

Original Research Article

A comparative study of demographical and clinical characteristics on the level of pain severity

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ABSTRACT

Background: Pain is one of the global public health challenges. Pain is not only contributing to physical complaint but also mental and personality dimension as well as productivity issues. Severity of pain is affected by multiple factors, including biological, psychological, and social factors. The objective of the study was to analyse whether there is difference of severity level of pain among several demographical and clinical characteristics of patients with pain.

Methods: A hospital-based observational study was conducted with cross-sectional design for six months period. Population of research were patients with pain as the chief complaint treated at the neurology outpatient clinic. Eligible sample were obtained through consecutive total sampling technique. The difference of severity of pain (mild/moderate/severe) and 6 characteristics of patients (age group, sex, number of morbidities, body area of pain, onset and working diagnosis) were analysed. Chi square statistical analysis with SPSS version 17.0 was employed with p value <0,05 were regarded as significant level.

Results: Majority of patients were female (58.8%), in the 51-60 age group, at senior high school level and living in urban area. Almost half of the patients with pain have no history of comorbidity (45.9%), which relatively almost equal with patients with single comorbidity. Three mostly affected body areas were shoulder, wrist, and lower back. Majority of patients admitted with moderate level of pain. The onset of pain was mostly above 6 months before visiting the clinic. During the study period, the most frequently working diagnosis were carpal tunnel syndrome and osteoarthritis knee. In bivariate analysis, we found that among 6 demographical and clinical characteristics, body area of pain and working diagnosis have significant difference associated with severity of pain (p value<0.05).

Conclusions: There is significant difference of severity of pain based on body area of pain and working diagnosis. We could not detect significant difference of severity of pain based on age group, sex, number of comorbidity and onset of pain.

Keywords: Outcome, Pain epidemiology, Pain intervention, Pain management, Severity of pain

INTRODUCTION

Pain is one of the global public health challenges due to the increasing prevalence and incidence. Currently, each year, it is predicted that 1 in 5 adults will suffer from pain every year. Also, 1 in 10 adults have suffered chronic pain each year globally. Pain also have a connection to myriad social and economic aspect.¹

Pain is not only contributing to physical complaint but also mental and personality dimension as well as productivity issues. Pain has multiple serious sequelae such as depression, work performance problem, social problem, and negative thinking about life. There are collectively evidence that pain as a public health priority, and lead to the concept that pain management has as a human right.^{1,2} Severity of pain is affected by multiple

factors, including biological, psychological, and social factors. According to Montgomery, more severe pain among patients with some chronic low back pain is significantly related to health quality. Because severe pain could lead to reduced physical functioning, mental health, worker productivity, and increased health care use.³

The interaction between environmental and psychological factors may exacerbate pain perception.⁴ Better understanding to complex interaction of biopsychosocial issues in pain severity, would contribute to the better management of pain. This understanding will also lead to a well-planned intervention to investigate whether patients within different level of pain severity can benefit from different pain management. In addition, whether early pain management can affect the individual course of pain severity to favorable level would also be potentially addressed.⁴ Therefore, the objective of the study was to analyze whether there is difference of severity level of pain among several demographical and clinical characteristics of patients with pain.

METHODS

This study was a hospital-based cross-sectional study, conducted at Neurology outpatient's clinic of Prof. R. D. Kandou Hospital, a tertiary hospital in North Sulawesi province, Indonesia. Population of research were patients with pain visited sub-division of interventional pain clinic of neurology. During 6 months of study period, patients admitted to the clinic were consecutively recruited with total sampling technique. Inclusion criteria were new visited patients, willingness to participate in study and had family/caregiver at the time of examination.

Patients and their families/caregivers were informed about the objective of the study before consent was obtained. Primary data were collected with the interview with patient and/or caregivers at the first time of visit. Secondary data were obtained from medical record. Ethic permission were requested to the hospital Ethic Committee of the hospital. Six demographical, which are age, sex, educational level, living area, ethnicity, and employment status, were obtained. Age group were divided into 6 categories (up to 20 years old, 21-30, 31-40, 41-50, 51-60 and 61+ years old). Sex were consisted of female and male group. Educational level were followed commonly Indonesia educational system, which are elementary level (for 6-12 years old children), junior high school (for 13-15 adolescent), senior high school (for 16-18 adolescent) and university/academy (for youth above 18 years old). Living area were divided in urban area (the capital city of North Sulawesi province), semi-urban area (20-30 km from the capital city) and rural area (more than 30 km from the capital city).

