RESEARCH PAPER

Factors Associated with Osteoporosis Medication Adherence among Elderly Orthopaedic Patients: A Retrospective Cohort Study

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ABSTRACT

Background: Osteoporosis is a major public health concern among the elderly and is associated with increased fragility fractures, disability, and healthcare costs. Although effective medications are available, poor long-term adherence remains a significant challenge that compromises treatment outcomes.

Objective: This study aimed to determine the rate of adherence to osteoporosis medications at 3-, 6-, and 12-month follow-up among elderly orthopaedic patients receiving treatment at the Department of Orthopaedics, Saveetha Medical College, Chennai, and to evaluate demographic, clinical, and treatment-related factors associated with adherence. The study further sought to identify independent predictors of adherence to osteoporosis medications to help improve long-term treatment compliance and strengthen fracture prevention strategies.

Materials and Methods: This retrospective cohort study was conducted in the Department of Orthopaedics, Saveetha Medical College and Hospital, Chennai. A total of 63 elderly patients who initiated anti-osteoporotic therapy between January and June 2025 were included, with adherence followed up over the subsequent 12 months (through June 2026). Data were obtained from medical records, pharmacy refill records, and follow-up documentation. Medication adherence was assessed at 3, 6, and 12 months, and demographic, clinical, and treatment-related variables were analysed using SPSS version 26. Logistic regression analysis was performed to identify independent predictors of adherence.

Results: Medication adherence declined from 88.9% at 3 months to 77.8% at 6 months and 65.1% at 12 months. Previous fragility fractures, and vitamin D supplementation were significant positive predictors of adherence, whereas polypharmacy was significantly associated with poor adherence. Financial constraints (31.8%), forgetfulness (22.7%), and adverse drug effects (18.2%) were the common reasons for treatment discontinuation.

Conclusion: Medication adherence among elderly osteoporosis patients declined progressively during follow-up. Early identification of patients at risk of poor adherence, coupled with regular counselling, structured follow-up, and multidisciplinary interventions, may improve long-term treatment persistence, reduce recurrent fractures, and enhance clinical outcomes.

Keywords: Osteoporosis; Medication adherence; Medication persistence; Anti-osteoporotic therapy; Older adults; Fragility fractures; Polypharmacy; Treatment discontinuation; Long-term adherence; Treatment duration; Secondary fracture prevention; Retrospective cohort study; Vitamin D supplementation

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INTRODUCTION

Osteoporosis is a chronic systemic skeletal disorder characterized by reduced bone mass and deterioration of bone microarchitecture, leading to increased bone fragility and susceptibility to fractures. It is one of the most significant public health problems affecting the elderly population worldwide, particularly among postmenopausal women and older men with multiple comorbidities. The growing proportion of older adults due to increased life expectancy has substantially increased the burden of osteoporosis-related fractures, resulting in considerable morbidity, mortality, disability, and healthcare expenditure. Hip, vertebral, and distal radius fractures are the most common osteoporotic fractures, often leading to prolonged hospitalization, functional decline, loss of independence, and diminished quality of life. Early diagnosis and long-term pharmacological management remain the cornerstone of osteoporosis care to reduce fracture risk and improve patient outcomes.[1]

The prevalence of osteoporosis continues to rise globally with advancing age. According to international estimates, approximately one in three women and one in five men over the age of 50 years will experience an osteoporotic fracture during their lifetime. In India, the burden is particularly substantial because of an aging population, nutritional deficiencies, low calcium intake, widespread vitamin D deficiency, and delayed diagnosis. Elderly orthopaedic patients represent a particularly vulnerable population because many present following fragility fractures, indicating underlying osteoporosis that often remains untreated or inadequately managed. Despite the availability of effective anti-osteoporotic medications, fracture recurrence remains common, highlighting deficiencies in long-term treatment adherence.[2]

Several pharmacological agents have demonstrated efficacy in reducing osteoporotic fractures, including bisphosphonates, denosumab, selective estrogen receptor modulators, parathyroid hormone analogues, romosozumab, calcium supplementation, and vitamin D therapy.[1] These medications improve bone mineral density, suppress excessive bone resorption, stimulate bone formation, and significantly reduce vertebral and non-vertebral fracture risk when administered appropriately. However, the clinical effectiveness observed in randomized controlled trials is often not replicated in routine clinical practice because medication adherence declines substantially over time.

