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Direct medical costs of inpatient treatment for forearm fractures at Cu Chi Regional General Hospital in 2024

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ABSTRACT

Introduction: Forearm fractures impose substantial financial burdens on patients and the healthcare system. Objectives: This study estimated the direct medical costs of forearm fracture treatment in the Department of Orthopedic Surgery at Cu Chi Regional General Hospital in 2024. Materials and methods: A retrospective cross-sectional study employing a total sampling technique reviewed medical records of inpatients with a primary diagnosis of forearm fracture (ICD-10 S52) at the Department of Orthopedics from January 2024 to December 2024. Direct medical costs and associated patient characteristics were analyzed. Results: A total of 407 inpatients were included in the study. Patients aged 18 - 65 years accounted for 75.40%. The overall direct medical cost amounted to 856,148,998 VND, of which 83.88% was reimbursed by Health Insurance. In cases of isolated trauma, the Total cost was 538,017,945 VND, whereas in polytrauma cases it reached 318,131,053 VND. Medical consumables constituted the largest cost component in the surgical cohort, whereas bed fees dominated the non-surgical cohort. Regression analysis identified age, length of stay, admission mode, injury type, and intervention type as significant factors influencing treatment costs ($p < 0.05$). Conclusion: This study highlighted significant variations in direct medical costs across different groups. Surgical interventions constituted the highest expenditures, mainly due to medical consumables and procedural fees. The Health Insurance Fund played a key role in reducing the financial burden borne by patients.

Keywords: *direct medical costs, forearm fracture, inpatient, trauma, Vietnam*

1. INTRODUCTION

Forearm fractures involving the radius and ulna are prevalent injuries that significantly impair activities of daily living (ADLs) and health-related quality of life (HRQoL). Beyond clinical challenges, these injuries impose substantial direct medical costs on patients and the healthcare system [1]. Analyzing these direct costs is essential for strategic resource allocation and quantifying the financial impact incurred by patients, particularly as costs tend to escalate with injury severity.

At Cu Chi Regional General Hospital, a Class II facility, research quantifying the specific treatment costs for forearm fractures remains limited [2]. Therefore, this study was conducted to estimate the direct medical costs associated with the inpatient management of this condition. Specifically, the study aimed to describe the demographic and clinical characteristics of inpatients, estimate the direct medical costs of treatment, and analyze the association between patient characteristics and these costs.

2. MATERIALS AND METHODS

2.1. Study setting and duration

The study was conducted from August 2024 to May 2025 at the Department of Orthopedics, Cu Chi Regional General Hospital, Ho Chi Minh City, Vietnam.

2.2. Study subjects

The study population comprised inpatients with a primary diagnosis of forearm fracture, corresponding to the ICD-10 code S52.

2.3. Selection criteria

Medical records of patients treated from January

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2024 to December 2024 were reviewed.

- Inclusion: Patients with a primary diagnosis of forearm fracture (ICD-10 S52) treated as inpatients.
- Exclusion: Patients aged under 18 years, pregnant women, and patients with incomplete medical records (defined as records missing detailed cost breakdowns or essential demographic data).

2.4. Study variables

The following variables were collected:

- Patient characteristics: Age, sex, health insurance status, and mode of admission.
- Clinical characteristics: Injury type (isolated vs. polytrauma), length of stay (LOS), and type of intervention.
- Direct medical costs: The sum of bed fees, diagnostic imaging, laboratory tests, pharmaceuticals, surgery/procedures, blood & blood products, examination and medical consumables.

2.5. Study design and sampling

A retrospective cross-sectional study design was employed using a total sampling technique. Initially, 425 medical records were screened. Following the exclusion of 18 records due to missing cost components or demographic data, a final sample of 407 patients that satisfied the selection criteria was included in the analysis.

