Original Research

ASSESSING THE PREVALANCE OF PAIN AND THE EFFICACY OF PAIN MANAGEMENT FOR HOSPITALIZED ELDERLY PATIENTS IN INTERNAL MEDICINE DEPARTMENT OF THONG NHAT HOSPITAL

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Abstract: We conducted this study to assess the prevalance of pain and the efficacy of pain management for hospitalized elderly patient in Internal Medicine Department of Thong Nhat hospital from 4/2024 to 7/2024. Cross-sectional study at two time points 246 of eligible hospitalized elderly patients were assessed for pain by using the Vietnamese version of Brief Pain Inventory short form. Patients who experienced pain were then re-assessed again after 7 days by using the same measurement tool. Besides, data on demographic factors clinical characteristics and medication use were collected from medical records during the last days. The prevalance of pain among 246 hospitalized elderly patients was relatively high at 51.22% and significantly related to injuries (p < 0.001), musccular- skeletal disorder (p < 0.0001), surgical disease (p= 0.023). The common locations of pain were leg, head, abdomen and back. Among patient with pain, the median score of worst pain, the average pain and the interview pain was 7.3±1.86; 5.18 ± 1.83; 4.91± 2.27 (on a scale from 0 to 10). Pain affected all daily activities of elderly patients, 65.9 % patients with pain experience serve pain related interference. 71.4% of hospitalized elderly patients with pain reported therapeutic efficacy (cut off as 50% of pain reduction). A large portion of patients were treated by using acetaminophen (69.8%), topical pain relief (33%), antiepileptic drugs (31.7%), NSAID (13.5%), morphin (0.8%). Pain is a common problem with high intensity and severe impairment of daily activities in hospitalized elderly patients, significantly related to injuries, musccular- skeletal disorder, surgical disease. Result of this study emphasizes the role of appropriate pain asessment and management to improve the treatment effectiveness and the quality of life of elderly patients.

Keywords: *pain; pain management; pain related interference*

1. INTRODUCTION

Pain is a common symptom, especially among the elderly. Pain prevalence is reported to be as high as 73% in community-dwelling older adults and increases to 80% in those living in nursing homes [1]. Furthermore, 45.8% to 77.7% of hospitalized patients experience this symptom [2,3]. The most common pain conditions affecting older adults are typically musculoskeletal-related, followed by chronic diseases that can also lead to pain, such as diabetic complications, cancer-related pain, and post-stroke pain [4].

Pain significantly impacts the elderly across multiple domains, including work, daily activities, mobility, mental state, sleep, enjoyment of life, and relationships. However, pain assessment and treatment are often inadequate, leading to suboptimal pain management. Many international studies have evaluated pain prevalence and management efficacy, but most focus on specific disease groups rather than the elderly population with its characteristic multimorbidity. Moreover, few such studies have been conducted in Vietnam. Several pain assessment scales exist, including the Brief Pain Inventory short form (BPIsfvn) developed by Charles S. Cleeland [5]. This is a widely used, highly valid, reliable, easy-to-understand pain assessment tool applicable to diverse populations and age groups, including the elderly. It has been translated into many languages, including Vietnamese. Therefore, we utilized this tool in this study to assess pain and its management in geriatric patients, aiming to propose timely interventions to improve their quality of life. The study objectives are:

- To survey pain status: prevalence, related factors, pain intensity, level of pain-related interference.
- To survey the effective pain reduction rate and pain management practices.

2. SUBJECTS AND RESEARCH METHODS

2.1. Research Subjects

- **Inclusion Criteria:** Patients ≥ 60 years old admitted to the Internal Medicine Department at Thong Nhat Hospital during the study period who did not meet any exclusion criteria.

- **Exclusion Criteria:** Patients meeting any of the following: coma or impaired consciousness; requiring or currently receiving mechanical ventilation; moderate or severe dementia; psychiatric illness; refusal to participate in the study

2.2. Research Methods

- **Study Design:** Prospective descriptive cross-sectional study at two time points: upon admission and 7 days after admission or at discharge if the hospital stay was less than 7 days. Conducted in the Internal Medicine Department from April 2024 to July 2024.

- **Sampling Method:** Convenience sampling.

- **Sample Size:** *Calculated using the formula for estimating a single proportion:*

$$n = \frac{Z^2_{1-\alpha/2}\, P(1-P)}{d^2}$$

n = minimum sample size

α = Type I error probability, set at α = 0.1

Z(1- α/2) = Z0.975 = 1.96 (value from standard normal distribution)

P = estimated population proportion, P = 0.673 (Based on Gianni W et al. [2])

d = allowable error, d = 0.1
n = [(1.96)^2 * 0.673 * (1-0.673)] / (0.1)^2 = 85

- Variables:

Demographic characteristics: Age, gender.