Consequently, many patients discontinue treatment prematurely, limiting the protective benefits against future fractures.[3] Medication adherence refers to the extent to which patients take medications according to prescribed dosage, timing, and duration. In osteoporosis management, adherence encompasses both compliance and persistence with therapy. Compliance reflects the accuracy with which patients follow prescribed dosing schedules, whereas persistence refers to the continuation of therapy for the recommended treatment duration. Since osteoporosis is largely asymptomatic until a fracture occurs, patients often underestimate the importance of continuous medication use. This silent nature of the disease contributes significantly to poor adherence, making osteoporosis one of the chronic conditions with the lowest long-term medication persistence rates worldwide.[4]

Numerous studies have reported that nearly 40–60% of patients discontinue osteoporosis medications within the first year of treatment. Non-adherence is associated with increased fracture incidence, greater hospitalization rates, higher healthcare costs, and elevated mortality following fragility fractures. Patients who fail to adhere to prescribed therapy have significantly lower gains in bone mineral density and reduced fracture prevention compared to adherent individuals. Therefore, improving medication adherence has become an essential component of comprehensive osteoporosis management, with increasing emphasis on identifying modifiable predictors influencing treatment continuation.[5]

Medication adherence among elderly orthopaedic patients is influenced by multiple demographic, clinical, psychological, socioeconomic, and healthcare-related factors. Advanced age, female sex, educational status, cognitive impairment, polypharmacy, financial constraints, adverse drug reactions, complicated dosing regimens, inadequate patient education, poor physician-patient communication, and limited family support have all been associated with reduced adherence. Additionally, depression, fear of medication side effects, misconceptions regarding osteoporosis, and lack of perceived disease severity contribute to premature discontinuation of therapy. Identifying these predictors enables clinicians to design targeted interventions that enhance adherence and improve long-term skeletal health.[6]

Orthopaedic departments play a critical role in osteoporosis management because many elderly patients initially seek care after sustaining fragility fractures. This encounter provides an important opportunity for secondary fracture prevention through timely diagnosis, initiation of anti-osteoporotic therapy, patient counselling, and structured follow-up. Nevertheless, studies have consistently demonstrated a substantial treatment gap following osteoporotic fractures, with many eligible patients either never receiving osteoporosis medication or discontinuing therapy during follow-up. Establishment of fracture liaison services and multidisciplinary osteoporosis clinics has shown promise in improving treatment initiation and adherence, yet implementation remains inconsistent across healthcare settings.[7]

Several methods have been employed to evaluate medication adherence in clinical research, including pharmacy refill records, medication possession ratio, proportion of

days covered, self-reported questionnaires such as the Morisky Medication Adherence Scale, pill counts, electronic monitoring systems, and review of medical records. Retrospective cohort studies provide valuable real-world evidence regarding adherence patterns because they reflect routine clinical practice rather than controlled research environments. Such studies also facilitate identification of patient characteristics associated with adherence while evaluating long-term outcomes over extended follow-up periods. The findings generated from retrospective analyses are particularly useful for developing institutional strategies aimed at improving osteoporosis care among elderly orthopaedic patients.[8]

India faces unique challenges in osteoporosis management owing to variations in healthcare access, socioeconomic disparities, medication affordability, and limited public awareness regarding bone health. Elderly patients frequently have multiple chronic illnesses requiring several medications, increasing the likelihood of treatment fatigue and non-adherence. Furthermore, differences in educational status, rural-urban healthcare accessibility, caregiver availability, and follow-up compliance influence persistence with osteoporosis therapy. Evidence regarding predictors of medication adherence among Indian elderly orthopaedic patients remains relatively limited, particularly from tertiary care teaching hospitals. Understanding locally relevant determinants is essential for developing effective patient-centred interventions tailored to regional healthcare settings.[9]

