Heavy feelings in abdomen.	1
	Difficulty eating without staff urging. Requests or requires laxatives or medication for bowels or medication for gastro-intestinal symptoms.	2
13	General somatic symptoms	
	None.	0
	Heaviness in limbs, back or head. Backaches, headaches, muscle aches. Loss of energy and fatigability.	1
	Any clear-cut symptom rates 2.	2

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14	Genital symptoms (symptoms such as loss of libido, enstrual disturbances)	
	Absent.	**0**
	Mild.	**1**
	Severe.	**2**
15	Hypochondriasis	
	Not present.	**0**
	Self-absorption (bodily).	**1**
	Preoccupation with health.	**2**
	Frequent complaints, requests for help, etc.	**3**
	Hypochondriacal delusions.	**4**
16	Loss of weight (rate either a OR b)	
	a)According to the patient:	
	No weight loss.	**0**
	Probable weight loss associated with present illness	**1**
	Definite (according to patient) weight loss.	**2**
	Not assessed.	**3**
	b) According to weekly measurements:	
	Less than 1 lb weight loss in week.	**0**
	Greater than 1 lb weight loss in week.	**1**
	Greater than 2 lb weight loss in week.	**2**
	Not assessed.	**3**
17	Insight	
	Acknowledges being depressed and ill.	**0**
	Acknowledges illness but attributes cause to bad food, climate, overwork, virus, need for rest, etc.	**1**
	Denies being ill at all.	**2**

Part 6: Oswestry Disability Index Questionnaire

Please rate the severity of your pain by circling a number below:

No pain 0; Unbearable pain 5

Instrument version 16 June 2016

Instructions: Please circle the **ONE NUMBER** in each section which most closely describes your problem.

CONTENTS	SCORES
SECTION 1 – Pain Intensity	
The pain comes and goes and is very mild.	**0**
The pain is mild and does not very much.	**1**
The pain comes and goes and is moderate.	**2**
The pain is moderate and does not very much.	**3**
The pain comes and goes and is severe.	**4**
The pain is severe and does not very much.	**5**
SECTION 2 – Personal Care	
I would not have to change my way of washing or dressing in order to avoid pain.	**0**
I do not normally change my way of washing or dressing even though it causes some pain.	**1**
Washing and dressing increases the pain, but I manage not to change my way of doing it.	**2**
Washing and dressing increases the pain and I find it necessary to change my way of doing it.	**3**
Because of the pain, I am unable to do some washing and dressing without help.	**4**
Because of the pain, I am unable to do any washing or dressing without help.	**5**
SECTION 3 – Lifting	
I can lift heavy weights without extra pain.	**0**
I can lift heavy weights, but it causes extra pain.	**1**
Pain prevents me from lifting heavy weight off the floor.	**2**
Pain prevents me from lifting heavy weights off the floor but I can manage if they are conveniently positioned, for example: on a table.	**3**
Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned.	**4**
I can only lift very light weights, at the most.	**5**

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SECTION 4 – Walking	
Pain does not prevent me from walking any distance.	**0**
Pain prevents me from walking more than one mile.	**1**
Pain prevents me from walking more than ½ mile.	**2**
Pain prevents me from walking more than ¼ mile.	**3**
I can only walk while using a cane or on crutches.	**4**
I am in bed most of the time and have to crawl to the toilet.	**5**
SECTION 5 – Sitting	
I can sit in any chair as long as I like without pain.	**0**
I can only sit in my favorite chair as long as I like.	**1**
Pain prevents me from sitting more than one hour.	**2**
Pain prevents me from sitting more than ½ hour.	**3**
Pain prevents me from sitting more than ten minutes.	**4**
Pain prevents me from sitting at all.	**5**
SECTION 6 – Standing	
I can stand as long as I want without pain.	**0**
I have some pain while standing, but it does not increase with time.	**1**
I cannot stand for longer than one hour without increasing pain.	**2**
I cannot stand for longer than ½ hour without increasing pain.	**3**
I cannot stand for longer than ten minute without increasing pain.	**4**
I avoid standing, because it increases the pain straight away.	**5**
SECTION 7 – Sleeping	
I get no pain in bed.	**0**
I get pain in bed, but it does not prevent me from sleeping well.	**1**
Because of pain, my normal night's sleep is reduced by less than one quarter.	**2**
Because of pain, my normal night's sleep is reduced by less than one-half.	**3**
Because of pain, my normal night's sleep is reduced by less than three-quarters.	**4**
Pain prevents me from sleeping at all.	**5**
SECTION 8 – Social Life	
My social life is normal and give me no pain.	**0**
My social life is normal, but increases the degree of my pain.	**1**

