

# Characteristics of Pain and Comorbidities in Geriatric Subjects in Indonesia: A Hospital-based National Clinical Survey

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## ABSTRACT

**Background.** Pain is one of the most common health problems often experienced by the elderly. Research on pain and its comorbidities in elderly are crucial, because it relates to disability and impairment in quality of life. Unfortunately research related to pain in the elderly and co morbidities are still limited in Indonesia, better understanding about pain can be a vital consideration of treatment and drug consideration. This study was conducted to provide an overview of pain and its comorbidities in elderly.

**Materials and methods.** This was an observational cross sectional study to 949 subjects. Subjects were recruited from outpatients neurology department in 10 big cities Hospitals in Indonesia. Data obtained from subjects who completed the self-made pain questionnaire and medical records. Subjects were characterized based on type of pain, location of pain, properties of pain, time of exacerbation, and comorbidities. All data were processed descriptively.

**Results and conclusion.** A total of 949 subjects met the inclusion criteria. The subjects consist of 476 (50.16%) female and 473 (49.84%) male, with common age group between 60-74 years (80.08%). The Most common pain characteristic are mild pain intensity (46.79%), mixed type of pain (44.68%), chronic pain (64.59%), multiple site pain location (45.42%) and uncertain time pain exacerbation (37.40%). Six hundred and eighteen (65.12%) subjects have comorbidity and 331 (34.88%) without comorbidity. The most common comorbidity found were hypertension (41.31%) and diabetes (14.23%), with 561 (90.78%) subjects have 1 comorbidity. These study provide the overview of the geriatric problems especially in pain and the comorbidities so that the clinician can provide a comprehensive management of pain problems in geriatric.

**Keywords:** pain, characteristic, prevalence, comorbidities, geriatric

## INTRODUCTION

In the past few years, geriatric people comprise the fastest growing segment of the world's population. The number of people worldwide, aged 65 years and older was estimated at 506 million as of 2008 and by 2040 will increase to 1.3 billion. The criteria for geriatric people in Indonesia is the age of 60 years old and older. In 2014, the amount of geriatric population reaches 20.24 million people, equiv-

alent to 8.03% of all Indonesians in 2014. In Yogyakarta (13.05%), Central Java (11.11%), and East Java (10.96%) are the top three province with the biggest geriatric populations in Indonesia. As patients aged, the incidence and prevalence of certain pain syndromes increase. Geriatric patients are more likely to have arthritis, bone and joint disorders, cancer and other chronic disorders associated with pain [1,2].

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The International Association for the Study of Pain (IASP) determine pain as “An unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage [3].

There was no difference between geriatric pain classification with other age groups. Pain can be classified pathophysiologically as either nociceptive or neuropathic in origin. Alternatively, pain may be mixed. Mixed type pain is a combination of both nociceptive and neuropathic. Nociceptive pain may be either visceral or somatic and is due to stimulation of pain receptors. The most common cause of neuropathic pain in other elderly people is a result of inflammation or musculoskeletal or ischemic disorders. Patients with nociceptive pain are treated pharmacologically with both opioid and nonopioid agents as well as non-pharmacologic interventions. Neuropathic pain results from a pathophysiologic disturbance of either the peripheral or the central nervous system. In the elderly, common examples include postherpetic neuralgia and diabetic neuropathy. Neuropathic pain less likely respond to nociceptive pain treatment and more likely to respond to adjuvant agents such as anticonvulsants and antidepressants. Pain of mixed origins may respond to administration of agents that treat for both nociceptive and neuropathic pain [4-6].

Besides pain, geriatric patients have other health problems such as hypertension, diabetes mellitus, cardiovascular disease and many more. These conditions can affect their quality of life. Research about the type of pain in the elderly and the comorbidities are rarely done so this research can provide an overview of the characteristic and the co morbid of pain in geriatric patients in Indonesia.

## MATERIAL AND METHODS

This was an observational descriptive study with cross sectional design from period of 2017 to 2018. Nine hundred and forty nine subjects who fulfilled the inclusion and exclusion criteria were recruited for this study. Data was acquired from 10 Hospitals in Yogyakarta, Aceh, Palembang, Solo, Malang, Pekanbaru, Manado, Bandung, Makassar and Bali. Data obtained from interviews and observing medical records were processed by statistical methods.

Subjects were recruited using non-random sampling with consecutive sampling, where sampling was based on all subjects who fulfilled the inclusion and exclusion criteria in the study within a certain period of time. The inclusion criteria in this study were patients aged  $\geq 60$  years, both men and women with complaints of neuromuscular pain with at least 1 medical comorbidity and willing to be the subject research by signing informed consent and agreed to be interviewed. Test subjects who met the inclusion

criteria and agreed to be interviewed in this study as many as 949 people.

