OPEN

Person-centered care approach to prevention and management of falls among adults and aged in a Brazilian hospital: a best practice implementation project

Anna Carolina da Silva Albertini,[1] Renato Pinheiro Fernandes,[1] Vilanice Alves de Araújo Püschel[2,4] and Flavia de Oliveira Motta Maia[3,4]

[1]Hospital Sírio Libanês, São Paulo, São Paulo, [2]Nursing School, University of São Paulo (USP), [3]Nursing School, University State of Campinas (UNICAMP), and [4]The Brazilian Centre for Evidence-based Healthcare: a JBI Centre of Excellence, Brazil

ABSTRACT

Objectives: The objective is to assess compliance with evidence-based criteria regarding a person-centered care approach to the prevention and management of falls among adults and the elderly in a Brazilian private hospital.

Methods: This project used the JBI audit and feedback method to implement evidence into practice. The JBI Practical Application of Clinical Evidence System and Getting Research into Practice audit tools have been used to promote changes in oncology and medical–surgical wards. The implementation protocol was designed based on the primary barriers and facilitators identified in the baseline audit, along with a training program and changes in the electronic medical records. Nursing documentation available in medical records, interviews with nurses who worked in oncology and medical–surgical wards, and interviews with patients admitted in oncology and medical–surgical wards were used to assess the baseline and follow-up audit compliance rates.

Results: The baseline and follow-up audits showed improvement for criteria 3 and 9 (100%) and criteria 6 and 7 (97%), respectively. The compliance for criteria 4 (97.6%), 5 (76.7%), and 8 (18%) showed slight variations from baseline and follow-up audits. Compliance for criteria 1 (76.9%) and 2 (63.3%) decreased in the follow-up audit.

Conclusion: These findings support that baseline, and follow-up audits allied to a fall training program and changes in the electronic nursing records increase the compliance rates related to evidence-based practice regarding a person-centered care approach to preventing and managing falls. We will implement new strategies according to the best practices to achieve better outcomes.

Key words: accidental falls, adults and aged, evidence-based practice, hospitalization, patient-centered care

JBI Evid Implement 2023; 21:14–24.

Correspondence: Anna Carolina da Silva Albertini, Hospital Sírio-Libanês, São Paulo, São Paulo Brazil.
E-mail: annacarol_04@hotmail.com

DOI: 10.1097/XEB.0000000000000356

What is known about this topic?

- Evidence for the use of a person-centered approach for fall prevention appears promising.
- Patients participate in the fall risk assessment process, actively engage in decision-making and treatment planning, and receive information regarding fall prevention and management.
- Fall prevention and management should be individualized, that is, to consider the patient's condition, individual risks, and the patient's intention to engage in behavior that will decrease his or her risk of falls.

What does this article add?
- Including patients in the fall risk assessment process and encouraging their engagement in goal setting and care planning are effective strategies.
- Fall prevention and management strategies based on individual risk factors, including relevant multidisciplinary interventions, facilitate the implementation of patient-centered care.
- Nurses' participation in educational programs reinforce patient-centered care for fall prevention and management.

Introduction

Falls in the hospital environment are a cause for concern among health professionals because this adverse event may result in injuries and higher healthcare costs, compromise the quality of care, and generate ethical and legal implications for health institutions.[1–4] The worldwide incidence of falls in hospital is around 0.2–1.7% patients/day.[5] In Brazil there is not an official statistic about the national incidence of falls in hospitals, nonetheless, studies showed an incidence of around 1.4–1.7% patients/day.[3,6]

Injury is the main problem related to falls, occurring in 30–50% of cases,[3,4] and it may be mild, moderate, or severe and possibly lead to death. Globally over 80% of fatal falls occur in low- and middle-income countries.[7] Consequently, injuries result in higher healthcare costs because of longer hospitalization periods and the need for further assistance, diagnostic tests, and drug or surgical treatments, in addition to the psychological and social impacts.[1,2]

Several intrinsic and extrinsic factors contribute to the rise in the number of falls among hospitalized patients.[5–8] Related causes include balance and gait disorders, hypotension, anemia, paresis, osteoarthritis, neurological disorders, amputations, cachexia or severe obesity, sensory impairment, fasting, intense pain, dressings that may impair the patient's mobility, and the use of walking assistance devices.[3,9,10] In addition to preexisting diseases, the use of medications that alter mobility and balance and polypharmacy are factors that also increase the risk of falling.[5–7] Extrinsic factors that increase the risk of falling include slippery floors, the absence of bed rails, inappropriate furniture and lighting, and an unfamiliar environment.[3,9,10]

There are many recommendations for preventing falls, such as training for healthcare professionals and health education for patients and caregivers.[11] Literature has reported that this type of education has potential benefits in reducing falls, and many technological strategies were employed, including the use of digital media resources, equipment, and applications developed for these purposes.[12–14]

Through systematic reviews and quality improvement projects, the best evidence found in the literature recommends strategies for preventing falls[1,2,15]:

(1) A comprehensive assessment is required to identify individual risk factors based on patients' needs, values, and preferences and provide targeted strategies to mitigate risks.
(2) Involving patients in fall prevention strategies can be an effective approach in a model based on structure, process, and results. This model allows patients to be involved and express their preferences regarding the care plan, thus sharing how their treatment will be conducted in the decision-making process. At the same time, the healthcare team moves from the role of expert to facilitator in motivating and supporting patients to maintain their health and greater independence.
(3) A fall risk assessment is recommended, which contemplates the patients' participation as part of the fall-prevention strategy by analyzing the patients' intention and ability to adopt a well tolerated behavior. Therefore, patients and caregivers become more aware of their risks and can participate in individualized fall prevention activities.

