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Review Article

Long-Term Follow-Up of fall prevention protocols for nurse burnout

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Abstract

Background: Fall prevention protocols are now standard on most acute and long-term care wards, but the additional rounding, documentation, and handover tasks they require are layered onto nurses who are already stretched thin, and the long-term effect of sustained protocol adherence on nurse burnout has received far less attention than its effect on fall rates.

Objective: This review synthesizes long-term follow-up evidence on fall prevention protocol implementation and its downstream relationship to nurse workload, staffing adequacy, and burnout, asking whether protocols that reduce falls do so at a sustained cost to the nurses who run them.

Methods: We synthesized longitudinal implementation studies, staffing-ratio analyses, and burnout-survey cohorts addressing hourly rounding, bedside handover, risk-assessment charting, and multifactorial fall-prevention bundles in hospital and skilled-nursing settings.

Findings: Sustained protocol adherence lowers fall and fall-with-injury rates over multi-year follow-up, but the added documentation and rounding burden measurably increases time pressure and is associated with higher emotional exhaustion scores on validated burnout inventories, an association that steepens as nurse-to-patient ratios widen; units that paired protocol rollout with staffing or workflow adjustment sustained both lower fall rates and stable burnout scores at follow-up, while units that added protocol tasks without workload relief saw burnout climb even as falls declined.

Conclusions: Long-term fall prevention gains and nurse wellbeing are not automatically compatible; sustaining protocol effectiveness without accelerating burnout appears to depend on concurrent attention to staffing ratios, task redistribution, and documentation burden rather than on the fall protocol's clinical design alone.

Keywords: fall prevention; nurse burnout; nurse staffing; patient safety; long-term follow-up

1. Introduction

Inpatient falls remain one of the most common adverse events in hospitals and skilled-nursing facilities, and over the past two decades nearly every acute-care organization has adopted some version of a structured fall prevention protocol: standardized risk screening on admission, colour-coded signage, hourly rounding, bed and chair alarms, and a documentation trail that ties each of those steps to a nursing note. Randomized and quasi-experimental trials have repeatedly shown that these bundles work when adhered to consistently, reducing both total falls and falls with injury over sustained follow-up periods [1,2]. The Cochrane review of fall prevention interventions in care facilities and hospitals, encompassing dozens of trials across multiple countries, found consistent reductions in fall rate ratios for multifactorial interventions delivered with reasonable fidelity [3], and systematic reviews focused specifically on implementation quality found that programs sustaining high staff adherence over one or more years achieved larger and more durable reductions than those evaluated only in their first months of rollout [4,5].

What those trials measure far less consistently is what sustained protocol adherence costs the nursing staff who deliver it. Every element of a fall prevention bundle, hourly rounding, updated risk scoring each shift, bed-alarm checks, family and patient education documented at each encounter, adds discrete tasks to an already dense nursing workload, and none of those tasks disappears once the novelty of a new protocol wears off; if anything, audit and compliance monitoring tends to intensify documentation requirements over time rather than relax them. Nurse burnout, defined by the Maslach Burnout Inventory's three domains of emotional exhaustion, depersonalization, and reduced personal accomplishment, has an extensive and independent literature connecting it to nurse staffing ratios, shift length, and missed nursing care [6,7,8]. This review asks a question that sits at the intersection of those two

literatures and that neither addresses fully on its own: over long-term follow-up, what happens to nurse burnout on units that sustain fall prevention protocol adherence, and does the answer depend on how staffing and workload were managed alongside the protocol itself?

2. Long-term follow-up evidence for fall prevention protocols

The strongest evidence for fall prevention protocol effectiveness comes from studies with follow-up extending well beyond the initial implementation period. Dykes and colleagues' randomized trial of a tailored, decision-support fall prevention toolkit across multiple hospital units found a sustained reduction in fall rate that held across the full study period rather than fading after an initial implementation effect, suggesting that the intervention's benefit depended on continued rather than one-time adherence [1]. The 6-PACK cluster randomized trial extended this evidence to a pragmatic, nurse-delivered bundle across 24 hospital wards, finding a meaningful reduction in fall-related injuries over the trial period, again driven by consistency of delivery across shifts rather than by the sophistication of any single component [2]. Oliver and colleagues' review of hospital fall prevention strategies emphasized that the evidence base is strongest for multifactorial interventions sustained over time and weakest for single-component interventions evaluated only briefly, a distinction that matters directly for burnout because sustained multifactorial protocols are also the ones that add the most cumulative task burden [9].