Employment status were classified as formal sectors (for civil servant, registered industrial employment and police/army), informal sectors (other than formal sector),

pension, housekeeper/housewife) and other. Clinical characteristics consisted of 5 variables which were number of comorbidity (hypertension, diabetes, stroke, heart diseases, etc), body area of pain (patients were asked to point the most affected body area), severity of pain (mild if numerical rating scale/NRS was 1-3, moderate if NRS was 4-6 and severe if NRS more than 6), onset of pain and working diagnosis (clinical diagnosis at the first time of visited at the clinic, with or without additional results of examination previously).

In statistical univariate analysis, authors presented all descriptive data in number and percentage. In bivariate analysis, we implemented Chi-square test to find difference between several characteristics and severity level of pain, with p value <0.05 were regarded as significant level. During statistical analysis, SPSS version 17.0 was employed.

RESULTS

Majority of patients with pain visited neurology interventional pain clinic were female, in the 51-60 age group, finish senior high school level and living in urban area. Patients aged 60 and above were almost one-third of total patients.

Table 1: Distribution of demographic characteristics.

Characteristics	N=85	%
Age group (year)	≤ 20	1.2
	21-30	1.2
	31-40	7.1
	41-50	20
	51-60	42.4
	>60	28.2
Sex	Female	58.8
	Male	41.2
Education	Elementary	7.1
	Junior high school	5.9
	Senior high school	51.8
	University/Academy	35.3
Living area	Rural	36.5
	Semi-urban	3.5
	Urban	60
Ethnic	Minahasa	89.4
	Bolmong	1.2
	Gorontalo	2.4
	Java	4.7
	Ambon	1.2
	Sangihe	1.2
Employment status	Formal	22.4
	Informal	37.6
	Housekeeper	2.4
	Pension	8.2
	Other	29.4

Table 2: Distribution of clinical characteristics.

Characteristics		N=85	%
Number of comorbidity	None	39	45.9
	1	36	42.4
	2	6	7.1
	3	4	4.7
Body area of pain	Shoulder	17	20
	Scapula	1	1.2
	Fingers	7	8.2
	Knee	10	11.8
	Wrist	30	35.3
	Lower back	9	10.6
	Plantar pedis	4	4.7
	Neck	1	1.2
	Face	6	7.1
	Severity of pain	Mild	9
Moderate		65	76.5
Severe		11	12.9
duration of pain (month)	<1	1	1.2
	2-1	13	15.3
	6-3	37	43.5
	>6	34	40
Working diagnosis	Axial LBP	3	3.5
	Radicular LBP	2	2.4
	Cluster headache	1	1.2
	Carpal tunnel syndrome	29	34.1
	Facet joint pain	3	3.5
	Frozen shoulder	5	5.9
	Myofascial pain syndrome	7	8.2
	Neuralgia trigeminal	6	7.1
	Knee osteoarthritis	10	11.8
	Plantar fasciitis	3	3.5
	Rotator cuff syndrome	7	8.2
	Shoulder bursitis	1	1.2
	Trigger finger	8	9.4

Table 3: Distribution of severe pain status (NRS 7-10).

Working diagnosis	N=11	%
Axial LBP	0	0
Radicular LBP	0	0
Cluster headache	0	0
Carpal tunnel syndrome	2	18.2
Facet joint pain	1	9.1
Frozen shoulder	1	9.1
Myofascial pain syndrome	0	0
Neuralgia trigeminal	3	27.3
Knee osteoarthritis	1	9.1
Plantar fasciitis	1	9.1
Rotator cuff syndrome	0	0
Shoulder bursitis	1	9.1
Trigger finger	1	9.1

Table 1 revealed that most of the patients were Minahasan ethnic and working in informal sectors. Almost half of the patients with pain have no history of comorbidity (45.9%), which relatively almost equal with patients with single comorbidity (such as hypertension, diabetes, heart disease, etc). Three body area were mostly affected were shoulder, wrist and lower back. Majority of patients admitted with moderate level of pain which were suffered mostly above 6 months before visiting the clinic.