To implement best practices for patient-centered fall prevention and management, an evidence implementation project was developed in the oncology and medical–surgical inpatient units at the hospital located in the Municipality of São Paulo, Brazil, an international reference in healthcare, which provides services for patients in various specialties. We selected units presenting the highest fall rates in 2019 and 2020, corresponded to 22 (11.2%) and 8 (4.6%) falls in the medical–surgical, and 33 (16.8%) and 21 (12.1%) falls in the oncology, respectively.

The JBI Practical Application of Clinical Evidence System (JBI-PACES) audit and feedback tool was adopted, as well as audit criteria following the recommendations of the JBI Evidence Summary 'Person-centered fall prevention and management in hospital settings'[1]: patients actively participating in the fall risk assessment, decision-making, and treatment planning process and receiving information about fall prevention and management. Furthermore, fall prevention and management must be individualized; it must consider the patient's condition, individual risks, and intention to engage in behaviors that reduce their risk of falling.[16–18]

This study set out to implement individualized fall prevention strategies based on the patient's needs and preferences and the risk assessment made by the nurse,

which relied on the participation of the patient and/or their caregivers. In current practice, the patient receives preventive recommendations without participating in care planning.

Objective

The aim of this study was to assess compliance with evidence-based criteria regarding a person-centered care approach toward the prevention and management of falls among adults and the elderly in oncology and medical–surgical wards.

The specific objectives were:

(1) To determine current compliance with evidence-based criteria regarding person-centered care, an approach to prevent falls among adults and the elderly in oncology and medical–surgical wards.
(2) To identify barriers and facilitators to achieve compliance with evidence-based criteria regarding person-centered care, an approach to prevent falls among adults and the elderly in oncology and medical–surgical wards.

Methods

This evidence implementation project used the JBI evidence implementation framework.[19,20] The JBI implementation approach is grounded in the audit and feedback process, along with a structured approach to the identification and management of barriers to compliance with recommended clinical practices. It consists of seven stages: identification of practice areas for change, engaging change agents, assessment of context and readiness to change, review of practice against evidence-based audit criteria, implementation of changes to practice, reassessment of practice using a follow-up audit, and consideration of the sustainability of practice changes.

The study activities, which involved three distinct but interrelated phases, are described below.

(1) Establishing a team and conducting a baseline audit based on criteria informed by evidence,
(2) Reflecting on the results of the baseline audit and designing and implementing strategies to address noncompliance found in the baseline audit informed by the Getting Research into Practice (GRiP),
(3) Conducting a follow-up audit to assess the outcomes of the interventions implemented to improve practice and identify future practice issues to be addressed in subsequent audits.

The project was developed in the oncology and medical–surgical units. The oncology unit has 31 beds and provides care for patients of both sexes over 16 years old either diagnosed with cancer or under diagnostic investigation, in the postoperative phase, or in the final stages of their lives. The medical–surgical unit has 19 beds and provides care for adult patients of both sexes receiving clinical and surgical treatment for diseases of various specialties. The oncology team is composed of 28 nurses, a care leader, and a nursing coordinator. The medical–surgical team consists of 12 nurses and a care leader. There are 36 work hours allocated in these units, distributed in 6 h day shifts and 12 h night shifts.

This study was conducted from 6 August 2021, to 15 October 2021, at the hospital. This evidence implementation project was conducted using the JBI-PACES, GRiP audit, and feedback tools, which are used to promote evidence-based healthcare using audit re-audit cycle evidence-based criteria, a team-based analysis of organizational barriers, and identification of strategies to overcome these barriers (Appendix, http://links.lww.com/IJEBH/A115).

Ethical considerations

Ethical approval was obtained from the *Plataforma Brasil* (n°47668821.2.0000.5461) and Ethics Committee of the hospital (ID number: 2124).

Phase 1: Stakeholder engagement (or team establishment) and baseline audit

The project team consisted of the oncology unit coordinator and member of the Fall Prevention Committee (FPC), the oncology unit care leader, and the medical–surgical unit nurse leader. They were responsible for supporting, supervising, and challenging the team in the project's implementation and assumed an essential role in the construction and execution process. The audit and training team for the educational program was composed of the nurses who authored this project.

To identify audit criteria, we used the JBI-PACES criteria for person-centered approaches to prevent falls to assess compliance with evidence-based fall prevention (Table 1).[15]

Sample

The sample size and the method used to measure compliance with best practices criteria were descripted in Table 1. The inclusion criteria considered nurses working in the oncology and medical–surgical units and patients/caregivers hospitalized in the same units where the implementation project was carried out. Exclusion criteria included nurses who were out of work in the baseline audits and follow-up audits and patients/caregivers who refused to participate in the project.

Table 1. Audit criteria used during the baseline with description of the sample and approach to measure compliance with best practices among patients and providers working in the oncology and medical–surgical wards. Sao Paulo, 2021

