Occupational therapist led environmental assessment and modification to prevent falls: Review of current practice in an Australian rural health service district.

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Authors declaration of contribution

AT, AP and LF were involved in initial discussions of research concept. AP, AT, LF and MR all participated in development of final research design. LF coordinated the data collection with assistance from AT and AP. Initial drafts of manuscript were completed by AT and AP. LF and MR provided assistance with data entry and analysis for manuscript. All authors provided critical review of manuscript drafts and have read and approved final version.

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Conflict of interest

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ABSTRACT

Introduction

Environmental assessment and modification is an effective approach to reducing falls, particularly when provided by occupational therapists to high risk populations. Environmental assessment and modification has been incorporated into many national and international falls prevention guidelines, however, evidence suggests that it is not being implemented in practice. The aim of this study is to identify factors that support the local adoption of best practice environmental assessment for falls prevention within a rural health service.

Methods

A concurrent mixed methods study using the Integrated Promoting Action on Research Implementation in Health Services framework was employed. The setting was a health service in Queensland, encompassing rural and regional populations. An audit, based on best practice, was conducted on eligible medical charts. An online survey of occupational therapists'

knowledge, confidence, attitudes and experience of environmental assessment and modification was completed. Focus group discussions were also carried out. Quantitative data were presented using descriptive statistics and discussions were thematically analysed.

Results

Twenty- four occupational therapists were identified as meeting the inclusion criteria. Fourteen participated in the survey and 12 of those surveyed also participated in the focus groups. Fifty-eight patients' medical charts were audited, which included entries from occupational therapists who completed the survey and focus groups and some who did not. Survey results identified that most occupational therapists were aware of, confident, and experienced in environmental assessment and modification for falls prevention. Chart audits, however, revealed that none of the patients received this intervention. Thematic analysis of focus group discussions identified three key themes which influenced uptake of environmental assessment and modification: confidence in, and awareness of evidence; key stakeholders' support and knowledge of occupational therapy; and, perceived impact of time and resources required for implementation. Results also suggested that several contextual issues unique to rural and regional service delivery influenced uptake, including: geographical and sociocultural diversities of communities being served; differing organisational structures which result in occupational therapists being line managed by other professions; and, limited access to professional development. Availability of local peer support, and engagement of multiple stakeholders from various professions were highlighted as key facilitators to support change.

Conclusion

Occupational therapists reported that they carried out best practice environmental assessment and modification for falls prevention but the medical chart audit provided no evidence of this

happening in practice. This discrepancy requires further investigation. This study provided an understanding of factors that influence whether occupational therapists implement best practice environmental assessment and modification in a rural health service. Findings could be used to guide the translation of evidence into practice across similar settings.

Key Words

Falls, environmental assessment and modification, home assessment, regional and rural, ageing

INTRODUCTION

Falls in older people are highly prevalent, cause serious injury and are costly to health services. Falls are sustained by approximately 35% of people aged 65-79 and by 50% of people aged over 80 years (Campbell & Robertson, 2007; Gillespie et al., 2012). Falls are the leading cause of injury related death and emergency department visits in people aged 75 years and over (Scuffham, Chaplin, & Legood, 2003; Stevens, Mahoney, & Ehrenreich, 2014), with approximately one older person dying every three hours following a fall in Australia alone (Australian Bureau of Statistics, 2018). It is estimated that falls in older people account for 27% of hospital costs (Campbell & Robertson, 2007).

