
Theses

2016

Evaluating the impact of a falls prevention community of practice in a residential aged care organisation

Jacqueline Francis-Coad
The University of Notre Dame Australia

Follow this and additional works at: <http://researchonline.nd.edu.au/theses>

 Part of the [Physical Therapy Commons](#), and the [Physiotherapy Commons](#)

COMMONWEALTH OF AUSTRALIA
Copyright Regulations 1969

WARNING

The material in this communication may be subject to copyright under the Act. Any further copying or communication of this material by you may be the subject of copyright protection under the Act.

Do not remove this notice.

Publication Details

Francis-Coad, J. (2016). Evaluating the impact of a falls prevention community of practice in a residential aged care organisation (Doctor of Philosophy (School of Physiotherapy)). University of Notre Dame Australia. <http://researchonline.nd.edu.au/theses/137>

This dissertation/thesis is brought to you by ResearchOnline@ND. It has been accepted for inclusion in Theses by an authorized administrator of ResearchOnline@ND. For more information, please contact researchonline@nd.edu.au.



Chapter 6:

What Worked Translating Evidence into Practice: A Realist Evaluation of the Impact of a Falls Prevention Community of Practice

Preface

This chapter describes Phase 3 (Study 3) of the research. Following the falls prevention activity audit, evidence-based falls prevention strategies prioritised by the CoP were actioned. The impact of CoP activities was evaluated at member, site and organisation levels.

This chapter is based on a manuscript submitted for publication (under peer review) and a poster presented at the 7th Biennial Australian and New Zealand Falls Prevention Conference 2016 (Melbourne, Australia) titled:

Francis-Coad, J., Etherton-Ber, C., Bulsara, C., Blackburn, N., Chivers, P., & Hill, A-M. What worked translating evidence into practice: A realist evaluation of the impact of a falls prevention community of practice.

The author's version of the manuscript is presented with modifications to suit the style and format of this thesis.

6.1 Abstract

Background

Falls prevention guidelines recommend that multifactorial prevention strategies are implemented by RAC organisations, but these require translation into clinical practice. A CoP was selected as a suitable model to support translation of the best available evidence into practice in a RAC organisation, as it could bring together like-minded people with falls expertise and local clinical knowledge providing a social learning opportunity in the pursuit of a common goal; falls prevention. The aims of the study were to evaluate the impact of a falls prevention CoP on its membership, its actions at site level and its actions at organisation level in translating falls prevention evidence into practice.

Methods

A convergent, parallel mixed methods evaluation design based on a realist approach using surveys, audits, observations and semi-structured interviews was conducted. Participants were 20 multidisciplinary staff nominating as CoP members between November 2013 and November 2015. They represented 13 sites (779 beds) of a RAC organisation. The impact of the CoP was evaluated at three levels to identify how the CoP influenced the observed outcomes in the varying contexts of its membership, the RAC site and RAC organisation.

Results

Staff participating as CoP members gained knowledge and awareness in falls prevention through connecting and sharing. Strategies prioritised and addressed at RAC site level culminated in a significant increase in the proportion of residents supplemented with vitamin D [mean increase = 28.23%, 95% CI (15.96%, 40.51%)] and development of falls prevention education for care staff. At organisation level a falls policy, reflecting preventative evidence-based guidelines, and a new falls risk assessment procedure with aligned management plans were written, modified and implemented. Variation in the impact of the CoP across the sites was observed. A key inhibitory mechanism identified by CoP members was a lack of recognition by managers of the requirement to prioritise time for members to engage in the translation of falls prevention evidence into practice. This resulted in less practice change taking place at some sites. Key enabling

mechanisms included an active CoP member who prompted staff attention to falls prevention strategies in novel ways and management support in reinforcing accountability for practice change. This resulted in better adoption of prioritised strategies.

Conclusion

Multidisciplinary staff participating in a falls prevention CoP gained connectivity and knowledge and were able to facilitate the translation of falls prevention evidence into practice in the context of a RAC site and RAC organisation. Support from RAC organisational and site management to make the necessary investment in staff time to enable change in falls prevention practice is essential for success.

6.2 Introduction

Falls are a major socio-economic problem in the RAC sector; half its population fall annually (Burland, Martens, Brownell, Doupe, & Fuchs, 2013; Haralambous et al., 2010; Nyman & Victor, 2011) and 25-30% of these falls result in physical injury (Burland et al., 2013; Oliver et al., 2007; Rapp, Becker, Cameron, König, & Büchele, 2012). Consequences for residents who fall include increased risk of mortality, functional decline, depression and anxiety (Morley, 2007; Oliver et al., 2007; Vlaeyen et al., 2015) in addition to significant cost burden for the health sector (Haines et al., 2013; Watson, Clapperton, & Mitchell, 2011). Preventing falls and resultant injury is challenging due to the multifactorial nature of falls, the complex characteristics of RAC populations who have multiple co-morbidities with age-related systems decline (Becker & Rapp, 2010; Onder et al., 2012; Rapp et al., 2012) and a diversely skilled workforce caring for them (Becker & Rapp, 2010; King et al., 2013). Two recent meta analyses in RAC populations showed different findings; a large systematic review (Cameron et al., 2012) found supplementing residents with low vitamin D levels reduced the rate of falls by 37% but not the risk of falling whilst Vlaeyen et al. (2015) reported multifactorial interventions delivered by a multidisciplinary staff reduced falls by 33% and the number of recurrent fallers by 21%. Falls prevention evidence-based guidelines also offer strategy implementation and adoption advice at staff, site and organisation levels (Australian Commission on Safety and Quality in Healthcare, 2009; National Institute for Health and Care Excellence, 2013). A systematic review conducted as part of the present research (described in Chapter 2) found that nine studies delivered interventions at all three levels and three delivered interventions at two levels (see Table 2.5 for the 12 included studies). A sub-group meta-analysis of three studies showed that when interventions were delivered at two or three levels, but were supported with external resources, there was a significant reduction in falls rates.

Implementing and adopting evidence-based falls prevention activities in the context of a RAC organisation requires embedding these activities in policy, processes and practices. To achieve this translation into practice systematic enquiry, synthesis and tailoring of falls prevention evidence for the local workplace is necessary (Glasziou, Ogrinc, & Goodman, 2011; Haines & Waldron, 2011; Tetroe, Graham, & Scott, 2011). Thus bringing people together with falls research expertise and local knowledge of barriers and facilitators to RAC workplace practices could facilitate effective translation of evidence into practice.

One option to bring like-minded people together is a CoP that enables sharing of expertise and ideas, to innovate for change in pursuit of a common goal (Bertone et al., 2013; Tolson, Lowndes, Booth, Schofield, & Wales, 2011; Wenger, 1998). CoPs have been used in health care organisations with the intent of building capacity and improving health care outcomes with inconclusive results largely due to poor or absent evaluation. Improved impact evaluations are thus indicated (Bertone et al., 2013; Li et al., 2009; Ranmuthugala, Plumb, et al., 2011).

A CoP was established to bring together RAC staff with an interest and goal in preventing falls as previously described in Chapter 4 (Francis-Coad, Etherton-Bear, Bulsara, Nobre, & Hill, 2016a). The intention was to offer a social learning opportunity (Wenger, 1998) and robustly evaluate its feasibility to facilitate translation of the current evidence using both objective outcomes and observed changes in health behaviour (Colquhoun et al., 2014; Michie, van Stralen, & West, 2011). The CoP was viewed as a complex intervention at the organisational level that could have differing impact across RAC sites and the individual staff participating as members, dependent upon leadership, culture and staff behaviours (Colquhoun et al., 2014; Ranmuthugala, Cunningham, et al., 2011; Tolson, Booth, & Lowndes, 2008). Evaluation using this realist approach could identify how the CoP influenced the observed outcomes in different contexts of its membership, the RAC site and RAC organisation (Hewitt, Sims, & Harris, 2012; Ranmuthugala, Cunningham, et al., 2011; Williams, Burton, & Rycroft-Malone, 2013).