Audit criteria	Sample	Method used to measure (%) compliance with best practices
1. A fall risk assessment is carried out on admission	The sample for baseline audit: Oncology: 31 patients MS: 18 patients Sample for follow-up audit: Oncology: 27 patients MS: 16 patients	This criterion was considered 'YES' when there was evidence in the clinical record of the risk assessment completed within 2 h of admission to the unit.
2. Assessment of fall risk is done at ward transfer.	The sample for baseline audit: Oncology: 31 patients MS: 18 patients Sample for follow-up audit: Oncology: 27 patients MS: 16 patients	This criterion was considered 'YES' when the medical records of patients who were transferred between units showed evidence of the risk assessment completed within 2 h after transfer and if there was a clinical change related to the risk of falling.
3. Patients participate in the fall risk assessment process	The sample for baseline audit: Oncology: 24 nurses and 31 patients MS: 11 nurses and 18 patients Sample for follow-up audit: Oncology: 23 nurses and 27 patients MS: 10 nurses and 16 patients	The criterion was considered 'YES' when the nurses interviewed reported that the assessment of the risk of falling is carried out with the participation of the patient/companion.
4. Reassessment occurs when there is a change in the condition in the clinic.	The sample for baseline audit: Oncology: 31 patients MS: 18 patients Sample for follow-up audit: Oncology: 27 patients MS: 16 patients	The criterion was considered 'YES' when the patients' charts showed evidence of reassessment of the risk of falling in situations of clinical change or in case of a fall, within a period of up to 2 h after the event/change.
5. At-risk patients and their families/caregivers receive oral and written information about fall prevention.	The sample for baseline audit: Oncology: 31 patients MS: 18 patients Sample for follow-up audit: Oncology: 27 patients MS: 16 patients	The criterion was considered 'YES' when, through the interview with the patient/companion, he/she expressed having received oral and written information about the prevention of falls by the team of the unit where he/she is hospitalized.
6. Patients are engaged in goal setting and treatment planning.	The sample for baseline audit: Oncology: 24 nurses MS: 11 nurses Sample for follow-up audit: Oncology: 23 nurses MS: 10 nurses	The criterion was considered 'YES' if, through an interview, the nurses answered that the patients were engaged in the establishment of goals and in the planning of care/measures to prevent falls.
7. Strategies targeted interventions, including relevant multidisciplinary interventions, are implemented according to individual risk factors.	The sample for baseline audit: Oncology: 24 nurses MS: 11 nurses Sample for follow-up audit: Oncology: 23 nurses MS: 10 nurses	The criterion was considered 'Yes" when the team of nurses answered, through an interview, that they planed fall prevention strategies according to the particularities of each patient, in relation to individual risk factors.
8. Patients and their families/caregivers receive discharge information for support services (when appropriate)	The sample for baseline audit: Oncology: 31 patients MS: 18 patients Sample for follow-up audit: Oncology: 27 patients MS: 16 patients	This criterion was considered 'YES' when the medical records of patients who were discharged from hospital showed evidence of the delivery of a Guidelines for the Prevention of Falls at Home or Guideline for the Prevention of Falls in the transition of care.
9. Health professionals receive person-centered education about the assessment, prevention and treatment of falls.	The sample for baseline audit: Oncology: 24 nurses MS: 11 nurses Sample for follow-up audit: Oncology: 23 nurses MS: 10 nurses	The criterion was considered 'YES' when the nurses, through an interview, answered that they had received health education on fall risk assessment, planning of preventive strategies, care in case of falls, with a focus on person-centered care, in the last 12 months.

MS, medical–surgical.

Baseline audit

The baseline audit occurred in both units from 6 August 2021 to 6 September 2021. When inpatients or their caregivers were unable to respond, nurses were interviewed. There were 31 patients and 24 nurses participating in the oncology unit and 18 patients and 11 nurses participating in the medical–surgical unit. All participants agreed to collaborate in the study and signed the Informed Consent Form.

Nine evidence-based criteria for fall prevention were audited in these units. Criteria 1, 2, 4, and 8 were audited and analyzed based on data extracted from the patients' records. Criteria 3, 6, 7, and 9 were audited based on interviews with nurses, whereas criterion 5 was audited based on interviews with the patients/caregivers.

Phase 2: Design and implementation of strategies to improve practice (Getting Research into Practice)

We presented the baseline audit to the project team using the JBI GRiP tool and discussed potential barriers and opportunities for improving compliance with the audited criteria. We carried out phase 2 from 10 September 2021, to 2 October 2021.

We report the JBI GRiP framework in Table 2 in the Results section, in which we inform key stakeholders, gather opinions, and allocate the available resources to promote implementation changes. On the basis of a person-centered care approach to the prevention and management of falls, the team leaders guided the team members in identifying relevant issues concerning participation from patients/caregivers in the fall risk assessment and engagement of patients/caregivers in goal setting and treatment planning. The team leaders and the stakeholders formulated strategies to overcome the main barriers and made effective decision-making.

Phase 3: Follow-up audit postimplementation of change strategy

Following the same criteria for the baseline audit, a follow-up audit was conducted to assess whether there was more patient/caregiver participation in the fall risk assessment processes and better results in adherence to the best practices for fall prevention.

The implementation team collected data in the oncology and Medical–Surgical units between 4 October 2021 and 15 October 2021. Patients/caregivers and nurses were interviewed.

The data collection time needed to be adjusted, because the number of COVID-19 cases increased considerably in the period. In order to avoid loss of sample size, the strategy adopted as to increase the number of hours per day dedicated to data collection. It can be noted that even with the shorter period of data collection, the samples are similar between baseline audit and follow-up audit.

Analysis

Results data on changes in compliance were measured using descriptive statistics embedded in the JBI-PACES in the form of percentage changes from baseline.

Results

Phase 1: Baseline audit

We performed the baseline audit on the medical–surgical and oncology wards, and Fig. 1 shows the results. In Fig. 1, criteria 1, 2, and 4 showed 100% compliance in the oncology, whereas in the medical–surgical, there was greater than 60% compliance with the same criteria. The actions carried out by the nursing team to develop these criteria were part of the protocol for the prevention of falls already established in the hospital. Also, criterion 5, whose compliance was greater than 70% in both units, was part of the preventive actions for falls in the same hospital protocol.

Criteria 3, 6, 7, and 8, whose compliance ranged from 0 to 26% in both units, referred to the person-centered care approach to preventing falls. This intervention intended to be implemented with this project. No preventive actions were available in the institutional protocol focused on person-centered care (Fig. 2).