The instrument used in this study was a self-made pain questionnaires that corresponds to pain management guide to evaluate pain in subjects. Data retrieval conducted by interviewing subjects enrolled in hospital and medical records to ensure the subjects answers related to subjects comorbidity. All the subjects completed the pain questionnaires prior to meeting with a neurologist. From the results of interviews and medical records. Data is processed for descriptive statistics to give overview about the characteristic of pain (intensity, type, properties, location, time of exacerbation) and comorbidity in this study.

## RESULTS

TABLE 1. Subjects Characteristics

Characteristics	Subjects (n=949)	Percentage (%)
Sex		
a. Male	476	50.16
b. Female	473	49.84
Age		
a. 60-74 years	760	80.08
b. 75-90 years	189	19.92

From a total of 949 subjects from 10 different hospitals participated in this study. Table 1 presents the subjects characteristics based on sex and age. 476 (50.16%) subjects were male and 473 (49.84%) subjects were female. This study found that 80.08% of total subjects are belong in the age group of 60 – 74 years old, while 19.92% are belong in 75 – 90 years old age group.

TABLE 2. Pain Characteristics in Geriatric Patients

Pain Characteristic	Subjects (n=949)	Percentage (%)
Pain Intensity		
a. Mild	444	46.79
b. Moderate	403	42.47
c. Severe	102	10.75
Type of pain		
a. Neuropathic	216	22.76
b. Inflammatory	309	32.56
c. Mixed	424	44.68
Properties of pain		
a. Acute	336	35.41
b. Chronic	613	64.59
Location of Pain		
a. Extremities	55	5.80
b. Back	283	29.82
c. Head	160	16.86
d. Multiple Side	431	45.42
e. CPSP	20	2.11
Time of Pain Exacerbation		
a. Morning	234	24.66
b. Afternoon	170	17.91
c. Evening	190	20.02
d. Uncertain	354	37.30

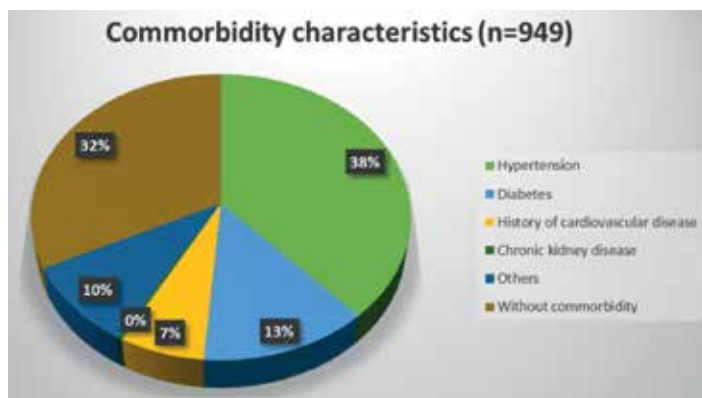


FIGURE 1. Comorbidity characteristics among geriatric patients

To the reference of the pain characteristics, the most experienced intensity of pain is mild pain with 444 (46.79%) subjects, while the least experienced intensity of pain is severe pain, with 102 subjects (10.75%). The intensity of pain was assessed using visual analog score (VAS) with the score interpretation are divided into mild (1-3), moderate (4-6), and severe (7-10). It was also found, that the most experienced type of pain is mixed pain (44.68%), followed by inflammatory pain (32.56%) and neuropathic pain (22.76%). The properties of pain are divided into chronic pain and acute pain, with chronic pain interpreted as pain more than 6 months and acute pain as pain less than 6 months. Chronic pain (64.59%) is more commonly found in the subjects, more than acute pain (35.41%).

The pain exacerbation is mostly occurred in the morning (24.66%), followed by afternoon (17.91%) and evening (20.02%). However, 37.3% of subjects are uncertain with the time of pain exacerbation they experienced. The location of the pain is mostly found at multiple sites (45.42%), whereas central post-stroke pain (CPSP) (2.11%) is the least found pain among the subjects.

Based on the results shown in Table 3, out of 949 subjects who experienced pain, over 65.12% subjects have medical comorbidity. The most common comorbidity in geriatric subjects is hypertension in 392 subjects (41.31%), followed by diabetes with 135 subjects (14.23%), history of cardiovascular disease in 68 subjects (7.17%), chronic kidney disease in subjects (0.42%), and other diseases in 97 subjects (10.22%).

