



## “Polypharmacy in the Elderly: Nursing Aspects”

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**Abstract:** Polypharmacy, the concurrent use of multiple medications, is a growing concern among the elderly due to its association with adverse drug reactions, medication non-adherence, and increased healthcare costs. Nurses play a critical role in identifying, preventing, and managing polypharmacy-related issues. This article explores the prevalence, risk factors, consequences, and nursing strategies for addressing polypharmacy in the elderly population. Emphasis is placed on nursing assessment, medication reconciliation, patient education, and interprofessional collaboration. Understanding these aspects can help improve patient safety and healthcare outcomes.

**Keywords:** Polypharmacy, elderly, nursing, medication safety, adverse drug reactions, medication reconciliation, geriatrics

### 1. Introduction

Polypharmacy, defined as the use of five or more medications concurrently, is a common phenomenon in geriatric populations due to multiple chronic conditions requiring pharmacological management (Maher et al., 2014). While medications are essential for managing diseases, inappropriate prescribing, drug interactions, and non-adherence can result in negative health outcomes. Nurses, being at the frontline of patient care, play a crucial role in monitoring medication regimens, ensuring safe administration, and educating patients and caregivers about potential risks.

### 2. Prevalence and Risk Factors of Polypharmacy in the Elderly

#### 2.1 Prevalence

Polypharmacy is a widespread concern among the elderly population, particularly in hospitalized and institutionalized settings. The prevalence of polypharmacy varies across different regions and healthcare systems, but studies consistently show that it affects a significant proportion of older adults. According to Jokanovic et al. (2015), more than **50% of elderly individuals take five or more medications daily**, and approximately **20% take ten or more medications**.

In **community-dwelling elderly individuals**, polypharmacy is less common but still present. Research indicates that **30-40% of elderly individuals living independently take five or more medications** due to multiple chronic conditions and age-related

physiological changes. The prevalence is significantly higher in **long-term care facilities and nursing homes**, where older adults often have complex health conditions requiring multiple prescriptions. A study by Wastesson et al. (2018) found that **up to 80% of nursing home residents** are exposed to polypharmacy, with a high percentage at risk of potentially inappropriate medication use.

Several factors influence the prevalence of polypharmacy:

- **Healthcare system differences:** Countries with universal healthcare and accessible pharmaceutical services tend to have higher medication use due to better access to treatments.
- **Socioeconomic status:** Individuals with better financial stability may have greater access to medications, while lower-income elderly individuals may rely on self-medication or alternative therapies.
- **Cultural factors:** In some cultures, medication use is heavily influenced by traditional medicine, leading to a combination of prescription drugs and herbal remedies, increasing the risk of polypharmacy.
- **Technological advances in medicine:** As new drugs are developed to manage chronic diseases, the likelihood of patients being prescribed multiple medications also increases.

#### 2.2 Risk Factors



Several interrelated factors contribute to polypharmacy in the elderly. These risk factors can be categorized into **biological, healthcare-related, and behavioral factors**.

## 2.2.1 Biological Risk Factors

### 1. Multiple Chronic Diseases

- Aging is often accompanied by chronic diseases such as **hypertension, diabetes mellitus, chronic kidney disease, cardiovascular diseases, osteoporosis, and arthritis**.
- These conditions frequently require long-term pharmacological management, leading to **polypharmacy as doctors prescribe multiple medications to control different symptoms and prevent complications**.
- For example, a patient with **hypertension, diabetes, and arthritis** may be prescribed **antihypertensives, antidiabetic drugs, pain relievers, and additional medications for secondary complications like neuropathy or hyperlipidemia**.

### 2. Age-Related Physiological Changes

- The **altered metabolism of drugs in the elderly** increases the likelihood of adverse drug reactions (ADRs), necessitating additional medications to counteract these effects.
- Age-related **renal and hepatic decline** affects drug clearance, requiring dose adjustments and sometimes leading to unintentional overdoses.