Therefore the aims of this study were to evaluate the impact of a falls prevention CoP on its membership, its actions at site level and its actions at organisation level in translating falls prevention evidence into practice.

6.3 Methods

6.3.1 Study Design

Study 3 used a convergent, parallel mixed methods evaluation design (Creswell & Plano Clark, 2007) based on a realist approach (Pawson & Tilley, 1997). Briefly, realist approaches have been used when more than a description of an intervention's outcomes is required; they seek to identify how interventions trigger (mechanisms) the observed 'outcomes' in varying 'contexts' (Hewitt et al., 2012; Pawson & Tilley, 1997; Ranmuthugala, Cunningham, et al., 2011). Theoretical explanations of how a CoP might

impact falls prevention were derived from the literature and stakeholder meetings using a context, mechanisms and outcomes (CMO) framework described previously in Chapter 3 (Francis-Coad, Etherton-Beer, Bulsara, Nobre, & Hill, 2015). This framework was tested by posing the questions “what was it about the intervention that worked?”, “for whom?”, “how?” and “under what conditions?” Survey questionnaires, semi-structured interviews, observation journals, electronic transcripts, emails, meeting minutes, clinical records and policy documents provided data on CoP activity. An overview of the study is shown in Figure 6.1.

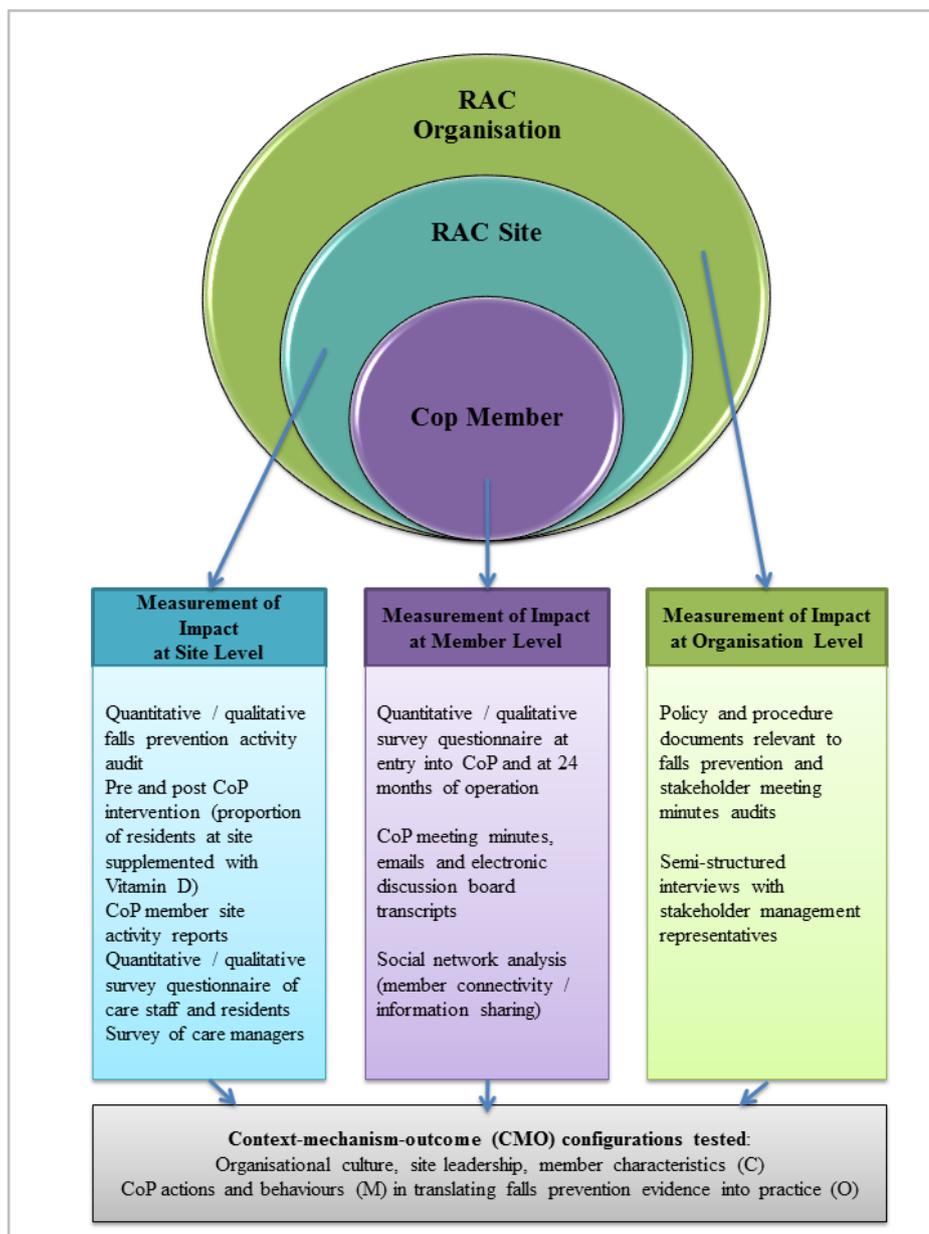


Figure 6.1 Overview of Measuring CoP Impact at Member, Site and Organisational Level.

6.3.2 *Participants and Setting*

The RAC organisation was led by a CEO from a central administrative site. There were approximately 1200 full and part time care staff across 13 geographically diverse sites providing mainly high level care in a home-like environment for approximately 780 older people at any one time, with a mean age of around 84 years. Sites were led by a care manager, with direct resident care provided mostly by care assistants supervised by professional nursing and allied health staff. All sites were represented by at least one CoP member with no more than 20 members at any one time for the duration of the study.

6.3.3 *Outcome Measures*

The impact of the falls prevention CoP on translating falls prevention evidence into practice was evaluated at three levels; RAC organisation level, RAC site level and its effect on staff who participated at membership level, as shown in Figure 6.1. This range of measured outcomes was used to inform theorised explanatory conjectured CMOs, which postulate how the outcomes were achieved considering the context in which they took place.

6.3.4 *Data Collection and Procedure*

CoP Member Level

An online survey questionnaire was administered to CoP members via an email link, using software by SurveyMonkey™, on entry into the CoP and following 24 months of CoP operation. Additional open response questions, modified from Ranmuthugala, Cunningham, et al. (2011), to determine experiences of CoP membership were included in the 24 months post CoP operation questionnaire (see Appendix I). CoP electronic communication transcripts including emails and face to face meeting minutes were used for triangulation.

The researcher kept a journal to record her observations and reflections regarding CoP member participation and operation. The observations contributed to descriptions and explanations of CoP web based communication, activity and impact (see Appendix J).

Findings were presented to the CoP members to establish respondent validation or 'member checking' (Creswell & Plano Clark, 2007; Thomas & Magilvy, 2011).

The establishment of a community through connections between its members and knowledge flow through the community was recorded by counting postings on the CoP intranet discussion web page and whom the posting was shared with, in addition to members' email frequency and attendance at face to face meetings. These CoP member interactions were recorded in a Microsoft Excel (2013) spreadsheet (Microsoft Corporation, Washington, USA).

RAC Site Level

Measurement of the impact of the CoP at site level prioritised improving the proportion of residents supplemented with vitamin D and development of falls prevention education for care staff and residents. These priority areas were determined in the early phase of CoP operation when the CoP conducted an audit of falls prevention activity as previously reported in Chapter 5 (Francis-Coad, Etherton-Ber, Bulsara, Nobre, & Hill, 2016b).

The proportion of residents at each site supplemented with vitamin D was calculated from medication charts. Electronic dispensing records from supplying pharmacists were sourced to verify the accuracy of medication chart audits.

Surveys of care staff (see Appendix K) and residents (see Appendix L) were planned to scope what they knew and thought about falls and falls prevention to inform subsequent education program design.