Prevention strategies such as environmental assessment and modification (EAM) of the home can significantly reduce falls (Gillespie et al., 2012). Environmental assessment and modification involves: an environmental assessment, aimed at home fall-hazard reduction through the systematic assessment of falls hazards, awareness raising and joint problem solving. It includes the provision of assistive equipment, technology and/or home modifications to maintain or improve independence and safety and, information/education about falls risks (Pighills, Ballinger, Pickering, & Chari, 2016). Environmental hazards within the home are implicated as a major contributor to falls amongst older people and are frequently cited as the cause of falls in the literature (Stevens et al., 2014). Environmental hazards have been estimated to cause 30-50% of all falls (Cumming et al., 2001; Currin, Comans, Heathcote, & Haines, 2011; Rubenstein, 2006; Talbot, Musiol, Witham, & Metter, 2005). The latest Cochrane review on preventing falls in the elderly (Gillespie et al., 2012) found that EAM was an effective approach to reducing falls at home and concluded that the effectiveness of environmental assessment increased if delivered by an occupational therapist. This finding is reflected in practice guidelines (Australian Commission on Safety and Quality in Healthcare,

2009; College of Occupational Therapists, 2015; National Institute of Clinical Excellence, 2013). Research findings also suggest that EAM for falls prevention should be of high intensity and targeted toward high risk populations (Clemson, Mackenzie, Ballinger, Close, & Cumming, 2008; Cumming et al., 1999; Pighills, Torgerson, Sheldon, Drummond, & Bland, 2011).

Occupational therapy led EAM normally takes the form of comprehensive assessment of the older person, the activities of daily living in which they engage, and their environment; with interventions consisting of person, activity and environment focused strategies. This may include assessment and provision of assistive technology or devices; material adaptations (e.g. removing garden debris from pathways, securing loose mats, providing non-slip strips on steps); behavioural adaptations (e.g. avoiding risky activities); or structural modifications (e.g. installing a stair lift to avoid using the stairs) (Clemson, 1997; Gitlin, 2009; Stevens et al., 2014). Environmental interventions in the home have traditionally fallen within the domain of occupational therapy practice due to the alignment between occupational therapy conceptual frameworks such as the Person, Environment, Occupation (PEO) model of practice (Law et al., 1996) and the aims of EAM (Pighills et al., 2016).

EAM led by occupational therapists has been shown to be feasible to implement; cost effective; and time efficient, with estimations suggesting it only takes around one and a half hours to carry out the assessment (College of Occupational Therapists, 2015; Gillespie et al., 2012; Pighills et al., 2011). However, in spite of the evidence and guidelines, EAM has not been routinely adopted in occupational therapy clinical practice (Clemson, Donaldson, Hill, & Day, 2014). Research suggests that the limited uptake is due to: organisational processes; clinician skills; lack of focus on prevention; client expectations; and, complexity of the intervention

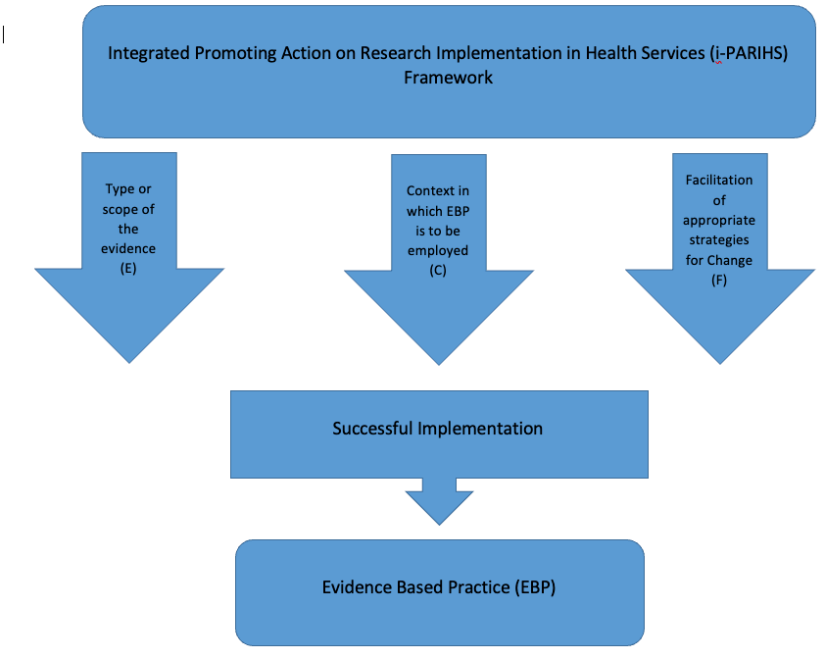
(Clemson et al., 2014). In regional and rural Australia, further barriers exist in the uptake of best practice among practitioners.

