Author’s response to reviews

Title: Feasibility and usefulness of a leadership intervention to implement evidence-based falls prevention practices in residential care in Canada

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Author’s response to reviews:

Reviewer 1:

The writing of the manuscript is very dense.

It is very difficult to really understand what the leadership intervention entailed.

The figures are somewhat useful to see flow, however it is unclear to know what the intervention was in this study.

The intervention is described very broadly and references the Ottawa model of implementation leadership (OMILe)—however the specifics of how the implementation leadership interfaced with the implementation of evidence-based practices to reduce patient falls.

Response: Thank you for this comment. We have edited the text and description of the intervention extensively to clarify the components and how the implementation leadership intervention interfaced with the evidence based falls prevention practices.
Reviewer 1:

In the background section, there is not a clear transition from the concept of leadership of point-of-care managers and the implementation of evidence-based practices.

It seems that there are clearly good leadership skills needed, however, only limited attention seems to have been focused on best practices for fall prevention and the integration of these practices by nursing staff.

Response: The background section was edited to create a better flow of ideas and clearer transitions between the main subjects. The intervention participants are now described as ‘Formal” and “Informal” leaders – with point-of-care managers grouped as formal leaders.

The best practices for falls prevention is further described with more clarity, (lines 199 - 214): Workshop participants prioritized six evidence-based practices for implementation that were compatible with other organizational directions, relatively easy to implement, and observable during the intervention period. Four of the practices came from the RNAO best practices guideline Prevention of Falls and Falls Injuries in the Older Adult (30), and two from RNAO guidelines Promoting Continence Using Prompted Voiding (31) and Prevention of Constipation in the Older Adult Population (32) with implications for falls prevention. The six chosen practices were from the 19 practices outlined in the institution’s standardized care plan. The remaining 13 practices would be the focus of implementation in the future.

After identifying the practices for implementation, participants set target goals that represented the percentage of residents’ charts they would see the evidence-based practices documented in. The practices and the target goals for implementation were: 1) educating clients and families about falls prevention (goal 50%); 2) identifying and modifying equipment in the environment that increases risks for falls and falls injuries, in this case, marking the optimal bed height for each resident on the wall (goal 80%); 3) developing an interdisciplinary exercise plan through physiotherapy consult (goal 75%); 4) establishing a toileting plan (goal 50%); 5) increasing fluid intake (goal 50%); and 6) increasing dietary fiber (goal 30%).

Reviewer 1:

There really needs to be more clarity on the actual intervention components based on the OMILe.

Response: Thank you – we have amended the description of the intervention content and delivery to add clarity to the different components and their relation to the O-MILe. We also added more description of the O-MILe lines 172-189:

The O-MILe is a theoretical model based on leadership theory and empirical research that identifies the knowledge, skills, and interpersonal processes to facilitate implementation of evidence-based practices. The embedded mechanisms in the O-MILe are that successful
implementation requires leaders to understand site-specific evidence-practice gaps, implementation strategies, and how leadership influences planned change processes. Leaders must also have the skills to prioritize change, set target goals, and facilitate staff to practice evidence-based care for improved outcomes (21).

The O-MiLe explicates the relations, change, and task-oriented leadership behaviors to facilitate implementation of evidence-based practices (21). Relations-oriented behaviors include supporting, developing skills, and recognizing others to increase cooperation and commitment. Change-oriented behaviors are concerned with commitment to support change and creating a sense of need. Task-oriented behaviors include planning, clarifying roles, monitoring and efficiently using resources (21). The behavioral categories of relations, change, and task-oriented leadership have a strong empirical basis in leadership effectiveness (25, 26).

The leadership intervention was designed to be delivered over 3 months. It included three interactive workshops and three individualized coaching sessions, both of which have shown to be effective strategies for developing leadership to address workplace challenges (27-29) (See Figure 1 for components of the intervention).

Reviewer 1:
Frame the study around the structure of a study with methods delineating the intervention (both the leadership training/coaching and the evidence-based practices leaders were integrating into practice.

Response: The intervention is described as part of the methods and the subheadings have been changed to add more clarity to the intervention workshops and coaching.

Reviewer 1:
Delineate tools used for measurement in a measurement section of the paper and include additional description of the ILS tool and psychometrics of this tool.