Care staff consenting to participate were surveyed using a self-administered questionnaire distributed in a paper format at site shift handovers, as computer access was limited. Explanation on completing the questionnaire was provided verbally and in written format by the shift registered nurse and the survey collection box was given prominence at the nurses' station. Completed questionnaires were collected after two weeks by the researcher.

Consenting residents who did not have a diagnosis of cognitive impairment were surveyed face to face by a trained research assistant who read them the questions and recorded their responses.

All site care managers were surveyed via email using a brief feedback questionnaire (see Appendix M) modified from Ranmuthugala, Cunningham, et al. (2011). This provided another perspective on CoP impact at RAC site level following 24 months of CoP operation.

RAC Organisation Level

Policy manuals, procedure documents (including forms) and stakeholder meeting minutes were scrutinised by site CoP members and professional staff at sites during the falls prevention activity audit that has been previously reported in Chapter 5 (Francis-Coad et al., 2016b). Semi-structured interviews were conducted with two managerial representatives from the organisation who had been involved with the CoP project using CoP evaluation questions modified from Ranmuthugala, Cunningham, et al. (2011). The interview procedure recommended by Liamputtong (2013) was followed; face to face contact was established, the researcher chatted with the participants ensuring their comfort and gave an explanation of the interview procedure and recording process. Participants were encouraged to speak freely and on completion these conversations were transcribed verbatim by the researcher and checked by a second researcher for accuracy. Transcripts were returned to participants for member checking.

6.3.5 Ethical Considerations

Ethical approvals for the study were obtained from the University of Notre Dame Australia human research ethics committee (Ref. no.s 013145F, 014179F [care staff survey] & 015033F [resident survey]) and the board of the RAC organisation. All CoP members, staff and residents provided written consent to participate.

6.3.6 Data Analysis

Member Level

CoP member pre and post questionnaire responses addressing capability, confidence, opportunity and motivation to champion falls prevention activity were extracted into SPSS version 22 software package (IBM SPSS Inc., Chicago IL, USA) and summarised using descriptive statistics. Differences pre CoP and 24 months post CoP operation were examined using a Wilcoxon signed rank test. A social network

analysis (SNA) was undertaken to examine the relationships, connections and flow of knowledge within the CoP. Data were organised in an excel matrix prior to entry into Ucinet 6 for Windows (Software for Social Network Analysis. Harvard, MA: Analytic Technologies). Exchanges between groups of members on the CoP discussion board provided frequency counts that were displayed in a matrix representing CoP member activity and connectivity. Qualitative data from CoP surveys, CoP face to face meeting minutes, researcher journal observations and emails were collected, transcribed verbatim and managed using NVivo analysis software (QSR International Pty Ltd. Version 10, 2012). Two independent researchers (JFC, AMH) read through all transcripts several times to become familiar with the data (Polit & Beck, 2013). Where open question responses provided further categorical data frequency counts were also undertaken. Transcripts were analysed using deductive content analysis, which uses previous knowledge around the research topic, when a theory is being tested (Elo & Kyngäs, 2008). Question led category matrices were constructed (Elo & Kyngäs, 2008) for member level responses based on the theoretical framework of what CoP activities or behaviours may have triggered the observed outcomes (Francis-Coad et al., 2015; Ranmuthugala, Cunningham, et al., 2011). It was theorised CoP outcomes would be influenced by CoP member actions and behaviours, therefore the principles of behaviour change were used as a design guideline (Colquhoun et al., 2014; Michie et al., 2011). Coding was framed around the behaviour change domains of capability, opportunity and motivation (Michie et al., 2011) to explain what worked or didn't work (CoP falls prevention actions, behaviours) for whom (CoP members, RAC sites, RAC organisation) and under what conditions (Ranmuthugala, Cunningham, et al., 2011; Williams et al., 2013). An example of coding using the COM-B model is provided (see Appendix N).

Site Level

Pre and post CoP audit measures for the proportion of residents per RAC site on vitamin D supplementation were described using proportion and percentage. Proportion differences pre and post intervention were examined using the non-parametric Wilcoxon signed rank test. Cross-sectional quantitative survey responses from care managers, care staff and resident surveys were entered into SPSS version 22 software package (IBM SPSS Inc., Chicago IL, USA) and summarised using descriptive statistics. Responses from care managers regarding their perceptions of CoP impact at

their sites were analysed using deductive content analysis and a COM-B categorisation matrix as described previously (Elo & Kyngäs, 2008).

Organisation Level

Content analysis of falls prevention related policy and process documents (electronic and paper) together with management meeting minutes at baseline and following 24 months of CoP operation was undertaken to identify newly implemented falls related documents or process reporting. Semi-structured interviews undertaken with two management representatives were transcribed verbatim and data were then analysed as described for CoP members.

After analyses for each level were completed, results from all three levels of measurement were examined to form conjectured CMOs.

6.4 Results

The impact of the falls prevention CoP at member, site and organisation level is summarised in Table 6.1.

Member Level Impact

A total of 22 staff participated as CoP members for varying durations throughout the study, with 18 completing surveys pre CoP and 24 months post CoP operation. The greatest benefit of CoP membership reported by participants was improved evidence-based falls prevention awareness and knowledge, Participating CoP member (P)11 *“I’ve a better scope of knowledge relating to falls, the awful consequences and the evidence too.”*

Table 6.1 Summary of CoP Impact at Member, Site and Organisation Level.

Impact at member level	Impact at site level	Impact at organisation level
Increased falls prevention knowledge	Annual evidenced-based falls prevention activity audit with intermittent spot checks	Falls policy (re-written and implemented)
Increased self-reported confidence and motivation	Increased proportion of residents supplemented with vitamin D at all sites	Standardised fall definition adopted

Impact at member level	Impact at site level	Impact at organisation level
to engage in falls prevention actions		
Increased connections and collaborations with multidisciplinary CoP members	Falls prevention CoP listed as agenda item at site staff meetings	New falls risk assessment tool placed in online assessment system
	Falls prevention committee formed	Aligned falls prevention management plan (developed and implemented)
	Falls prevention checklists for individual residents at highest risk of falling (“catch a falling star” program)	CoP newsletter (developed and implemented) four editions published
	Surveyed frontline care staff and residents to determine falls prevention education needs and preferences	Falls prevention CoP listed as agenda item at RAC Board Committee meetings
	Surveyed care managers to determine their perception of CoP impact at their site	
	Falls prevention poster checklist for staff and residents	
	Screening for safer resident footwear, clothing and lighting (night time sensor lights)	

CoP members (n = 18) identified falls prevention strategies they were aware of at baseline [125 correct responses, median number of correct responses = 6.00 (IQR = 3-15)] and 24 months post CoP operation [221 correct responses, median number of correct responses = 10.50 (IQR = 4-28)]. There was a significant difference between the pre and post scores with post survey scores showing increases in knowledge, $p < .001$. For example, there was increased knowledge regarding the need for a multifactorial

approach, P6 *“it has improved my personal knowledge of falls management (multifactorial approach),”* and single strategies targeting intrinsic risk factors like vitamin D deficiency and medication side effects, P8 *“I didn’t know the impact vitamin D and medications can have on falls until I joined the CoP. I bring this up for actioning when discussing with residents and staff.”*

When member survey responses regarding motivation and confidence to lead falls prevention activities were compared pre CoP and 24 months post CoP operation there were no significant differences (see Appendix O). However six members (33.3%) reported they felt motivated to undertake new falls prevention activities, such as attending external falls prevention events after joining the CoP, P3 *“I’ve registered for the local falls conference,”* and eight (44.4%) became new contributors to site falls prevention meetings, P9 *“I’m part of a regular falls meeting at my site now.”* New or improved social connections were enabled, P7 *“it was great to get to know more staff”* and the opportunity to network, ask questions and share ideas with multidisciplinary colleagues [n = 11, (61.1%)] was perceived as a membership benefit. This was reported as particularly relevant for members who were new to the RAC organisation or novice practitioners, P13 *“It was lovely to have a place where I could ask questions,”* P9 *“I feel I can contribute more to preventing falls and discussions about falls.”*

Eleven CoP members made a strong connection to the research team in the pursuit of evidence-based knowledge on falls prevention. Knowledge flow through the CoP and web-based connections amongst members was evident through frequency counts of discussion board participation and post sharing amongst CoP members (see Appendix P) and is represented visually in Figure 6.2.