## 2.2.2 Healthcare-Related Risk Factors

### 1. Fragmented Healthcare System

- Many elderly patients see **multiple specialists** for different health conditions, leading to **uncoordinated prescribing** of medications.
- Specialists often focus on their area of expertise, prescribing medications **without full awareness of other drugs** the patient may be taking.
- Lack of a **centralized medication record** can lead to **duplicate prescriptions, drug-drug**

**interactions, and prescribing cascades** (where one medication is prescribed to treat the side effects of another).

### 2. Lack of Regular Medication Review

- Medications are often **prescribed indefinitely without periodic reassessment**, leading to patients continuing drugs they may no longer need.
- There is **insufficient deprescribing**, meaning patients are not taken off unnecessary or potentially harmful medications.

### 3. Overprescription in Hospital Settings

- Hospitalized elderly patients often receive **additional medications** to manage acute illnesses. Upon discharge, these medications may continue unnecessarily, increasing the medication burden.
- The **"prescribing cascade"** can occur, where new symptoms caused by a medication's side effects are misinterpreted as a new disease, leading to **additional prescriptions** rather than identifying the root cause.

### 4. Limited Pharmacist Involvement

- In some healthcare systems, there is **insufficient pharmacist involvement in reviewing prescriptions and identifying potential medication-related problems**.
- Regular **pharmacist-led medication reviews** could prevent unnecessary polypharmacy and optimize therapy.

## 2.2.3 Behavioral and Lifestyle Risk Factors

### 1. Self-Medication

- Many elderly individuals consume **over-the-counter (OTC) medications, herbal supplements, and alternative medicines** without consulting healthcare providers.
- Common self-medicated drugs include **painkillers (NSAIDs), vitamins, laxatives, and herbal supplements** that may interact with prescribed medications, leading to unintended effects.
- Elderly individuals often believe that **herbal and natural supplements** are safe, but some



herbal products (e.g., ginseng, St. John's Wort) can interfere with prescription medications.

## 2. Polypharmacy Due to Psychological Factors

- Cognitive decline, **dementia, depression, and anxiety** in elderly patients contribute to medication errors and misuse.
- Patients with **memory impairment** may forget whether they have taken their medications and either skip doses or take extra doses.
- Some elderly individuals **hoard medications from previous prescriptions**, leading to **inappropriate medication use or overdosing**.

## 3. Influence of Family and Caregivers

- Family members or caregivers may influence medication use by either **encouraging or discouraging** adherence to prescribed drugs.
- In some cases, elderly individuals **receive medications from multiple family members**, increasing the risk of unmonitored medication use.

## 4. Financial Constraints

- Elderly patients, especially those on fixed incomes, may have **limited financial resources** to afford all their prescribed medications.
- As a result, they may **skip doses, reduce frequency, or turn to cheaper but potentially unsafe alternatives** such as herbal medicines or expired drugs.

### 2.2.4 Social and Cultural Risk Factors

#### 1. Trust in Physicians and Overprescription

- Some elderly individuals **believe that taking more medications indicates better care**, leading them to request additional prescriptions from their doctors.
- Physicians may feel pressured to prescribe medications even when non-pharmacological treatments (such as diet and lifestyle changes) could be more effective.

#### 2. Cultural and Traditional Medicine Practices

- In many cultures, elderly individuals rely on **traditional medicine, Ayurvedic treatments, or homeopathic remedies**, often in combination with modern medications.
- These practices increase the risk of **drug-herbal interactions** and **reduced efficacy of prescribed medications** due to conflicting mechanisms of action.

### Summary of Risk Factors

Risk Factor Category	Specific Risk Factors
Biological	Multiple chronic diseases, altered drug metabolism, organ function decline
Healthcare-Related	Fragmented care, lack of medication review, hospital overprescription, insufficient deprescribing, poor pharmacist involvement
Behavioral	Self-medication, memory impairment, psychological factors, financial constraints, caregiver influence
Social & Cultural	Overprescription due to patient demand, traditional medicine use, limited health literacy

### 3. Consequences of Polypharmacy

#### 3.1 Adverse Drug Reactions (ADRs)

Elderly individuals experience altered pharmacokinetics due to decreased renal and hepatic function, making them more susceptible to ADRs (Gnjidic et al., 2012). Common ADRs include dizziness, confusion, gastrointestinal disturbances, and falls.

