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Original Article

A Prospective Study on Drug Audit, Prescribing Patterns Assessment, and Clinical Outcomes Evaluation in a Tertiary Care Hospital, Tamil Nadu, India

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ABSTRACT

Background: Research studies on drug utilization in inpatient settings serve as valuable tools for assessing drug prescribing trends, efficiency, and the cost-effectiveness of hospital formularies. Our current study focuses on evaluating drug usage patterns, conducting drug audits, and assessing clinical outcomes using WHO indicators in healthcare facilities within tertiary care hospitals. **Materials and Methods:** In a prospective study conducted at a tertiary care hospital in Tamil Nadu, data were systematically gathered from 800 prescriptions spanning from November 2021 to April 2023. The WHO data collection tool was employed to evaluate prescribing indicators. Patients who either passed away or requested discharge against medical advice within the first 24 hr of admission were excluded from the dataset. The data analysis was carried out using Graph Pad Prism version 10. **Results:** The average number of drugs per encounter was 2.14. Antibiotics were prescribed in 71% of encounters, while injections were administered in 52%. A total of 80% of drugs were prescribed using generic names in the tertiary care hospital. Regarding hospital stays, 27% of individuals were admitted within three days of treatment, and individuals aged 21 to 40 accounted for more than 35% of the total hospital stays. **Conclusion:** The study demonstrated that cefotaxime was the most frequently prescribed antibiotic. The average number of drugs in this study was slightly over WHO standards. This research motivates clinicians to increase the use of generic drugs, may reduce the expenditures in health care without affecting the efficacy of the drug, and guide more clinicians towards prescribing generic drugs. However, injectable drugs are more prescribed when compared to other formulations. Further, we recommend studies that need more sample sizes and multicentre studies to estimate the overall prescribing practices of orthopedic ward.

Keywords: Prescriptions, Tamil Nadu, Drugs, Hospital and Generic drug.

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INTRODUCTION

Drug therapy plays a pivotal role in managing osteoporosis in outpatient settings, and inappropriate drug therapy often leads to irrational use. Osteoporotic Fractures (OF) are the most significant complications in older patients, contributing to a global health issue due to demographic aging, lack of physical activity, genetic predisposition, smoking, alcohol consumption, and other factors that increase the risk of fractures.

Such studies inherently establish a foundation for assessing rational drug utilization and providing evidence-based recommendations for healthcare policy decisions. While drug utilization research in inpatient settings effectively evaluates prescription trends, efficiency, and cost-effectiveness, there is a noticeable variation in drug utilization between countries, healthcare institutions, and even within the same institution over time, reflecting changing disease patterns.[1]

Conducting periodic studies on drug usage patterns in different private and government healthcare settings is essential to analyze current hospital drug policies critically. This is especially crucial in resource-developing countries to ensure optimal resource utilization. Various drug utilization studies have been conducted on orthopedic patients in diverse Indian settings.

The study highlights that appropriate drug utilization can mitigate bone loss, enhance bone structure, reduce falls, and lower the risk of osteoporotic fractures in the elderly population. The World Health Organization (WHO) has developed indicators for

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prescribing practices, serving as a metric for healthcare providers' performance. Evaluating the risk of polypharmacy, a crucial factor in drug reactions and adverse events, is accomplished by examining the average number of medications prescribed per patient encounter. To promote cost-effective healthcare practices, it is essential to monitor the proportion of medications prescribed using generic names, as this can contribute to cost control by encouraging the utilization of generic drugs. Furthermore, the extent of antibiotic overuse, a significant contributor to antibiotic resistance, can be assessed by analyzing the percentage of patient encounters involving anti-biotic prescriptions. These indicators play a vital role in shaping healthcare policies and practices, aligning them with national drug policies, and ensuring the safe and efficient use of medications.

MATERIALS AND METHODS

Study Design

This prospective observational study examined 800 current prescriptions based on specific methodology and selection criteria. Data were collected from patient case files in the Department of Orthopedics at the tertiary care hospital in Krishnagiri, Tamil Nadu, spanning 16 months (from November 2021 to April 1, 2023).