2.6. Data collection

Data were extracted directly from the hospital's Electronic Medical Record (EMR) system and exported into Microsoft Excel 2021 for cleaning. The dataset was screened for inconsistencies. To address cost variability and potential outliers, data were stratified and analyzed by intervention type (conservative management, procedural intervention, surgical intervention) and trauma severity (isolated trauma vs. polytrauma*).

**Note: Polytrauma is defined as forearm fractures accompanied by injuries to at least one other body region requiring concurrent management.*

2.7. Statistical analysis

Data analysis was performed using SPSS software version 26.0.

- Descriptive Statistics: The Kolmogorov-Smirnov test was used to assess the normality of data distribution. Continuous variables with non-normal distributions were presented as median and interquartile range (IQR), while categorical variables were reported as frequencies and percentages.
- Comparative Analysis: Differences between groups were analyzed using the Mann-Whitney U test or Kruskal-Wallis test. Categorical variables were compared using the Chi-square test.
- Regression Analysis: To identify factors associated with direct medical costs, a multivariate linear regression model was applied. Total cost was log-transformed (natural logarithm) to normalize the distribution and satisfy model assumptions.
- A p-value < 0.05 was considered statistically significant.

2.8. Ethical considerations

The study protocol was approved by the Ethics Committee of Cu Chi Regional General Hospital (Approval No. 05/HĐĐĐ, dated April 14, 2025). Patient confidentiality was strictly maintained by anonymizing all personal identification data during extraction and analysis.

3. RESULTS

3.1. Demographic and clinical characteristics

A total of 407 inpatients were included in the study. The median age was 56 years (IQR: 41 - 65), with patients of working age (18 - 65 years) accounting for the majority (75.40%). There was a notable female predominance, comprising 69.04% of the population. Regarding admission, emergency entry was the dominant mode (83.30%), reflecting the acute nature of the injury. All patients (100%) were covered by health insurance, with the 80% coverage tier representing the largest proportion (72.50%). The median length of stay was 1 day for both groups; however, the mean duration was longer for isolated trauma (3.94 ± 4.01 days) compared to polytrauma (2.10 ± 2.96 days).

Table 1. Demographic and clinical characteristics of the study population

Characteristics	Statistics (n = 407)
Gender, n (%)	
Male	126 (30.96)
Female	281 (69.04)
Age (years)	
Median	56
IQR (Q1 - Q3)	41 - 65
Min-Max	18 - 100
Mean ± SD	54.12 ± 17.53
Age group, n (%)	
18 - 65 years	307 (75.40)
> 65 years	100 (24.60)
Admission Category, n (%)	
Appropriate Referral	24 (5.90)
Bypass Referral	22 (5.40)
Emergency	339 (83.30)
Open-access*	22 (5.40)

Characteristics	Statistics (n = 407)
Length of stay (days)	
Isolated trauma (n = 199)	
Median (IQR)	1 (1 - 7)
Mean ± SD	3.94 ± 4.01
Polytrauma (n = 208)	
Median (IQR)	1 (1 - 1)
Mean ± SD	2.10 ± 2.96
Health Insurance Coverage, n (%)	
80% coverage	295 (72.50)
95% coverage	10 (2.50)
100% coverage	102 (25.10)

**Note: Open-access refers to the policy allowing patients to access district-level hospitals without a referral letter while maintaining full health insurance benefits.*

3.2. Direct medical costs of forearm fracture treatment

Table 2 presents the breakdown of direct medical costs for patients with isolated trauma. Conservative management was the most prevalent treatment modality (n = 112). Regarding cost structure, cost drivers varied significantly across groups. For conservative management, surgery & procedure fees (likely regarding casting and splinting) alongside diagnostic imaging were the primary expenditures. In contrast, bed fees and pharmaceuticals accounted for the majority of costs in the procedural intervention group. Notably, for patients requiring surgical intervention, medical consumables constituted the largest cost component (169,084,256 VND), followed by surgery & procedure fees.

