delayed interventions. This issue is especially prominent among older patients with cognitive impairment or dementia, who experience higher rates of preventable adverse events such as falls, delirium, and infections, and who often have longer hospital stays, higher readmission rates, and increased mortality risk (Catalán and Oliveira, 2025; Järbrink et al., 2025; Schouten et al., 2025). Collectively, this evidence highlights the central role of nursing safety in the inpatient management of older adults and underscores the need for more targeted indicator systems to systematically evaluate and continuously improve nursing quality and its relationship with adverse events.

Nursing-sensitive indicators (NSIs) are quantitative measures that directly or indirectly reflect the structure, processes, and outcomes of nursing care and are primarily influenced by nursing actions, thereby capturing changes in health status that can be modified by nursing practice. Concept analyses and systematic reviews consistently indicate that NSIs provide objective and comparable evidence for nursing quality monitoring, quality improvement, and organizational-level decision-making. Among hospitalized older patients, commonly used and representative nursing-sensitive indicators include fall rates, pressure injury rates, hospital-acquired infections, medication administration errors, length of stay, functional decline, and patient satisfaction (Goes et al., 2023; Wang et al., 2025). In long-term care and residential aged care settings, structured medication reviews, pain, dehydration, urinary tract infections, falls, behavioral symptoms, depression, weight loss, and decline in activities of daily living have been identified through Delphi studies and review research as priority nursing-sensitive quality indicators for frail older populations (Tevik et al., 2023). These indicators encompass key domains in which nursing practice has the greatest potential to prevent harm and maintain functional ability in older adults.

In recent years, nursing-sensitive indicators have increasingly become important tools for nursing quality evaluation and continuous quality improvement (QI) both nationally and internationally, and they have been widely applied in geriatric nursing. Existing evidence suggests that structured medication reviews, multifactorial fall risk assessment and prevention bundles, and enhanced identification interventions for adverse drug events-when implemented using nursing-sensitive indicators-can to some extent reduce the occurrence of specific types of adverse events or improve their detection. However, findings remain heterogeneous, and implementation is often challenged by insufficient integration and sustainability issues (Sultana et al., 2025). Moreover, current research on nursing-sensitive indicators is largely fragmented across different care settings and indicator types, and there remains a relative lack of systematic exploration of how to construct and apply comprehensive indicator sets to drive sustained improvements in nursing quality for hospitalized older patients (Tevik et al., 2023; Connolly et al., 2025).

Against this backdrop, the present review focuses on nursing-sensitive indicators related to adverse events and nursing quality improvement during hospitalization of older patients. It systematically synthesizes the epidemiological characteristics and preventability evidence of adverse events among hospitalized older adults, with particular attention to high-risk factors such as frailty and cognitive impairment. It identifies key nursing-sensitive indicators closely associated with adverse events in older inpatients and elucidates their conceptual foundations and empirical evidence. Furthermore, it analyzes the current applications and limitations of nursing-sensitive indicators in geriatric nursing quality evaluation and quality improvement practices, and explores their application pathways and future directions in areas including falls, pressure injuries, infections, medication-related harm, functional decline, and patient experience. This review aims to provide evidence-based support and practical guidance for clinical nurses, nursing managers, and policymakers, to promote the standardized and systematic application of nursing-sensitive indicators in the quality management of inpatient geriatric nursing, ultimately improving patient safety and nursing quality for hospitalized older adults.

2 Characteristics of Adverse Events in Hospitalized Older Patients

2.1 Relationship between physiological and psychological characteristics and adverse events

Older patients commonly experience multisystem functional decline at the physiological level, which constitutes a fundamental internal basis for the occurrence of adverse events during hospitalization. Aging is frequently accompanied by frailty, multimorbidity, and polypharmacy, leading to reduced physiological reserve and increased vulnerability, thereby significantly elevating the risk of hospital-associated adverse events such as