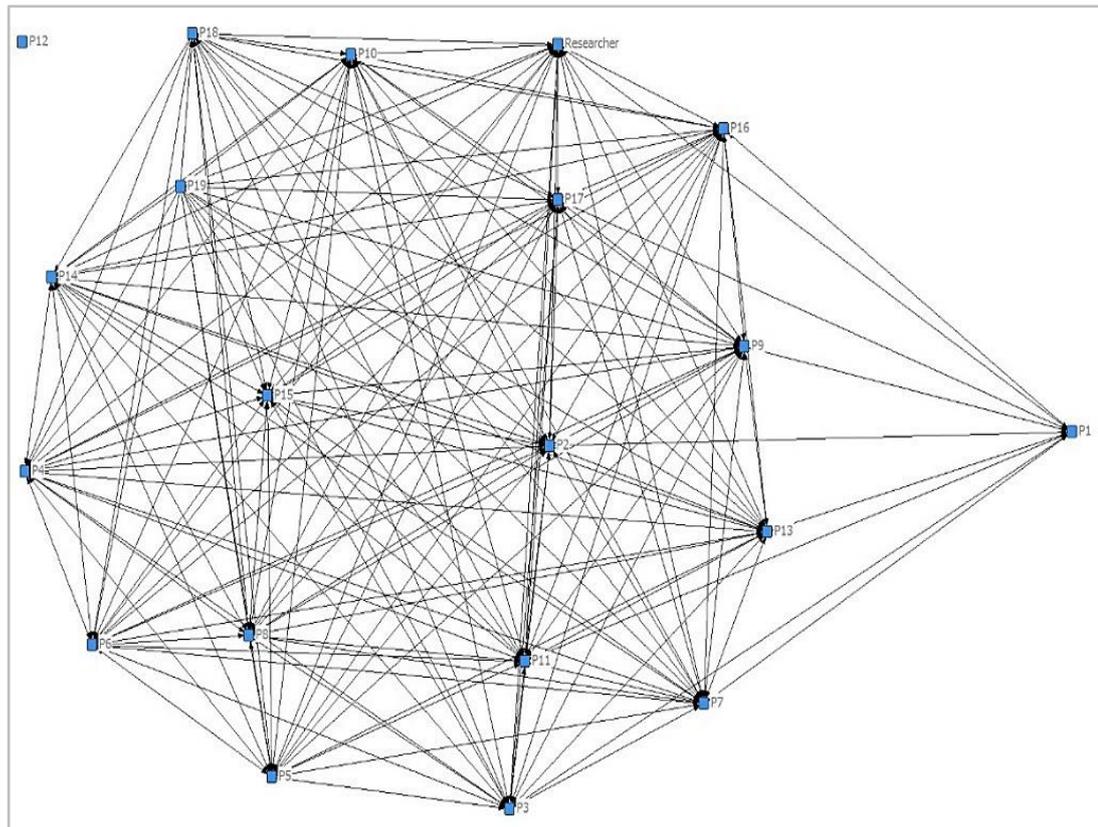


Figure 6.2 Participating CoP Member Connectivity and Knowledge Flow Amongst the Membership.

There were 11 different CoP web-based discussion topics supported by eight face to face meetings across the 24 months of CoP operation. Topics included falls prevention auditing (29 posts), promoting vitamin D supplementation (20 posts), “Ask the CoP?” (21 posts) and psychotropic medication use (11 posts).. The researcher and facilitator were the most connected across the entire membership providing a strong link between the research institution and RAC organisation. Six CoP members, who were therapists, became the most connected sharing more than eight postings and additional monthly email contact. Seventeen (94.4%) members shared falls prevention knowledge from the CoP with staff at their sites, P7 “*I gave feedback at staff meetings, clinical meetings and shift handovers*” and ten (55.6%) with residents at their sites, P8 “*we’ve discussed falls prevention in our new ‘Better Balance’ program.*”

The key barrier to member participation in the CoP was perceived to be lack of dedicated time due to competing interests [11, (61.1%)], P9 “*finding the time with so many other things to do,*” Manager 1 “*staff got no additional time to support involvement in the CoP, this was a barrier to getting things done.*”

Site Level Impact

The CoP was able to successfully lead and conduct a falls prevention activity audit at all 13 sites in the organisation as described previously in Chapter 5 (Francis-Coad et al., 2016b).

Significant improvements were made across 12 RAC sites in the proportion of residents supplemented with vitamin D from July 2014 (baseline CoP audit) to November 2015 (follow up audit of vitamin D supplementation) with the mean increase in the proportion of residents receiving supplementation of 28.23% [95% CI, (15.96-40.51), $p = .002$] presented in Figure 6.3. The transition care beds at two sites (one entire site and half the beds at another site) were not included in this data analysis as the resident populations were entirely different between baseline and follow up.

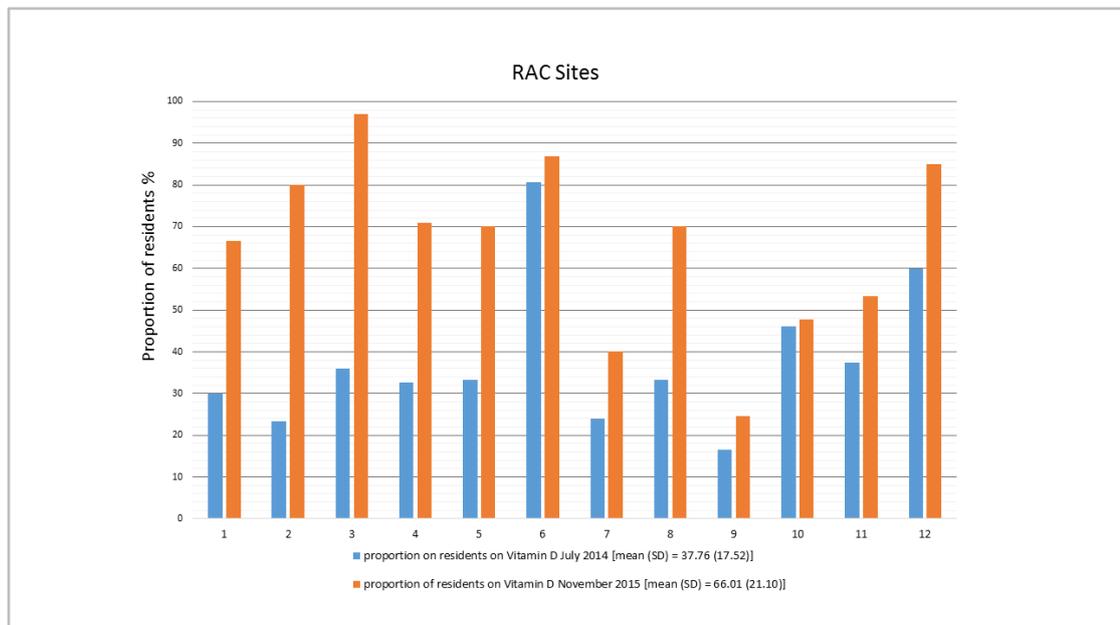


Figure 6.3 Proportion of Residents Supplemented with Vitamin D Measured in July 2014 and Re-Measured November 2015.