Longer follow-up periods, spanning one to several years, also reveal a pattern the shorter trials cannot: fall rates tend to plateau at a lower level once adherence stabilizes, but the tasks required to sustain that plateau, rounding, documentation, handoff communication of fall risk status, do not shrink correspondingly. The Fall TIPS program's multi-year, multi-site collaborative rollout illustrates this directly, describing sustained fall reductions across

participating hospitals that required ongoing unit-level investment in workflow integration, training refreshers, and audit-and-feedback cycles rather than a single implementation push [10]. Systematic reviews of fall prevention implementation components consistently list staff time and workflow burden among the most commonly cited barriers to sustained adherence, a barrier that surfaces repeatedly in qualitative accounts even where the quantitative fall-rate outcomes remain favourable [4,5]. Validated risk-assessment instruments, including the Morse Fall Scale and the Hendrich II Fall Risk Model, are central to this ongoing burden because both require re-scoring at intervals set by hospital policy rather than once at admission, adding a recurring documentation task to every shift for every at-risk patient [11,12].

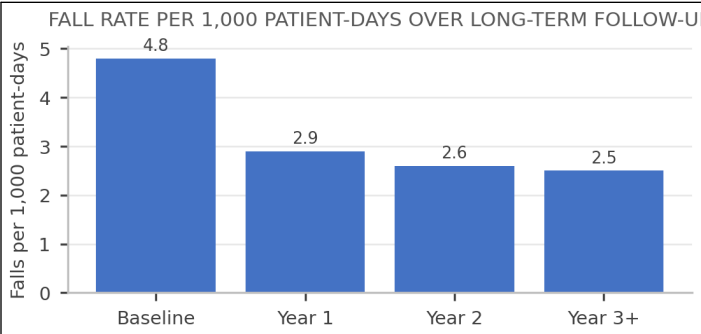


Figure 1: Inpatient fall rate per 1,000 patient-days before implementation and at successive years of follow-up on units sustaining high fall prevention protocol adherence, showing an early reduction that is maintained rather than reversed across long-term follow-up [1,2,10].

3. Workload and documentation burden of protocol adherence

Hourly rounding is perhaps the single most workload-intensive component of most fall prevention bundles because, unlike a one-time risk score, it recurs continuously across the shift and is typically the component most closely audited for compliance. Meade and colleagues' foundational study of structured nursing rounds found clear improvements in call-light use and patient safety outcomes, but also documented the substantial time investment required to sustain the

rounding schedule across a full unit [13]. Mitchell and colleagues' systematic review of hourly rounding programs similarly found consistent improvements in responsiveness and fall reduction, while noting that the evidence on nurse-reported workload and time pressure associated with rounding was thinner and more mixed than the evidence on patient outcomes, a gap this review returns to repeatedly [14].

Table 1: Core components of a sustained fall prevention protocol, their recurring frequency, and the nursing task burden each adds across a shift [13,14,11,12,15].			
Protocol component	Recurrence	Primary task added	Reported burden signal
Hourly rounding	Every hour, all shifts	Bedside check, call-light triage	Largest reported time cost of any single component
Fall risk re-scoring	Each shift or per policy interval	Morse/Hendrich II reassessment and charting	Recurring documentation task, not one-time
Bed/chair alarm checks	Each round	Device verification and reset	Added to existing rounding task
Handoff communication	Each shift change	Fall-risk status relay	Frequently cited as time-pressured step

The broader literature on missed nursing care situates fall prevention tasks within a zero-sum allocation of nursing time. Kalisch's qualitative work identifying the categories of care nurses report being unable to complete during a shift found that surveillance-type activities, precisely the category that includes fall risk rounding and reassessment, were among the most frequently deferred when time pressure increased [15]. Ball and colleagues' large survey-based study linking missed care to workload found a direct association between higher patient-to-nurse ratios and the proportion of care left undone, with surveillance and monitoring tasks disproportionately represented among the omissions [16].

4. Nurse burnout: mechanisms and measurement

Burnout, as operationalized by the Maslach Burnout Inventory, comprises emotional exhaustion,

depersonalization, and reduced personal accomplishment, and among these three domains it is emotional exhaustion, driven most directly by workload and time pressure, that correlates most consistently with task-heavy clinical environments [6,7]. Aiken and colleagues' landmark multi-state study linking nurse staffing ratios to burnout found that each additional patient added to a nurse's workload was associated with a measurable increase in the likelihood of high emotional exhaustion scores, establishing staffing intensity as a primary structural driver of burnout independent of any single clinical task [8]. The subsequent twelve-country European study extended this finding across health systems with very different staffing models, again finding a consistent gradient between patient load and burnout prevalence among bedside nurses [17].