Table 2. Direct medical costs for patients with isolated trauma

Cost Components VND (%)	Conservative Management (n = 112)	Procedural Intervention (n = 64)	Surgical Intervention (n = 23)
Laboratory tests	737,400 (2.07)	20,643,200 (12.18)	8,419,900 (2.53)
Diagnostic imaging	5,122,500 (14.36)	683,000 (0.40)	1,570,900 (0.47)
Pharmaceuticals	718,110 (2.01)	48,563,530 (28.65)	40,163,369 (12.07)
Blood & blood products	0 (0.00)	0 (0.00)	2,040,000 (0.61)
Surgery & procedure fees	23,862,000 (66.89)	3,517,000 (2.07)	60,263,200 (18.11)
Medical consumables	6,583 (0.02)	7,123,297 (4.20)	169,084,256 (50.80)
Examination fees	4,087,500 (11.46)	2,325,000 (1.37)	825,000 (0.25)
Bed fees	1,138,200 (3.19)	86,661,900 (51.12)	50,462,100 (15.16)
Total cost	35,672,293	169,516,927	332,828,725

**Unit: Vietnam Dong (VND), Exchange rate: 1 USD 24,335 VND (at the time of study)*

Table 3. Direct medical costs for patients with polytrauma

Cost Components VND (%)	Conservative Management (n = 178)	Procedural Intervention (n = 23)	Surgical Intervention (n = 7)
Laboratory tests	21,380,600 (5.93)	3,461,200 (2.36)	4,055,100 (4.18)
Diagnostic imaging	26,977,300 (7.48)	683,000 (0.46)	887,900 (0.92)
Pharmaceuticals	49,281,640 (13.66)	19,404,271 (13.21)	12,334,147 (12.72)

Cost Components VND (%)	Conservative Management (n = 178)	Procedural Intervention (n = 23)	Surgical Intervention (n = 7)
Blood & blood products	0 (0.00)	0 (0.00)	0 (0.00)
Surgery & procedure fees	155,468,800 (43.09)	23,758,000 (16.17)	21,787,000 (22.46)
Medical consumables	13,482,153 (3.74)	59,235,964 (40.33)	42,486,597 (43.80)
Examination fees	6,412,500 (1.78)	825,000 (0.56)	262,500 (0.27)
Bed fees	87,800,100 (24.33)	39,517,400 (26.90)	15,186,700 (15.66)
Total cost	360,803,093	146,884,835	96,999,945

Table 3 details the direct medical costs for patients with polytrauma. Similar to isolated trauma, conservative management was the most common approach (n = 178). For this group, surgery & procedure fees and bed fees were the major cost drivers. In the procedural intervention group, medical consumables and bed fees dominated the expenses. For the surgical intervention (n = 7), medical consumables and surgery & procedure fees represented the largest share of the Total cost.

Table 4. Costs by therapeutic drug category

Drug Category	Total cost (VND)	Percentage (%)
Analgesics and anti-inflammatories	15,937,944	12.92
Penicillins and combinations	7,196,535	5.83
Cephalosporins	62,881,895	50.96
Other antibiotics	20,888,546	16.93
IV fluids and electrolytes	8,733,487	7.08
Solvents and supportive drugs	4,095,134	3.32
Muscle relaxants	3,670,695	2.97
Total cost	**123,404,237**	**100.00**

Table 4 illustrates the distribution of pharmaceutical costs by therapeutic category. Antibiotics dominated the cost structure, accounting for nearly three-quarters of the total drug expenditure (73.72%). Specifically, Cephalosporins incurred the highest cost (62,881,895 VND), representing over half (50.96%) of the total pharmaceutical budget. Other significant contributors included other antibiotics (16.93%) and analgesics/anti-inflammatories (12.92%). Conversely, supportive drugs and muscle relaxants accounted for the smallest shares of the cost burden.