Medical conditions: All diseases diagnosed upon admission and recorded in medical history: Surgical conditions, traumatic conditions, medical conditions (categorized into 12 groups: neurological, eye, ENT, cardiovascular, respiratory, gastrointestinal, musculoskeletal, renal/urological, endocrine, hematological, gynecological, and cancer).

Pain-related variables:

Pain: Binary variable (Yes/No) based on question 1 of BPI sfvn.

Pain location: 7 values (head/face/neck, chest, abdomen, back, arm, leg, genitalia) based on question 2 of BPI sfvn.

Pain intensity (BPI sfvn): 4 variables (worst pain, least pain, average pain, current pain) scored 0-10 (0=no pain; 10=pain as bad as you can imagine) based on questions 3, 4, 5 of BPI sfvn.

Total pain intensity (BPI sfvn): Sum of the 4 pain intensity aspects (worst, least, average, current), scale 0-40.

Pain severity (BPI sfvn): 4 levels corresponding to intensity: no pain (0); mild (1-3); moderate (4-6); severe (7-10).

Pain interference intensity (BPI sfvn): 7 variables (general activity, walking, work, sleep, mood, relationships with others, enjoyment of life) scored 0-10 (0=does not interfere; 10=completely interferes) based on question 9A-G of BPI sfvn.

Total interference intensity (BPI sfvn): Sum of the 7 interference aspects, scale 0-70 (0=no interference; 70=complete interference).

Interference severity (BPI sfvn): 2 levels - mild interference (total interference intensity < 35) and severe interference (total interference intensity ≥35).

Pain management-related variables:

Change in pain status: Defined as change in pain intensity at time 2 vs. time 1 (3 categories: increased, decreased, unchanged).

Percentage pain reduction (%) calculated as: [(Value Time1 - Value Time2) / Value Time1] * 100

Analgesic therapies: Non-pharmacological; medications used categorized into 13 groups: Acetaminophen, Tramadol, Morphine, NSAIDs, Corticosteroids, Psychotropic drugs, Anticonvulsants, Antispasmodics, Skeletal muscle relaxants, Coronary vasodilators, Topical analgesics, Other analgesics.

2.3. Data Analysis

Patients participating in the study were interviewed and clinically assessed using a structured form collecting medical history, pain symptoms, and pain relief efficacy, including the BPIsfvn questionnaire, at two time points (admission and 7 days post-admission or at discharge if stay <7 days). Medical records were reviewed for comorbidities and medications. Data was processed using SPSS 26 software.

2.4. Research Ethics

The study was approved by the Biomedical Research Ethics Committee of Thong Nhat Hospital regarding ethical and safety aspects (Approval No. [Decision Number] dated ... [Date] 2025).

3. RESULTS

From April 2024 to July 2024, 246 eligible patients were enrolled. Among them, 126 patients (51.22%) reported pain. Pain prevalence was higher in females (55%) compared to males (47%).

Within the pain group, females constituted a higher proportion (56.35%) than males (43.65%). The mean age was high (75.37 ± 9.26 years), with the largest proportion in the 70-79 age group (36.5%). There was no significant difference in mean age between patients with and without pain (p=0.11). There was no significant difference in pain prevalence between genders (p=0.21) or among age groups (p=0.8) (p-values from Chi-square test).

Analysis of pain location showed a decreasing prevalence from leg (23.01%) to head/face/neck and abdomen (both 21.43%), back (15.08%), and chest (12.7%) (Figure 1). No significant difference in pain location distribution was found between genders (p=0.672). The top three pain locations for females were abdomen, leg,
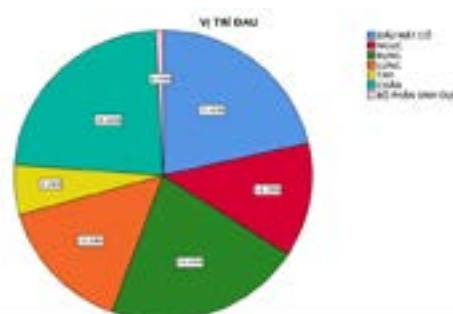

Figure 1. Distribution of Pain Locations

and head/face/neck. Similarly for males, they were leg, head/face/neck, and back.