TABLE 3. Comorbidity Variation in Geriatric Patients

Comorbidity variation	n=618	%
1 comorbid	561	90.78
2 comorbids	37	5.99
3 comorbids	18	2.91
4 comorbids	2	0.32

Table 4 shows the comorbidity variation in subjects. From 618 subjects with comorbidities 561

(90.78%) subjects have one comorbidity and 57 (9.22%) subjects have more than one comorbidities. Out from 57 patients with multiple comorbidities, 37 (5.99%) subjects have two comorbidities, 18 (2.91%) subjects have three comorbidities, and 2 (0.32%) subjects have four comorbidities.

## DISCUSSION

Nine hundred and forty nine patients from 10 hospitals in Indonesia were enrolled in this study. Table 1 presents the subjects characteristics based on sex and age. Four hundred and seventy six (50.16%) subjects were male and 473 (49.84%) subjects were female.

This study found that pain is mostly found in male subjects, more than female. Different from the result of this study, the other study found that pain is more commonly found in women [7,8,9]. The different pain prevalence between male and female may occur because various factors, such as socio-demographic and psychological [10]. According to socio-demographic factor, female are more prevalent to have pain than male, because female have lower pain threshold and pain tolerance than male. However, according to psychological factor, female is able to cope the pain sensation better than male. In terms of pain rehabilitation and medication, male subjects have tendency to develop mood disturbance that can affect pain rehabilitation and medication in a long term [11].

From this study, subjects in the range of 60-74 years old are most frequent group that experience pain (n =760, 80.08%) compare to subjects in 75-90 years old (n=189, 19.92%). Prevalence of pain in geriatric patients is increasing by age, however, some of geriatric patients were not complaining the pain they experienced, because they believe pain is normal in aging process [12].

In this study, more subjects experienced mild pain, compared to moderate and severe pain. This result is different with the previous study that found severe pain is the most common pain intensity in

geriatric patients [8]. The difference between these studies might be caused by the subjective nature of pain itself, where pain is based on the personal understanding and experience of each person. Also, the pain threshold of each person is different one from another.

Mixed type of pain is more commonly found than the other type of pains. Mixed pain is a state of unpleasant sensory sensation that comes from different sources or in combination of nociceptive and neuropathic pain [13]. Inflammatory pain is any pain that occurred as a result of the inflammatory response, through cytokines and other mediators [14]. Neuropathic pain defined as a sensation that occurred from abnormal discharges of deformed nervous system-related structures, either central or peripheral nervous system [15].

Chronic pain is found in more than half of the total subjects that participated in this study. This result is similar with previous study, that found chronic pain is the most common type of pain in geriatric patients. Prevalence of chronic pain in geriatric patients are varies between past studies, where it can reach as high as 85% and as low as 20.9%. This variation can be affected by several factors, such as socio-demographic differences, different pain evaluation methods and the different definitions of chronic pain by the researchers [12,16].

Patients that were having pain in the morning are dominantly found in this study. The geriatric patients mostly experience pain in the morning, which can be caused by the stiffened joints of the geriatric patients and the wearing-off effect of the painkiller medication from the previous night [17].

Subjects with multiple-site pain are more commonly found than subjects with single pain location. These findings are in line with the previous study that found multiple-sited pain is commonly found in geriatric patients. Among subjects with single pain location, back pain is the most common pain found in geriatric subjects in this study. This finding is in line with previous study that found among the pain

with single location, back pain is more commonly found in geriatric patients [7].

Pain is frequent among older adults and oftenly occurs as a result of many chronic diseases, such as history of heart disease, end stage renal failure, diabetes and other diseases associated with chronic pain [12]. Hypertension is the most commonly found comorbidity in this study. The result is in accordance with the previous studies, that found hypertension is the most common comorbidity found in geriatric patients [9,18]. Chronic pain may be associated with the increase risk of hypertension. This might be explained by the alteration in pain regulatory system, that is promoted by the decrease of baroreceptor sensitivity in patient with chronic pain [19]. Subjects with single comorbidity are found more often than subjects with multiple comorbidities. Past study show that geriatric patients might have one or more health problems that can affect patient's life [20]. The statement is in accordance with the results in this study, whereas 561 subjects (90.78%) have one comorbidity, and the rest of the subjects have more than one comorbidities.

## CONCLUSION

From 949 geriatric patients with pain, over 65.12% have comorbidities and 90% patients have only 1 comorbidities. Hypertension (41.31%) is the most common condition experienced by geriatric patients. Data suggests geriatric patients often complaint mild pain (46.79%) compared to other pain intensity. Other findings in this study show that more geriatric patients experienced mixed type pain (44.68%) than any other type of pain. From the duration of the pain, the majority of patients have chronic pain (64.59%) than the acute one that occurs in several site of the body with uncertain exacerbation time. These study can provide the overview of the geriatric problems especially pain and the comorbidities so that the clinician can provide a comprehensive and appropriate management of pain problems in elderly.

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