3.3. Factors associated with direct medical costs

Multivariate regression analysis identified five significant determinants of trauma treatment costs ($p < 0.05$). Specifically, regarding patient characteristics, each additional year of age was associated with a slight decrease of 0.598% in treatment costs. Conversely, length of stay was a major cost driver, with each additional day of hospitalization resulting in an approximate 38.82% increase in direct medical expenditures ($p < 0.001$). Clinical factors also played a critical role; patients with isolated forearm fractures incurred costs 16.14% higher than those with polytrauma. Furthermore, the type of intervention had the most substantial impact, with surgical or procedural interventions increasing costs by 425.41% compared to conservative management ($p < 0.001$). Finally, patients with non-referral admissions (emergency, bypass, or open-access) incurred average costs that were 24.61% higher than those with appropriate referrals.

Table 5. Multivariate regression analysis of factors associated with direct medical costs

Independent variables	B Coefficient	SE*	p-value
Constant	11.193	0.371	$p < 0.001$

Independent variables	B Coefficient	SE*	p-value
Age	-0.006	0.002	$p < 0.05$
LOS	0.328	0.008	$p < 0.001$
Mode of Admission	0.220	0.049	$p < 0.001$
Injury Type	-0.176	0.056	$p < 0.05$
Type of Intervention	1.659	0.070	$p < 0.001$

**SE: Standard Error*

Note: The dependent variable was the natural logarithm of the total direct medical cost (LnCost). Reference groups: Appropriate referral (Mode of admission), Isolated trauma (Injury type), Conservative management (Type of Intervention).

4. DISCUSSION

4.1. Sex distribution

In this study, female patients predominated, with an admission rate approximately twice that of males. This finding aligns with studies conducted in Iran [1] and Sweden [3], which observed a higher fracture risk among females, particularly from middle age onwards.

4.2. Age groups

Upon further stratification by age group, the results revealed that among patients over 50 years old, the incidence in females was nearly five times higher than in males (215 females vs. 45 males). Conversely, in the 18 - 50 age group, the male prevalence was approximately 1.2 times that of females. These ratios differ somewhat from findings in the UK [4], which indicated that middle-aged women (> 50 years) had a fracture rate approximately three times higher than men, whereas, in the 18 - 50 age group, the male incidence was reported to be about twice that of females.

In the 18 - 50 age demographic, the higher fracture incidence in males is often attributed to occupational hazards and lifestyle factors. Regarding physiological factors, in women, bone mineral density (BMD) in the distal forearm tends to decline with age, thereby increasing fracture susceptibility at this site. In contrast, men are less affected due to higher peak bone mass and a slower rate of bone loss over time. After the age of 65, the rate of BMD decline in the female forearm appears to decelerate, which may explain the stabilization of forearm fracture rates observed in this age cohort [5]. However, in 2024, the Department of Orthopedics at Cu Chi Regional General Hospital recorded a higher volume of forearm fracture patients in the 18 - 65 age group compared to the > 65 group (75.4% vs. 24.6%, respectively). This finding contrasts with the study by Jerrhag et al. [3], which reported that patients over 65 years of age constituted the majority compared to the 18 - 65 cohort. This discrepancy may be due to the specific demographic characteristics of the Cu Chi region, which has a high concentration of industrial zones and a younger active workforce prone to occupational or traffic-related accidents.

4.3. Age

In this study, the age variable followed a non-normal distribution; therefore, data are presented as median and IQR. The overall median age of the study population was 56 (IQR: 41 - 65). Notably, the median age for males was 42 years, significantly lower than that for females (59 years). This aligns with the previously discussed findings regarding sex distribution and age-related injury mechanisms. Our results are lower than those reported by Lofthus et al. [6], who observed a median age of 51 (IQR: 20 - 99) for males and 69 (IQR: 20 - 92) for females.

4.4. Length of stay (LOS)

The median LOS for patients with isolated trauma was 1 day (IQR: 1 - 7), with a mean of 3.94 ± 4.01 days. Surprisingly, patients with polytrauma exhibited a shorter LOS compared to the isolated trauma group, with a median of 1 day (IQR: 1 - 1) and a mean of 2.10 ± 2.96 days. This finding contradicts the conventional assumption that polytrauma patients typically require longer hospitalization than those with less severe injuries.