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Pain has no significant effect on my social life apart from limiting my more energetic interests, My dancing, etc.	2
Pain has restricted my social life and I do not go out very often.	3
Pain has restricted my social life to my home.	4
I have hardly any social life because of the pain.	5
SECTION 9 – Traveling	
I get no pain while traveling.	0
I get some pain while traveling, but none of my usual forms of travel make it any worse.	1
I get extra pain while traveling, but it does not compel me to seek alternative forms of travel.	2
I get extra pain while traveling which compels me to seek alternative forms of travel.	3
Pain restricts all forms of travel.	4
Pain prevents all forms of travel except that done lying down.	5
SECTION 10 – Changing Degree of Pain	
My pain is rapidly getting better.	0
My pain fluctuates, but overall is definitely getting better.	1
My pain seems to be getting better, but improvement is slow at present.	2
My pain is neither getting better nor worse.	3
My pain is gradually worsening.	4
My pain is rapidly worsening.	5

Instrument version 16 June 2016

PHỤ LỤC E2: BỘ CÂU HỎI NGHIÊN CỨU

ID:

BỘ CÂU HỎI NGHIÊN CỨU

TÊN ĐỀ TÀI: CÁC YẾU TỐ ẢNH HƯỞNG ĐẾN SỰ PHỤC HỒI CHỨC NĂNG CỦA NGƯỜI BỆNH ĐAU LƯNG

Xin vui lòng cho biết ý kiến của các anh/ chị bằng cách trả lời các câu hỏi sau:

Phần 1: Thông tin chung của người bệnh

Những câu hỏi sau liên quan đến thông tin cá nhân. Xin hãy đánh dấu tích (√) những câu hỏi sau:

1. Giới ☐ Nam ☐ Nữ
2. Tuổi .....
3. Cân nặng ..... (Kg) Chiều cao ..... (m) BMI (kg/m^2)
4. Địa chỉ: Thành thị ☐ Nông thôn ☐ Miền núi ☐
5. Tuyến trước:
6. Tình trạng hôn nhân
   ☐ Đã lập gia đình ☐ Độc thân
   ☐ Ly thân ☐ Ly hôn ☐ Góa (chồng hoặc vợ)
7. Trình độ học vấn
   ☐ Tiểu học (1-5) ☐ Trung học cơ sở (6-9) ☐ Trung học phổ thông (10-12)
   ☐ Trung cấp ☐ Cao đẳng (3 năm) ☐ Cử nhân Đại học
   ☐ Khác (ghi cụ thể) .....
8. Nghề nghiệp
   ☐ Chuyên nghiệp ☐ Nông dân
   ☐ Công nhân ☐ Buôn bán
   ☐ Nội trợ ☐ Nghỉ hưu
   ☐ Công việc khác (ghi cụ thể).....
9. Thu nhập của bản thân và gia đình là bao nhiêu tiền trong một tháng:
   - Thu nhập của bản thân trên một tháng: .....VND
   - Thu nhập của gia đình trên một tháng: .....VND
10. Bản thân có thẻ bảo hiểm y tế không? Có ☐ Không ☐
    Nếu có, Bảo hiểm sẽ chi trả cho việc điều trị là bao nhiêu phần trăm?..... (%)
11. Bản thân đã phải nghỉ làm do đau thắt lưng là bao nhiêu ngày? .....(ngày)

Phần 2: Những thông tin liên quan đến bệnh và điều trị.