#### 3.2 Drug-Drug Interactions

The concurrent use of multiple drugs increases the risk of harmful drug interactions, which can lead to therapeutic failure or toxicity.

#### 3.3 Medication Non-Adherence

Medication non-adherence is a significant concern in elderly patients with polypharmacy. The complexity of medication regimens often leads to unintentional errors, confusion, or deliberate avoidance of medications due to various psychological, financial, and social factors. Non-adherence can result in poor disease management, increased hospitalizations, and a higher risk of mortality.



### 3.3.1 Types of Medication Non-Adherence

Medication non-adherence can be classified into two main types:

1. Unintentional Non-Adherence – Occurs when patients fail to take medications correctly due to forgetfulness, confusion, physical limitations, or lack of understanding.
2. Intentional Non-Adherence – Occurs when patients consciously choose not to take medications due to side effects, financial constraints, or personal beliefs.

### 3.3.2 Causes of Medication Non-Adherence

#### 1. Complexity of Medication Regimens

- Elderly patients with multiple chronic conditions often have complicated medication schedules that involve taking multiple pills at different times of the day.
- The presence of different dosing frequencies (e.g., once daily, twice daily, before meals, after meals) can cause confusion.
- Medications with special instructions, such as those requiring fasting, avoiding certain foods, or monitoring side effects, can be difficult to follow.

✓ *Example:* A patient taking antihypertensives, antidiabetic drugs, painkillers, and cholesterol-lowering medications may need to take 10+ pills a day at different times, increasing the chances of missing doses.

#### 2. Forgetfulness and Cognitive Decline

- Many elderly individuals suffer from age-related memory decline, dementia, or Alzheimer's disease, making it difficult to remember to take medications.
- Cognitive impairment affects executive functioning, making it harder for individuals to plan and follow their medication schedules.
- Even in patients without cognitive disorders, stress, depression, or fatigue can contribute to forgetfulness.

✓ *Example:* A 75-year-old patient with mild cognitive impairment may forget whether they have already taken their morning pills, leading to missed doses or accidental overdoses.

#### 3. Confusion Due to Medication Appearance and Changes

- Generic drugs often differ in color, shape, and size from brand-name drugs, causing confusion among elderly patients.
- Frequent changes in prescriptions or adjustments in dosages can make it difficult for elderly individuals to track their medications.

- Elderly patients may mix up similar-looking pills or take the wrong medication at the wrong time.

✓ *Example:* A patient prescribed two different white pills (e.g., a blood pressure medication and a cholesterol-lowering drug) may accidentally take the same pill twice while skipping the other.

#### 4. Side Effects Leading to Intentional Non-Adherence

- Many elderly patients stop taking medications due to side effects such as dizziness, nausea, fatigue, or gastrointestinal discomfort.
- Some medications cause orthostatic hypotension (sudden drops in blood pressure when standing up), confusion, or drowsiness, making elderly individuals hesitant to continue using them.
- Medications that affect daily functioning, such as sedatives or diuretics (which increase urination), may discourage adherence.

✓ *Example:* A patient prescribed a diuretic for hypertension may avoid taking it in the evening to prevent waking up frequently at night to urinate.

#### 5. Financial Constraints

- Many elderly individuals, especially those on fixed pensions or limited insurance coverage, struggle to afford all prescribed medications.
- Some elderly patients may skip doses to make medications last longer or prioritize certain medications over others due to financial limitations.
- High costs of brand-name drugs may prevent access to necessary treatment.

✓ *Example:* A low-income elderly patient may choose to buy only pain medication for arthritis and skip their cholesterol-lowering or blood pressure medication due to financial constraints.

#### 6. Lack of Health Literacy

- Many elderly individuals do not fully understand the purpose, benefits, or proper administration of their medications.
- Misconceptions about certain drugs being unnecessary, harmful, or addictive can lead to non-adherence.
- Some elderly individuals may believe that missing doses occasionally is harmless or that medications should only be taken when symptoms appear.