This disparity can be attributed to several factors. First, the rate of surgical intervention in the isolated trauma group was significantly higher

(11.56% of 199 patients) compared to the polytrauma group (3.37% of 208 patients). Second, LOS is intrinsically contingent upon injury severity [7]. Third, differences in treatment approaches and protocols between patient groups may contribute to this variation. Our recorded LOS is lower than that reported in studies from China [8, 9] (15.49 ± 16.97 days; 13.9 days), Vietnam [10] (8.3 days), and the USA [11] (5.1 days).

4.5. Mode of admission

The study results indicate that the vast majority of patients (83.3%) were admitted via the Emergency Department, whereas admissions via appropriate referral, bypass referral, and open-access accounted for only 5.9%, 5.4%, and 5.4%, respectively. This high prevalence of emergency admissions reflects the acute and sudden nature of forearm fractures, whereby most patients lack the time to proactively select their preferred level of care. This finding stands in sharp contrast to the study by Weycker et al. [11], which reported an emergency admission rate of only 14%.

4.6. Health insurance coverage

All patients in the study possessed health insurance, indicating a 100% coverage rate among the inpatient forearm fracture population at the hospital and underscoring the pivotal role of health insurance in mitigating the financial burden of healthcare. Specifically, the majority of patients were eligible for the 80% coverage tier (accounting for 72.5%). This is the standard reimbursement level for employees under compulsory insurance schemes and participants in household-based health insurance. The health insurance participation rate observed in our study is significantly higher than that reported by Qu et al. [9], which stood at 64.3%.

4.7. Total direct medical costs of forearm fracture treatment in 2024

The total direct medical cost for the 407 inpatients treated for forearm fractures at the Department of Orthopedics, Cu Chi Regional General Hospital, in 2024 amounted to 856,148,998 VND. Specifically, the total expenditure for the isolated trauma group (n = 199) was 538,017,945 VND, while the polytrauma group (n = 208) accounted for 318,131,053 VND. Medical consumables (32.47%) and bed fees (22.97%) were the largest expenditures.

These findings reveal cost structure disparities compared to Pham Van Tuan et al. [10], where consumables were higher (43.14%) but bed fees were lower (18.89%). However, our results align with Weycker et al. [11], who reported that medical consumables accounted for 23%, and bed fees constituted approximately one-third of the total treatment cost.

Surgery and procedure fees accounted for 21.41%, while pharmaceuticals contributed 14.41%, laboratory tests 4.51%, diagnostic imaging 2.32%, and examination fees 1.67%. When compared to Pham Van Tuan et al. [10], their pharmaceutical and IV fluid costs were lower (11.19% vs. 14.41%). Meanwhile, other categories such as surgery & procedures (14.83%), laboratory tests (3.56%), diagnostic imaging (6.4%), examination fees (0.89%), and blood products (1.06%) remained comparable to our current findings.

Notably, cost drivers diverged significantly between groups: medical consumables dominated in the surgical group, whereas procedure fees were paramount in the non-surgical group. This contrasts with Wenjing et al. [8], which reported that medical consumables were the second-largest cost after pharmaceuticals in the surgical group, while laboratory costs predominated in the non-surgical group. These discrepancies reflect variations in treatment protocols, health insurance policies, and hospital fee structures across different healthcare settings. Given that medical consumables and bed fees were identified as primary cost drivers, hospital administrators should prioritize strategies to negotiate procurement prices for consumables and optimize patient turnover to reduce length of stay, thereby alleviating the financial burden.