Response: We have edited this section extensively and have added the tools used for measurement in the Outcomes section – adding Measures into the subtitle to now read: Outcomes & Measures.

Reviewer 1:
How does this leadership intervention support the concept of the leaders' role in developing a culture of safety for "zero" falls?

Response: The leadership intervention is designed to support the implementation of evidence-based practices to improve the quality of care and ultimately patient outcomes. With leadership
having a strong influence on workplace culture, implementation of evidence-based practices to prevent falls is consistent with a culture of safety.

Reviewer 1:

Please consider simplifying the description of the leadership intervention and give more attention to how the Prevention of Falls practices was integrated into the nursing care of the patients. This is critical as this is often where the gap is in leadership to promote improvements in preventing patient falls.

Response: We have clarified the description of the intervention as described above and have added clarity on the mechanism of action of the leadership intervention – with more detail on the influence of leaders to improve care and outcomes.

Reviewer 1:

Given that falls actually increased following the leadership training—provide discussion on needs to enhance/change intervention.

Response: We have added to our discussion about the increase in the number of falls post-intervention (lines 431 - 443):

It was interesting to note that the number of falls increased after the intervention. Given the purpose of the study was to explore the feasibility of delivering the leadership intervention and the usefulness of the intervention to develop implementation leadership behaviours, the study was not powered to detect causal differences in falls prevention practices or falls rates. The sample size was small and the leadership intervention was not delivered as planned with fewer workshops and coaching sessions than intended. In addition, we collected data on the absolute number of falls which is not a standardized method of reporting falls rates and may not be a clinically significant measure of understanding falls prevention strategies. Rather, the rate of falls per person year or per 1,000 occupied patient days is a standardized reporting method and should be collected to allow comparisons to other studies and examine trends over time (40-42). As a complex intervention with multiple components, future leadership intervention studies should ensure an adequate sample size and capture the intervention fidelity to understand what works in different contexts (43).

Reviewer 2:

Thank you for the opportunity to review this manuscript. This study evaluated the feasibility of a leadership training intervention in implementing falls prevention guidelines for 10 formal and informal leaders in long-term care. This study took great care to ensure that the intervention was relevant to the needs of the long-term care staff, that staff were supported after workshops, and that barriers and facilitators were explored.
The study did not find a difference in the number of falls post-intervention although this is not surprising given the small sample size and short duration. Leadership scores were generally high although a comparison of leadership attitudes before and after the intervention was not conducted. The authors do not conclude on the feasibility of the studies, but rather comment on the complexity of leadership interventions and recommend additional research into its effectiveness.

Please find below a list of recommendations for improving the clarity and structure of this manuscript.

Response: Thank you

Reviewer 2:

1. Consistent use of leadership terminology

Throughout the manuscript you describe point-of-care managers, clinical leaders, opinion leaders and in the results as unit manager/educators, nurses and care aids. It would improve the clarity of this study if staff cohorts were defined as formal and informal leaders with a short description of the staff roles included in each category.

Response: Thank you for this comment. We have described formal and informal leaders as suggested and have clarified this throughout the text.

Reviewer 2:

2. Sample size

In lines 140-149, you describe the size of the long-term care home and the number of included units and staff in the study.

• Please also state the number of residents within the two units and the number of staff approached for consent.

• It may be helpful to include a flow diagram (or revise Figure 1) showing the number of leaders (formal and informal) on the units, the size of the staff teams they direct, and the number of residents on the units.

Response: • We have clarified the number of residents and the size of staff teams on each unit, and have elected to keep this in text rather than as a table. Lines 145 – 152:

We purposefully recruited formal and informal leaders on the two participating units. Formal leaders were managers and a clinical educator responsible for training and supervising clinical
staff. Informal leaders included staff nurses and unregulated care aids who had been identified by their managers as influential in practice with their peers. Each unit was composed of one Registered Nurse manager, one Registered Practical Nurse and 1-6 unregulated health care aids per unit depending on the shift (days=3-6; evenings=2-4, nights=1-2). The educator worked days for all the units in the facility. Together the two participating units had a total of 48 residents pre-intervention and 46 post-intervention.

Reviewer 2:

• Additionally, if any staff did not consent to participate initially, please state these (originally estimated for a sample size of 13 but only 10 participated with one drop out).