This research employed a quantitative approach, focusing on monitoring prescriptions for orthopedic patients. Five key concepts, namely validity, reliability, subjectivity, transferability, and authenticity, were considered. Validity was ensured through a detailed description of the selection, design, and methodology. Reliability was enhanced by involving two or more co-authors in a significant portion of the work. To minimize subjectivity, coding and categorization tasks were performed by two authors, and subsequent analysis was a collaborative effort involving all co-authors. The results section was authored by two co-authors, whose contributions were compared and merged into the final version by the entire research team.

Study Context

This observational study included patients of all age groups diagnosed with orthopedic disorders who visited both government and private hospitals' orthopedic departments. The primary objectives were to examine drug utilization among orthopedic patients, both inpatients and outpatients, and to assess drug utilization in accordance with WHO core drug use prescribing indicators.[2] Prescription data were collected from patient case papers over a 16months period. A prescription or an encounter was defined as a written order for drugs in a patient's case paper, given by physicians for one day. Data from orthopedic patients (304 males and 496 females were recorded and analyzed, resulting in 800 prescription orders and a total of 429 prescribed drugs.

Inclusion and Exclusion Criteria

Comprehensive information on prescribed drugs during the entire hospital stay, including the number of drugs per prescription, antibiotics, injections, use of generic/brand names, and treatment duration, was extracted from medical and nursing charts. Patients who died or sought discharge against medical advice within 24 hr of admission were excluded. The analysis of drug utilization data was conducted based on WHO core indicators, and disease classification followed the International Classification of Diseases 10 provided by the WHO.[3]

Sample Size Calculation

The sample size was determined using the following formula,

$$N=z^2\ p\ (1-p)\ /\ d^2$$

Where p represents the estimated proportion of inappropriate prescription patterns (0.5 in this case, as no prior research findings were available).[4] N signifies the sample size, and d denotes the margin of sampling error tolerated (0.05). The standard normal value of a 95% confidence interval (z) was set to 1.96, resulting in the calculated sample size.

Data Analysis

To ensure objectivity, the author and two co-authors conducted statistical data analysis using Graph Pad Prism version 10 software. Continuous data were presented as mean±SEM, while categorical data were expressed as percentages. Differences between means of two groups were compared using the student's t-test and a *p*-value less than 0.05 was considered statistically significant.

Ethics

The study received approval from the Ethical review board (PCP/EC/00108/2019), Padmavathi College of Pharmacy. All participants obtained both written and oral informed consent from patients. Patients unwilling to participate were not enrolled, and consent was obtained from legally acceptable representatives. Confidentiality was strictly maintained throughout the study.

RESULTS

Table 1 displays the frequency of orthopedic prescriptions by gender from November 2021 to April 2023, with a total of 800 prescriptions included in the study. The study included 304 male patients with a mean age of 76±20.33 years and 496 female patients with a mean age of 89.50±36.93 years. The age distribution revealed that the highest number of patients (35%) fell within the 21-40 years age group, followed by 27% in the >20 years age group, and 24% in the 41-60 years age group. Patients aged 61-80 years accounted for 15% of the total (Table 1).

The study identified six different diagnostic features. The most common diagnoses included lower limb pain (27%), followed by

Table 1: Socio-demographic data of the orthopaedic prescriptions of the study population.

		Male (n)	Female (n)	Total (n)	Percentage (%)
Gender		304	496	800	
Age in (Years)	>20	92	124	216	27%
	21-40	90	184	274	34%**
	41-60	74	116	190	24%
	61-80	48	72	120	15%
Mean Age (years) (Mean±SD)		76±20.33	89.50±36.93		
Education Status	<10	80	80	160	20
	>10	28	68	96	12
	Diploma	44	62	106	13.5
	UG	90	204	294	37
	PG	12	44	56	70
	Illiterate	50	38	88	11
Marital Status	Married	176	312	488	61
	Unmarried	128	184	312	39
Occupation	Accountant	08	00	08	01
	Business	40	36	76	10
	Driver	36	16	52	06
	Electrician	24	00	24	03
	Engineer	04	32	36	4.5
	Farmer	24	64	88	11
	Housewife	00	92	92	11.5
	Laboratory Asst.	24	36	60	7.5
	Mechanic	56	00	56	07
	Pharmacist	32	16	48	06
	Student	38	64	102	13
	Worker	18	140	158	20
Social habit	Smoking	68	24	92	11.5
	Drinking	172	68	240	30
	No	64	404	468	58.5
Region	Rural	216	280	496	62
	Urban	88	216	304	38
Food Habit	Vegetarians	60	112	172	21.5
	Non-Vegetarian	216	52	268	33.5
	Mixed	28	332	360	45

F-9.486; p value- 0.0061; **Statistically Significant.

indications of fractures (17%), infections (16%), osteoarthritis (15%), pain in the upper limb (13%), and low back pain (13%). The mean±SD for males was 50.67±18.18, and for females, it was 82.67±51.08 (Table 2).

