



# Pain Characteristic and Its Impact in Geriatric Patients

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## Abstract

**Background:** Advanced age has the risk of certain health disorders that can cause pain. It becomes big problem since it often leads to serious health problems such as increased depression and decreased the quality of life. To better understand management of pain in geriatric, recognizing pain's characteristic and its impact in geriatric patients are needed.

**Purpose:** The primary concern of this study was to identify pain characteristic and its impact in geriatric patients.

**Methods:** In this cross-sectional study, the data were obtained from geriatric patients (more than 60 years old) that attend internal medicine clinic and neurology clinic in Bethesda hospital Yogyakarta Indonesia. We collect the data about the type of pain, pain characteristic, pain severity and pain impact.

**Results:** From 134 patients, 72 (53.73%) were female and 107 (79.85%) patients aged between 60-74 years old. Of all patients, 60 (44.78%) had inflammatory pain and 88 (65.67%) had moderate pain. In terms of pain duration 94 (70.15%) reported chronic pain and 40(29.85%) with acute pain. With regard to location, most had low back pain 47.76%, shoulder pain 14.18 % and then knee pain 13.43%. Of all patients, pain also had a negative impact in activity, sleep and emotion. Pain can disturb sleep 87 (64.47%), activity (85.82%), and emotion (51.49%).

**Conclusion:** There has been high prevalence of chronic pain among the elderly. Moderate and low back pain were the most frequent. Pain can disturb activity, sleep, and activity of the elderly.

**Keywords:** Pain characteristic; pain impact; Geriatric patients

## Introduction

Elderly men and women represent the fastest growing demographic in the world's population. WHO 2018 reported by 2050 the number of people aged 60 years and older is expected to total 2 billion, up from 900 million in 2015. With advancing age, pain is the most problem in elderly people [1]. Studies suggest 25% to 50% of community dwelling elderly report pain and that for elderly residents in nursing home the prevalence of pain is as high as 80% [2]. The pain is a common subjective symptom among adults older than age 65. Studies indicate that more than 50% of older adults suffer chronic pain [3], and the pain prevalence among

patients at long-term geriatric care facilities is estimated at 48%-79% [4].

Chronic pain is one of the most prominent causes of disability worldwide and represents a major challenge for public health. Elderly Patients with chronic pain have reported a significant impact on their functional impairment, falls, slow rehabilitation, mood changes (depression and anxiety), decreased socialization, sleep and appetite disturbance, and greater healthcare use and costs [5]. Consequences of untreated pain include unnecessary suffering and impaired quality of life, functional loss, depression

and behavioral disturbances including aggression, agitation, and wandering [6-8].

However, pain characteristic and its impact in elderly patient in Indonesia is still rarely studied. The primary concern of this study was to identify pain characteristic and its impact in geriatric patients. With identify pain characteristic and it 's impact in geriatric patient, doctor and caregiver can do pain management based on the pain characteristic and it's impact in geriatric patient.

## Methods

This is a cross sectional study with standardized pain assessment tools from Brief Pain Inventory. The data were obtained from geriatric patients (more than 60 years old) that attend internal medicine clinic and neurology clinic in Bethesda hospital Yogyakarta Indonesia. The eligible criteria for study subjects were: male and female, age 60 years old and above, can communicate effectively, and give consent to join the study. We collect the data about the type of pain, pain characteristic, and pain

severity. The pain impact was systematically measured to the sleep quality, activities, and emotional status. The information about the medication were collected systematically using the electronic medical record and prescribing information system. The data were analyzed descriptively using standard statistical software. This study obtained ethical approval form Duta Wacana Christian University School of Medicine Ethic Committee.

## Results

From 134 patients, 72 (53.73%) were female and 107 (79.85%) patients aged between 60-74 years old. Of all patients, 60 (44.78%) had inflammatory pain and 88 (65.67%) had moderate pain. In terms of pain duration 94 (70.15%) reported chronic pain and 40(29.85%) with acute pain. With regard to location, most had low back pain 47.76%, shoulder pain 14.18 % and then knee pain 13.43%. Off all patients, sometimes pain disturb sleep 51.33%, activity 52.99% and emotion 39.55%. After treatment, most patients had decrease of pain >50% (36.57%), 30-50% (23.13%) (Table 1).

**Tabel 1:** Characteristic patients in geriatric pain.

Variabel	Responden	
	N	%
Gender (n=134)		
Male	62	46,27
Female	72	53,73
Age		
60-74 years	107	79,85
75-90 years	27	20,15
Degree of Pain		
Low (skala 1-3)	27	20,15
Moderate (skala 4-6)	88	65,67
Severe (skala 7-10)	19	14,18
Type of pain		
Neuropathic	24	17,91
Inflammatory	60	44,78
Mix Pain	50	37,31
Character of pain		
Acute	40	29,85
Chronic	94	70,15
Location		
Shoulder pain	19	14,18
Low back pain	64	47,76
Head and neck pain	6	4,48
Knee pain	18	13,43
<i>Multipe site pain</i>	3	2,24

Etc	24	17,91
Disturb sleep		
No disturb	47	35,07
Sometimes disturb	70	51,31
Very disturb	17	13,16
Disturb activity		
No disturb	27	35,07
Sometimes disturb	71	52,99
Very disturb	44	32,83
Disturb emotion		
No disturb	65	48,51
Sometimes disturb	53	39,55
Very disturb	16	11,94
Worsen time		
Morning	38	28,36
Afternoon	21	15,67
Night	22	16,42
Day long	2	1,49
Uncertain	51	38,06
Decrease of pain		
No	6	4,48
Reduced 30-50%	31	23,13
Redued > 50%	49	36,57
Undescribed	48	35,82
Another comorbid		
Stroke	34	25,37
Diabetes Mellitus	11	8,21
Dyslipidemia	9	6,72
Gastrointestinal disorders	16	11,94