Considering the increasing burden of osteoporotic fractures and the critical importance of sustained pharmacological therapy, identifying factors associated with medication adherence is essential for improving clinical outcomes. This retrospective cohort study was therefore undertaken in the Department of Orthopaedics, Saveetha Medical College, Chennai, to evaluate predictors of osteoporosis medication adherence among elderly orthopaedic patients over an 18-month study period with follow-up assessments at 3, 6, and 12 months. The findings are expected to provide valuable evidence for clinicians in identifying high-risk patients, strengthening adherence counselling, optimizing follow-up strategies, and ultimately reducing the incidence of recurrent osteoporotic fractures in the elderly population.[10]

MATERIALS AND METHODS

Study Design

This study was designed as a retrospective cohort study to evaluate factors associated with osteoporosis medication adherence among elderly orthopaedic patients receiving anti-osteoporotic treatment.

Study Setting

The study was conducted in the Department of Orthopaedics, Saveetha Medical College and Hospital, Chennai, utilizing data obtained from hospital medical records and follow-up documentation.

Study Duration

The study covered an 18-month period from January 2025 to June 2026. Patients who initiated osteoporosis therapy between January and June 2025 were identified from hospital records and their available records were reviewed for the subsequent 12 months, with adherence assessed at 3-, 6-, and 12-month intervals.

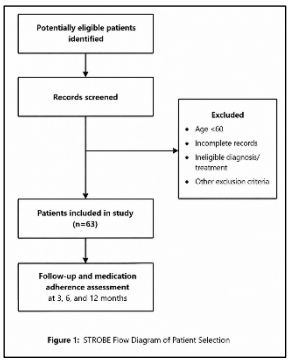

Figure 1: STROBE Flow Diagram of Patient Selection

Study Population

The study population comprised elderly patients diagnosed with osteoporosis who attended the Department of Orthopaedics and were prescribed pharmacological treatment for osteoporosis.

Sample Size

A total of 63 patients who fulfilled the eligibility criteria were included in the study.

Sampling Technique

A consecutive sampling method was employed. All eligible patient records meeting the predefined inclusion and exclusion criteria during the enrollment period were reviewed.

Data Collection

Data were collected retrospectively from hospital electronic medical records, outpatient records, inpatient case sheets, pharmacy dispensing records, and follow-up documentation**.** The variables assessed included demographic characteristics (age, sex, and body mass index), medical history and comorbidities, history of previous fragility fractures, bone mineral density (BMD) findings where available, type of osteoporosis medication prescribed, calcium and vitamin D supplementation, number of concomitant medications (polypharmacy), duration of osteoporosis treatment, follow-up attendance, medication refill records, documented adverse drug reactions, and treatment discontinuation, including the reasons for discontinuation where available**.**

Follow-up

Medication adherence was assessed at 3, 6, and 12 months following initiation of osteoporosis therapy using clinical follow-up documentation and available medication dispensing/refill records. Patients were classified as adherent when continued use of the prescribed osteoporosis medication was documented at the respective assessment point. Patients were classified as non-adherent when discontinuation of therapy was documented. Medication refill or dispensing records were used as supporting evidence of treatment continuation where available. No Medication Possession Ratio (MPR), Proportion of Days Covered (PDC), or validated adherence questionnaire was used.

Outcome Measures

Primary Outcome

- Medication adherence to prescribed osteoporosis therapy during the follow-up period.

Secondary Outcomes

- Identification of demographic, clinical, and treatment-related predictors influencing medication adherence.
- Association between medication adherence and follow-up attendance.
- Reasons for treatment discontinuation, where documented.

Statistical Analysis

The collected data were entered into Microsoft Excel and analysed using the Statistical Package for the Social Sciences (SPSS) version 26.0. Medication adherence was summarized at 3, 6, and 12 months

among patients with documented adherence status at each respective assessment point. Patients with documented treatment discontinuation were classified as non-adherent, whereas patients without sufficient documentation to determine treatment status were not classified as adherent or non-adherent.

Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. The chi-square test or Fisher's exact test was used for categorical variables, and the independent Student's t-test was used for continuous variables, as appropriate. Variables with $p<0.10$ on univariate analysis, together with female sex, which was retained a priori given its established clinical relevance in osteoporosis adherence, were entered into a multivariable logistic regression model to identify factors independently associated with medication adherence. A p-value <0.05 was considered statistically significant.