P8 “*We have printed out all the articles on vitamin D and the nursing staff have put the articles in all our visiting doctors files and they discuss it with them so residents can be put on vitamin D.*” The key barrier to supplementation was identified as lack of some doctor’s willingness to prescribe, P8 “*Some doctors are very resistive to any suggestions, it’s like they think what do you know?*”

The development of falls prevention education for care staff and residents was informed by surveys of both groups determining what they knew and thought about falls prevention.

The care staff survey was piloted at a single site (Hang, Francis-Coad, Burro, Nobre, & Hill, 2016) (see Appendix Q) prior to being administered at eight participating RAC sites. Briefly, 147 care staff participated (response rate 37.9%); the survey responses indicated that reminders about how to carry out falls prevention strategies by displaying posters around the site were the most popular education preference [n = 80 (54.4%)].

Forty residents who did not have a diagnosis of cognitive impairment (response rate 83.3% of all residents without a diagnosis of cognitive impairment) across six sites participated in the resident survey. Education preferences included having a reminder poster for their room, with pictures of appropriate falls prevention strategies [n = 11 (27.5%)]. These findings led to the development and implementation of a pictorial falls prevention poster checklist across all sites. One CoP member developed the ‘Catch a Falling Star’ program targeting residents assessed as at higher risk of falling and recurrent fallers using a personalised strategy checklist, P16 *“we have the falling stars program, our residents have personal checklists to remind staff of the strategies to use at all times.”*

Twenty two (78.6%) care staff (C) participating in the survey from this site discussed using the program when questioned about their knowledge of falls prevention strategies, C4 *“I check and report on the falling star plans every shift,”* C11 *“the falling star plan says to always make sure they (resident) have their call bell in reach.”* Following CoP information sharing this program was then implemented by two (15.4%) additional sites.

Falls prevention practices deemed to be effective at some sites were shared with others for adoption, these included monthly site “falls meetings” [n = 3, (23.1%)] and falls prevention becoming an agenda item at staff meetings [n = 7, (53.8%)], P3 *“we prioritised it, we discussed prevention together in team meetings to help them (staff) understand,”* P2 *“we helped staff realise how important it is by showing them the facts (displaying monthly falls rates)”* and screening resident footwear and clothing [n = 3,

(23.1%)], P16 *“we went through the cupboards checking all items that were unsafe so family could remove, if it’s not there staff can’t put it on.”*

Additional equipment, namely sensor lights for night-time toileting and bed or chair alarms, was introduced at two (23.1%) sites. Feedback provided by 12 (92.3%) care managers regarding CoP impact at their site was strongly perceived to be; improved staff falls prevention awareness and actions, through education and resources provided by the CoP members, Manager 9 *“it has given staff ideas on how to keep residents from falling, it’s a very precious tool (the CoP).”*

Barriers identified by CoP members to implementing fall prevention strategies included perceived lack of management support in realising the importance of prioritising falls prevention and member participation, P16 *“there were some care managers who didn’t provide the project with the same importance as mine,”* P17 *“at a site where the manager is not committed, sees it (CoP) as less relevant, then it’s hard to get any impact,”* Manager 1 *“if you’ve got care manager support then it’s (falls prevention) front and centre in peoples’ minds.”*

Organisation Level Impact

CoP auditing of relevant falls related policy and process documents and management meeting minutes identified gaps in governance for targeted attention, Manager 1 *“having a culture of wanting to improve is fundamental, acknowledge you are not perfect, have a willingness to change.”*

A standardised fall definition to assist in clarifying the reporting of falls was adopted, “an unexpected event in which a person comes to rest on the ground or lower level” (Lamb, Jørstad-Stein, Hauer, & Becker, 2005), P2 *“the wording is easier for everyone to understand in this one,”* P5 *“after discussing this and watching the simulation video (fall reporting) I realised that some incidences should have been counted as falls at our site.”*

The drafting and completion of a falls prevention policy, risk assessment tool and aligned management strategies by the CoP was an iterative extensive process over 11 months, which engaged CoP members with RAC management. This reflected a

cultural shift by both CoP members and RAC managers in their approach to falls from one of reactively managing falls to more proactive prevention, Manager 1 *“there were gaps and I knew we didn’t have a standardised way of addressing falls, now we do all that proactive preventative stuff.”* The CoP liaised with clinical and management groups across the organisation through face to face and email discussions regarding policy content and falls risks together with ICT personnel for adaptation into workable electronic formats, Manager 1 *“for me the major achievements of the CoP have been the policies and procedures, that was our gap and now I feel like we’re getting there.”*

Raising awareness and providing education regarding falls and falls prevention was also addressed via a CoP newsletter (see Appendix R) in electronic and paper formats four monthly across the organisation to all levels of management, clinical working groups and staff, Manager 2 *“it has had a positive impact, I’ve seen it at sites on coffee tables and noticeboards and heard staff talking about it.”* Ten (76.9%) care managers reported the CoP newsletter was distributed at their sites and 11(84.6%) thought it was a useful resource. The awareness of the problem of falls and importance of falls prevention raised by the CoP led to CoP reporting becoming an agenda item at the organisation’s care committees’ meetings, Manager 1 *“its (newsletter) included in reports to the organisation’s care committees so they’ve got it as a standing agenda item.”*

Barriers to the CoP translating evidence into practice from an organisational perspective were having conflicting priorities and realising that commitment was required to support dedicated staff time, Manager 2 *“there was a lack of focus (on falls prevention), we didn’t give it dedicated time, but there are so many things we are involved in.”*

Results from each of the three levels were iteratively examined using the framework of potential CMO configurations described in Table 3.1. This led to the development of conjectured CMOs shown in Table 6.2.

Table 6.2 Conjectured Context-Mechanism-Outcome Configurations – What Worked for Whom, How and Under What Conditions.

Member Level	
CCMO 1	Members who demonstrated higher levels of falls prevention knowledge and awareness (psychological capability) and felt strongly that they needed to action fall prevention strategies enough (reflective motivation), better engaged with other site staff to enable implementation of falls prevention strategies
CCMO 2	Members who participated more in CoP social learning opportunities and connected to experts, gained confidence and credibility and were motivated to make a greater contribution to falls prevention change at their site
CCMO 3	Membership of the CoP enabled new and more frequent multidisciplinary connections to develop, when time to participate was supported by site managers. These connections served as a resource for guidance and reduced professional isolation within the organisation.
RAC Site Level	
CCMO 4	Site visiting general practitioners (residents' family doctor) who related to RAC staff (particularly CoP members and nurse practitioners) as credible peers and advocated for the recommended evidence significantly improved their proportion of residents at their site who were supplemented with vitamin D
CCMO 5	Falls prevention strategies were best implemented and adopted by frontline staff when the required strategies were prompted in novel ways and staff were made accountable for enactment by care managers, by being required to document completion of strategies during their shift.
CCMO 6	Higher levels of care manager support, through realisation of the importance of the CoP to their site and subsequent prioritisation for staff to participate as CoP members and action falls prevention, enabled the implementation of evidence-based practices at sites
RAC Organisation Level	
CCMO 7	Organisational acknowledgment of gaps in governance and recognition of the consequences of not taking a more preventative approach (reflective motivation) regarding falls management changed the cultural focus towards pro-active management rather than reactive management of falls, following greater engagement with the CoP
CCMO 8	Failure to offer opportunity in terms of dedicated time commitment for CoP members to learn and engage in falls prevention activity above existing professional duties, limited implementation of falls prevention activities
CCMO 9	Receiving regular reports on the CoP's falls prevention actions created a stronger feedback loop from frontline care to general management and assisted in focussing dedicated and more timely attention on falls prevention

Note. CCMO = conjectured context mechanism outcome

The conjectured CMOs demonstrated how the variability observed in translating evidence into practice was influenced by the RAC context. For example, the level of site care manager support for CoP member participation and action (context), through realising the need to prioritise falls prevention activities (mechanism), influenced the success of translating evidence into practice (outcome).