1. Ngày vào viện: .....
2. Quá trình đau thắt lưng đã được bao lâu? .....
3. Chẩn đoán: .....
   Ngày chẩn đoán:.....
4. Những bệnh lý kèm theo nào mà bản thân đang mắc phải?
   4.1 Cao huyết áp ☐ Không ☐ Có Thời gian mắc bệnh .....?

Điều trị: Luôn luôn ☐ Thỉnh thoảng ☐ Không điều trị ☐
4.2 Bệnh về tim mạch: ☐ Không ☐ Có Thời gian mắc bệnh ……..?
Điều trị: Luôn luôn ☐ Thỉnh thoảng ☐ Không điều trị ☐
4.3 COPD ☐ Không ☐ Có Thời gian mắc bệnh……?
Điều trị: Luôn luôn ☐ Thỉnh thoảng ☐ Không điều trị ☐
4.4 Bệnh lý về thận ☐ Không ☐ Có Thời gian mắc bệnh ……?
Điều trị: Luôn luôn ☐ Thỉnh thoảng ☐ Không điều trị ☐
4.5 Khác…… ……

5. Đã sử dụng phương pháp điều trị nào?
☐ Thuốc
☐ Vật lý trị liệu
☐ Tiêm thuốc
☐ Phẫu thuật
☐ Ăn kiêng
☐ Khác……

6. Thuốc đã từng sử dụng để điều trị đau lưng?
☐ Aspirin
☐ Oxycodin
☐ NSAIDs
☐ Other….

7. Dấu hiệu/ triệu chứng liên quan đến đau lưng
☐ Đau chân
☐ Đau bụng hoặc đau ở bàng quang

8. Trước đây có phẫu thuật hay bị chấn thương vùng cột sống thắt lưng không?
Nếu có? Mô tả chi tiết……..

9. Bản thân có thói quen nào sau đây:
Hút thuốc:
Luôn luôn ☐ thường xuyên ☐ Thỉnh thoảng☐ Hiếm khi ☐ Không bao giờ ☐
Uống rượu:
Luôn luôn ☐ thường xuyên ☐ Thỉnh thoảng☐ Hiếm khi ☐ Không bao giờ ☐
Tập thể dục:
Luôn luôn ☐ thường xuyên ☐ Thỉnh thoảng☐ Hiếm khi ☐ Không bao giờ ☐

Phần 3: Thang nhìn đau (NRS)

Tôi muốn bạn đánh giá đau của bạn trên thang điểm từ số không đến mười. 'Không' có nghĩa là bạn không có nỗi đau nào cả. 'Mười' có nghĩa là cơn đau tồi tệ nhất bạn có thể hình dung ra. Bạn sẽ cung cấp chỉ số đau của bạn là số mấy?

0	1	2	3	4	5	6	7	8	9	10

Không đau **Đau rất trầm trọng**

Phần 4: Bộ câu hỏi đánh giá sự tự tin của người bệnh trong việc kiểm soát đau lưng (PSEQ)

STT	Tuyên bố	0	1	2	3	4	5	6
1	Tôi vẫn có thể tận hưởng mọi hoạt động trong cuộc sống hàng ngày, mặc dù đau.							
2	Tôi có thể làm được hầu hết việc nhà, mặc dù đau.							
3	Tôi có thể hòa đồng với bạn bè hoặc gia đình thường xuyên như tôi đã từng làm, mặc dù đau.							
4	Tôi có thể chịu đựng được đau trong mọi trường hợp.							
5	Tôi có thể làm được một số công việc mặc dù đau (bao gồm việc nhà, đi làm có lương hoặc không có lương)							
6	Tôi vẫn có thể làm được mọi việc tôi muốn như sở thích hoặc các hoạt động trong thời gian rỗi, mặc dù đau							
7	Tôi có thể chịu đựng được đau mà không dùng thuốc.							
8	Tôi có thể đạt được hầu hết các mục tiêu mà tôi đặt ra trong cuộc sống, mặc dù đau.							
9	Nhưng tôi có thể sống với một cuộc sống như bình thường, mặc dù đau.							
10	Tôi có thể dần dần trở nên chủ động hơn, mặc dù đau.							