Ethical Considerations

The study was conducted after obtaining approval from the Institutional Ethics Committee of Saveetha Medical College and Hospital.

Inclusion Criteria

- Patients aged 60 years and above.
- Patients diagnosed with primary or secondary osteoporosis based on clinical and/or radiological evaluation.
- Patients prescribed anti-osteoporotic medications.
- Patients treated in the Department of Orthopaedics during the study period.
- Patients with sufficient medical and/or pharmacy documentation to determine medication adherence during the defined follow-up period.

Exclusion Criteria

- Patients younger than 60 years.
- Patients with insufficient medical records to determine medication continuation or discontinuation.
- Patients for whom medication adherence status could not be reliably determined from available clinical or pharmacy records.
- Patients with pathological fractures due to malignancy or metastatic bone disease.
- Patients with severe cognitive impairment or psychiatric illness preventing reliable assessment of medication use.
- Patients participating in other clinical trials involving osteoporosis treatment during the study period.

RESULTS

A total of 63 elderly patients diagnosed with osteoporosis and receiving anti-osteoporotic medications were included in the study. Medication adherence was assessed at 3, 6, and 12 months, and demographic, clinical, and treatment-related variables were analysed to identify predictors of adherence.

Table 1. Baseline Demographic Characteristics of the Study Population (n = 63)

Variable	Frequency (n)	Percentage (%)
Age (years)		

60–69	28	44.4
70–79	24	38.1
≥80	11	17.5
Sex		
Male	21	33.3
Female	42	66.7
BMI (kg/m²)		
<18.5	8	12.7
18.5–24.9	31	49.2
25–29.9	18	28.6
≥30	6	9.5

The majority of patients were aged between 60 and 69 years (44.4%), and females constituted 66.7% of the study population. Nearly half of the participants had a normal BMI, while obesity was observed in only 9.5%.

Table 2. Clinical Characteristics of the Study Population

Variable	Frequency (n)	Percentage (%)
Previous Fragility Fracture	38	60.3
Hypertension	35	55.6
Diabetes Mellitus	26	41.3
Polypharmacy (≥5 medications)	30	47.6
Vitamin D Deficiency	40	63.5
Family History of Osteoporosis	14	22.2
Vitamin D Supplementation	47	74.6

Fragility fractures were present in 60.3% of patients, indicating a high-risk elderly population. Vitamin D deficiency was the most common associated clinical finding, affecting 63.5% of participants. Vitamin D supplementation (calcium plus vitamin D) was prescribed to 74.6% of patients; this is a distinct variable from baseline vitamin D deficiency and is analysed separately in Tables 5 and 7.

Table 3. Osteoporosis Medications Prescribed

Medication	Frequency (n)	Percentage (%)
Oral Bisphosphonates	29	46.0
Intravenous Bisphosphonates	11	17.5
Denosumab	13	20.6
Teriparatide	7	11.1
SERMs	3	4.8

Oral bisphosphonates were the most commonly prescribed medications (46.0%), followed by Denosumab (20.6%). Only a small proportion received selective estrogen receptor modulators.

Table 4. Medication Adherence during Follow-up

Follow-up	Adherent n (%)	Non-adherent n (%)
3 Months	56 (88.9)	7 (11.1)
6 Months	49 (77.8)	14 (22.2)
12 Months	41 (65.1)	22 (34.9)

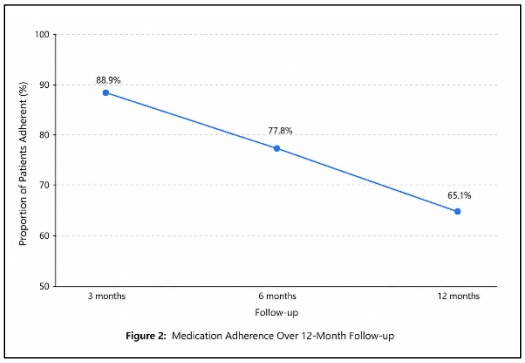

Figure 2: Medication Adherence Over 12-Month Follow-up

Medication adherence gradually declined during follow-up, decreasing from 88.9% at 3 months to 65.1% at 12 months. The

proportion of non-adherent patients nearly tripled over one year.