Criterion 9, which refers to the knowledge of professionals about person-centered care approach for the prevention of falls, showed an agreement of 36% in medical–surgical and 58% in oncology, demonstrating that the new approach to be implemented was known by some nurses.

Phase 2: Strategies for Getting Research into Practice

After reviewing the baseline audit results, the project team listed the barriers and strategies for the implementation project and built an action plan, which we documented by the GRIP tool (Table 2).

The main barriers identified were the absence of strategies that used person-centered care to prevent and manage falls in the hospital. We developed strategies related to the education of professionals and patient/caregivers to improve their participation in the assessment and planning of goals prevent falls. We also developed materials in the electronic medical record system to register preventive actions used by the professionals involved in the process of assessment and preventing falls.

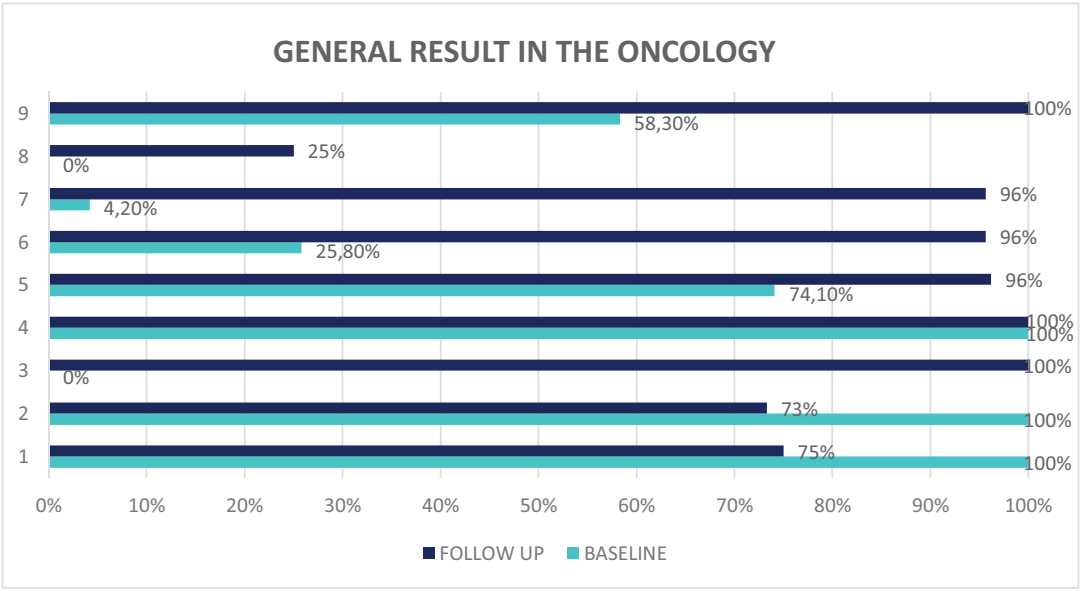
Table 2. Getting Research into Practice matrix. Sao Paulo, 2021

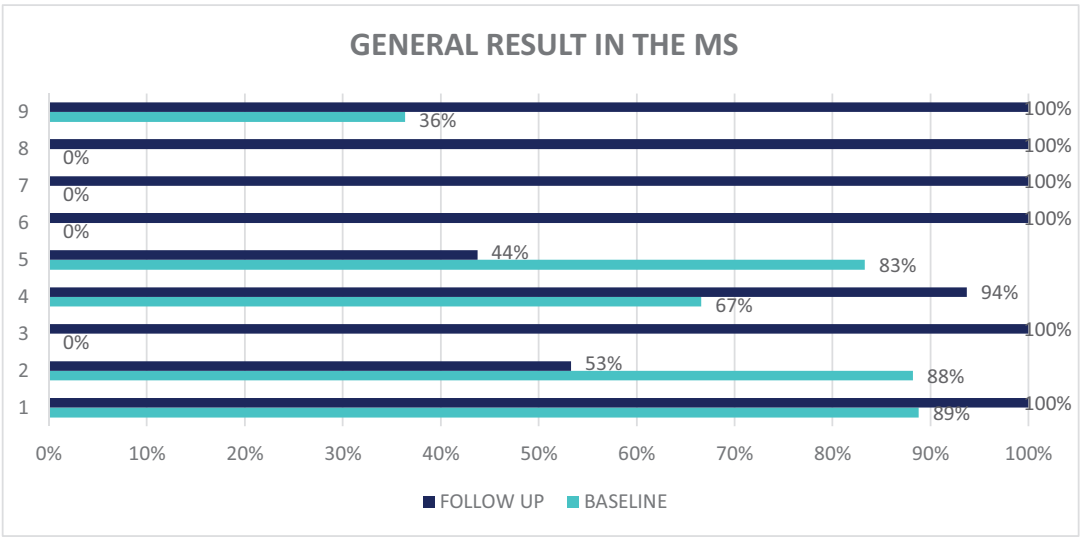
Barriers	Strategies	Resources	Results
Lack of standardization to assess the risk of fall with the participation of the patient and/or companion	Implementation of this practice in the Unit of Oncology and MS, with analysis of impact and results after 2 weeks. Nursing training with guidance on how to assess the risk of fall with the participation of the patient and/or companion.	Online training, clarifying concepts and the methodology of implementation of the project. Construction of an instrument for use with the patient, in order to both visualize the risk score, while the evaluation takes place.	The risk assessment instrument was printed to fill out the bedside, with the patient's participation and subsequent transfer of data to the electronic medical record system. Reach the training of 100% of the nursing team of the oncology and MS units.
Absence of well defined flows for multidisciplinary interventions for fall prevention with customized strategies.	Review of the Bundle of Falls Prevention in the Institutional Protocol, defining the responsibilities of each professional category, with well designed flows to prevent falls with personalized actions.	Support of the CPQ with meetings with managers in the areas of Nursing, Pharmacy, Nutrition, Physiotherapy, Psychology, Social Work, Medical and Quality to create new flows and documentary review to be put into practice. Support of the Information Technology (IT) team to customize the resources in the electronic medical records, to meet the demands presented. Training for nurses in the Oncology and MS units, updating them on the changes made in the electronic medical records.	Postfall care flowchart Revision of the Protocol for The Prevention of Falls in the electronic system. Optimization of resources in the electronic medical records, with customization of the care planning process, with a personalized character, focusing on centered care. Reach in the training of 100% of the nursing team of the oncology and MS units.
Absence of documents that favor the patient's evolutionary follow-up after the occurrence of fall.	Preparation of clinical notes in the electronic medical records to support the care team in the recording of information on the occurrences of fall, ensuring the well tolerated documentation of evolutionary data after the occurrence of fall.	Support of the IT team to enable the actions in the electronic medical records	Feasibility of clinical notes in electronic medical records. Reach the training of 100% of the nursing team of the oncology and MS units.
Lack of support material for hospital discharge education to patients at risk of falls.	Preparation of educational material to deliver to the patient at hospital discharge.	Support of the IT team to meet the demands: (1) inclusion of printed guidelines for delivery to the patient. (2) Patient Education for Discharge (Multiprofessional) – electronic documentation of all guidance provided by the multidisciplinary team on fall prevention during hospitalization and in hospital discharge planning. Online training for nurses in the oncology and MS units.	Meeting the demands of the IT team and availability of a document for printing and delivery to the patient: Discharge Guidelines (Prevention of Home Fall). Training range in 100% of the nurses in the oncology and MS units.
Lack of nurses' knowledge about strategies for assessing the risk of fall with the participation of patients and/or companions	Educational strategy for nurses, to perform the assessment of the risk of falls with the participation of the patient and/or companion, using safe communication methods and patient activation strategy.	Online training for nurses in the oncology and MS units, using the Zoom platform, lasting one hour, totalizing six groups, reinforcing the concepts related to assessing the risk of falls and preventive measure.	100% reach in the training of nurses in the oncology and MS units.