Phần 5:

5.1 Thang điểm đánh giá sự lo âu của Hamilton

Dưới đây là một danh sách các cụm từ mô tả cảm giác chắc chắn mà người bệnh có. Cách đánh giá người bệnh là cách tìm ra câu trả lời mà người bệnh mô tả đúng nhất các điều kiện sau. Chọn một trong năm mức độ cho mỗi câu hỏi và thang điểm bao gồm 14 câu hỏi:

(0 = Không có mặt, 1 = nhẹ, 2 = trung bình, 3 = nặng, 4 = Rất nghiêm trọng)

TT	Nội dung	Trả lời				
1	Tâm trạng lo lắng (Lo lắng, tiên đoán những biểu hiện xấu nhất, sợ hãi, bứt rứt)	0	1	2	3	4
2	Căng thẳng (Cảm giác căng thẳng, mệt mỏi, hốt hoảng, cảm xúc dễ khóc, run rẩy, cảm giác bồn chồn, không có khả năng thư giãn)	0	1	2	3	4
3	Lo sợ (Trong bóng tối, người lạ, bị bỏ lại một mình, thú vật, xe cộ, đám đông)	0	1	2	3	4
4	Mất ngủ (Khó ngủ, ngủ không ngon giấc hay bị thức giấc, giấc ngủ không được thỏa mãn, mệt mỏi khi thức dậy, chiêm bao, ác mộng, kinh hãi bóng đêm).	0	1	2	3	4
5	Trí tuệ (Khó tập trung, trí nhớ kém)	0	1	2	3	4
6	Tâm trạng trầm cảm (Mất hứng thú, không thích giải trí, trầm cảm, mất ngủ)	0	1	2	3	4
7	Triệu chứng về cơ bắp (Đau nhức, co rúm, cứng khớp, cơn co giật, nghiến răng, giọng nói run rẩy, tăng trương lực cơ)	0	1	2	3	4
8	Cảm giác (Ù tai, mờ thị lực, cơ mặt bừng nóng và lạnh, cảm giác yếu mệt, đau nhói)	0	1	2	3	4
9	Triệu chứng tim mạch (Nhịp tim nhanh, đánh trống ngực, đau ngực, mạch đập mạnh, cảm giác ngất xỉu, mất nhịp)	0	1	2	3	4

10	Triệu chứng hô hấp (Nặng ngực hoặc thắt ngực, cảm giác nghẹt thở, thở dài, khó thở)	0	1	2	3	4
11	Triệu chứng tiêu hóa (Khó nuốt, đau bụng, cảm giác nóng rát trong dạ dày, đầy bụng, buồn nôn, nôn, sôi bụng, hay đi phân lỏng, sụt cân, táo bón)	0	1	2	3	4
12	Triệu chứng tiết niệu – sinh dục (Tiểu nhiều lần, mót tiểu. Mất kinh, rong kinh, khả năng sinh dục yếu, xuất tinh sớm, mất khoái cảm, liệt dương).	0	1	2	3	4
13	Triệu chứng thần kinh (Khô miệng, bừng mặt, xanh xao, hay đổ mồ hôi, chóng mặt, đau căng đầu, tóc dựng).	0	1	2	3	4
14	Thái độ lúc phỏng vấn (Sốt ruột, bồn chồn, bất an, run tay, cau mày, căng thẳng, thở dài hoặc thở nhanh, mặt tái xanh, ….., vv)	0	1	2	3	4

5.2 Thang điểm đánh giá sự trầm cảm của Hamilton (HDRS)

	NỘI DUNG	ĐIỂM
1	**Khí sắc trầm** ***(buồn chán, hy vọng, mong nhận được giúp đỡ, vô dụng)***	
	Không có cảm giác khó chịu và dấu hiệu trầm cảm	0
	Những trạng thái này xuất hiện khi phỏng vấn.	1
	Những trạng thái này xuất hiện khi giao tiếp bằng lời	2
	Những trạng thái này xuất hiện khi giao tiếp không lời, ví dụ thông qua nét mặt, dáng đi, giọng nói và khi khóc	3
	Những cảm giác nảy xuất hiện khi giao tiếp bằng lời và không lời.	4
2	**Cảm giác có tội**	**0**
	Không có cảm giác tội lỗi	
	Tự chỉ trích bản thân, thấy mình luôn làm mọi người thất vọng	1
	Suy nghĩ là có tội	2
	Nghĩ bệnh tật là do bị trừng phạt. Hoang tưởng là có tội	3
	Ảo thanh hoặc ảo thị mang màu sắc đe dọa	4
3	**Tự tử**	
	Không có suy nghĩ này	0
	Cuộc sống không có ý nghĩa	1
	Mong muốn được chết	2
	Có tư tưởng muốn tự tử	3