Table 5. Factors Associated with Medication Adherence at 12 Months

Variable	Adherent (n=41)	Non-adherent (n=22)	p-value
Female sex	31 (75.6%)	11(50.0%)	0.076
Previous Fragility Fracture	29 (70.7%)	9 (40.9%)	0.042
Polypharmacy	15 (36.6%)	15 (68.2%)	0.033
Vitamin D Supplementation	35 (85.4%)	12 (54.5%)	0.018

Previous fragility fracture, polypharmacy, and vitamin D supplementation were significantly associated with adherence at 12 months. Female sex showed a higher proportion of adherence but was not statistically significant in univariate analysis.

Table 6. Documented Reasons for Medication Discontinuation/Non-adherence at 12 Months (n = 22)

Reason	Frequency (n)	Percentage (%)
Financial Constraints	7	31.8
Forgot Medication	5	22.7
Adverse Drug Effects	4	18.2
Lack of Symptoms	3	13.6
Missed Follow-up Visits	3	13.6

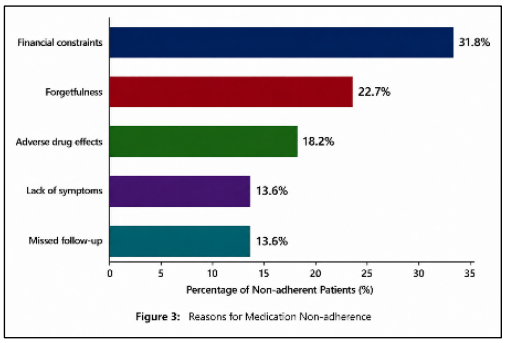

Figure 3: Reasons for Medication Non-adherence

Among the 22 patients classified as non-adherent at 12 months, the most frequently documented reasons were financial constraints (31.8%), forgetfulness (22.7%), and adverse drug effects (18.2%).

Table 7. Multivariable Logistic Regression Analysis for Predictors of Medication Adherence at 12 Months

Predictor	Odds Ratio (OR)	95% CI	p-value
Female sex	2.36	1.10–5.08	0.032
Previous Fragility Fracture	2.89	1.21–6.92	0.018
Vitamin D Supplementation	3.14	1.34–7.35	0.009
Polypharmacy	0.42	0.18–0.95	0.036

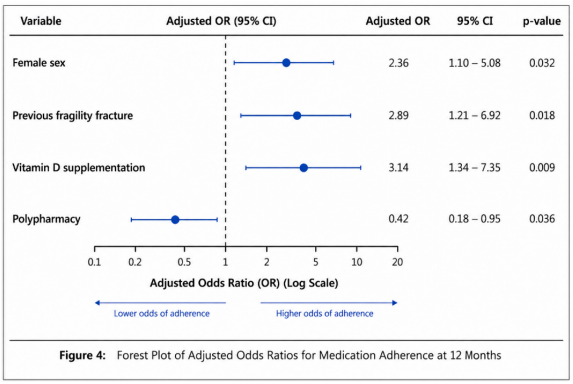

Figure 4: Forest Plot of Adjusted Odds Ratios for Medication Adherence at 12 Months

On multivariable analysis, female sex, previous fragility fracture, and vitamin D supplementation were associated with higher odds of documented medication continuation, whereas polypharmacy was associated with lower odds.

Table 8. Overall Medication Adherence Status at 12 Months

Adherence Category	Frequency (n)	Percentage (%)
Good Adherence	41	65.1
Poor Adherence	22	34.9

At 12 months, 41 patients (65.1%) were classified as adherent and 22 (34.9%) as non-adherent according to the study's record-based adherence assessment. These findings indicate a substantial decline in adherence over the follow-up period.