Occupational Therapists in rural and regional settings are often required to be multi-skilled generalists with a wide-range of practice knowledge. These occupational therapists often work within extensive geographical boundaries which influence travel required and present associated financial and time constraints on delivering services to regional and rural communities (Boshoff & Hartshorne, 2008; Kingston, Williams, Judd, & Gray, 2015). Professional isolation is also a factor for rural occupational therapists including limited access to professional support, time to engage in professional development activities and access to resources, such as peer reviewed journals (Roots & Li, 2013). However, minimal research has been conducted on strategies to enhance uptake of best practice by regional and rural occupational therapists.

Despite many interventions being shown to be effective, implementation of research in non-academic settings remains limited (Kilbourne, Neumann, Pincus, Bauer, & Stall, 2007). Our research uses the Integrated Promoting Action on Research Implementation in Health Services Framework (i-PARIHS) to guide the implementation of evidence into practice. The i-PARHIS Framework is a widely used conceptual framework for implementing evidenced based practice (EBP). It encompasses 3 key interacting elements that influence successful implementation (SI), namely, the type or scope of the Evidence (E), the Context in which EBP is going to be employed (C) and the Facilitation of appropriate strategies for change (F). Specifically, the i-PARIHS Framework assists in diagnosing critical elements related to implementation of best practice EAM (E and C) and development of an implementation strategy (F) to enable successful and sustained change (Harvey & Kitson, 2016). Using this Framework provides a

way to engage stakeholders in self-reflection regarding critical aspects of implementation and the related nature of needed change (See Figure 1). Significantly, this framework argues that successful implementation (SI) of evidence translation into practice has as much to do with the context or setting, where the new evidence is being introduced, and how that new evidence is introduced (facilitated into practice) as it does with the quality of the evidence.

Figure 1: Implementation of evidence into practice – the i-PARIHS Framework (Harvey & Kitson, 2016)



The research question addressed in this study was: What is current occupational therapy practice for falls prevention and what are the barriers and enablers for the adoption of best practice EAM within a regional and rural health service? This paper forms part of a broader research project which aims to identify factors that support the local adoption of best practice EAM for falls prevention and evaluate the outcome of implementation which builds on these support factors with occupational therapists in a regional and rural context, using the i-PARIHS framework (Harvey & Kitson, 2016). This paper focuses on the pre-implementation phase of the framework with an emphasis on understanding the context.