MS, medical–surgical.

We presented the results of baseline audit to nurses and coordinators of the medical–surgical and oncology wards. We carried out online training by the Zoom Platform, reinforcing the concepts related to assessing the risk of falls and preventive measures. We included patients/caregivers in this training.

Furthermore, the following actions were developed for implementation: participation from patients/

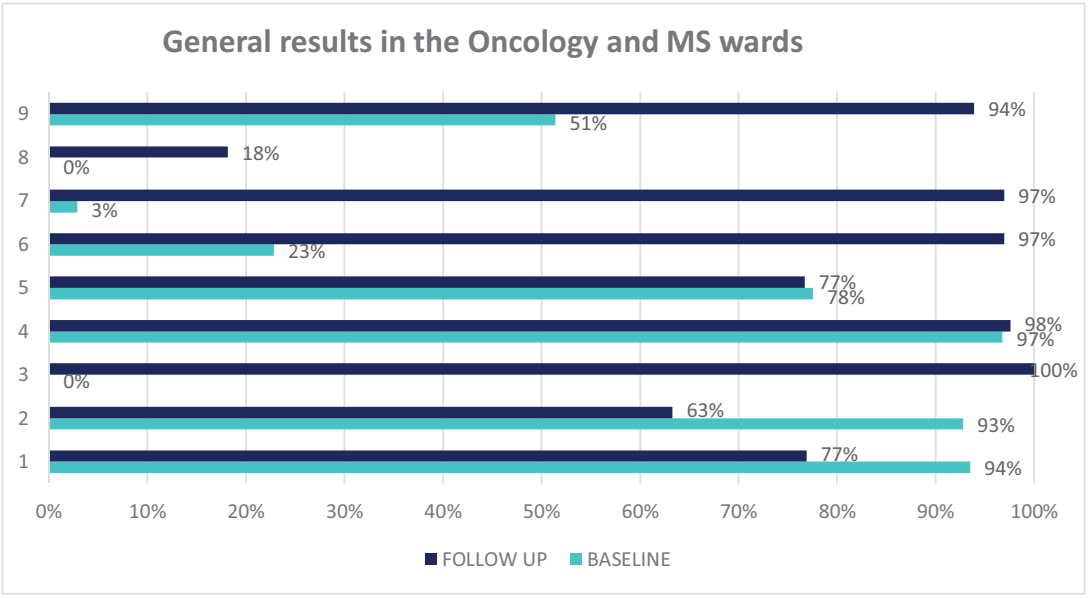




Audit criteria

1.The assessment of the risk of fall is made on admission. (MS: 16 of 16 samples taken and Oncology: 27 of 27 samples taken)
2. The assessment of the risk of fall is made in the transfer of the ward. (MS: 16 of 16 samples taken and Oncology: 27 of 27 samples taken)
3. Patients participate in the process of assessing the risk of fall. (MS: 10 of 10 samples taken and Oncology: 23 of 23 samples taken)
4. Reassessment occurs when there is a change in the condition in the clinic. (MS: 16 of 16 samples taken and Oncology: 27 of 27 samples taken)
5. At-risk patients and their family members/caregivers receive oral and written information on the prevention of falls. (MS: 16 of 16 samples taken and Oncology: 27 of 27 samples taken)
6. Patients engage in goal setting and treatment planning. (MS: 10 of 10 samples taken and Oncology: 23 of 23 samples taken)
7.Targeted strategies, including relevant multidisciplinary interventions, are implemented according to individual risk factors. (MS: 10 of 10 samples taken and Oncology: 23 of 23 samples taken)
8. Patients and their family/caregivers receive discharge information for support services (where appropriate). (MS: 16 of 16 samples taken and Oncology: 27 of 27 samples taken)
9. Health professionals receive education on the evaluation, prevention and treatment of falls, centered on the person.(MS: 10 of 10 samples taken and Oncology: 23 of 23 samples taken)

Figure 1. Adherence with best practice for each audit criteria comparing baseline and follow-up audits (%) in the oncology and medical–surgical wards.