	Toan tự sát (Cố gắng tìm mọi cách để tự tử nhưng không thành công).	4
4	**Chứng mất ngủ: lúc bắt đầu đi ngủ**	
	Không khó ngủ (dễ ngủ)	0
	Thỉnh thoảng khó ngủ	1
	Khó ngủ	2
5	**Chứng mất ngủ: duy trì giấc ngủ**	
	Không mất ngủ	0
	Không ngủ được	1
	Đi lại suốt đêm – không ngủ được	2
6	**Chứng mất ngủ: thức dậy sớm**	
	Không khó ngủ	0
	Đi lại trong một vài giờ sau đó ngủ lại được	1
	Không thể ngủ lại được nếu ra khỏi giường	2
7	**Khả năng làm việc và thực hiện các hoạt động hàng ngày**	
	Không gặp khó khăn.	0
	Có suy nghĩ là không có khả năng, mệt mỏi hoặc yếu đuối liên quan đến các hoạt động hàng ngày, khả năng làm việc và sở thích.	1
	Mất khả năng hứng thú với các hoạt động hàng ngày, sở thích và khả năng làm việc.	2
	Thời gian giành cho các hoạt động hàng ngày bị giảm. Người bệnh không giành ít nhất 3 giờ một ngày trong việc thực hiện các hoạt động hàng ngày (làm việc và sở thích) loại trừ công việc nội trợ.	3
	Không có khả năng làm việc cũng như công việc nội trợ	4
8	**Sự trì trệ (suy nghĩ và phát ngôn chậm chạp, mất khả năng tập trung, giảm khả năng vận động)**	
	Suy nghĩ và phát ngôn bình thường	0
	Sự trì trệ ở mức độ nhẹ trong lúc phỏng vấn	1
	Sự trì trệ ở mức độ rõ ràng trong lúc phỏng vấn	2
	Khó phỏng vấn	3
	Hoàn toàn ngớ ngẩn	4
9	**Lo âu về cơ thể**	
	Không lo âu	0
	Bồn chồn/ lo âu	1
	Tay chân không để yên	2
	Ngồi không yên	3
	Cắn móng tay, giật tóc, cắn môi.	4
10	**Lo âu về tinh thần**	
	Không lo lắng.	0
	Căng thẳng và cáu gắt	1

	Lo lắng cả những vấn đề rất nhỏ	2
	Sự lo lắng được thể hiện trên khuôn mặt và giọng nói	3
	Sợ hãi	4
11	**Lo âu về thể chất: (Tiêu hóa: khô miệng, khó tiêu, tiêu chảy, đầy hơi, ợ hơi; Tim mạch – nhịp tim nhanh, đau đầu; Hô hấp – Thở quá nhanh;Tần xuất đi tiểu, đổ mồ hôi)**	
	Không có	0
	Nhẹ	1
	Vừa	2
	Nặng.	3
	Không còn khả năng	4
12	**Những dấu hiệu của hệ tiêu hóa**	
	Không phàn nàn gì	0
	Mất cảm giác ngon miệng, đầy bụng.	1
	Gặp khó khăn trong việc ăn uống. Yêu cầu dùng thuốc điều trị những dấu hiệu của đường tiêu hóa.	2
13	**Những triệu chứng về thể chất nói chung**	
	Không có	0
	Buồn chán vì đau lưng, đau đầu, đau cơ. Mất năng lượng và suy kiệt.	1
	Bất cứ dấu hiệu rõ ràng nào	2
14	**Những dấu hiệu của bộ phận sinh dục như dấu hiệu mất khả năng ham muốn dục tình, rối loạn kinh nguyệt)**	
	Không có	0
	Nhẹ	1
	Nặng.	2
15	**Nghi bệnh**	
	Không có	0
	Quan tâm đến hình thể	1
	Quan tâm đến sức khỏe.	2
	Phàn nàn nhiều về sức khỏe	3
	Hoang tưởng nghi bệnh.	4
16	**Giảm cân**	
	a) Theo báo cáo của người bệnh:	
	Không giảm cân	0
	Có thể giảm cân liên quan đến bệnh tật	1
	Giảm cân	2
	Không đánh giá được.	3
	b) Theo sự đo lường bằng cân người bệnh	
	Giảm cân nặng ít hơn 0,5kg trong 1 tuần	0