✓ *Example:* An elderly patient with hypertension may stop taking their medication when they feel fine, unaware that it is necessary for long-term control of blood pressure.

#### 7. Social and Psychological Factors

- Elderly individuals who live alone may lack a support system to help them remember to take medications or access pharmacies regularly.
- Depression and mental health issues can lead to medication neglect, especially in patients with chronic pain or terminal illnesses.
- Fear of dependency on medication or a belief in natural healing may lead some elderly individuals to intentionally avoid prescribed drugs.

✓ *Example:* A widowed 80-year-old woman with arthritis may avoid taking pain medications due to fear of becoming dependent on them, despite severe joint pain.

#### 3.3.3 Consequences of Medication Non-Adherence

Failure to adhere to prescribed medication regimens can result in:

- Worsening of Chronic Diseases – Poor medication adherence leads to uncontrolled diabetes, hypertension, or cardiovascular disease, increasing the risk of complications such as strokes or heart attacks.
- Increased Hospitalizations – Non-adherence is a leading cause of hospital readmissions among elderly patients due to disease exacerbation or drug withdrawal effects.
- Higher Healthcare Costs – Emergency hospital visits and additional treatments due to non-adherence place a financial burden on patients and healthcare systems.
- Polypharmacy Complications – Skipping doses or taking medications irregularly may lead to unnecessary prescription changes, resulting in increased medication burden and side effects.

#### 3.3.4 Nursing Interventions to Improve Medication Adherence

Nurses play a critical role in addressing medication non-adherence through:

1. Patient and Caregiver Education
  - Educate patients about the importance of adherence, proper dosing, and side effects.
  - Simplify medical terminology and provide clear written instructions.

- Encourage patients to ask questions and discuss concerns with healthcare providers.

2. Use of Reminder Tools

- Encourage the use of pill organizers, alarms, and medication reminder apps.
- Teach family members or caregivers to assist with medication management.

3. Simplifying Medication Regimens

- Work with doctors and pharmacists to reduce the number of medications where possible.
- Recommend long-acting formulations or combination pills to minimize dosing frequency.

4. Addressing Side Effects and Cost Barriers

- Encourage patients to report side effects instead of stopping medications abruptly.
- Explore alternative medications or generic options for cost-effective treatment.
- Provide information on government or insurance programs that assist with medication costs.

5. Behavioral Strategies

- Implement motivational interviewing techniques to help patients overcome resistance to medications.
- Encourage self-monitoring by keeping a medication diary.

6. Regular Follow-Ups

- Schedule periodic medication reviews to assess adherence and make necessary adjustments.
- Ensure that patients have access to refills and ongoing support.

#### 3.4 Increased Hospitalizations and Mortality

Studies indicate a strong correlation between polypharmacy and increased hospital admissions due to drug-related complications (Wimmer et al., 2016).

#### 4. Nursing Role in Managing Polypharmacy

##### 4.1 Medication Assessment and Reconciliation

Nurses play a key role in reviewing and reconciling medications during patient admission, transfers, and discharge. This involves:



- Verifying current prescriptions with patients and caregivers
- Identifying unnecessary or duplicate medications
- Communicating discrepancies to healthcare providers

#### 4.2 Patient and Caregiver Education

Education on proper medication use, potential side effects, and the importance of adherence is crucial. Nurses can use strategies such as:

- Providing written medication schedules
- Teaching the use of pill organizers
- Encouraging open communication about medication-related concerns

#### 4.3 Monitoring and Reporting ADRs

Nurses should closely monitor patients for signs of ADRs and report them to physicians for timely intervention. Regular assessment tools, such as the Beers Criteria and STOPP/START criteria, can help identify inappropriate prescribing (O'Mahony et al., 2015).

#### 4.4 Encouraging Non-Pharmacological Interventions

Whenever possible, nurses should advocate for non-pharmacological treatments, such as lifestyle modifications, physiotherapy, and dietary changes, to minimize reliance on medications.