Co-morbidities were observed among patients in the orthopedic department, with 72% in females and 28% in males. Diabetes mellitus was the most prevalent co-morbidity (22%), followed by sleep apnea (5%). The mean±SD for males with co-morbidities was 20±16.28, while for females, it was 51.50±33.22 (Table 3).

Table 4 represents Out of the 800 prescriptions, 344 (71%) contained at least one antibiotic prescription. A total of 156 (27%) antibiotics were prescribed, with most prescriptions (61%) containing only one antibiotic. The mean±SD was 189.3±141.0.

Table 2: Gender-wise distribution of diagnosis in an orthopedic ward (*n*=800)

Sl. No.	Diagnosis	Prescription of both gender		Total number of patients (%)
		Male (n)	Female (n)	
1	Fracture	68	64	132(17)
2	Pain in the Lower limb	32	184	216 (27) **
3	Infection	56	68	124 (16)
4	Low back pain	24	80	104 (13)
5	Osteoarthritis	64	56	120 (15)
6	Pain in the upper limb	60	44	104 (13)

F- 6.649; *p* value- 0.0086; Statistically Significant **- and R square -0.4699.

Table 3: Gender-wise distribution of co-morbidity orthopaedic ward (*n*=572).

Co-morbidities	Male(n)	Female(n)	Total number of patients (%)
Anaemia	16	64	80 (10)
Apnea	12	16	28 (3.5)
Asthma	12	40	52 (6.5)
Diabetes Mellitus	32	96	128 (16)**
Hepatitis	08	24	32 (04)
UTI	12	40	52 (6.5)
Ulcer	56	28	84 (10.5)
Hypertension	12	104	116 (14.5)
Total	160	412	572 (71.5)
Grand total (%)	28%	72%	800

F- 5.899; *p* value- 0.0093; Statistically Significant **- and R square -0.3597.

Table 4: Number of antibiotics prescribed to individual patients (*n*=568).

Sl. No.	Variable	Number of Prescriptions (n)	Percentage (%)
1	Single antibiotic	344	61
2	Two antibiotics	156	27
3	Three antibiotics	68	12
Total		568	100

The study involved 800 patients and included a total of 1716 prescribed drugs, with an average of 2.1 drugs per prescription. All prescribed drugs (100%) were on the Essential Drugs List (EDL) of India. Commonly prescribed antibiotics included Cefotaxime (11%), Ceftriaxone (16%), Amikacin (5%), and Gentamycin (3%). The mean±SD was 32±75.52. *p* value<0.0001; and R2-0.6190 respectively (Table 5).

A total of 1,536 injectable drugs were prescribed for both male and female patients among the current study population, and these injectable drugs are detailed in Table 6. The mean±SD for males was 173.6±236.7, while for females, it was 303.2±414.8. Notably, the *p*-value indicated that there was no statistically significant. The prescribing patterns included a minimum of 1 drug per prescription and a maximum of more than 8 drugs. The most common prescription contained 2 drugs (25%) (Table 7) Length of hospital stay was analyzed, with 27% of patients being hospitalized within three days of treatment and 14% experiencing hospital stays exceeding five days (Table 8).

The study results indicated that antibiotics comprised the majority of prescribed drugs, accounting for 35% of medications used to treat various clinical conditions, totalling 1,716 prescribed drugs. Conversely, the lowest number of antiemetic drugs prescribed in our study was merely 2% (*p*=0.0226) (Table 9). Additionally, the mean±SD was 245.1±212.8, with a standard error of the mean (SEM) of 80.45 and an R^2 value of 0.6075.

In accordance with WHO prescribing indicators, we prospectively assessed patient prescriptions in the medical inpatient pharmacy of the health center. A total of 1,716 drugs were prescribed, with an average of 2.14 drugs per prescription. Notably, 80% of the

Table 5: The most commonly prescribed antibiotic for hospitalized patients at TCH.