	Giảm cân nặng nhiều hơn 0,5 kg trong 1 tuần	1
	Giảm cân nặng nhiều hơn 1 kg trong 1 tuần	2
	Không đánh giá được	3
17	**Tâm trạng/ Nhận thức**	
	Có sự suy giảm nhận thức	0
	Nhận thức giảm trầm trọng làm người bệnh không muốn ăn, cần được nghỉ ngơi.	1
	Sa sút	2

Phần 6: Bộ câu hỏi đánh giá sự hạn chế vận động của người bệnh đau lưng của Oswestry
Khoanh tròn vào một con số thể hiện mức độ trầm trọng do cơn đau của bạn cho các phần dưới đây
Không đau: 0; Rất đau: 5

NỘI DUNG	ĐIỂM
Phần 1 – Mức độ đau	
Đau nhẹ	0
Đau vừa	1
Khá đau	2
Không khá đau	3
Rất đau đớn	4
Rất không đau	5
Phần 2 – Chăm sóc cá nhân	6
Không phải thay đổi cách tắm rửa và mặc quần áo để tránh đau đớn.	0
Không cần thay đổi cách tắm rửa và mặc quần áo dù việc này có gây đau đớn.	1
Tắm rửa và mặc quần áo làm tăng đau đớn nhưng vẫn thực hiện theo cách cũ.	2
Tắm rửa và mặc quần áo làm tăng đau đớn và cần thay đổi cách thực hiện.	3
Bởi vì đau đớn nên thỉnh thoảng cần sự giúp đỡ để tắm rửa và mặc quần áo.	4
Bởi vì đau đớn nên không thể tắm rửa và mặc quần áo nếu không có sự giúp đỡ.	5
Phần 3 – Nâng vật nặng	
Có thể nâng vật nặng mà không quá đau đớn	0
Có thể nâng vật nặng nhưng khá đau đớn	1
Không thể nâng vật nặng khỏi sàn do đau đớn	2
Không thể nâng vật nặng khỏi sàn do đau đớn nhưng có thể nâng nếu vật ở vị trí thuận tiện như trên bàn, kệ,…	3
Không thể nâng vật nặng do đau đớn nhưng có thể nâng nếu vật có trọng lượng trung bình ở vị trí thuận tiện như trên bàn, kệ,…	4
Chỉ có thể nâng vật nhẹ	5
Phần 4 – Đi lại	
Đau đớn không ngăn cản việc đi lại	0
Vì đau đớn nên không thể đi quá 1 dặm (=1,6km)	1
Không thể đi quá 0,5 dặm vì đau đớn	2
Không thể đi quá 0,25 dặm vì đau đớn	3
Chỉ đi lại được nếu có gậy chống	4
Nằm trên giường và phải bò vào nhà vệ sinh	5
Phần 5 – Ngồi	
Có thể ngồi lâu trên bất cứ loại ghế mà không gây đau đớn	0
Chỉ có thể ngồi trên loại ghế quen thuộc mà không gây đau đớn	1
Chỉ ngồi được 1 giờ do đau đớn	2