Methods

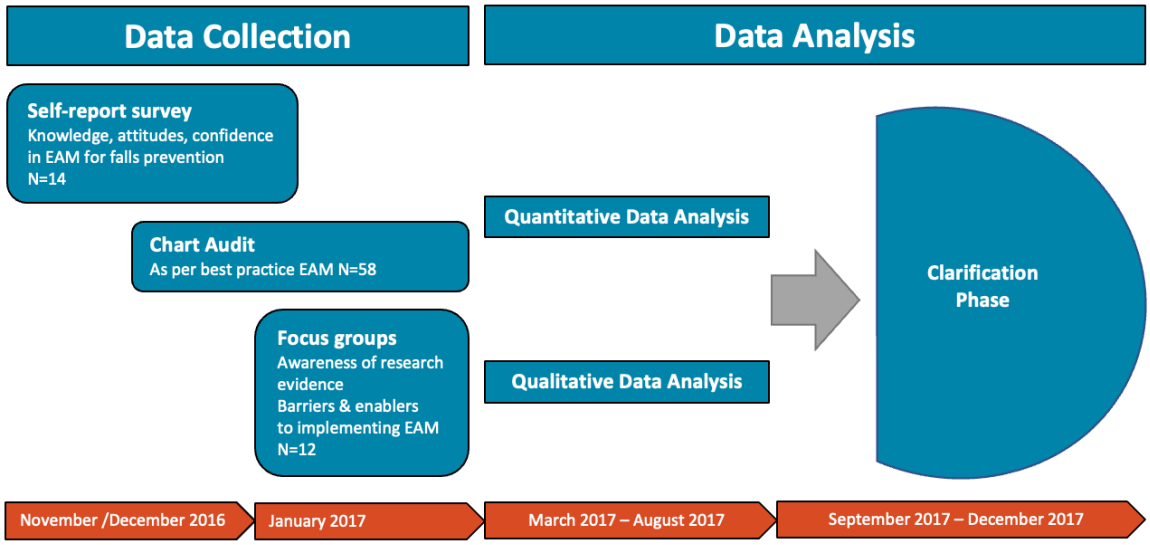
Study Design

A concurrent mixed methods approach incorporating the i-PARIHS framework was used to investigate current occupational therapy practice in falls prevention (Corcoran, 2006a). The study comprised of three elements: an occupational therapy staff survey, to elicit knowledge, attitudes, confidence and experience of using EAM for falls prevention; a medical chart audit, using an audit tool, which included the key elements of best practice EAM; and, occupational therapy staff focus groups to explore awareness of research evidence and identify barriers and enablers to implementing best practice EAM. The survey and medical chart audit produced quantitative data and the focus groups provided qualitative data. This mixed methods approach was used to: allow all elements of the i-PARIHS framework to be addressed; to provide objective measures to triangulate with subjective reports of clinical intervention; and, to delve more deeply into clinician perceptions of barriers and facilitators to implementation.

More specifically, the survey and focus groups elicited staff awareness of both falls prevention guidelines and existing evidence underpinning EAM and explored the existing service delivery model, resource constraints, the level of clinician and management support for implementation of the intervention and the service delivery setting. Data generated from the questionnaires and focus groups were analysed to highlight critical contextual elements that needed to be addressed in the development of a future implementation strategy (F). The medical chart audit was included in the study to provide objective data on current practice and to enable triangulation with the subjective data elicited from the questionnaires and focus groups.

The quantitative and qualitative data were gathered simultaneously but analysed separately to enhance interpretation and validity of results (Corcoran, 2006b). The data were then merged during a clarification phase to develop a comprehensive understanding of the research question (Figure 2).

Figure 2: Timeline of data collection and data analysis



Study Setting

This study was conducted in a public hospital and health service in Queensland, Australia that covers an area of 90,000km^2 and provides healthcare to 280,000 people living in regional and rural areas. Services are structured in a 'hub and spoke' model with a regional hospital as the hub and rural hospitals as spokes. Occupational therapists work in a variety of areas including community, acute hospital and rehabilitation settings. Occupational therapists working in rural hospitals typically work in sole positions, delivering a variety of duties including paediatrics, rehabilitation, home assessment and aged care via inpatient, outpatient or outreach services. Operational management of these rural roles is not typically provided by an occupational therapist. Occupational therapists in the regional centres are more likely to work alongside other occupational therapists, however, still provide a more generalist service than their urban

counterparts. The study sites included one regional hospital, six rural hospitals and two community based services. Data collection took place from November 2016 to February 2017.