6.5 Discussion

The falls prevention CoP made a positive impact at all three measured levels – member, site and organisation. CoP members perceived that they were able to translate research evidence about falls prevention strategies into practice in the context of their individual site and the broader RAC organisation.

6.5.1 Member Reflection and Realisation (CCMO 1 & 2)

Our study found that all CoP members benefited from membership by improving their knowledge of RAC falls prevention strategies through association with experts, but translating this knowledge into practice showed varied levels of success. Although possessing the relevant knowledge is a foundation step in the translation process identified by other studies (Glasziou et al., 2011; Tetroe et al., 2011), simply having more knowledge did not necessarily mean CoP members moved it into use at their sites as other factors were involved (Goodwin, Jones-Hughes, Thompson-Coon, Boddy, & Stein, 2011; Tetroe et al., 2011). Furthermore, translation appeared to be triggered by CoP members who fully understood the negative consequences of a resident fall, reflected and realised the importance of engaging their colleagues in actioning evidence-based falls prevention strategies at their site. Reflection and realising negative consequences are traits reported elsewhere as important in triggering health behaviour change (Colquhoun et al., 2014; Vestjens, Kempen, Crutzen, Kok, & Zijlstra, 2015). Our CoP, similar to that of Tolson, Irene, Booth, Kelly and James (2006), showed evidence of connecting, sharing information and problem solving together as a cohesive unit, which are fundamental elements of a functioning CoP in accordance with Wenger (1998).

6.5.2 *Opportunities, Connections and Credibility (CCMO 2 & 3)*

Membership of the falls prevention CoP enabled clinicians to gain confidence and credibility, through connections to experts and identify themselves as role models. This motivated members to then initiate and contribute to falls prevention change at their sites, particularly if they were new to the field of falls prevention. Social learning opportunity is a characteristic of CoPs whereby association of novice with expert in a field can lead to professional identity building through sharing and collaborating (Ranmuthugala, Cunningham, et al., 2011; Tolson et al., 2011). Higher levels of connectivity in social networks such as CoPs have been associated with a stronger sense of community and greater resource exchange amongst members (Ikioda, Kendall, Brooks, De Liddo, & Shum, 2013; Yousefi-Nooraie, Dobbins, Marin, Hanneman, & Lohfeld, 2015). Membership of the CoP enabled new and more frequent multidisciplinary connections to develop, which then served as a resource for guidance and reduced professional isolation within the organisation as identified by Ranmuthugala, Cunningham, et al. (2011).

6.5.3 *Relationships, Credibility and Advocating (CCMO 4)*

Improvement in the proportion of residents supplemented with vitamin D varied across the 12 participating sites, which could have been influenced by the enabling or disabling actions of the visiting family doctors as the main prescribers (of medications). It was perceived by CoP members that doctors who viewed RAC staff as credible peers, regarding providing falls prevention evidence, advocated for vitamin D supplementation, whereas those who didn't acted as a barrier. Other studies have found that doctor and nurse cooperation can influence the success of intervention implementation: A systematic review of interdisciplinary interventions in nursing home settings reported positive impacts on resident outcomes when the resident's doctor participated in the intervention (Nazir et al., 2013). Conversely Steinmo et al. (2016) also noted conflict between doctor and nurse was a key barrier to implementation success of a quality improvement program in a health care setting.

6.5.4 *Sharing, Motivation and Reinforcement (CCMO 5)*

More evidence-based falls prevention activities were implemented at RAC sites that had manager support and also when CoP members were motivated and provided meaningful resources. For example the ‘Catch a Falling Star’ program, supported by the site manager, was one CoP member’s motivational way of sharing falls prevention strategies that made sense to site staff and resulted in uptake of those strategies at the site. Motivational ways of sharing knowledge is recommended for enabling knowledge transfer (Steinmo et al., 2016; Tolson et al., 2011). Enactment of falls prevention strategies by frontline care staff was observed when site managers supported staff accountability, through requiring and reinforcing documentation of staff actions in resident notes. Reinforcement of desired health behaviours has been shown to assist in habit formation (Colquhoun et al., 2014; Michie et al., 2011).

6.5.5 *Prioritising and Supporting (CCMO 6)*

CoP members who were given the time to attend face to face CoP meetings and became involved in web-based discussion and collaboration were more successful at implementing falls prevention evidence and practice change at their site. This action was perceived by CoP members to be triggered when care manager’s realised that dedicated time was needed for CoP members to lead falls prevention change and were able to prioritise support for CoP participation. For example supported CoP members implemented additional multifactorial falls prevention strategies such as tailored resident falls prevention plans, footwear screening and regular falls prevention site committee meetings. Conversely, at sites where CoP members were not supported to participate in CoP meetings and discussions there was limited implementation of evidence-based practices. Limited dedicated time for staff to be involved is a frequent barrier reported in other health implementation studies (der Zijpp et al., 2016; Steinmo et al., 2016; Tolson et al., 2008).

6.5.6 *Acknowledgment, Engagement and Cultural Change (CCMO 7)*

The CoP, were able to identify gaps in the falls management policy and procedures. The CoP engaged management by providing information on the perceived costs and benefits of taking preventative action, to gain their support for a cultural

change towards fall reduction. Taking a more proactive cultural approach to reducing falls may lead to better outcomes for residents as RAC culture has been linked to quality outcomes for residents (Etherton-Beer, Venturato, & Horner, 2013; Tolson et al., 2008). Providing information on the costs and benefits of performing a behaviour is an established means of facilitating health behaviour change as described extensively in the field of health behaviour research (Connor & Norman, 2005; Michie et al., 2011). The further engagement of CoP members, who were clinical staff delivering resident care, in writing the new falls policy and procedures brought authenticity and relevancy to the resultant organisational documentation and actioned changes in this area. This tailoring of knowledge by the users has been identified as a step in successful translation (Bertone et al., 2013; Tetroe et al., 2011).

6.5.7 Opportunity and Engagement (CCMO 8)

At organisational level failure to consistently support opportunity, in terms of dedicated time commitment, for CoP members to learn and engage in falls prevention activity was perceived to limit implementation of falls prevention activities. Whilst CoP members were cognisant of the fact that the organisation had to manage a range of complex issues, they felt this still reflected a lack of realised importance of the need to learn and action falls prevention in the workplace and achieve even better outcomes. Limited time and resources has been identified in other studies as a barrier to work place learning and implementing new practices (O'Connell, Ostaszkiewicz, Sukkar, & Plymat, 2008; Tolson et al., 2008).

6.5.8 Feedback Loop and Focus (CCMO 9)

Regular CoP reporting to management group meetings within the RAC organisation regarding their falls prevention actions and outcomes, created a strong feedback loop from frontline care staff to organisational management. Recognition of higher levels of feedback for systems, teams or individuals is a factor linked with successful implementation (Bertone et al., 2013; Ivers et al., 2012) and use of evidence in practice (Glasziou et al., 2011). CoP reporting to the organisation's care committees assisted in focussing attention and subsequent support for falls prevention activity. Organisational support has been reported as a CoP enabling mechanism regarding implementation (Ranmuthugala, Cunningham, et al., 2011), whilst shifting

organisational priorities has been identified as a barrier to implementation by others (Sorensen et al., 2011; Tolson et al., 2008).

6.5.9 Limitations

In this study we have postulated possible mechanisms that triggered the observed outcomes under certain contextual conditions. Whilst findings from evaluating a single RAC organisation are not generalisable they provide valuable learnings for similar RAC organisations looking to translate falls evidence into practice. The size of the CoP may appear small ($n = 20$) but we feel it reflects the authentic number of staff that a RAC organisation of this size may assign to participate in a given project. Whilst elements of this study relied on self-report, we have supported validity and credibility of the findings by incorporating quantitative data where possible, triangulating findings using multiple data sources and maintaining an audit trail. Ideally interviews of care staff, site managers and representatives of the organisation's care committees would have provided further depth to our insights, however the pragmatics of such an undertaking were beyond the scope of this study. The intranet software was unable to track members accessing the CoP web site unless they posted comments on the electronic discussion board but future upgrades to the software should have the capacity to track access across all areas. Evaluation and explanation of the impact of operating a falls prevention CoP on falls outcomes will be described in Chapter 7.

