

# The correlation of pain intensity and quality of life in chronic LBP patients in Adam Malik general hospital

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**Abstract.** Low back pain (LBP) is a world health problems and a major cause of disability. The study is to determine the correlation between pain intensity and quality of life (QoL) in patients with chronic LBP. This study was a descriptive, analytical research with the cross sectional design. Twenty-nine chronic LBP outpatients that have visited the Neurology Clinic of Adam Malik General Hospital Medan. Patients from July to November 2015 were selected by consecutive sampling. A questionnaire and interview are asking the information about subjects' characteristics, diagnosis, medical history, pain intensity and quality of life-based on WHO QoL criteria were used to collect the data. Using Spearman correlation test, we found correlation among VAS and physical function ( $p < 0.001$ ,  $r = -0.606$ ), limitations due to physical problems ( $p < 0.001$ ,  $r = -0.837$ ), limitations due to emotional problems ( $p = 0.007$ ,  $r = -0.477$ ), vitality ( $p = 0.021$ ,  $r = -0.380$ ), social function ( $p = 0.015$ ,  $r = -0.403$ ), the feeling of pain ( $p = 0.003$ ,  $r = -0.499$ ) and general health ( $p = 0.040$ ,  $r = -0.330$ ). On the other hand, there was no correlation between VAS and mental health ( $p = 0.110$ ,  $r = -0.235$ ). We concluded that pain intensity in outpatients with chronic LBP in the Neurology Clinic at Adam Malik General Hospital Medan correlates with the patients' quality of life.

## 1. Introduction

Low back pain (LBP) is a world health problem and a major cause of disability. In 2013, WHO estimates the prevalence of LBP reaches to 60-70% in industrialized countries.[1] More than 70 percent of persons in developed countries will experience LBP at some time in their lives. Around 20 percent had persistent symptoms at one year, and around 10 percent live unable to work. In Indonesia at the same year, a lifetime prevalence of LBP between 59.3-62.4% and annual prevalence within 20.9-31.2%.[2] The LBP can attack all age groups in the community, from children to the elderly. Also, LBP can be suffered by all people regardless of gender and race to affect the quality of life.

Low back pain is a pain, muscle tension, or stiffness localized below the costal margin and above the inferior gluteal folds, with or without sciatica. Pain in the lower back area that can relate to problems with the lumbar spine, the discs between the vertebrae, the ligaments around the spine and discs, the spinal cord and nerves, muscles of the low back, internal organs of the pelvis and abdomen,



or the skin covering the lumbar area.[3] Based on the footage, the World Health Organization (WHO) classifies LBP over (1) acute LBP, within <6 weeks, (2) sub-acute LBP, lasting 6-12 weeks and (3) chronic LBP, persists for 12 weeks or more.

The quality of life of the patient can be by using a Short Form-36 (SF-36) health survey that has two main components: the physical component and the mental component. The physical component consists of four scales of physical function, limitations due to physical problems, the feeling of pain, and general health. Similarly, the mental component which also consists of 4 scales and differentiated on vitality, social function, limitations due to emotional problems, and mental health. Each scale has 2-10 question items so that the overall question to be assessed amounted to 36 pieces.[4]

Wang *et al.* (2005) in his study of 232 people in Taiwan found a negative correlation between quality of life and the intensity of pain in chronic LBP patients.[5] Similarly, a study in Slovenia showed that pain intensity, depression levels, and other factors affected disability and quality of life of patients.[6]

Research Guclu *et al.* in 2012 found a correlation of pain intensity with the quality of life that is the physical function and limitations due to physical problems. The results of this study indicate that the increased intensity of pain, the less physical function of the patient.[7] Similarly, the limitations due to physical problems. Study Ji *et al.* 2014 on quality of life in patients with LBP also showed that there is a decrease in quality of life score in the group of patients compared to the control group. The quality of life of the sufferer has decreased significantly in eight life quality scales. It suggests that LBP in addition to disturbing the physical component also affects the mental component of a person's quality of life.[8] Therefore, the researchers are interested in examining the relationship between the intensity of pain and quality of life in patients with chronic LBP in Adam Malik General Hospital.

## 2. Material and Methods

### 2.1. Subjects

The population of general LBP in Adam Malik General Hospital reaches around 25 patients a week, while a sample of this study were chronic LBP patients who visit Adam Malik General Hospital which fulfilled the inclusion and exclusion criteria. We screened for 75 patients, and 29 patients included while 46 patients were an exclusion. The inclusion criteria in this study were the chronic LBP outpatients at Neurology Clinic from July to November 2015 and agreed to participate in the study by signing the informed consent. The exclusion criteria are secondary LBP caused by other than HNP and spondylosis (e.g., metastatic bone disease, urinary tract stone, spondylitis and other viscerogenic pain), patients with severe cognitive impairment (Mini-Mental State Examination < 10), patients and patients with severe depression (Hamilton Depression Score > 20).

### 2.2. Sample collection

Sampling technique in this study is by consecutive sampling, where all subjects who come and meet the selection criteria included in the study until the number of subjects that totaled 29 people.

### 2.3. Pain intensity

Pain intensity is a state of degree or intense measure of pain measured through interviews using the Short-Form McGill Pain Questionnaire (SF-911 MPQ). This questionnaire includes the Present Pain Intensity (PPI) index of standard MPQ and visual analog scale (VAS). The main component of SF-911 MPQ consists of 15 words, i.e., 11 sensory words and four effective words, rated on the intensity scale as 0=none, 1=mild, 2=moderate, or 3=severe. Furthermore, the three pain scores derived from the total value of the rating of the intensity of the selected words are distinguished over the sensory, effective and number of descriptors. In contrast, the VAS measurements were from painlessness (0-4 mm), mild pain (5-44 mm), moderate pain (45-74 mm) and severe pain (75-100 mm).