#### 4.5 Collaboration with Healthcare Teams

Interdisciplinary collaboration among nurses, pharmacists, and physicians ensures holistic medication management. Pharmacists can assist in reviewing medication appropriateness, while nurses provide ongoing monitoring and patient education.

#### 5. Strategies for Reducing Polypharmacy Risks

- **Regular Medication Review:** Conduct periodic medication reviews to discontinue unnecessary drugs.
- **Deprescribing:** A systematic approach to safely reducing or discontinuing medications that may no longer be beneficial.
- **Enhancing Communication:** Promoting effective communication between healthcare providers to prevent redundant prescribing.
- **Utilizing Technology:** Electronic prescribing and medication reconciliation software can help prevent errors.

#### 6. Conclusion

Polypharmacy in the elderly presents significant challenges, but nurses play a vital role in ensuring safe medication practices.

Through regular medication assessment, patient education, ADR monitoring, and interprofessional collaboration, nurses can minimize the risks associated with polypharmacy. Addressing this issue proactively can improve patient safety, reduce healthcare costs, and enhance the quality of life for elderly individuals.

#### 7. Bibliography

- Bjerre, L. M., Farrell, B., Hogel, M., Graham, L., Lemay, G., McCarthy, L., & Raman-Wilms, L. (2018). Deprescribing: An essential component of medication management in older people. *Canadian Family Physician*, 64(5), 339-341.
- Gnjjidic, D., Hilmer, S. N., Blyth, F. M., Naganathan, V., Waite, L., Seibel, M. J., & Cumming, R. G. (2012). High-risk prescribing and incidence of frailty among older community-dwelling men. *Clinical Pharmacology & Therapeutics*, 91(3), 521-528. <https://doi.org/10.1038/clpt.2011.258>
- Tian, F., Chen, Z., Zhang, J., Zhang, Y., & Feng, Q. (2025). Prevalence and Factors with Potentially Inappropriate Prescribing among Older Surgical Outpatients in China: A Nationwide Cross-sectional Study in 100 Hospitals. *Journal of Epidemiology and Global Health*, 15(1), 1-10.
- Jokanovic, N., Tan, E. C. K., Dooley, M. J., Kirkpatrick, C. M., & Bell, J. S. (2015). Prevalence and factors associated with polypharmacy in long-term care facilities: A systematic review. *Journal of the American Medical Directors Association*, 16(6), 535.e1-535.e12. <https://doi.org/10.1016/j.jamda.2015.03.003>
- Maher, R. L., Hanlon, J. T., & Hajjar, E. R. (2014). Clinical consequences of polypharmacy in elderly. *Expert Opinion on Drug Safety*, 13(1), 57-65. <https://doi.org/10.1517/14740338.2013.827660>
- Morin, L., Johnell, K., Laroche, M. L., Fastbom, J., & Wastesson, J. W. (2018). The epidemiology of polypharmacy in older adults: Register-based prospective cohort study. *Clinical Epidemiology*, 10, 289-298. <https://doi.org/10.2147/CLEP.S153458>
- Shareef, Z., Murtaza, A., Fatima, G., Aqib, A. I., Manzoor, Z., Malik, M. S. U., & Hussain, H. I. (2025, March). Pharmacological and Herbal Approach to Diabetes Mellitus Type 2 Management: A Comparative



Analysis of Conventional Therapy and Alternative Remedy. In *Annales Pharmaceutiques Françaises*. Elsevier Masson.