4.8. Payment structure of direct medical costs

The study reveals that Health Insurance covered a substantial portion of the expenses, accounting for 83.88% of the total treatment expenditure, while Out-of-Pocket (OOP) payments accounted for only 16.12%. Compared to the study by Yeong et al. [12], which reported an insurance reimbursement rate of 77.01% and an OOP rate of 22.99%, the current study demonstrates a higher insurance

coverage ratio. Nonetheless, both studies document a general trend where the majority of treatment costs are reimbursed by health insurance. This finding is also consistent with the conclusion drawn by Pham Van Tuan et al. [10], who also noted that health insurance covers the bulk of costs for forearm fracture treatment.

4.9. Therapeutic medication groups

The primary medications administered for forearm fracture treatment at the Department of Orthopedics, Cu Chi Regional General Hospital, include analgesics and anti-inflammatories, penicillins and combinations, cephalosporins, other antibiotics, IV fluids and electrolytes, solvents and supportive drugs, and muscle relaxants.

The most frequently prescribed category was Cephalosporin antibiotics (accounting for 50.96% of pharmaceutical costs), followed by other antibiotics (16.93%) and analgesics and anti-inflammatories (12.92%). Less frequently utilized categories included IV fluids and electrolytes (7.08%), Penicillins and combinations (5.83%), solvents and supportive drugs (3.32%), and muscle relaxants (2.97%).

Compared to Weycker et al. [11], where antibiotics comprised only 12% of total drug costs, and IV fluids reached 13%, the current study indicates a significantly higher frequency of antibiotic utilization. Our results also differ from the findings of Qu et al. [9], which indicated that anti-osteoporosis agents such as calcium, vitamin D, calcitonin, and bisphosphonates were the most commonly used group. These discrepancies may stem from differences in clinical factors, treatment protocols, and disease patterns specific to each healthcare facility. Specifically, the high prevalence of antibiotic use observed in this study may reflect local clinical practices regarding prophylactic administration for trauma cases to prevent infection in a tropical environment, or differences in prescribing guidelines compared to other regions.

4.10. Average treatment cost per patient for a forearm fracture in 2024

The mean cost per patient was 2,103,560 VND. Surgical intervention incurred a significantly higher mean cost (14,327,622 VND) than non-surgical management (1,130,823 VND), consistent with findings in China [8]. Our mean cost (86.44 USD) is substantially lower than in developed nations like the USA (11,760 USD) [11] or even Iran (929.40 USD) [1], attributable to differences in healthcare pricing and economic conditions across regions.

**Exchange rate applied: Based on the USD/VND exchange rate listed on December 31, 2024.*

4.11. Factors associated with direct medical costs of forearm fracture treatment at the Department of Orthopedics, Cu Chi Regional General Hospital

The study results identified five statistically significant determinants of trauma treatment costs: age, LOS, mode of admission, injury type, and type of intervention. The employment of a multivariate linear regression model utilizing the natural logarithm of costs as the dependent variable facilitated the control of confounding factors and allowed for the assessment of the independent impact of each explanatory variable.

These findings align with a study conducted in China [13], which also identified age and length of stay as factors significantly associated with treatment costs ($p < 0.05$). Additionally, factors related to admission route, treatment modality, diagnosis, complications, and surgery were also recorded to influence total treatment expenditures in that study.

In contrast to our findings, research from Ghana [14] indicated that gender significantly influenced fracture treatment costs, specifically noting that male patients incurred higher costs than females. These discrepancies in research outcomes may be attributed to variations in study population characteristics, healthcare systems, and health insurance policies.

4.12. Limitations

This study has several limitations. First, as a single-center study conducted at a Class II hospital, the findings may not be generalizable to central-level hospitals (Class I or Special Class) where case complexity and treatment costs might be higher. Second, the retrospective design relies on existing medical records, which preclude the assessment of long-term functional outcomes or indirect costs (e.g.,

productivity loss). Third, for patients with polytrauma, the recorded costs encompassed the treatment of all concurrent injuries during the admission. Due to the limitations of the hospital billing system, it was not feasible to isolate the specific costs attributable solely to the forearm fracture. Finally, the study did not account for out-of-pocket expenditures for services or medications purchased outside the hospital system.