DISCUSSION

The present retrospective cohort study evaluated the predictors of osteoporosis medication adherence among 63 elderly orthopaedic patients over a 12-month follow-up period. The study demonstrated that medication adherence progressively declined with time, from 88.9% at 3 months to 77.8% at 6 months and 65.1% at 12 months. Previous fragility fractures, and vitamin D supplementation were associated with better medication adherence, whereas polypharmacy significantly reduced treatment persistence. Female sex was not significantly associated with adherence in univariate analysis but was independently associated with higher odds of adherence after adjustment for the variables included in the multivariable model. Financial constraints, forgetfulness, and adverse drug reactions were the leading causes of medication discontinuation. These findings emphasize that medication adherence remains a major challenge in the long-term management of osteoporosis and that both patient-related and healthcare-related factors influence treatment continuation.

In the present study, females constituted 66.7% of the study population, while most participants belonged to the 60–69-year age group (44.4%). This observation is consistent with the established epidemiology of osteoporosis, which predominantly affects postmenopausal women due to accelerated estrogen deficiency-related bone loss. Similar demographic patterns have been reported by Siris et al., whose review of real-world compliance and persistence data confirmed that osteoporosis pharmacotherapy is used predominantly by women.[11] Likewise, Imaz et al. demonstrated that poor adherence to osteoporosis therapy significantly increases fracture risk, underscoring the clinical importance of sustained treatment in this predominantly female population.[6]

The present study showed that 60.3% of patients had sustained previous fragility fractures before initiation of treatment. Fragility fractures are considered one of the strongest predictors of future osteoporotic fractures and often serve as the first clinical manifestation of osteoporosis. Similar findings were reported by Akesson et al., who emphasized that patients presenting with fragility fractures represent a high-risk group requiring immediate secondary fracture prevention through sustained pharmacological therapy.[7] Despite this increased risk, previous studies have consistently reported a substantial treatment gap after fracture, indicating that many patients discontinue therapy within the first year.

One of the most important findings of the present study was the gradual decline in medication adherence over time. Although adherence remained high at three months (88.9%), it decreased to 65.1% by the end of one year. This pattern is consistent with

numerous international studies demonstrating that persistence with osteoporosis medications declines progressively during long-term therapy. Cramer et al. reported that nearly half of patients discontinue bisphosphonate therapy within the first year, primarily because osteoporosis remains asymptomatic until fractures occur.[12] Similarly, Vrijens et al. highlighted that medication adherence in chronic diseases deteriorates over time without structured patient education and regular follow-up.[8] The adherence rate observed in the present study is slightly higher than that reported in several Western studies, possibly reflecting closer follow-up within a tertiary care teaching hospital.

Oral bisphosphonates were the most commonly prescribed medications (46.0%) in this study, followed by denosumab and intravenous bisphosphonates. Oral bisphosphonates remain the first-line pharmacological treatment because of their established efficacy, affordability, and widespread availability. However, their strict administration requirements and gastrointestinal adverse effects frequently contribute to poor adherence. Black and Rosen demonstrated that although bisphosphonates significantly reduce vertebral and hip fractures, long-term persistence remains suboptimal due to inconvenience and medication-related side effects.[3] The availability of injectable therapies such as denosumab may improve adherence in selected patients by reducing dosing frequency.

After adjustment for the variables included in the model, female sex was associated with higher odds of documented medication continuation; however, this finding should be interpreted cautiously given the small sample size and observational design (OR 2.36, p=0.032). This association may reflect differences in healthcare utilization, disease awareness, or follow-up behaviour, although these mechanisms were not directly assessed in the present study. The finding suggests that older male patients may benefit from targeted adherence counselling. Siris et al. similarly reported that compliance and persistence with osteoporosis medications remain suboptimal across large real-world cohorts, an observation consistent with the progressive decline in adherence seen in the present study.[11]

Previous fragility fracture was also independently associated with higher medication adherence. Patients with a prior fracture may have greater awareness of fracture risk; however, this mechanism was not directly evaluated in the present study. The finding supports the importance of structured secondary fracture prevention and adherence counselling for patients presenting with fragility fractures. Akesson et al. similarly reported that patients enrolled in fracture liaison services following fragility fractures demonstrated significantly higher treatment persistence than those receiving routine orthopaedic care.[7]

Vitamin D supplementation was the strongest positive factor associated with medication adherence in the present study (OR 3.14, p=0.009). This association should not be interpreted as evidence that Vitamin D supplementation was associated with higher odds of documented medication continuation, as patients receiving supplementation may differ from those not receiving it in clinical management, counselling, or healthcare engagement. Cosman et al. emphasized that adequate calcium and vitamin D supplementation improves therapeutic outcomes and

encourages continued adherence to anti-resorptive therapy.[10] The present study did not directly assess these potential mechanisms.