6.6 Conclusion

A multidisciplinary falls prevention CoP was able to facilitate translation of falls prevention evidence into practice in the context of the RAC site and RAC organisation. CoP members who engaged in social learning gained knowledge but those who realised the importance of engaging their site colleagues in falls prevention activities, backed by management support, were most successful at facilitating evidence-based practice change. The progression from novice to expert practitioner in falls prevention was also observed most in CoP members who connected frequently amongst the diverse membership. The improvement in the proportion of residents supplemented with vitamin D varied across RAC sites was heavily influenced by credible relationships between prescribing Doctors and RAC CoP members. At organisation level the CoP engaged management in falls prevention through a variety of dissemination sources

creating a feed back loop between workplace practice and board level decision making. This resulted in a proactive falls prevention culture developing. Support by RAC management to provide the necessary investment in staff time to better enable change in falls prevention practice is essential for success. Future research should continue to test these conjectured mechanisms of action noting the contextual conditions that produce the desired or undesired outcomes. This may better inform how CoPs impact their membership and the translation of evidence into practice.

6.7 References

- Australian Commission on Safety and Quality in Healthcare. (2009). *Implementation guide for preventing falls and harm from falls in older people: Best practice guidelines for Australian hospitals and residential aged care facilities*. Retrieved from <http://www.safetyandquality.gov.au/publications/implementation-guide-for-preventing-falls-and-harm-from-falls-in-older-people-best-practice-guidelines-for-australian-hospitals-and-residential-aged-care-facilities-2009/>
- Becker, C., & Rapp, K. (2010). Fall prevention in nursing homes. *Clinics in Geriatric Medicine*, 26(4), 693-704. doi:10.1016/j.cger.2010.07.004
- Bertone, M. P., Meessen, B., Clarysse, G., Hercot, D., Kelley, A., Kafando, Y., Sieleunou, I. (2013). Assessing communities of practice in health policy: A conceptual framework as a first step towards empirical research. *Health Research Policy and Systems*, 11(1), 39. doi: 10.1186/1478-4505-11-39
- Burland, E., Martens, P., Brownell, M., Doupe, M., & Fuchs, D. (2013). The evaluation of a fall management program in a nursing home population. *The Gerontologist*, 53(5), 828-838. doi:10.1093/geront/gns197
- Cameron, I. D., Murray, G. R., Gillespie, L. D., Robertson, M. C., Hill, K. D., Cumming, R. G., & Kerse, N. (2012). Interventions for preventing falls in older people in nursing care facilities and hospitals. *The Cochrane Database of Systematic Reviews*, 1(3). doi:10.1002/14651858.CD005465.pub3.
- Colquhoun, H., Leeman, J., Michie, S., Lokker, C., Bragge, P., Hempel, S., Wilson, M. G. (2014). Towards a common terminology: A simplified framework of interventions to promote and integrate evidence into health practices, systems, and policies. *Implementation Science*, 9(1), 51. doi: 10.1186/1748-5908-9-51
- Connor, M., & Norman, P. (Eds.). (2005). *Predicting health behaviour: Research and practice with social cognition models*. Berkshire, UK: Buckingham University Press.
- Creswell, J. W., & Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*. Los Angeles, CA: Sage.
- der Zijpp, T. J., Niessen, T., Eldh, A. C., Hawkes, C., McMullan, C., Mockford, C., Seers, K. (2016). A bridge over turbulent waters: Illustrating the interaction between managerial leaders and facilitators when implementing research evidence. *Worldviews on Evidence-Based Nursing*. doi: 10.1111/wvn.12138
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107-115. doi:10.1111/j.1365-2648.2007.04569.x
- Etherton-Beer, C., Venturato, L., & Horner, B. (2013). Organisational culture in residential aged care facilities: A cross-sectional observational study. *PLoS One*, 8(3), e58002. doi:10.1371/journal.pone.0058002

- Francis-Coad, J., Etherton-Ber, C., Bulsara, C., Nobre, D., & Hill, A-M. (2015). Investigating the impact of a falls prevention community of practice in a residential aged-care setting: A mixed methods study protocol. *Journal of Advanced Nursing*, 71(12), 2977-2986. doi:10.1111/jan.12725
- Francis-Coad, J., Etherton-Ber, C., Bulsara, C., Nobre, D., & Hill, A-M. (2016a). Can a web-based community of practice be established and operated to lead falls prevention activity in residential care? *Geriatric Nursing*, Advance on line publication, <http://dx.doi.org/10.1016/j.gerinurse.2016.09.001>
- Francis-Coad, J., Etherton-Ber, C., Bulsara, C., Nobre, D., & Hill, A-M. (2016b). Using a community of practice to evaluate falls prevention activity in a residential aged care organisation: A clinical audit. *Australian Health Review*, 41(1), 13-18. doi:10.1071/AH15189
- Glasziou, P., Ogrinc, G., & Goodman, S. (2011). Can evidence-based medicine and clinical quality improvement learn from each other? *BMJ Quality and Safety*, 20(1), i13-i17. doi:10.1136/bmjqs.2010.046524
- Goodwin, V., Jones-Hughes, T., Thompson-Coon, J., Boddy, K., & Stein, K. (2011). Implementing the evidence for preventing falls among community-dwelling older people: A systematic review. *Journal of Safety Research*, 42(6), 443-451. doi:10.1016/j.jsr.2011.07.008
- Haines, T. P., Nitz, J., Grieve, J., Barker, A., Moore, K., Hill, K., Robinson, A. (2013). Cost per fall: A potentially misleading indicator of burden of disease in health and residential care settings. *Journal of Evaluation in Clinical Practice*, 19(1), 153-161. doi:10.1111/j.1365-2753.2011.01786.x
- Haines, T. P., & Waldron, N. G. (2011). Translation of falls prevention knowledge into action in hospitals: What should be translated and how should it be done? *Journal of Safety Research*, 42(6), 431-442. doi:10.1016/j.jsr.2011.10.003
- Hang, J., Francis-Coad, J., Burro, B., Nobre, D., & Hill, A-M. (2016). Assessing knowledge, motivation and perceptions about falls prevention among care staff in a residential aged care setting. *Geriatric Nursing*, 37, 464-469. doi:10.1016/j.gerinurse.2016.06.019
- Haralambous, B., Haines, T. P., Hill, K., Moore, K., Nitz, J., & Robinson, A. (2010). A protocol for an individualised, facilitated and sustainable approach to implementing current evidence in preventing falls in residential aged care facilities. *BMC Geriatrics*, 10(1), 8. doi:10.1186/1471-2318-10-8
- Hewitt, G., Sims, S., & Harris, R. (2012). The realist approach to evaluation research: An introduction. *International Journal of Therapy and Rehabilitation*, 19(5), 251. doi:10.12968/ijtr.2012.19.5.250
- Ikioda, F., Kendall, S., Brooks, F., De Liddo, A., & Shum, S. B. (2013). Factors that influence healthcare professionals' online interaction in a virtual community of practice. *Social Networking*, 2, 174-184. doi:10.4236/sn.2013.24017