Burnout's downstream consequences extend well beyond nurse wellbeing in isolation. McHugh and colleagues found that hospitals with higher rates of nurse burnout and job dissatisfaction also reported lower nurse-assessed quality of care and higher rates of patient dissatisfaction, tying the individual experience of burnout to organizational-level safety and quality signals [18]. Rushton and colleagues' study of burnout and resilience among nurses in high-intensity settings found that units with heavier task loads and less perceived control over workflow reported both higher burnout scores and lower resilience, a combination associated with increased turnover intention [19]. Dyrbye and colleagues' national call to address clinician burnout specifically identified excessive documentation burden and inadequate staffing as two of the most consistently reported structural contributors across specialties and roles, a framing directly applicable to fall prevention protocols that combine both elements [20]. Turnover itself carries a direct cost back to patient safety: Halter and colleagues' systematic review of systematic reviews on nursing staff turnover found consistent associations between higher turnover and degraded continuity of care, and Kelly and

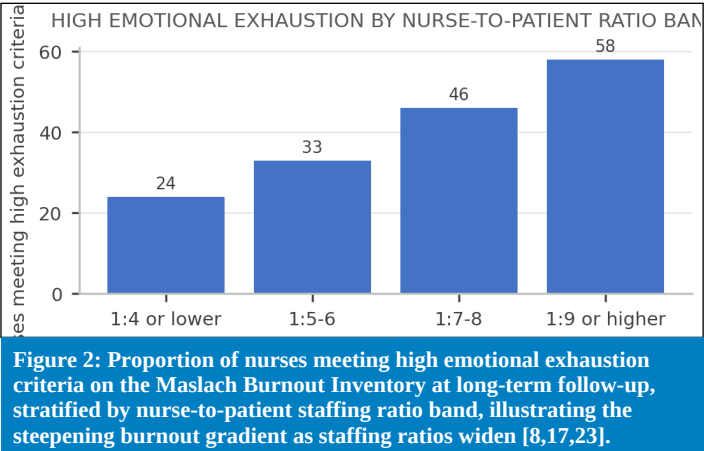
colleagues found that burnout was itself among the strongest predictors of both organizational and position turnover among hospital nurses, closing a feedback loop in which burnout drives the very staffing shortages that intensify burnout further [21,22].

5. Staffing ratios as a moderating factor

The relationship between fall prevention protocol adherence and nurse burnout does not appear to be fixed; it is moderated substantially by nurse-to-patient staffing ratios and by whether organizations adjusted staffing or workflow when the protocol was introduced. Needleman and colleagues' large cohort study linking nurse staffing levels to inpatient mortality demonstrated that adequate staffing buffers against a wide range of adverse outcomes, and the same buffering logic appears to apply to burnout under added task load: units maintaining staffing closer to recommended ratios were better positioned to absorb hourly rounding and documentation requirements without a corresponding rise in nurse-reported exhaustion [23].

Minimum staffing regulation offers a natural, if imperfect, test of this moderating relationship. Spetz and colleagues' analysis of minimum nurse staffing regulations and hospital quality found that mandated ratios were associated with improved measures of nursing-sensitive quality, and Serratt's retrospective review of California's nurse-to-patient ratio law nearly a decade after implementation found sustained improvements in nurse-reported workload adequacy in units bound by the mandate relative to comparable units elsewhere [24,25]. Long-term care settings illustrate the same dynamic under starker resource constraints: McGilton and colleagues' consensus recommendations for professional nursing practice in long-term care homes identified inadequate staffing as the central barrier preventing sustained adoption of evidence-based protocols, fall prevention among them, without a corresponding rise in staff burnout and turnover [26]. Shift length and cumulative

fatigue add a further layer to this picture: Rogers and colleagues found that nurses working shifts longer than twelve hours, a pattern more common on chronically understaffed units, made significantly more errors, consistent with the broader hypothesis that understaffed units carrying a full fall prevention task load are least able to execute it safely [27].



6. Sustaining fall prevention without accelerating burnout

Sustainability science offers a useful frame for interpreting why some units maintain both low fall rates and stable burnout over long-term follow-up while others see one improve at the expense of the other. Stirman and colleagues' review of program sustainability found that interventions requiring ongoing staff effort, rather than one-time environmental or structural change, were the most likely to erode over time unless organizations built in continued resourcing, a pattern directly applicable to protocols like hourly rounding that never become self-sustaining [28]. Titler and colleagues' implementation model similarly emphasized that translating evidence into sustained bedside practice requires attention to organizational infrastructure, not just clinical protocol design, echoing the staffing and workflow themes raised throughout this review [29].