**Note: Throughout the Discussion section, costs in this study and other referenced studies have been calculated and converted to USD using the USD/VND exchange rate listed on December 31, 2024 (1 USD = 24,335 VND) [15].*

5. CONCLUSION

This study examined the direct medical costs of inpatient treatment for forearm fractures at Cu Chi Regional General Hospital in 2024. The findings reveal that the condition predominantly affects females of working age (18 - 65 years), with the majority of admissions occurring via the Emergency Department. While the median length of stay was relatively short (1 day), treatment costs varied significantly depending on the intervention type and trauma severity.

Regarding cost structure, surgical interventions incurred the highest expenditures, primarily driven by the cost of medical consumables, whereas bed fees were the dominant cost driver for conservative management. Antibiotics, particularly Cephalosporins, represented a substantial portion of pharmaceutical costs. The study identified five key determinants of direct medical costs: Age, length of stay, mode of admission, injury type, and type of intervention. Notably, costs escalated significantly with prolonged hospitalization and the implementation of complex surgical procedures.

Practical implications

These findings underscore the pivotal role of Health Insurance in mitigating the financial burden for patients, given the 100% coverage rate observed. To further optimize resources, hospital management and policymakers should focus on strategies to manage the costs of medical consumables and antibiotics, as well as protocols to minimize unnecessary hospital stays.

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TÓM TẮT

Đặt vấn đề: Gãy xương cẳng tay gây ra gánh nặng tài chính đáng kể cho người bệnh và hệ thống y tế. Mục tiêu: Nghiên cứu này ước tính chi phí y tế trực tiếp cho việc điều trị gãy xương cẳng tay tại Khoa Ngoại chỉnh hình, Bệnh viện Đa khoa Khu vực Củ Chi năm 2024. Đối tượng và phương pháp nghiên cứu: Nghiên cứu cắt ngang hồi cứu sử dụng kỹ thuật chọn mẫu toàn bộ đã rà soát hồ sơ bệnh án của người bệnh nội trú có chẩn đoán chính là gãy xương cẳng tay (mã ICD-10 tương ứng S52) tại Khoa Ngoại chỉnh hình từ tháng 01/2024 đến hết tháng 12/2024. Chi phí y tế trực tiếp và các đặc điểm người bệnh liên quan đã được phân tích. Kết quả: Tổng số 407 người bệnh nội trú được đưa vào nghiên cứu. Người bệnh trong độ tuổi 18 - 65 chiếm 75.40%. Tổng chi phí y tế trực tiếp lên tới 856,148,998 VND, trong đó 83.88% được Bảo hiểm Y tế chi trả. Trong các trường hợp đơn chấn thương, tổng chi phí là 538,017,945 VND, trong khi ở các ca đa chấn thương con số này đạt 318,131,053 VND. Vật tư y tế là thành phần chi phí lớn nhất trong nhóm phẫu thuật, trong khi chi phí giường bệnh chiếm ưu thế trong nhóm không phẫu thuật. Phân tích hồi quy xác định tuổi, số ngày điều trị, hình thức vào viện, loại chấn thương và loại can thiệp là các yếu tố có ý nghĩa thống kê ảnh hưởng đến chi phí điều trị ($p < 0.05$). Kết luận: Nghiên cứu này đã chỉ ra sự khác

biệt đáng kể về chi phí y tế trực tiếp giữa các nhóm khác nhau. Can thiệp phẫu thuật chiếm mức chi phí cao nhất, chủ yếu do vật tư y tế và chi phí thủ thuật. Quỹ Bảo hiểm Y tế đóng vai trò then chốt trong việc giảm thiểu gánh nặng tài chính cho người bệnh.

Từ khóa: *chi phí y tế trực tiếp, chấn thương, gãy xương cẳng tay, nội trú, Việt Nam*

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