Chỉ ngồi được 30 phút do đau đớn	3
Chỉ ngồi được 10 phút do đau đớn	4
Không thể ngồi do đau đớn	5
Phần 6 – Đứng	
Có thể đứng lâu mà không gây đau đớn	0
Lúc đứng hơi đau nhưng không nhiều và không đau theo thời gian	1
Không thể đứng quá 1 giờ đồng hồ	2
Không thể đứng quá 30 phút	3
Không thể đứng quá 10 phút	4
Không thể đứng do quá đau	5
Phần 7 – ngủ	
Không đau lúc ngủ	0
Khá đau nhưng không ảnh hưởng đến giấc ngủ	1
Bởi vì đau đớn nên không thể ngủ quá 15 phút	2
Bởi vì đau đớn nên không thể ngủ quá 30 phút	3
Bởi vì đau đớn nên không thể ngủ quá 45 phút	4
Không thể ngủ	5
Phần 8 – Sinh hoạt hàng ngày	
Hoạt động xã hội bình thường, không gây đau đớn	0
Hoạt động xã hội bình thường nhưng làm tăng đau đớn	1
Đau đớn không gây ảnh hưởng đến các hoạt động xã hội trừ những hoạt động cần nhiều năng lượng như nhảy múa	2
Do đau đớn nên hạn chế tham gia các hoạt động xã hội, không ra ngoài thường xuyên	3
Do đau đớn nên chỉ tham gia các hoạt động ở nhà	4
Hoàn toàn không tham gia các hoạt động xã hội do đau đớn	5
Phần 9 – Du lịch	
Không đau đớn khi đi du lịch.	0
Có hơi đau khi du lịch nhưng những hoạt động du lịch này không làm bệnh tệ hơn.	1
Khá đau khi du lịch nhưng chưa cần thiết phải thay đổi hình thức du lịch.	2
Khá đau khi du lịch và buộc phải thay đổi hình thức du lịch.	3
Do đau đớn nên các hình thức du lịch bị hạn chế.	4
Do đau đớn nên chỉ có thể nằm.	5
Phần 10 – Thay đổi mức độ đau	
Càng ngày càng tốt hơn	0
Có tiến triển tốt hơn	1
Có tiến triển nhưng chậm	2
Không tốt hơn cũng không xấu đi	3
Đang có xu hướng tệ hơn	4
Tệ hơn rất nhanh	5

PERMISION FOR USING INSTRUMENTS

Về: Ask permission of using Pain self efficacy Questionnaire (8)

pain_self_....pdf

Trả lời Trả lời tất cả Chuyển tiếp Khác

amanda_luxmoore@worksafe.vic.gov.au 25 tháng 1 lúc 9:21 AM

Đến honganh Khuc

Hi,

We are happy for you to use the questionnaire (with reference to WorkSafe Victoria), however we do not have the capability to translate it into Vietnamese.

Regards,
Amanda

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nongann Knuc
tới tôi

Tiếng Anh > Tiếng Việt Dịch thư

Vào ngày 22:01 Thứ Tư, 27 tháng 1 2016, Farah MEBARKI <fmebarki@mapigroup

Hello

Thank you for sending this document.

I am pleased to inform you that you the permission to use the Vietnamese version

I hope this helps. Do not hesitate to contact me should you need any information.

Best regards

Farah Mebarki
Administrative Assistant
Information Support Unit

Mapi Research Trust

ADDITIONAL STATISTICAL ANALYSIS

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
sumPSEQ	.109	125	.001	.977	125	.031
sumCOM	.373	125	.000	.671	125	.000
PLHAMD	.216	125	.000	.888	125	.000
PLHAMA	.296	125	.000	.788	125	.000
sumODQ	.090	125	.015	.961	125	.001

a. Lilliefors Significance Correction

BIOGRAPHY

NAME	Khuc Thi Hong Anh
DATE OF BIRTH	4th June 1974
PLACE OF BIRTH	Hanoi
INSTITUTIONS ATTENDED	Hanoi Medical school, 1993 – 1996 School of Nursing, Certificate of Nursing Nam Dinh Nursing University, 2002 – 2006 College of Nursing, Diploma of Nursing Nam Dinh Nursing University, 2007 – 2008 Bachelor of Nursing Mahidol University, 2015-2016 Master of Nursing Science (Adult Nursing)
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