During the study period, the most frequently working diagnosis were carpal tunnel syndrome and osteoarthritis genu (Table 2). Table 3 showed that, among condition admitted with severe level of pain, neuralgia trigeminal was the most painful condition based on patients experience (27.3%), followed by carpal tunnel syndrome (18.2%).

In bivariate analysis, we found that among 6 demographical and clinical characteristics, body area of pain and working diagnosis have significant difference associated with severity of pain. We did not find any significant difference between age group, sex, number of comorbidity and onset of pain with severity of pain (Table 4).

Table 4: Comparison of demographic and clinical characteristics based on severity of pain

Characteristics		Severity of pain						Total	P value	
		Mild		Moderate		Severe				
		N	%	N	%	N	%	N		%
Age group (year)	≤ 20	0	0	1	100	0	0	1	100	0.89
	21-30	0	0	1	100	0	0	1	100	
	31-40	1	16.7	3	50	2	33.3	6	100	
	41-50	1	5.9	14	82.4	2	11.8	17	100	
	51-60	5	13.9	26	72.2	5	13.9	36	100	
	>60	2	8.3	20	83.3	2	8.3	24	100	
Sex	Female	2	5.7	29	82.9	4	11.4	35	100	0.39
	Male	7	14	36	72	7	14	50	100	

Continued.

Characteristics		Severity of pain						Total	P value	
		Mild		Moderate		Severe				
		N	%	N	%	N	%	N		%
Number of comorbidity	0	4	10.3	28	71.8	7	17.9	39	100	0.46
	1	4	11.1	30	83.3	2	5.6	36	100	
	2	0	0	5	83.3	1	16.7	6	100	
	3	1	25	2	50	1	25	4	100	
Body area of pain	Shoulder	2	11.8	13	76.5	2	11.8	17	100	0.03
	Scapula	0	0	1	100	0	0	1	100	
	Fingers	4	57.1	2	28.6	1	14.3	7	100	
	Knee	1	10	8	80	1	10	10	100	
	Wrist	0	0	28	93.3	2	6.7	30	100	
	Lower back	2	22.2	6	66.7	1	11.1	9	100	
	Plantar pedis	0	0	3	75	1	25	4	100	
	Neck	0	0	1	100	0	0	1	100	
	Face	0	0	3	50	3	50	6	100	
Duration of pain (month)	<1	0	0	1	100	0	0	1	100	0.06
	2-3 Jan	3	23.1	8	61.5	2	15.4	13	100	
	4-6 Mar	6	16.2	28	75.7	3	8.1	37	100	
	>6	0	0	28	82.4	6	17.6	34	100	
Working	Axial LBP	1	33.3	2	66.7	0	0	3	100	0.02
Diagnosis	Radicular LBP	0	0	2	100	0	0	2	100	
	Cluster headache	0	0	1	100	0	0	1	100	
	Carpal tunnel syndrome	0	0	27	93.1	2	6.9	29	100	
	Facet joint pain	0	0	2	66.7	1	33.3	3	100	
	Frozen shoulder	1	20	3	60	1	20	5	100	
	Myofascial pain syndrome	2	28.6	5	71.4	0	0	7	100	
	Neuralgia trigeminal	0	0	3	50	3	50	6	100	
	Knee osteoarthritis	1	10	8	80	1	10	10	100	
	Plantar fasciitis	0	0	2	66.7	1	33.3	3	100	
	Rotator cuff syndrome	0	0	7	100	0	0	7	100	
	Shoulder bursitis	0	0	0	0	1	100	1	100	
	Trigger finger	4	50	3	37.5	1	12.5	8	100	

DISCUSSION

The objective of the study was to analyse whether there is difference of severity level of pain among several demographical and clinical characteristics of patients with pain. It is agreed that pain is a multifactorial and a complex phenomenon because there are multiple factors that contribute to shape the interaction that would be peripheral, psychological, and neurological.⁴