Survey

A cross-sectional survey was developed for this study, which was based on the principles of the i-PARIHS framework (Harvey & Kitson, 2016). The survey comprised a total of 12 questions, with sub-questions, examining occupational therapists' knowledge, attitudes, confidence and experience of EAM for falls prevention. Knowledge questions addressed the "E" element of the i-PHARIHS and covered: awareness of falls risk factors; ability to identify the components of a comprehensive falls prevention environmental assessment; and, ability to identify solutions to address a specific environmental hazard. Respondents indicated their level of agreement with statements, on a 4-point Likert scale for the remaining questions. Attitude questions, addressed the "E" and "C" elements of the i-PHARIHS, and covered: whether EAM was a core part of their role (C); level of team and department support for undertaking EAM (C); perception of the level of importance of falls prevention assessments for at risk patients (C); degree to which clinicians engage patients and carers in developing action plans (E); views about whether personal and environmental factors influence behaviour change (E); perception of patients' level of adherence to recommendations (C, E); views about whether the person, the environment and occupational performance should be considered within EAM (E); and, awareness of categories of risk factors (E). Confidence questions, addressed the "C" and "F" elements of the i-PHARIHS, and covered: confidence in conducting EAM and in knowing when to do so (F); level of access to support and expertise in EAM (C, F); and, awareness about where to obtain equipment and modification information (C, F). Experience questions, addressed the "C" and "F" elements of the framework, and covered: experience in conducting falls prevention home assessments (F) and whether this was part of current service provision

(C); whether their current role involves working with people at high risk of falls (C); training in EAM (C, F); experience observing others conducting EAM (C, F); experience of pre-assessment screening of falls risk (C, F); interest in attending EAM and falls prevention equipment and modification training (F); Years of practice as an occupational therapist and years of experience working with older people.

The survey was qualitatively piloted with a panel of occupational therapists, external to the health service, to check content and readability (Green & Thorogood, 2018). The survey was hosted on the Survey Monkey platform. Responses were anonymous, with data exported in a format suitable for descriptive analysis.

Medical Chart Audit

The chart audit was restricted to patients attending the regional hospital and the community care service, due to these services most frequently providing EAM type interventions. Occupational therapy services in rural areas tend to cover a broad spectrum of conditions, with EAM intervention only a small component of work. Charts were included in the audit if they were for patients who: were 65 years of age and over; were identified as an admission related to falls or falls risk; received an occupational therapy service; and, attended the service between July 1st and September 1st 2016.

Charts were identified via a central administrative database for the occupational therapy service at the regional hospital. Hand searches of charts were required at the community care site due to records not being linked to the central administrative database. Identified charts were audited based on a checklist derived from Clemson et al's criteria to determine whether the environmental falls prevention intervention provided was comprehensive (Clemson et al.,

2008) (Figure 3). These criteria relate to the "E" element of the i-PARIHS framework. Data were entered into an excel spreadsheet with additional notes included to facilitate interpretation and highlight additional observations made during the audit process. The data collection was completed by one of the authors who has a background in occupational therapy. Entered data were then reviewed and confirmed by a second author to ensure consistency of data entry.

Figure 3. Environmental Assessment and Modification Medical Chart Audit Tool (Clemson, Mackenzie, Ballinger, Close, & Cumming, 2008)

1. Did a comprehensive process of hazard identification and priority setting take place, taking into account personal risk and environmental audit?
2. Was an assessment tool used which had been validated for the broad range of potential fall hazards?
3. Was a formal, observational evaluation of functional capacity (e.g. physical capacity, behaviour, functional vision, habits) of the person within the context of their environment completed?
4. Was adequate follow-up provided by the health professional and support provided for adaptations and modifications?
5. Was the older person actively involved in the assessment and priority setting?
6. Based on questions 1-4 above, was the intervention of high intensity? Y/N

(To be deemed high intensity the intervention must meet 3 out of the first 4 criteria above)

Focus Groups

Qualitative data were collected via semi-structured focus group discussions. Pre-determined themes, linked to the i-PARIHS Framework (Harvey & Kitson, 2016), were used to direct questions in the focus groups. Key questions were based on exploring clinicians' understanding of evidence for EAM (E element of the i-PARIHS), perceived knowledge of colleagues, employer and patients about EAM, and barriers and facilitators for providing EAM services (C and F elements of the i-PARIHS). A facilitator, external to the health district, was employed to minimise bias in questioning and in participant responses. Focus group discussions were audio recorded and transcribed verbatim.