Sl. No.	Variables	ATC Code	Total (n)	Percentage (%)
1	Inj. Amikacin 250mg/IV	J01GB06	80	05
2	Inj. Ceftriaxone 1 g	J01DD04	280	16
3	Inj. Cefotaxim 1 g	J01DA10	192	11
4	Inj. Pantoprazole 40 mg	A02BC02	76	4.4
5	Inj. Dexamethasone 1 mg/mL	H02AB02	08	0.5
6	Inj. Ranitidine 25 mg/mL	A02BA02	228	13
7	Inj. Diclofenac 75 mg	M01AB05	148	09
8	T. Paracetamol 500 mg	N02B E01	100	06
9	T.Calcium and Vitamin$_3$ 1000 mg	A12AX	72	4.1
10	Syp. Paracetamol 250 mg/60 mL	N02BE01	56	3.2
11	Inj. Tramadol 50 mg	N02AX02	52	3.03
12	Metronidazole 500 mg/100 mL	J01X D01	80	05
13	T. Prednisolone 10 mg	H02AB06	48	03
14	Magnesium Sulphate 70 mg	A06AD04	32	02
15	Inj. Ondansetron 4 mg/2 mL	A04AA01	32	02
16	Inj. Gentamycin 40 mg/mL	D06AX07	52	03
17	Inj. Hydrocortisone 100 mg	J1720	12	0.7
18	Normal Saline 0.9% infusion	J7050	136	08
19	Intravenous solution Isolyte 0.037g in 100 mL		32	02

p value- 0.0001; Statistically Significant***-, and R square -0.6190.

Table 7: Average number of medications prescribed per prescription.

Number of Medication Prescribed	Male(n)	Female(n)	Total(n)
01	8 (28)	20 (71)	28 (03)
02	28 (35)	52 (65)	80 (7.4)
03	120(44)	152 (56)	272 (25)
04	92 (42)	120 (58)	212 (21)
05	68 (35)	124 (65)	192 (18)
06	48 (43)	64 (67)	112 (10)
07	28 (37)	48 (63)	76 (7)
>08	24 (27)	64 (73)	88 (8.2)
total	416	644	1060

F- 8.836; *p* value- 0.0018; Statistically Significant **- and Bartlett's test -26.97; '*p*'value- highly significant.

Table 6: Type of formulation prescribed and administered during the study period (*n*=596).

Sl. No.	Variables	Male (n) (%)	Female (n) (%)	Total (n)
1	Injections	568 (37)	968(63)	1536
2	Tablets	224 (33)	456(67)	680
3	Syrup	24 (43)	32 (57)	56
4	Gel	28 (58)	20 (42)	48
5	Capsules	24 (37)	40 (63)	64

Table 8: Length of hospital stay by the patients at orthopedic ward.

Age (in years)	No. of Days (stayed in hospital) [n, (%)]					
	1	2	3	4	>5	Total (%)
0-20	24	64	76	28	24	216 (27)
21-40	36	52	72	52	64	276 (35)
41-60	72	40	36	28	12	188 (24)
61-80	16	44	32	16	12	120 (15)
Total (%)	148(18)	200(25)	216(27)	124(16)	112(14)	800

F- 1.263; *p* value- 0.3277; Statistically Significant- NS and R square -0.2519.

Table 9: Category of the drug prescribed by the orthopedic department.

Category	Total (n)	Percentage (%)
Antibiotics Medications	604	35.19
Anti-ulcer drugs	304	18
Corticosteroids drugs	68	04
Analgesic, Antipyretic and NSAIDS	428	25
Anti-Protozoal drugs	80	05
Anti-emetic drugs	32	02
Others	200	12

Table 10: WHO Core prescribing indicators (*n*=800).

Sl. No.	Prescribing indicators	Observed values	WHO values
1	Total number of encounters	800	-
2	Total number of drugs	1716	-
3	Average number of drugs per encounter in percentage	2.145%	1.6-1.8%
4	Percentage of drugs prescribed by generic names	80%	100%
5	Percentage of antibiotics prescribed	71%	20-26.8%
6	Percentage of injections prescribed	52%	13.4-24.1%

drugs, amounting to 1,372 prescriptions, were prescribed by their generic names. Antibiotics were a part of 71% of the encounters, with injections being prescribed in 52% of them. Importantly, all the prescribed drugs, accounting for 100%, were included in the Essential Drugs List (EDL) of India, as detailed in Table 10.

