

7.2 Effectiveness of quality improvement measures and practical experience

Overall evidence suggests that NSI-oriented quality improvement (QI) can strengthen nursing processes and reduce risk, and is particularly suitable for geriatric service areas where risks are highly concentrated. Geriatric-specific nursing process indicators developed through Delphi consensus provide nurses with a clear framework for measuring core care processes (assessment, person-centered care planning, and risk prevention) and for indicating key areas in urgent need of improvement. In long-term care and community settings, NSI-based quality indicator systems and operational manuals have improved assessment consistency and supported more standardized evaluation of adverse outcomes; however, social and psychosocial dimensions remain difficult to quantify, reflecting the problem of “measurability bias” within indicator systems (Kawase et al., 2025).

Practical experience indicates that the effects of QI depend on multifactorial synergy. First, a clear “goal-accountability-feedback” chain can increase nurses’ engagement and the consistency of implementation. Second, using both process and outcome indicators allows timely identification of workflow gaps and iterative adjustment of strategies before outcome indicators show significant changes. Reviews of QI in nursing homes further suggest that multifaceted strategies (education and training, audit-and-feedback, and teamwork interventions) often improve documentation quality, adherence to pressure injury and fall prevention, and pain management outcomes. However, improvements in resident-level “hard outcomes” are less stable and rarely sustained over the long term, implying that implementation intensity, organizational support, and intervention sustainability may be key limiting factors.

Regarding informatics and transparency, embedding NSIs into routine information systems and publicly reporting them can enhance transparency, promote inter-facility benchmarking, and sustain managerial attention to safety and functional outcomes for older patients. In addition, incorporating patient satisfaction as a nursing-related indicator-linked to functional status and quality of life-illustrates how subjective experiences of older patients can be integrated into indicator systems, expanding evaluation from “event control” to “perceived benefit” in a way that aligns more closely with person-centered geriatric care goals (Goes et al., 2023). Across acute care, long-term care, and transitional care, NSIs are increasingly being used to design and evaluate interventions targeting preventable harm. By matching assessment, monitoring, and prevention bundles to identified risk profiles, more precise interventions can be achieved (Järbrink et al., 2025; Feng et al., 2024).

7.3 Limitations of existing evidence and future directions for improvement

Despite the considerable potential of NSIs and related QI initiatives, existing evidence still shows substantial conceptual, methodological, and implementation-level limitations. Multiple reviews consistently note that there is a lack of consensus regarding NSI definitions; indicator systems vary widely across countries and care environments; and empirical evidence is inconsistent as to whether many commonly used indicators are truly “nursing-sensitive,” limiting benchmarking interpretation and cross-institutional transferability. Moreover, many indicator systems were originally developed for acute care or nursing homes and do not fully reflect the complex needs of older patients (e.g., cognition, autonomy, care transitions, and social participation). As a result, key domains of geriatric safety may be underestimated or not measured at all. Reliability studies also suggest that agreement for physical health outcome indicators is often acceptable, whereas measurement performance for social and psychosocial items is weaker, indicating that tool refinement and staff training remain necessary (Kawase et al., 2025).

From the standpoint of QI study design, the evidence base remains fragmented and methodologically limited, particularly in nursing homes and community care, where robust experimental or long-term longitudinal studies are scarce and evidence for sustained resident outcome improvements is limited. Reviews focusing on nursing-sensitive outcomes in general practice nurses or community nurses highlight gaps in outcome reporting, high heterogeneity of interventions, and uncertainty regarding which outcomes most sensitively reflect nursing effects in older populations. Data infrastructure also poses barriers: free-text documentation and performance systems oriented toward acute care limit standardized collection and longitudinal tracking of NSIs during care transitions and across the continuum of care (Cowdell et al., 2025).