Patients in the pain group had comorbidities distributed in decreasing prevalence as follows: cardiovascular disease (84.1%), musculoskeletal disorders (43.7%), gastrointestinal disorders (42.1%), endocrine disorders (38.9%), neurological disorders (23%), trauma (15.1%), surgical conditions (13.5%), and cancer (3.2%). Pain prevalence was significantly higher in patients with a history of surgical conditions (p=0.023), trauma (p<0.001), and musculoskeletal disorders (p<0.0001).

At the first assessment (evaluating pain in the 24 hours prior to admission), mean pain intensity scores (0-10) were 7.3±1.86 for worst pain, 5.18 ± 1.83 for average pain, and 4.91± 2.27 for current pain.

The proportion of patients experiencing severe interference (total interference intensity ≥ 35) was 65.9%. Among the interference domains, general activity was most affected, followed by mood, work, walking, enjoyment of life, sleep, and relationships with others were least affected.

Effective Pain Reduction Rate:

Using the Wilcoxon Signed Ranks test, we compared pain intensity changes between the two assessments (categorized as increased, decreased, unchanged) in patients with pain. Therapeutic efficacy was defined as a pain reduction percentage ≥50%. The effective pain reduction rates were 67.5% for worst pain, 73% for average pain, and 71.4% for total pain intensity.

Regarding pain management methods, among the 126 patients with pain, 18.3% used non-pharmacological therapies. The most commonly prescribed medication groups were Acetaminophen (69.8%), followed by topical analgesics (33.3%), anticonvulsants (31.7%), antispasmodics (26.2%), tramadol (23%), psychotropic drugs (19.8%), NSAIDs (13.5%), and morphine (0.8%) (Figure 2).
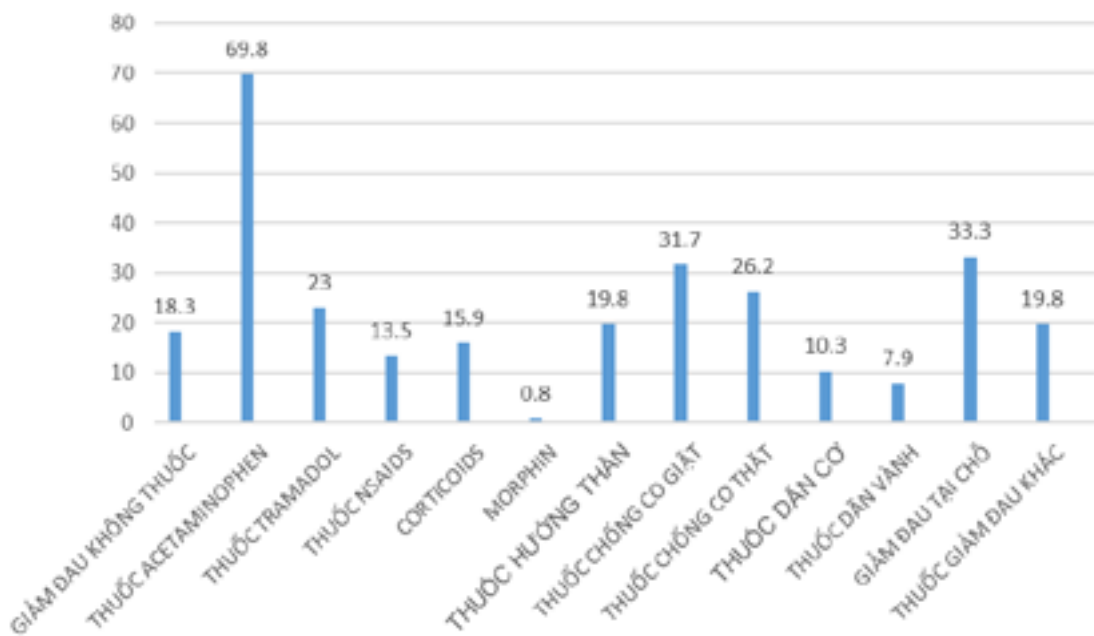

Figure 2. Pain Management Methods

4. DISCUSSION

Our study of 246 eligible subjects found a pain prevalence of 51.22%, lower than Gianni et al. [2] (67.3%, n=367) conducted in 8 geriatric hospitals in Italy in 2010 using the NRS scale, but comparable to Costantini M et al. [3] (53.9%, n=2778) across 30 Italian hospitals in 2002, and Le Thi Thuy Phuong [6] (55.3%, n=349) at Gia Dinh Hospital in 2017 using the same BPI assessment tool.