Total of 1,716 drugs were prescribed to 800 patients for various clinical conditions. According to WHO standards, drug prescriptions by generic names should ideally be 100%. However, in our study, 1,372 (80%) drugs were prescribed using generic names, while 344 (20%) were prescribed with brand names.

DISCUSSION

Patient demographics, socio-economic status, and clinical characteristics play a pivotal role in shaping physicians' prescribing patterns for the pharmacological treatment of osteoporosis. Our analysis of the current data revealed that older age and having an established patient status were associated with a higher likelihood of receiving pharmacotherapy for osteoporosis in a tertiary care hospital. Interestingly, patients with a primary diagnosis of bone-related disorders were less inclined to receive pharmacological treatment for osteoporosis compared to those with a secondary diagnosis of osteoporosis. It's worth noting that many fractures can be attributed to underlying medical or bone-related conditions. Studies have consistently shown that patients with medical issues such as fractures, arthritis, lumbar-sacral pain, and pain in the upper and lower limbs are at an elevated risk of developing osteoporosis.

The occurrence of bone and joint infections, particularly in post-operative patients, is a potentially grave and challenging condition to manage, often resulting in significant morbidity and mortality. Antimicrobial agents are frequently necessary for the treatment of orthopedic patients. However, the irrational use of these agents can lead to various repercussions, including increased costs, drug interactions, prolonged hospital stays, and an elevated risk of bacterial resistance to commonly used antimicrobials. This study was conducted within the orthopedic

department of a tertiary care hospital, where the most common diagnoses included bone fractures and soft tissue infections. These findings align with previous research where fractures and accidental trauma cases where prevalent.[5]

In this study, we conducted an exploration of overall drug usage practices within the orthopedic department, employing standard WHO indicators in tertiary care hospitals. Prescription auditing is a crucial component of ensuring high-quality clinical care. However, the traditional audit process involving the collection of pharmaceutical data, its interpretation, and subsequent feedback introduces significant delays between an action and the feedback, which can diminish its impact on healthcare provider behavior. Additionally, the aggregation of data can create a disconnect between the current prescriber and specific errors, making it challenging to identify clear avenues for improvement. It's important to note that audits may not inherently lead to behavior change.[6] Nevertheless, the development of prescribing indicators for patients offers a promising solution, as these indicators, when integrated into electronic prescribing systems, can provide immediate feedback to clinicians.[7-9]

In our study female prominence was seen with a male-female ratio of 1:1.6. The same was observed in a study by Kaliamoorthy *et al*. and Venugopal where female patients were higher than male patients.[10,11]

Our study revealed an average of 2.145 drugs prescribed per patient per encounter, which is notably lower than the 8.19 value reported in the study by Basnet *et al*.[4] This value was slightly higher than the WHO recommended optimal range of 1.6-1.8. Studies conducted in Libya have reported this index ranging from 2.85 to 3.00[12,13] It aligns with the findings of a study in Ghana[14] but is higher than the index observed in Ethiopia (1.83).[15] Similarly, our results indicated a slightly lower index compared to studies conducted in the Eastern Mediterranean Region (2.7),[16] India (2.58),[17] Sudan (2.55),[18] Egypt (2.5),[19] and Saudi Arabia (2.4).[20] Notably, prescribing drugs by their generic names fosters the rational use of medications by enhancing safety, efficacy, and cost-effectiveness, as it enables the identification of drug products using their scientific names.[21]

The utilization of generic drug names stood at 80%, surpassing the 27.7% observed in Kenya, although it falls short of the WHO's recommended 100%. This variance may be ascribed to healthcare providers' preference for branded medications over generic alternatives, substantial promotional efforts undertaken by pharmaceutical companies and their representatives when dealing with prescribers, or the absence of a national policy encouraging generic prescription.[22] The inclination towards brand names can be attributed to marketing-oriented drug policies, a practice that healthcare providers should actively discourage.