Response: • We have clarified the number of staff approached with the number that were invited to participate in the results as response rate (10/10 with one drop-out), and removed the sample size estimate from the methods to avoid confusion.

Reviewer 2:

3. Fall prevention best practices

In line 183 and in 204-210, the fall prevention best practices are discussed. Please group this information into one section and explain the rationale for why only some of the recommendations were included in the implementation plan.

Please state if the participants eventually planned on implementing all the recommendations.

Response: This information has been grouped into one section and clarity has been given to why only some of the practices were included in the implementation plan. Lines 199 - 2016 now read:

Workshop participants prioritized six evidence-based practices for implementation that were compatible with other organizational directions, relatively easy to implement, and observable during the intervention period. Four of the practices came from the RNAO best practices guideline Prevention of Falls and Falls Injuries in the Older Adult (30), and two from RNAO guidelines Promoting Continence Using Prompted Voiding (31) and Prevention of Constipation in the Older Adult Population (32) with implications for falls prevention. The six chosen practices were from the 19 practices outlined in the institution’s standardized care plan. The remaining 13 practices would be the focus of implementation in the future.

Reviewer 2:

4. Individualized leadership action plan vs. team leadership action plan
In line 200, authors state that participants were required to make multiple action plans. Please explain how these differ and what strategies go into each type.

Response: The differences between the individualized and team leadership action plans are that in the individualized plan, participants identified the leadership behaviours that they would individually do to implement the falls prevention practices, whereas in the team plan, they identified all the leadership behaviours that the unit level team would do collectively. Both the individual and team plans were based on the O-MILe and identically structured. This has been clarified in the text - lines 215 - 220:

In the workshops, participant developed a leadership action-plan that identified the relations, change, and task-oriented leadership behaviours they would engage in to implement the falls prevention practices (21).

Each participant developed an individual leadership action plan in the first workshop, that specified the leadership behaviours they would individually engage in. Whereas in the second workshop, participants developed a unit-level team leadership action plan of the leadership behaviours they would collectively engage in as a team to implement falls prevention practices.

Reviewer 2:

5. Scales

In lines 232-234, you discuss the Likert scale for usefulness as 1-4 with acceptable scores of at least 3. This does not seem like a big enough range to detect a primary outcome of this feasibility study. Please explain the rationale for this choice.

Response: Our Likert rating scale was a 5 point scale where 0=not at all useful and 4=highly useful. We have changed the text to clearly indicate that the scale is 5 points and we were looking for high ratings for usefulness of the workshops and coaching sessions. Lines 234 236 now read:

Usefulness of the intervention was based on a ratings of 3 and above on a 5 point Likert scale, where 0=not at all useful and 4=extremely useful for developing implementation leadership behaviours.

Reviewer 2:

In lines 245-246 you describe the ILS scale validity using the Cronbach alpha statistic. This statistic really only speaks to the internal consistency of the scale. Please consider rewording the phrase on reliability to emphasize that this is not related to inter-rater reliability. Please consider finding additional sources to validate other properties of this scale.
Response: Regarding the ILS scale – we recognize the confusion – so we have removed the word reliability to avoid confusion and clarified the sentence to read (lines 245 - 249):

Previous research has demonstrated a Cronbach’s alpha coefficient of 0.98 on total ILS scores for internal consistency, and has shown good convergent validity and discriminant validity on the total scale and all four subscales (33).

The inter-rater reliability has not been tested by the authors of the scale.

Reviewer 2:

6. Pre- post- comparisons

In the second paragraph under 'data collection', you describe comparing the number of falls and documentation on falls prevention pre- and post-intervention. Please explain why you did not assess leadership ILS scores pre- and post- as this seems like an obvious measure to help support the usability of the intervention.

Response: We recognize that this would have been a valuable measure to support usability of the intervention. We have incorporated this into our future work.

Reviewer 2:

7. Cost data analysis

Please include what analysis was conducted for the cost data within the data analysis section.

Response: We have included a description in the data analysis section (lines 281 – 286).

Cost data were summarized using mean and standard deviation (SD) and presented in 2018 Canadian dollars. Staff participation costs were calculated by multiplying the mean hourly wages with the number of hours that staff participated in the workshop and coaching sessions. Miscellaneous costs included transportation expenses for research staff to collect chart audit data for the evaluation of the fall prevention strategies, and to attend the workshop.