Polypharmacy was significantly associated with lower medication adherence (OR 0.42, p=0.036). Nearly half of the patients were receiving five or more concomitant medications. A higher medication burden may increase regimen complexity and the likelihood of missed doses. The finding supports consideration of medication simplification and regular medication review in elderly patients receiving osteoporosis therapy. These findings are consistent with Imaz et al., who demonstrated that poor medication adherence in osteoporosis substantially increases fracture risk, reinforcing the clinical relevance of adherence barriers such as polypharmacy identified in the present study.[6]

Financial constraints were the most frequently documented reason for non-adherence or treatment discontinuation (31.8%), followed by forgetfulness (22.7%) and adverse drug effects (18.2%). These findings highlight potentially modifiable barriers to sustained treatment. Cramer et al. similarly reported that treatment cost remains a major determinant of medication persistence, particularly where long-term therapy is not adequately reimbursed.[4] Practical interventions such as medication reminders, caregiver involvement, adherence counselling, and review of treatment affordability may be considered, although their effectiveness was not evaluated in the present study.

The findings of the present study have important clinical implications for orthopaedic practice. Elderly patients presenting with fragility fractures should undergo systematic osteoporosis evaluation and receive structured counselling regarding the importance of long-term medication adherence. Regular follow-up visits at 3, 6, and 12 months, combined with patient education, medication review, and assessment of barriers to adherence, may substantially improve treatment persistence. Implementation of multidisciplinary fracture liaison services involving orthopaedic surgeons, physicians, nurses, pharmacists, and physiotherapists has been shown to reduce secondary fractures through improved adherence and continuity of care.[14]

The present study has several strengths, including assessment of real-world osteoporosis medication adherence in elderly orthopaedic patients and evaluation of multiple demographic and clinical factors over 12 months. However, several limitations should be acknowledged. The retrospective design relied on existing medical records and pharmacy documentation and therefore may have resulted in incomplete or inconsistently documented information. The sample size of 63 patients from a single tertiary care centre limits generalizability and may result in unstable estimates in multivariable logistic regression. Medication adherence was assessed retrospectively using available clinical and pharmacy documentation rather than a validated adherence instrument or direct medication monitoring, misclassification of adherence status is possible. In addition, patients who discontinued treatment but remained in follow-up could not always be reliably distinguished from patients who were lost to follow-up; however, absence of documentation cannot necessarily be interpreted as medication non-adherence. The exclusion of patients without sufficient follow-up or documentation may also have

introduced selection bias. Future multicentre prospective studies with larger samples and standardized adherence measures are warranted.[15]

Overall, the present study demonstrates a progressive decline in adherence to documented osteoporosis medications during the first year of treatment. Previous fragility fracture, and vitamin D supplementation were associated with higher adherence, whereas polypharmacy was associated with lower adherence. Financial constraints, forgetfulness, and adverse drug effects were the most frequently documented barriers. These findings support the need for individualized counselling, medication review, attention to treatment affordability, and structured follow-up to address potentially modifiable barriers to long-term osteoporosis treatment.[16]

CONCLUSION

This retrospective cohort study demonstrated a progressive decline in documented osteoporosis medication adherence over 12 months, with 65.1% of patients classified as adherent at the final assessment. Previous fragility fracture, and vitamin D supplementation were independently associated with higher odds of adherence, whereas polypharmacy was associated with lower odds of adherence. Financial constraints, forgetfulness, and adverse drug effects were the most frequently documented barriers to continued treatment. Regular follow-up, patient education, medication counselling, medication review, and attention to treatment affordability may help address potentially modifiable barriers to long-term osteoporosis therapy.

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