## Discussion

Pain characteristic in adult/geriatric is different with the pain characteristic in young/pediatric patient. The study by King et al (2011) estimate the prevalence of chronic pain in the young patient (pediatric). In young or pediatric patient, headache is most prevalent and is reported in 8% to 83% of children, followed by abdominal pain (4%–53%), musculoskeletal pain (4%–40%), and back pain (14%–24%). In adult or geriatric patient, concert with age-associated changes in somatosensory function, chronic comorbidities often contribute to pain, including musculoskeletal disorders, diabetes, and cancer, particularly with advanced stages of chronic disease. In addition, pain may result from treatments, such as surgery and chemotherapy. From this study, musculoskeletal related pain (low back pain) is the most common site of pain in geriatric patient [9].

Pathophysiological pain research studies have taught us that the pain signal initiates from the stimulation of peripheral nociceptor nerve terminals from specific receptors/ ion channels. Pain circuitry activates nociceptors in response to painful stimuli. Pain is signaled to the brain via a wave of depolarization. Such depolarization encompasses a discharge of sodium and potassium, via sodium channels. The surge of sodium is transmitted to first-order neurons ending in the brain stem within the trigeminal nucleus or dorsal horn of the spinal cord. Sensory information is then spread via small-diameter C-fibers terminating within individual regions of the dorsal horn of the spinal cord (laminae I-IV), from where the signal is transmitted to the brainstem, thalamus, and higher cortical centers [10]. Within this structure, the electrochemical signal opens voltage-gated calcium channels in the presyn-aptic terminal for calcium to enter and allow glutamate to release into the synaptic space. Glutamate connects

with N-methyl-D-aspartate (NMDA) receptors on the second-order neurons producing depolarization. These neurons cross over the spinal cord and ascend to the thalamus, where they synapse with third-order neurons, after which they connect to the limbic system and cerebral cortex.

Neurophysiologic changes associated with aging seem to influence pain processing, with evidence to support a general increase in pain threshold and reduced pain tolerance from deterioration of the pathways involved in endogenous inhibition. An age-related increase in pain threshold to thermal stimuli may be related to loss in the structure and function of the peripheral (A delta fibers) and central nervous system (CNS) pathways implicated in the processing of noxious information [11]. Experimental pain studies provide some evidence of reduced sensitivity to mild pain with advancing age, particularly for thermal pain. Other types of pain stimuli (i.e., mechanical, electrical) are more equivocal, with reports of no change or decreased thresholds in older adults. In contrast, results from 10 independent studies showed reduced pain tolerance as a function of age, irrespective of stimulus method [12,13]. In addition, temporal summation of noxious heat is enhanced in the CNS of older adults compared with younger individuals [14]. Age-related impairment in opioid and nonopioid mechanisms of the endogenous pain inhibitory systems have been described, showing less than a third of the strength of induced effects on sensitivity when compared with younger adults [15]. Collectively, these studies suggest that aging increases vulnerability to persistent severe pain owing to reduced pain tolerance and impaired endogenous pain-modulating capacities.

Pain in older adults is a significant problem worldwide, and is associated with reduced activity, falls, mood disorders, sleep disturbances, isolation, and substantial disability; factors that compromise quality of life and well-being. Persistent pain may lead to frailty, compromising general health and functional status [16,17]. From this study, chronic pain in geriatric patient is higher than acute pain (70,15% and 29,85%) and it can disturb activity, sleep, and emotion. Although pain management can be successfully implemented for most older adults, pain remains undertreated in the oldest old, African Americans, and ethnic minorities, as well as in individuals with cognitive impairment [18]. Overall, older adults are less likely to receive analgesics compared with young adult patients despite the significant ramifications to general health and well-being [19]. Specific physiologic changes in older adults need to be considered when selecting appropriate analgesic therapy [11]. Older adults have reduced intravascular volume and muscle mass, which may alter drug distribution resulting in increased plasma levels relative to younger individuals, and leading to increased volume of distribution of fat-soluble opioids (i.e., fentanyl) because of greater fat/lean body mass ratio, whereas decreased total body water can result in increased plasma levels of hydrophilic opioids

(i.e., morphine). Renal clearance (glomerular filtration, tubular reabsorption, and secretion) decreases at a rate of 6% to 10% per decade beginning at age 30 years.

Thus, reduced renal function without underlying kidney disease is common in older adults. In addition, hepatic clearance is reduced because of decreased hepatic blood flow. Nonsteroidal anti-inflammatory drugs are not recommended by the American Geriatrics Society, especially long-term use because of the high risk of adverse effects on the gastrointestinal, cardiovascular, and renal systems. Dosage reductions (25%–50%) of other medications used to treat pain in older adults are typically necessary, particularly at initiation of treatment [20]. In this study, by administering pain medication can reduce pain <50% in geriatric patient.

## Conclusion

There has been high prevalence of chronic pain among the elderly. Moderate and low back pain were the most frequent. Pain can disturb activity, sleep, and activity of the elderly. Because of that, the good management of pain in geriatric is important to reduce pain in geriatric and make geriatric patients live well.

## Authors' contribution

RP - Concept and design of the study, manuscript preparation, statistically analyzed and interpreted, critical revision of the manuscript.

FB - Concept and design of the Study, collected data, preparing first draft of manuscript, critical revision of manuscript and review of the study.

YF - Concept and design of the Study, collected data, preparing first draft of manuscript, critical revision of manuscript and review of the study.

## Source of Support

Nil.

## Conflict of Interest

None declared.

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