Audit criteria

1.The assessment of the risk of fall is made on admission. (MS and Oncology: 43 of 43 samples taken)

2. The assessment of the risk of fall is made in the transfer of the ward. (MS and Oncology: 43 of 43 samples taken)

3. Patients participate in the process of assessing the risk of fall. (MS and Oncology: 33 of 33 samples taken)

4. Reassessment occurs when there is a change in the condition in the clinic. (MS and Oncology: 43 of 43 samples taken)

5. At-risk patients and their family members/caregivers receive oral and written information on the prevention of falls. (MS and Oncology: 43 of 43 samples taken)

6. Patients engage in goal setting and treatment planning. (MS and Oncology: 33 of 33 samples taken)

7.Targeted strategies, including relevant multidisciplinary interventions, are implemented according to individual risk factors. (MS and Oncology: 33 of 33 samples taken)

8. Patients and their family/caregivers receive discharge information for support services (where appropriate). (MS and Oncology: 43 of 43 samples taken)

9. Health professionals receive education on the evaluation, prevention and treatment of falls, centered on the person (MS and Oncology: 33 of 33 samples taken)

Figure 2. Adherence with best practice for each audit criteria comparing baseline and follow-up audits (%) in the oncology and medical–surgical wards together.

caregivers in the fall risk assessment using the Johns Hopkins Scale[21] printed to fill out the bedside and subsequent transfer of data to the electronic medical record system; engagement of patients/caregivers in goal setting and treatment planning, to respects their opinions and preferences within the premises of patient safety; was included fall prevention strategies within the care plan in the electronic medical record to support the care planning process and preventive measures that would be personally executed by the nurse; reviewed of the Bundle of Falls Prevention in the Institutional Protocol, defining the responsibilities of each professional category and designed flows to prevent falls with personalized actions; and preparation of educational material to deliver to the patient at hospital discharge that possibly offers written information and contributions to the health education of patients and their caregivers.

Thus, the flow begins when the fall risk assessment is performed by the nurse with the patient engaged in this assessment; based on the results, care planning is established with the patient/caregiver considering their preferences; the responsibilities of each member of the multidisciplinary team are defined in the care planning; reassessment is done every 24 h or when the patient's clinical condition changes or when the patient falls. The flow finishes when patient received hospital discharge and material educational about fall prevention at home has given to patient/caregiver by nurses.

The fall prevention strategies were developed from the 'Bundle of Falls Prevention in the Institutional Protocol' already used in the hospital. This bundle was revised and included evidence-based person-centered care and multifactorial interventions as exercises, medication adjusts, environment control and patient and health professional education about fall prevention.[16,22,23]

The lack of technological resources (laptop or tablet for bedside use), associated with the increase in time spent carrying out the risk fall assessment on paper and transcribing electronic medical records, were identified as barriers to the implementation project. However, there was no financial resource to overcome them.

Phase 3: Follow-up audit(s)

The follow-up audit showed that both oncology and medical–surgical wards presented increasing compliance with criteria 3, 4, 6, 7, and 9 (minimum 94% and maximum 100%) when compared with baseline audit. Medical–surgical ward showed 100% compliance with criterion 1, but the compliance was worse in criteria 2 (baseline audit 88% and follow-up audit 53%) and 5 (baseline audit 83% and follow-up audit). Oncology ward showed increasing compliance with criterion 8 (baseline audit 0% and follow-up audit 25%) and worse compliance with criteria 1 (baseline audit 100% and follow-up audit 75%) and 2 (baseline audit 100% and follow-up audit 73%). The postimplementation audit results and the sample size are shown in Fig. 1.

When both units were evaluated together, the results showed criteria 1 and 2 were worse compliance in the follow-up than baseline audits. In criterion 1, the compliance was 77% in the follow-up audit and 94% in the baseline audit. The result reflected the high demand for care required from the healthcare team during the COVID-19 pandemic, who spent more time on care activities. It is essential to review the process and perform the risk assessment for the patient within 2 h of admission (a period of 2 h was established prior to the COVID-19 pandemic and proved to be inadequate during the pandemic). In criterion 2, the compliance was 63% in the follow-up audit and 93% in the baseline audit. The teams had trouble providing fall prevention orientation within 24 h of the patient's admission, which required adjusting the results (a period of 24 h was established prior to the COVID-19 pandemic and proved to be inadequate during the pandemic). The medical–surgical unit contributed the most to this result.

Following the evaluated both units together, the criteria 4 and 5 was a slight variation in compliance between the baseline audit (97 and 78%, respectively) and follow-up audit (98 and 77%, respectively). In the criterion 4, it is indicated that the fall risk reassessment is already a well established practice in the institution, especially in the oncology unit. Criterion 5 demonstrates weaknesses in the process of verbal and written orientation on fall prevention. Therefore, it is necessary to hold reflections and develop action plans to improve performance in this criterion, especially in the medical–surgical unit.

Criteria 3, 6, 7, 8, and 9 showed improvement between follow-up and baseline audit when evaluated both units together. Criterion 3 compliance in the follow-up audit (100%) demonstrated the effectiveness of the actions to patient participation in the fall risk assessment process.