The distribution of pain locations (leg > head/face/neck & abdomen > back > chest) aligns with the common pathologies

in elderly patients.

Patients with pain had comorbidities dominated by cardiovascular disease, followed by musculoskeletal disorders, gastrointestinal disorders, endocrine disorders, and neurological disorders. Chi-square tests confirmed significantly higher pain prevalence in patients with a history of trauma (p<0.001), surgical conditions (p=0.023), and musculoskeletal disorders (p<0.0001). This pattern fits the degenerative musculoskeletal issues in the elderly (osteoporosis, fall/fracture risk, prior trauma), highlighting the need for greater attention to pain assessment and management in these subgroups.

Regarding pain intensity, mean scores were all at least moderate (≥4/10), highest for worst pain (7.3±1.86), followed by average pain (5.18±1.83) and current pain (4.91±2.27). This finding is consistent with Costantini M et al. [3], as detailed in Table 1, reinforcing the severe pain burden experienced by elderly patients upon admission.

Table 1. Comparison of Pain Intensity Across Studies

Pain Intensity Aspect	Our Study	Le Thi Thuy Phuong [6]	Costantini M et al. [3]
Worst Pain	7.3±1.86	7.34±2.4	7±2
Average Pain	5.18±1.83	4.52±2.48	5±2
Current Pain	4.91±2.27	3.6±2.86	5±2

The high proportion of patients experiencing severe interference (65.9%) coupled with high mean pain intensity scores demonstrates the profound impact of pain on all daily activities of hospitalized elderly patients. General activity was most affected, followed by mood, work, walking, enjoyment of life, sleep, and relationships. This pattern mirrors findings by Lazarus and Neumann [7], who also reported pain causing significant interference in 2/3 of patients with chronic pain across all daily activities, increasing disability risk by 3.31 times compared to pain-free patients.

Statistical analysis revealed significant differences (p<0.0001) in pain intensity across all 4 aspects and total pain intensity between the two assessments, with the majority showing lower intensity at the second assessment. Effective pain reduction rates were 67.5% for worst pain, 73% for average pain, and 71.4% for total pain intensity. This rate is higher than Le Thi Thuy Phuong's [6] rate of 65.7% for total pain intensity. However, we found no significant differences in pain reduction rates between genders or age groups (p>0.5). Regarding pain management methods, 18.3% of the 126 pain patients used non-pharmacological therapies. The most prescribed medication groups were Acetaminophen (69.8%), topical analgesics (33.3%), anticonvulsants (31.7%), antispasmodics (26.2%), tramadol (23%), psychotropic drugs (19.8%), NSAIDs (13.5%), and morphine (0.8%). Our results are similar to Le Thi Thuy Phuong [6], where Acetaminophen (54.55%) was most common, followed by Tramadol (31.02%), muscle relaxants (26.20%), and NSAIDs (22.46%). A Swedish study [8] (2007-2013) also found paracetamol (Acetaminophen) the most commonly used analgesic (~60%), favored for its safety profile. However, its efficacy can be limited. Morphine use in our study was minimal (0.8%), likely due to concerns about addiction and side effects in elderly, multimorbid patients, typically reserved for uncontrolled cancer pain. This low opioid use aligns with findings in Latin America (García CA [9]). Compared to Gianni et al. [2] (49% of pain patients received medication, primarily NSAIDs; opioids and adjuvant drugs used rarely), our medication use was higher and more diverse. NSAID use was lower in our study, likely reflecting caution due to cardiovascular, renal, and GI risks in elderly patients; doctors preferred common analgesics and topical agents. The distribution of analgesics prescribed generally aligns with the patients' pathologies and pain etiologies (mainly musculoskeletal, trauma, neurological, GI, CV). However, it appears insufficient for the severity of pain endured, leaving a significant proportion (28.6%) without effective control. Therefore, patients with severe pain should be considered for stronger opioids, combined with adjuvant analgesics and non-pharmacological

therapies to maximize pain control efficacy.

5. CONCLUSION

Pain is prevalent among hospitalized elderly patients, affecting over 50%, with high intensity and severe interference across all activities. Prevalence is significantly higher in patients with a history of trauma, surgical conditions, and musculoskeletal disorders. The effective pain control rate was 71.4%. Greater attention to pain assessment and the appropriate combination of pharmacological therapies is needed to ensure adequate pain control, thereby improving treatment effectiveness and enhancing patients' quality of life.

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