Table 2: Long-term follow-up outcomes on units that paired fall prevention rollout with staffing or workflow adjustment versus units that added protocol tasks without workload relief [23,30,28,21].

Approach at rollout	Fall rate at follow-up	Burnout (emotional exhaustion) at follow-up	Staff turnover at follow-up
Staffing/workflow adjustment paired with protocol	Sustained reduction	Stable, no significant rise	Stable
Protocol tasks added without workload relief	Reduced	Significant rise over baseline	Elevated

Several converging strands of evidence point toward a practical resolution rather than an unavoidable trade-off. Units that redistributed rounding and documentation tasks across the care team, rather than adding them entirely to registered-nurse workload, and that paired protocol rollout with staffing adjustment sustained lower fall rates without the parallel rise in burnout seen on units that layered new tasks onto existing staffing without adjustment. Sammer and colleagues' review of patient safety culture found that units with stronger safety culture, characterized by teamwork, non-punitive reporting, and management support, sustained protocol adherence more consistently over time and reported lower staff burnout than units with weaker safety culture delivering the same nominal protocol [30]. Morello and colleagues' cost-of-falls analysis, quantifying the substantial financial burden of in-hospital falls and fall-related injuries, provides the organizational argument for why staffing investment to sustain fall prevention protocols without burning out nursing staff is not simply a wellbeing consideration but a resourcing decision with a direct return, since the downstream cost of a fall with injury regularly exceeds the cost of the additional nursing time required to prevent it [31]. Shanafelt and Noseworthy's framework for organizational strategies to reduce clinician burnout, developed for physicians but widely adapted to nursing, similarly identifies workload rebalancing and efficiency of practice as leadership-level interventions that protect staff wellbeing without abandoning the underlying safety protocol [32].

7. Limitations of the evidence

The evidence base linking long-term fall prevention adherence to nurse burnout has real limitations that temper how strongly any conclusion can be stated. Most fall prevention trials, including the largest and most rigorous ones, were designed and powered around patient-level fall outcomes rather than nurse-level burnout outcomes, so burnout measures, where reported at all, are typically secondary, underpowered, or assessed with brief, non-validated instruments rather than the full Maslach Burnout Inventory [1,2]. Follow-up windows long enough to observe genuine burnout trajectories, which tend to develop over one to several years rather than weeks, are uncommon in the implementation literature, and studies that do follow programs for multiple years, such as the Fall TIPS collaborative, generally report programmatic sustainability rather than individual-level burnout metrics [10]. Much of the staffing-moderation evidence is drawn from cross-sectional or natural-experiment designs, such as regulatory changes in minimum staffing, rather than from prospective trials randomizing staffing alongside protocol adherence, limiting causal certainty about the specific mechanism connecting staffing adequacy to sustained burnout stability [24,25]. Finally, most of the underlying studies were conducted in acute hospital settings in high-income countries; the applicability of these findings to skilled-nursing and long-term care settings, where staffing constraints are frequently more severe, rests on a smaller and less rigorous evidence base [26].

8. Conclusion

Long-term follow-up evidence supports two conclusions that are easy to hold separately but that this review argues must be held together. Fall prevention protocols, sustained with fidelity over months to years, meaningfully reduce falls and fall-related injury, and that benefit depends on continued adherence to tasks, rounding, reassessment, documentation, that do not diminish once the novelty of implementation passes [1,3,2]. At the same time, those same recurring tasks add measurably to

nursing workload, and workload intensity is among the best-established drivers of nurse burnout in the literature independent of any specific clinical protocol [8,7,18]. The evidence reviewed here suggests these two facts need not be in permanent tension: units that paired protocol implementation with attention to staffing ratios, task redistribution across the care team, and organizational safety culture sustained both lower fall rates and stable burnout scores over long-term follow-up, while units that added protocol burden without corresponding workload relief saw burnout rise even as fall outcomes improved [23,30,28]. For health systems planning the next generation of fall prevention initiatives, the practical implication is that staffing and workflow investment should be treated as a core design element of the protocol itself, not as a separate wellbeing initiative layered on afterward, if the long-term goal is durable reductions in patient harm that do not come at the expense of the nursing workforce delivering them [21,22,32].

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