Criteria 6 and 7 compliances improved significantly between the baseline audit (23 and 3%, respectively) and follow-up audit (97% both units). This is evidence that all implemented actions enabled the participation of the patient/caregiver in establishing fall prevention strategies and care planning in both units. For criterion 6, compliance in the medical–surgical unit increased from 0 to 100%.

Criterion 8 compliance improved between the baseline audit (0%) and follow-up audit (18%). There was no improvement in the medical–surgical unit (0% compliance in both audits). Although the aggregate result presented a low compliance (18%), there are opportunities for improvement in the orientation process for the patient upon discharge by investing in raising their awareness of fall prevention for home care.

Criterion 9 compliance improved significantly between the baseline audit (51%) and follow-up audit (100%), demonstrating positive performance following the training preparations and application in both units.

Discussion

This study aimed to assess compliance with evidence-based criteria regarding a person-centered care approach to the prevention and management of falls among adults and the elderly in oncology and medical–surgical wards. The project used the JBI audit and feedback method to implement evidence into practice using the JBI PACES and GRiP audit tools to promote changes in the two wards.

Compliance increased in the follow-up audit for criteria 3, 4, 6, 7, and 9. The changes were accomplished because of the planning in phase 2 of the project, where facilitators were identified and intervention plans were established based on the strategies described in the GRiP. The most noteworthy of these strategies are the following: the fall risk assessment tool that was printed for bedside completion with the patient's participation; the training of 100%

of the oncology and medical–surgical nursing teams; the flowchart for postfall care and clinical notes in the electronic medical record to record information and the secure documentation of progression data, the review of the Fall Prevention Protocol in the computer system; the customization of the care planning process for a personalized approach that is compatible with each patient's particularities, with a focus on patient-centered care.

However, we need to improve criteria 1, 2, 5, and 8, whose compliance either decreased or remained low. The change in the time markers for the patient's fall risk assessment upon admission and transfer (criteria 1 and 2) proved inadequate for the work process of the teams in both units during the COVID-19 pandemic. Despite the interventions, the slight variation in compliance in criterion 5 demonstrated that verbal and written orientation on fall prevention does not modify. Moreover, there was low compliance with criterion 8 to provide discharge instructions in an electronic document that can be printed and delivered to patients/caregivers. However, we need to improve criteria 1, 2, 5, and 8, whose compliance either decreased or remained low. We need to develop actions plans to achieve better results soon.

We identified some challenges during the implementation of this project such as the lack of technological resources and electronic devices to perform fall risk assessments and bedside care planning. Despite these barriers, some actions initiated in this project are being expanded to other hospital areas because the results demonstrated possibilities of greater engagement between professionals and patients and good prospects for improving fall prevention processes.

Including patients/caregivers in the fall risk assessment process and engaging them in goal setting and care planning proved beneficial. Furthermore, we based fall prevention and management strategies on individual risk factors, including multidisciplinary interventions within the care context.

The nurses consistently adhered to and participated in the educational programs made available. In addition, they helped provide patient-centered care in fall prevention and management to implement the evidence in practice.

The literature results demonstrate that person-centered interventions and personalized patient education may have the potential to be effective in reducing falls in hospitals, but the evidence is still limited.[16] Patient and staff education can reduce the rate and risk of hospital falls and multifactorial interventions tended to produce a positive impact.[23–25]

The results of our study corroborate the findings of the literature.[13,16,25–29] However, it advances by enabling the assessment of patient participation in processes that involve their safety in the hospital environment, especially in the area of risks, and the establishment of care strategies with preventive measures reflected in lower rates of falls because of their engagement throughout the process. Nonetheless, follow-up audits are required to ensure sustained success of this implementation project.

Conclusion

These findings support that baseline and follow-up audits allied to a fall training program. Changes in the electronic medical records increase compliance rates related to evidence-based practice regarding a person-centered care approach to preventing and managing of falls.

The implications for practice and knowledge sustainability in this implementation project include the following: the patients were involved in the fall risk assessment process and encouraged to engage in goal setting and care planning. We targeted fall prevention and management strategies according to individual risk factors, including relevant multidisciplinary interventions. Nurses participated in educational programs and contributed to the implementation of patient-centered care in the practice of preventing and managing falls. In the future, we will implement new strategies to achieve overall success and change according to best practices.

Acknowledgements

We thank the Brazilian Centre for Evidence-based Healthcare: – a JBI Centre of Excellence (JBI Brazil), the Sírio-Libanês Hospital and the New Knowledge Center team, the nursing coordinator of the Oncology Unit, the nurses and nurse leaders of the Oncology and of the Medical-Surgical Clinic units, the Fall Prevention Committee, and the Nursing Management.

Funding: The authors A.C.d.S.A. and R.P.F. received funding from the HSL to carry out the JBI Evidence Implementation Training Program conducted by JBI Brazil.

Conflicts of interest

There are no conflicts of interest.

References

1. Ambrose AF, Paul G, Hausdorff JM. Risk factors for falls among the elderly: a literature review. *Maturitas* 2013; 75: 51–61.
2. Cedraz RO, Gallasch CH, Junior EFP, Gomes HF, Rocha RG, Mininel VA. Risk management in a hospital environment: incidence and risk factors associated with falls and pressure injuries in a clinical unit. *Anna Nery School* 2018; 22: e20170252.