### 2.4. Quality of life

Quality of life is a concept related to one's physical health, psychological state, level of independence, social relationships, personal beliefs and their relation to the environment. This variable is measured through interviews using the SF-36 questionnaire. The value obtained is in the range 0-100% where the higher the value, the better the quality of life.

### 3. Results

#### 3.1. Characteristics of subjects

Of the total number of out-patients, 52% were females (n=15), and 48% were males (n=14) with age greater than 61 years old in both sexes. Out of 29 subjects, 90% (n=26) were diagnosed with spondylosis lumbalis and 10% (n=3) were HNP (Table 1).

**Table 1.** General characteristics of subjects.

Variables	n	%
Gender		
Males	14	48
Females	15	52
Age		
< 61	9	31
≥ 61	20	69
Diagnosis		
HNP	3	10
Spondilosis lumbalis	26	90

#### 3.2. Pain intensity

The most prominent pain characteristics are sensory pain (mean = 4.96, SD = 4.51) and VAS value (mean = 6.12, SD = 1.96) (Table 2).

**Table 2.** Characteristics of pain intensity.

Variables	Mean	SD
Sensory	4.96	4.51
Affective	2.21	2.81
VAS	6.12	1.96

#### 3.3. Correlation between pain intensity and quality of life

Data were calculated using IBM SPSS Statistic for Windows, Version 24.0. On overall subject, first, we measured the normality value of each variables using Shapiro-Wilk Test of Normality. After that; we were using Pearson's correlation test on normal distribution value and Spearman's correlation test on abnormal distribution value, we found correlation among VAS and physical function, limitations due to physical problems, limitations due to emotional problems, vitality, social function, the feeling of pain and general health. There was no connection between VAS on the other line and mental health (Table 3).

**Table 3.** Correlation between pain intensity and quality of life.

Variables assessed in subjects (n = 29)	VAS	
	r	p
Physical function	-0.606	<0.001 <sup>a</sup>
Limitation due to physical problems	-0.837	<0.001 <sup>a</sup>
Limitation due to emotional problems	-0.447	0.007 <sup>b</sup>
Vitality	-0.380	0.021 <sup>a</sup>
Mental health	-0.235	0.110 <sup>a</sup>

Social function	-0.403	0.015 <sup>b</sup>
The feeling of pain	-0.499	0.003 <sup>a</sup>
General health	-0.330	0.040 <sup>a</sup>

<sup>a</sup>Pearson's Correlation Test<sup>b</sup>Spearman's Correlation Test

#### 4. Discussion

In this study, chronic LBP diagnosis through anamnesis, physical and neurological examination and lumbosacral photo examination. The results showed that 52% of subjects were female and aged over 61 years. The study of Stefane *et al.* in 2011, of 97 LBP patients, 67 women (69.07%) and 30 men (30.93%) were aged > 60 years.[9] Similarly, the study of Yong *et al.* (2014), of 3121 LBP patients obtained 1997 (64%) female and 1124 (36%) male.[10]

Based on the SF-36 questionnaire used in this study to measure the correlation between the intensity of pain and quality of life it is known that almost all of the elements considered to provide significant results except for mental health ( $p = 0.110$ ,  $r = -0.235$ ). Study conducted [7] showed significant results in physical function ( $p = <0.01$ ,  $r = -0.477$ ), limitations due to physical problems ( $p = 0.005$ ,  $r = -0.277$ ), vitality ( $p = 0.002$ ,  $r = -0.304$ ), mental health ( $p = 0.002$ ,  $r = -0.305$ ) and feeling of pain ( $p = 0.0333$ ,  $r = -0.214$ ).

A study conducted by Shim *et al.* in 2014 in young men in Korea by comparing LBP groups with healthy groups found significant results for physical function, social function, vitality, feeling of pain, general health, limitations due to economic problems and limitations due to a physical problem with  $p = <0.001$ . While for mental health we also found a relationship but not significant ( $p = 0.154$ ).[11] The mental health element is a valid assessment of mental status and is useful for screening for psychiatric disorders.

Hart, 1988 in [11], describes the "sickness response" that limits movement and strength as a defense against injury or stressor. The three cytokines, interleukins (IL) -1, IL-6, and  $\alpha$ -tumor necrosis factor  $\alpha$  as prophylactic cytokines (PICs). These PICs initiate cellular cascade events, affect and aggravate pain by activating the glial cell system in the central nervous system, resulting in depression resulting from the altered hypothalamus-pituitary-adrenal axis, sleep disturbance due to changes in serotonin secretion and dopamine. It explains that chronic NPB and depression have similar pathophysiology, so the severe pain or depression mood can occur without tissue damage or pathological changes.

Almost 90% of the research subtext was with lumbar spondylosis. One of the causes of LBP is a lumbar spinal congenital anomaly. Spinal disorders affect the quality of life on the physical aspect compared to the mental aspects. Limitations of the research in this study are the patient's pain perception that is very subjective, so sometimes the results obtained are not appropriate especially patients were given questionnaires after physiotherapy. The small sample size was also our limitation so further study of pain intensity and quality of life should be encouraged in this matter.

#### 5. Conclusion

Pain intensity in outpatients with chronic LBP in the Neurology Clinic at Adam Malik General Hospital correlates with the patients' quality of life especially on the field of physical function, limitations due to physical problems, limitations due to emotional problems, vitality, social function, the feeling of pain and general health.

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