Participant Recruitment

Occupational therapists working with adults whose current role did, or could, include EAM were identified by the Director of occupational therapy and invited to participate in the survey. A link to the confidential survey was sent via a work email by the Director of occupational therapy, which included study information. To improve response rates, research team members attended relevant staff meetings to increase engagement, and a reminder email was sent by the Director one week prior to the survey closing. An invitation to participate in the focus groups was included at the end of the survey where participants expressed interest and were followed up by the researchers. A separate email invitation to participate in the focus groups was also sent to all eligible occupational therapists by the Director of occupational therapy to further increase the focus group participation rate and capture potential participants who were unable to complete the survey.

Data analysis

Descriptive statistics were used to summarise the survey and chart audit data reflecting percentages, means and standard deviations using IBM SPSS v.22 software (IBM, Armonk, New York, USA). Notes collected alongside the chart audit were triangulated with the quantitative data to further interpret findings.

An inductive thematic analysis of the transcribed focus group discussions was performed by two of the authors (Braun & Clarke, 2006). Codes were constantly compared until agreement and 'thematic saturation' was reached. Data were stored and managed in NVivo v.11 qualitative data analysis software (QSR International, Melbourne, Victoria, Australia).

Ethics

The study was granted ethics approval (Protocol HREC/16/QTDD/58). Approval to access confidential health information for the project was granted in accordance with Section 284 of the Public Health Act 2005 (RD006571). Written informed consent was obtained from all participants in the focus groups. Completion and submission of the on-line survey was interpreted as implied consent to participate. All data were de-identified and pseudonyms used.

RESULTS

Survey

Twenty-four occupational therapists were identified as working with adults and whose current role included, or could include, EAM. A total of 14 occupational therapists completed the survey with a response rate of 58.3%. All survey participants were female and had worked as occupational therapists for between 0 and 25 years, with an average of 8.93 years.

Knowledge

Results from the knowledge component of the survey indicated that respondents were aware of available evidence and validated assessment tools. Half of the survey respondents (7/14) identified that they had attended additional formal courses on environmental assessment for falls prevention. All participants indicated an interest in participating in further training in falls prevention, and learning more about equipment and environmental modifications for falls prevention. Table 1 provides a summary of the knowledge questions and responses.

Table 1: Survey statements used to determine knowledge of environmental assessment and modification

	Correct	Incorrect	Unsure
There are no guidelines on best practice on environmental assessment for falls prevention	**10 (71.43%)**	1 (7.14%	3 (21.43%)
65–79-year-olds are most likely to have a fall	2 (14.29%)	**10 (71.43%)**	2 (14.29%)
There are no validated tools to assess for falls when conducting a home assessment	**8 (57.14%)**	3 (21.43%)	3 (21.43%)
Evidence shows that effectiveness of comprehensive environmental assessment for falls prevention is increased when completed by an occupational therapist	**12 (85.71%)**	0 (0)	2 (14.29%)
People at high risk of falls include those with a history of falls, visual impairment, those who are aged, have co-morbidities and have had a recent hospital admission with subsequent functional decline	**14 (100%)**	0 (0)	0 (0)
Modifying the environment is the most important aspect to preventing falls	**6 (42.86%)**	**6 (42.86%)**	2 (14.29%)
A hazard check-list is all you need to undertake a home assessment for falls prevention	**14 (100%)**	0 (0)	0 (0)
Comprehensive home based environmental assessment for falls prevention would take more time that I usually have	5 (35.71%)	**7 (50.0%)**	2 (14.29%)
Most falls occur in the home	**13 (92.86%)**	0 (0)	1 (7.14%)

Note: entries in bold indicate most common answer

Confidence

The survey indicated that most occupational therapists (10/14) reported feeling confident in knowing when to conduct an environmental assessment for falls prevention. Eighty-six percent (12/14) agreed or strongly agreed that they felt confident in conducting a comprehensive environmental assessment for falls prevention; had access to experienced colleagues who could support this practice; and, had knowledge of where to obtain information about equipment and modifications which could be used to support people at risk of falls.