- Ivers, N., Jamtvedt, G., Flottorp, S., Young, J. M., Odgaard-Jensen, J., French, S. D., Oxman, A. D. (2012). Audit and feedback: effects on professional practice and healthcare outcomes. *The Cochrane Database of Systematic Reviews*, (6). doi:10.1002/14651858.CD000259.pub3
- King, D., Mavromaras, K., He, B., Healy, J., Macaitis, K., Moskos, M., Zhang, W. (2013). *The aged care workforce 2012 final report*. Canberra: Department of Health and Ageing. Retrieved from http://www.cshisc.com.au/media/163387/The_Aged_Care_Workforce_Report.pdf
- Lamb, S. E., Jørstad-Stein, E. C., Hauer, K., & Becker, C. (2005). Development of a common outcome data set for fall injury prevention trials: The prevention of falls network Europe consensus. *Journal of the American Geriatrics Society*, 53(9), 1618-1622. doi:10.1111/j.1532-5415.2005.53455.x
- Li, L. C., Grimshaw, J. M., Nielsen, C., Judd, M., Coyte, P. C., & Graham, I. D. (2009). Use of communities of practice in business and health care sectors: A systematic review. *Implementation Science*, 4, 27. doi:10.1186/1748-5908-4-27
- Liamputtong, P. (2013). *Research methods in health: Foundations for evidence-based practice* (2nd ed.). Australia: Oxford University Press.
- Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*, 6(1), 42. doi: 10.1186/1748-5908-6-42
- Morley, J. E. (2007). Falls and fractures. *Journal of the American Medical Directors Association*, 8(5), 276-278. doi:10.1016/j.jamda.2007.04.008
- National Institute for Health and Care Excellence (NICE). (2013). *Falls: Assessment and prevention of falls in older people*. Retrieved from <http://www.nice.org.uk/guidance/cg161/resources/guidance-falls-assessment-and-prevention-of-falls-in-older-people-pdf>
- Nazir, A., Unroe, K., Tegeler, M., Khan, B., Azar, J., & Boustani, M. (2013). Systematic review of interdisciplinary interventions in nursing homes. *Journal of the American Medical Directors Association*, 14(7), 471-478. doi: 10.1016/j.jamda.2013.02.005
- Nyman, S. R., & Victor, C. R. (2011). Older people's recruitment, sustained participation, and adherence to falls prevention interventions in institutional settings: A supplement to the Cochrane systematic review. *Age and Ageing*, 40(4), 430-436. doi:10.1093/ageing/afr016
- O'Connell, B., Ostaszkiwicz, J., Sukkar, K., & Plymat, K. (2008). The tri-focal model of care: Advancing the teaching-nursing home concept. *International Journal of Nursing Practice*, 14(6), 411-417. doi:10.1111/j.1440-172X.2008.00714.x

- Oliver, D., Connelly, J. B., Victor, C. R., Shaw, F. E., Whitehead, A., Genc, Y., Gosney, M. A. (2007). Strategies to prevent falls and fractures in hospitals and care homes and effect of cognitive impairment: Systematic review and meta-analyses. *British Medical Journal*, 334(7584), 82-87. doi:10.1136/bmj.39049.706493.55
- Onder, G., Carpenter, I., Finne-Soveri, H., Gindin, J., Frijters, D., Henrard, J. C., Bernabei, R. (2012). Assessment of nursing home residents in Europe: The services and health for elderly in long term care (SHELTER) study. *BMC Health Services Research*, 12(5), 1-10. doi:10.1186/1472-6963-12-5
- Pawson, R., & Tilley, N. (1997). *Realistic evaluation*. London: Sage.
- Polit, D. F., & Beck, C. T. (2013). *Essentials of nursing research: Appraising evidence for nursing practice*. Philadelphia: Lippincott Williams & Wilkins.
- Ranmuthugala, G., Cunningham, F. C., Plumb, J. J., Long, J., Georgiou, A., Westbrook, J. I., & Braithwaite, J. (2011). A realist evaluation of the role of communities of practice in changing healthcare practice. *Implementation Science*, 6, 49. doi:10.1186/1748-5908-6-49
- Ranmuthugala, G., Plumb, J. J., Cunningham, F. C., Georgiou, A., Westbrook, J. I., & Braithwaite, J. (2011). How and why are communities of practice established in the healthcare sector? A systematic review of the literature. *BMC Health Services Research*, 11, 273. doi:10.1186/1472-6963-11-273
- Rapp, K., Becker, C., Cameron, I. D., König, H.-H., & Büchele, G. (2012). Epidemiology of falls in residential aged care: Analysis of more than 70,000 falls from residents of Bavarian nursing homes. *Journal of the American Medical Directors Association*, 13(2), 187e181-e186. doi:10.1016/j.jamda.2011.06.011
- Sorensen, A. V., Harrison, M. I., Kane, H. L., Roussel, A. E., Halpern, M. T., & Bernard, S. L. (2011). From research to practice: Factors affecting implementation of prospective targeted injury-detection systems. *BMJ Quality and Safety*, 20(6), 527-533. doi:10.1136/bmjqs.2010.045039
- Steinmo, S. H., Michie, S., Fuller, C., Stanley, S., Stapleton, C., & Stone, S. P. (2016). Bridging the gap between pragmatic intervention design and theory: Using behavioural science tools to modify an existing quality improvement programme to implement “Sepsis Six”. *Implementation Science*, 11(1), 1. doi:10.1186/s13012-016-0376-8
- Tetroe, J. M., Graham, I. D., & Scott, V. (2011). What does it mean to transform knowledge into action in falls prevention research? Perspectives from the Canadian Institutes of Health Research. *Journal of Safety Research*, 42(6), 423-426. doi:10.1016/j.jsr.2011.08.005

- Thomas, E., & Magilvy, J. K. (2011). Qualitative rigor or research validity in qualitative research. *Journal for Specialists in Pediatric Nursing, 16*(2), 151-155. doi:10.1111/j.1744-6155.2011.00283.x
- Tolson, D., Irene, S., Booth, J., Kelly, T. B., & James, L. (2006). Constructing a new approach to developing evidence-based practice with nurses and older people. *Worldviews on EvidenceBased Nursing, 3*(2), 62-72. doi:10.1111/j.1741-6787.2006.00052.x
- Tolson, D., Booth, J., & Lowndes, A. (2008). Achieving evidence-based nursing practice: Impact of the Caledonian development model. *Journal of Nursing Management, 16*(6), 682-691. doi:10.1111/j.1365-2834.2008.00889.x
- Tolson, D., Lowndes, A., Booth, J., Schofield, I., & Wales, A. (2011). The potential of communities of practice to promote evidence-informed practice within nursing homes. *Journal of the American Medical Directors Association, 12*(3), 169-173. doi:10.1016/j.jamda.2010.08.010
- Vestjens, L., Kempen, G. I., Crutzen, R., Kok, G., & Zijlstra, G. R. (2015). Promising behavior change techniques in a multicomponent intervention to reduce concerns about falls in old age: A Delphi study. *Health Education Research, 30*(2), 309-322. doi:10.1093/her/cyv003
- Vlaeyen, E., Coussement, J., Leysens, G., Van der Elst, E., Delbaere, K., Cambier, D., Dobbels, F. (2015). Characteristics and effectiveness of fall prevention programs in nursing homes: A systematic review and meta-analysis of randomized controlled trials. *Journal of the American Geriatrics Society, 63*(2), 211-221. doi:10.1111/jgs.13254
- Watson, W., Clapperton, A., & Mitchell, R. (2011). The burden of fall-related injury among older persons in New South Wales. *Australian and New Zealand Journal of Public Health, 35*(2), 170-175. doi:10.1111/j.1753-6405.2010.00656.x
- Wenger, E. (1998). Communities of practice: Learning as a social system. *Systems Thinker, 9*(5), 2-3.
- Williams, L., Burton, C., & Rycroft-Malone, J. (2013). What works: A realist evaluation case study of intermediaries in infection control practice. *Journal of Advanced Nursing, 69*(4), 915-926. doi:10.1111/j.1365-2648.2012.06084.x.
- Yousefi-Nooraie, R., Dobbins, M., Marin, A., Hanneman, R., & Lohfeld, L. (2015). The evolution of social networks through the implementation of evidence-informed decision-making interventions: A longitudinal analysis of three public health units in Canada. *Implementation Science, 10*(1), 166. doi:10.1186/s13012-015-0355-5