- O'Mahony, D., O'Sullivan, D., Byrne, S., O'Connor, M. N., Ryan, C., & Gallagher, P. (2015). STOPP/START criteria for potentially inappropriate prescribing in older people: Version 2. *Age and Ageing*, 44(2), 213-218. <https://doi.org/10.1093/ageing/afu145>
- Page, A. T., Clifford, R. M., Potter, K., Schwartz, D., & Etherton-Beer, C. (2016). The feasibility and effect of deprescribing in older adults on mortality and health: A systematic review and meta-analysis. *British Journal of Clinical Pharmacology*, 82(3), 583-623. <https://doi.org/10.1111/bcp.12975>
- Rankin, A., Cadogan, C. A., Patterson, S. M., Kerse, N., Cardwell, C. R., Bradley, M. C., & Ryan, C. (2018). Interventions to improve the appropriate use of polypharmacy in older people: A Cochrane systematic review. *BMJ Open*, 8(6), e019430. <https://doi.org/10.1136/bmjopen-2017-019430>
- Vlahovic, B., Jha, V., Stojanovic, V., Vojinovic, T., Dutta, A., Dutta, P., & Medenica, S. (2025). Enhancing patient-centered care: Evaluating quality of life in type 2 diabetes management. *PloS one*, 20(3), e0319369.
- Scott, I. A., Hilmer, S. N., Reeve, E., Potter, K., Le Couteur, D., Rigby, D., & Jansen, J. (2015). Reducing inappropriate polypharmacy: The process of deprescribing. *JAMA Internal Medicine*, 175(5), 827-834. <https://doi.org/10.1001/jamainternmed.2015.0324>
- Costa, A., Bozdog, M., Renzi, G., Rani, B., Passani, M. B., Angeli, A., ... & Supuran, C. T. Hitting Two Birds with One Stone: Dual Modulation of Brain Carbonic Anhydrases and Histone Deacetylases Boosts Memory Consolidation. *Gustavo and Supuran, Claudiu T., Hitting Two Birds with One Stone: Dual Modulation of Brain Carbonic Anhydrases and Histone Deacetylases Boosts Memory Consolidation*.
- Sharma, A., Madaan, V., & Petty, F. D. (2016). Exercise and polypharmacy in elderly patients. *Journal of the American Geriatrics Society*, 64(2), 415-418. <https://doi.org/10.1111/jgs.13967>
- Spinewine, A., Schmader, K. E., Barber, N., Hughes, C., Lapane, K. L., Swine, C., & Hanlon, J. T. (2007).

Appropriate prescribing in elderly people: How well can it be measured and optimized? *The Lancet*, 370(9582), 173-184. [https://doi.org/10.1016/S0140-6736\(07\)61091-5](https://doi.org/10.1016/S0140-6736(07)61091-5)

- Turner, J. P., Jansen, K. M., Shakib, S., Singhal, N., Prowse, R., & Bell, J. S. (2016). Polypharmacy cut-off and outcomes: Five or more medicines were used to identify community-dwelling older men at risk of different adverse outcomes. *Journal of Clinical Epidemiology*, 69, 251-259. <https://doi.org/10.1016/j.jclinepi.2015.06.017>
- Viktil, K. K., Blix, H. S., Moger, T. A., & Reikvam, A. (2007). Polypharmacy as commonly defined is an indicator of limited value in the assessment of drug-related problems. *British Journal of Clinical Pharmacology*, 63(2), 187-195. <https://doi.org/10.1111/j.1365-2125.2006.02744.x>
- Shareef, Z., Murtaza, A., Fatima, G., Aqib, A. I., Manzoor, Z., Malik, M. S. U., & Hussain, H. I. (2025, March). Pharmacological and Herbal Approach to Diabetes Mellitus Type 2 Management: A Comparative Analysis of Conventional Therapy and Alternative Remedy. In *Annales Pharmaceutiques Françaises*. Elsevier Masson.
- Wastesson, J. W., Morin, L., Tan, E. C. K., & Johnell, K. (2018). An update on the clinical consequences of polypharmacy in older adults: A narrative review. *Expert Opinion on Drug Safety*, 17(12), 1185-1196. <https://doi.org/10.1080/14740338.2018.1546841>
- Wimmer, B. C., Bell, J. S., Fastbom, J., Wiese, M. D., & Johnell, K. (2016). Medication regimen complexity and polypharmacy as factors associated with hospital discharge destination among older people: A population-based cohort study. *Drugs & Aging*, 33(5), 407-413. <https://doi.org/10.1007/s40266-016-0362-1>