In this study we found that based on demographical data majority of patients were female, in the late middle age group, with relatively good sufficient educational level and living in urban area. Montgomery also reported that in their study, the sample had a mean age of 56 years; 41% were females and 56% were employed.³ This result

is in line with the previously research that found that participants within the mild and moderate level of pain, were more likely to have a greater body mass index, be less physically active, have more emotional problems, be unemployed, have a lower education level, have more comorbidities and a greater number of painful site when compared to the minimal level.⁴

In this study we found that almost half of the patients have at least a comorbid condition. Hypertension was the most common comorbidity (not included in the table). In the study by Pan et al, the relationship between some comorbidities and pain level were also studied. Some common conditions including diabetes, heart attack, hypertension, thrombosis, asthma, bronchitis/emphysema, osteoporosis, hyperthyroidism, hypothyroidism, rheumatoid arthritis was also collected.

The result of the study found that more comorbidities will lead to more severe the level of pain. This is in line with some conclusion that comorbidity is regarded as one of the most important risk factors for pain.⁴

In the present study, we found that 3 mostly affected body areas were shoulder, wrist, and lower back. We did not collect data about other body areas that might be suffer from pain with lesser degree. However, it has been proposed that the interaction between widespread pain and psychological problem may lead to pain sensitization underpinning chronic pain.

People with sensitization tend to have a greater pain intensity, more widespread pain, and psychological problems. Pan et al found that the more body work area affected by pain, in the support of the presence of emotional problems, were a risk factors for belonging to the higher level of pain group. This means that there is a role of sensitization in developing of worse level of pain.⁴

In the current study, we found that majority of patients admitted with moderate level of pain. The level of pain severity might bring anxiety and depression. The manifestation and progression of chronic pain is also affected by psychological issues. The development to the higher level of pain severity, would lead the patients to be more dependent, physically, and psychologically. Furthermore, various dimension of daily life would also be affected as higher severity of pain that will impar both work and nonwork performances and productivity.³

The duration of pain was mostly above 6 months before visiting the clinic. Duration of pain lead to central sensitization might associated with brain morphometry. Research in fibromyalgia revealed that grey matter volume loss in anterior cingulate and prefrontal cortex showed moderate correlation with central sensitization. In their study, Alshuft reported that duration of chronic arthritis pain associated with the increasing cortical thinning in extended cerebral cortical regions beyond recognised pain-processing areas.⁵

According to Perez, patients with chronic pain have suffered for deterioration of quality of life due to some delays in receiving treatment that, when wait times are longer than 6 months.⁶ A study on neuropathic pain by Melikoglu found that the duration of neuropathic pain, in interaction with other factors, has correlated with quality of sleep, and in general health-related quality of life.⁷ Therefore, the duration of pain in this study might affect the level of severity which mostly moderate to severe based on patients' experiences.

During the study period, the most frequently working diagnosis were carpal tunnel syndrome (CTS) and knee osteoarthritis. It is in line with the previous study by Kastilong that found 60 cases in duration of five months study period. They reported that CTS is the most common peripheral neuropathy entrapment that accounts

for about 90% of all entrapment neuropathies. It occurs in approximately 3.8% of the general population, with the incidence rate of 276:100000 per year.⁸

Knee osteoarthritis is also commonest type of arthritis and responsible for musculoskeletal problem globally.⁹⁻¹⁰ In bivariate analysis, we found that among 6 demographical and clinical characteristics, body area of pain and working diagnosis have significant difference associated with severity of pain (p value <0.05). Majority of severe case in this study was due to neuralgia trigeminal. Neuralgia trigeminal is considered as one of the most dreadful pain conditions due to its severe and excruciating nature of pain. Mild stimulation in the face area might trigger an excruciating pain.

Limitation of the study include no MRI-detected structural pathology, since the data were obtained in the first visit, except for some patients who underwent the examination before visited the clinic. We also did not collect data on concomitant condition of pain in other body area which might be suffer from pain with the lesser degree. In addition, we also did not correlate the severity level with activities of daily living or quality of life in general.

CONCLUSION

Among patients with pain visited our clinic, we found there is significant difference of severity of pain based on body area of pain and working diagnosis. We failed to detect any significant difference of severity of pain based on age group, sex, number of comorbidity and onset of pain.

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