3. Brazil, Ministry of Health, Anvisa and Fiocruz, annex 01: protocol for the prevention of falls. Protocol integral to the National Patient Safety Program, Brasília, 2013 [cited on 16 October 2020]. Available at: https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/item/prevencaode-quedas.
4. Oliveira ASd, Trevizan PF, Bestetti MLT, Melo RCd. Environmental factors and risk of falls in the elderly: a systematic review. *Braz Journ Geriatr Gerontol* 2014; 17: 637–45.
5. Enríquez de Luna-Rodríguez M, Aranda-Gallardo M, Canca-Sánchez JC, Moya-Suárez AB, Vázquez-Blanco MJ, Morales-Asencio JM. Profile of the patient who suffers falls in the hospital environment: multicenter study. *Enferm Clin (Engl Ed)* 2020; 30: 236–43.
6. Pasa TS, Magnago TSBS, Urbanetto JS, Baratto MAM, Morais BX, Carollo JB. Risk assessment and incidence of falls in adult hospitalized patients. *Rev Latino-Am Enfermagem* 2017; 25: e2862.
7. Step safely: strategies for preventing and managing falls across the life-course. Geneva: World Health Organization; 2021.
8. Prato SCF, Andrade SM, Cabrera MAS, *et al*. Frequency and factors associated with adults aged 55 years and over. *Public Health J* 2017; 51: 37.
9. Victor MAG, Luzia MF, Severo IM, Almeida MA, Goes MGO, Lucena AF. Falls in surgical patients: subsidies for safe nursing care. *Nurs JUFPE* 2017; 11 (Suppl 10): 4027–35.
10. Gonçalves AK, Griebler EM, Possamai VD, Costa RR, Martins VF. Elderly fallers and nonfallers: multicomponent exercise program and prevalence of falls. *Cons Health* 2017; 16: 187–93.
11. Brazilian Society of Geriatrics and Gerontology. Project Guidelines. Falls in the elderly: prevention. 2008. Available at: http://www.projetodiretrizes.org.br/projeto_diretrizes/082.pdf
12. Nascimento MM, Maia NJS, Ramos LS, Appell HJ. Influence of executive functions on gait and balance of elderly regular physical exercisers. *Braz J Health Sci* 2018; 22: 139–48.
13. Cruz DTd, Cruz FM, Chaoubah A, Leite ICG. Factors associated with recurrent falls in an elderly cohort. *Collect Health J* 2017; 25: 475–82.
14. Reuben DB, Gazarian P, Alexander N, *et al*. Strategies to reduce injuries and build confidence in the elderly (STRIDE) intervention: assessment and management of risk factors for falls, patient involvement and nurse co-management. *J Am Geriatr Soc* 2017; 65: 2733–9.
15. Lizarondo L. Evidence summary. Falls in the hospital setting: person-centered approach to prevention. The JBI EBP Database. 2021.
16. Avanecean D, Calliste D, Contreras T, Lim Y, Fitzpatrick A. Efficacy of patient-centered interventions on falls in the intensive care setting compared with usual care: a systematic review. *JBI Database Syst Rev* 2017; 15: 3006–48.
17. Tzeng HM, Yin CY. Patient involvement in the prevention of falls in hospitals. *Nurs Econ* 2015; 33: 326–34.
18. Toren O, Lipschuetz M. Prevention of falls in hospitals - the need for a new approach: an integrative article. *Nurse Care Open Access J* 2017; 2: 93–6.
19. Ayton DR, Barker AL, Morello RT, *et al*. Barriers and facilitators to the implementation of the 6-PACK fall prevention program: a preimplementation study in hospitals participating in a cluster-controlled randomized clinical trial. *PLoS One* 2017; 12: e0171932.
20. Porritt K, McArthur A, Lockwood C, Munn Z, editors. JBI Handbook for Evidence Implementation. JBI, 2020. Available at: https://implementationmanual.jbi.global. https://doi.org/10.46658/JBIMEI-20-02
21. Poe SS, Cvach MM, Dawson PB, Straus H, Hill EE. The Johns Hopkins Fall Risk assessment Tool: postimplementation evaluation. *J Nurs Care Qual* 2007; 22: 293–8.
22. Meg EM, Kate W, Cathy J, *et al*. Interventions to reduce falls in hospitals: a systematic review and meta-analysis. *Age Ageing* 2022; 51: afac077.
23. Cameron ID, Dyer SM, Panagoda CE, *et al*. Interventions for preventing falls in older people in care facilities and hospitals. *Cochrane Database Syst Rev* (9): 2018:CD005465.
24. Haines TP, Bell RAR, Varghese PN. Pragmatic trial, randomized grouping of a policy of introducing low beds to hospital wards for the prevention of falls and fall injuries. *J Am Geriatr Soc* 2010; 58: 435–41.
25. Vonnes C, Wolf D. Fall prevention and risk agreement: engaging patients and families in a partnership for patient safety. *BMJ Open Qual* 2017; 6: e000038.
26. Dykes PC, Burns Z, Adelman J, *et al*. Evaluation of a patient-centered fall-prevention tool kit to reduce falls and injuries: a nonrandomized controlled trial. *JAMA Netw Open* 2020; 3: e2025889.
27. Trier H, Valderas JM, Wensing M, Martin HM, Egebart J. Involving patients in patient safety programmes: a scoping review and consensus procedure by the LINNEAUS collaboration on patient safety in primary care. *Eur J Gen Pract* 2015; 21 (Suppl): 56–61.
28. Burrows Walters C, Duthie EA. Patient's perspectives of engagement as a safety strategy. *Oncol Nurs Forum* 2017; 4: 712–8.
29. Maia FOM, Cruz DALM, Shimoda GT, Sichieri K, Iida LIS. Falls prevention strategies for adult inpatients in a university hospital of São Paulo, Brazil: a best practice implementation project. *JBI Database Syst Rev Implement Rep* 2018; 16: 1720–36.