In our research, we observed a notable decline in antibiotic treatment as patient age increased, with the elderly population (aged 65 and above) being the most likely to receive prescriptions. It's worth noting that there is substantial variation in the age ranges of patients included in contrasting studies, with many focusing solely on specific patient subsets. This variance makes it challenging to draw direct comparisons regarding age-related findings. While our findings align with studies conducted in Holland and Australia,[23,24] which also identified high rates of antibiotic treatment among the elderly and children, similar studies in England/Wales and Sweden reported comparable trends.[25,26] Conversely, research conducted in Norway revealed that patients aged 80 and older had the lowest likelihood of being prescribed antibiotics. Regarding the most frequently prescribed antimicrobial agents in our study, we found that cefotaxim, a third-generation cephalosporin derivative, was the predominant choice. It was followed by ceftriaxone, and among aminoglycosides, Amikacin emerged as the most commonly prescribed drug.[27-29]

The majority of individuals were living with one or two chronic health conditions, with only 5% indicating the presence of more than five co-morbidities. Notably, hypertension emerged as the most prevalent co-morbid condition. It's worth mentioning that the severity of these co-morbid conditions was linked to a diminished Health-Related Quality of Life (HRQoL) and a decline in dementia-specific Quality of Life (QoL). Individuals with severe co-morbid conditions faced increased odds of experiencing difficulties in mobility, self-care, managing their usual activities, as well as dealing with pain and mood-related issues. It's important to highlight that the prevalence rate of diabetes mellitus in this study, at 32%, differs from previously reported rates for individuals living with osteoporosis. In our study, the prevalence rate for co-morbidity concerning hypertension within the living situation was found to be 29%.[30]

In our study, we observed that the highest proportion of prescribed drugs came in the form of intravenous formulations, accounting for 64%, followed by oral formulations at 29%. Interestingly, a study conducted by Kishore *et al*. in an orthopedic outpatient setting in 2017 revealed a significant contrast, where prescriptions with oral formulations were as high as 94%, with parenteral formulations constituting only 4% of the prescriptions.[31]

Hospitalized elderly patients often experience elevated costs, complications, worse outcomes, and longer Lengths of Stay (LOS) compared to their younger counterparts. For instance, a study by Freeman *et al*. estimated that when compared to younger patients (aged 18-44 years), older adults (aged 65-84 years) had hospital stays that were, on average, 1.4 days longer. Surprisingly, no single intervention consistently showed a reduction in LOS for older patients. While one review suggested that discharge planning was associated with a modest 0.73-day reduction in LOS for older patients, others found no such association or even reported an increased LOS.[32-34] However, our study indicates that for patients aged 21-30 years, there was a 27% increase in the

length of hospital stay, resulting in a 2.7-day contract from the aforementioned prescription study.

Our research underscores the importance of adhering to WHO standards, where prescriptions by generic name should ideally reach 100%. Nevertheless, our study revealed that 80% of drugs (1372) were prescribed using generic names, with 20% (344) relying on brand names. This discrepancy contrasts with the findings of Baghel *et al.*[35] It is noteworthy that a greater number of physicians favored generic names over brand names, a practice that should be promoted as it not only benefits physicians but also alleviates the burden on patients, potentially leading to increased patient compliance in our study. The statistical analysis indicated that the mean (Mean±SD) was 858±726.9, with a *p*-value of 0.3436, which was found to be statistically insignificant.

Our study emphasizes the utilization of medications among patients seeking care in orthopedic departments for various clinical conditions. However, it's essential to acknowledge that we did not capture data regarding drug-drug interactions, drug-food interactions, prescription costs, and medication errors in the current study. These limitations hindered our ability to comprehensively assess our research, underscoring the need for future investigations to delve deeper into prescription practices within orthopedic departments.

CONCLUSION

The study demonstrated that cefotaxim emerged as the most commonly prescribed antibiotic, signifying a positive step toward promoting the rational use of antibiotics in hospitalized patients. Nonetheless, it is imperative to stress that continuous monitoring of antibiotic usage is crucial. Optimizing drug regimens in line with national drug prescribing guidelines for osteoporosis patients can be beneficial during the course of drug therapy. Moreover, the study sheds light on the fact that the average number of drugs prescribed in this study slightly exceeded WHO standards. This research serves as a compelling motivation for clinicians to consider increasing the utilization of generic drugs, potentially leading to cost savings in healthcare without compromising the efficacy of the medications. This, in turn, could guide more clinicians toward favoring generic drugs when prescribing for patients in the orthopedic department. Furthermore, it is noteworthy that injectable drugs are more commonly prescribed in comparison to other formulations. In light of these findings, we recommend conducting studies with larger sample sizes and the inclusion of multicenter investigations to gain a more comprehensive understanding of the overall prescribing practices among orthopedic patients.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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