Reviewer 2:

8. ILS response categories

Please remove the description of the ILS response categories from table 3 and list these briefly within the data analysis section (line 284) and in more detail within the results 'leadership behaviors'.


Response: We recognize the confusion this has created and have therefore renamed the
description of the ILS response categories in table 4 to “ILS Subscale Category” and the
description of the deductive coding in the analysis (lines 288-290) to read:

Qualitative data were deductively coded into categories that corresponded to ILS subscales (i.e.
proactive leadership, knowledgeable leadership, supportive leadership, and perseverant
leadership).

Reviewer 2:

9. Table 1

Consider regrouping table 1 into formal and informal leaders as opposed to the number of
participants in the workshop, interview and focus groups. This seems to be unnecessary.

Response: Thank you for this – we have re-grouped table 1 into formal and informal leaders.

Reviewer 2:

10. Table 2

Please include an explanation of why referrals to physiotherapy were unavailable pre-
intervention.

Response: Physiotherapy referral was not available pre-intervention because of a technological
 glitch in the organization’s electronic charting system, which was new at the time of pre-
intervention data collection. By the time we collected post-intervention data, this was rectified.
 We have clarified this in the paper (lines 338-341): All data on the fall prevention strategies
identified for implementation were documented and available through the electronic charts with
the exception of physiotherapy referral, which was not available through the electronic charting
system pre-intervention but was available post-intervention (Table 2).

Reviewer 2:

Please also include the number of falls as a percentage of the total number of residents on the
units.

Response: We have included in the results the number of falls alongside the total number of
residents on the units. We chose not to express as a percentage as one resident could have had
more than one fall and percentage therefore could be misleading. Lines 333-337 - now reads:

Standardized data on falls rates were not available, nor were data on severity of injuries from
falls. Data on the total number of falls were available and collected from the organization’s
electronic database, showing 22 falls in 48 residents in the three months pre-intervention and 30 falls in 46 residents in the 3 months post-intervention. It was not clear from the data collected how many residents had fallen from the total number of falls.

Reviewer 2:

11. Action plan evaluation

In line 347, you mention that researchers collected chart audit data. Please explain if staff were responsible for evaluating their own action plans. If staff are unable to have ongoing evaluation of their own plans, this is likely not a sustainable approach.

Response: On line 347, the cost was for researchers to collect chart audit data to evaluate the implementation of the falls prevention strategies, not to evaluate the action plans. We have clarified this in the text. Participants reflected on their action plans during the intervention (workshops and coaching sessions). The intervention is structured as an ongoing self-assessment strategy for leadership development. We have added this to the discussion.

Reviewer 2:

12. Organizational needs

In line 356, you describe that participants required more support in adapting the intervention into the context of their organization. Since the researchers had already met with senior leadership to discuss this, please describe what additional needs were not already identified and addressed.

Response: Line 356 was referring to adapting the curricula content of the workshops to include ways to adapt evidence-based practices (such as falls prevention practices) to the organizational context. We met with senior leadership to adapt the delivery of the leadership intervention to the organizational context, which is different than the intervention participants learning how to adapt evidence based clinical practices for implementation. We have clarified the text to reflect this (line 357):

For the workshops, participants suggested enhancing the curricula to include ways to adapt evidence-based clinical practices to the organizational context, in this case falls prevention practices in residential care facilities.

Reviewer 2:

13. Table 3

Please include correct number of significant digits.
Response: We have confirmed that Table 3 is accurate.

As explained in the analysis and described by the ILS tool developers to calculate scores for the ILS, we first computed a mean score for each set of three items within a given subscale. We report the median rating for the subscale and the range of computed mean scores for each subscale to accommodate for the small sample size.

Reviewer 2:

14. Falls prevention

Within the discussion on line 419-427, you discuss fall data as an outcome measure. Please state additional references for the challenges in changing health outcomes in long-term care given this is a population with complex health needs, highly transitory, etc.

Response: We have added the following lines and references (lines 425 – 429):

With a complexity of factors impacting health outcomes for older people in residential care homes such as cognitive impairment, polypharmacy, vertigo and previous falls (to name a few) (38, 39), researchers must carefully consider the type of data available from participating organizations when selecting outcomes including what constitutes a fall, falls injury and severity of injury.