Attitude

Survey respondents demonstrated a supportive attitude towards implementing environmental assessment and modification. They reported that preventing falls in the home is a core concern for an occupational therapist and that behaviour change in falls prevention is dependent on both

personal and environmental factors. Table 2 provides a summary of questions and responses to the survey on occupational therapy attitudes toward EAM.

Table 2. Survey responses for attitude towards environmental assessment and modification

Survey Questions	Strongly Disagree	Disagree	Agree	Strongly Agree
Preventing falls in the home is <u>not</u> a core concern for my role as an occupational therapist	**11 (78.57%)**	3 (21.43%)	0 (0)	0 (0)
I have full support from my team/department to conduct comprehensive falls prevention home assessments	0 (0)	1 (7.14%)	6 (42.86%)	**7 (50.0%)**
I am <u>not</u> convinced of the importance of comprehensive falls prevention assessments for people at risk of falls	**8 (57.14%)**	4 (28.57%)	1 (7.14%)	1 (7.14%)
I actively engage the patient and family in developing falls prevention action plans	0 (0)	1 (7.14%)	**9 (64.29%)**	4 (28.57%)

Note: entries in bold indicate most common answer

<u>Experience</u>

Most occupational therapists surveyed (9/14) indicated that they carried out home assessments for falls prevention weekly and all those surveyed currently worked with older people at high risk of falls. Survey questions and responses, relating to occupational therapy experience, are presented in table 3.

Table 3: Survey statements used to determine experience of EAM

	Yes	No
I conduct a home assessment for falls prevention weekly	**9 (64.29%)**	5 (35.71%)
I have work shadowed with other occupational therapists to observe their practice in environmental assessment for falls prevention	**8 (57.14%)**	6 (42.86%)
I have experience in completing pre-assessment screening to identify patient who may benefit from home assessment for falls prevention	**9 (64.29%)**	5 (35.71%)
Does your current practice include home assessment for falls prevention as part of the service?	**11 (78.57%)**	3 (21.43%)
Do you predominately work in a rural area?	6 (42.86%)	**8 (57.14%)**
Does your current practice involve working with older people at high risks of falls?	**14 (100%)**	0 (0)

Note: entries in bold indicate most common answer

Medical Chart Audit

One hundred and thirty-four charts met the inclusion criteria for the audit, with 61 from the community care team and 76 from the hospital teams. Seventy-six charts were excluded from the audit because they were unavailable. The remaining 58 charts reviewed comprised 20 charts from the community care team (33% of community team charts that met the inclusion criteria) and 38 charts from the hospital teams (50% of hospital team charts that met the inclusion criteria). All available medical charts were audited and included occupational therapists who participated in the focus groups and surveys as well as those who did not. Therefore, it is reasonable to assume that the sample was representative of occupational therapy practice within the Hospital and Health Service. It is possible, however, that some of the unavailable charts were for patients who had received EAM, although this is unlikely because we assume that occupational therapists would consistently apply treatment protocols within and across teams.

None of the charts documented a comprehensive process of hazard identification using a validated assessment tool. Forty-three charts reviewed recorded that a locally developed assessment tool or other validated assessment had been used, such as the Montreal Cognitive Assessment and Mini Mental State Examination, but none specifically validated for falls. None of the charts documented a formal, observational evaluation of functional capacity of the person within the context of their environment. It was more common for informal observations of the home environment to be documented ad-hoc. Only one chart documented details of trailing assistive equipment with the patient in the home. A variety of follow up actions were recorded in 38 of the charts such as referrals for minor home modifications, and prescription of required equipment. However, the follow up tended to be driven by the problem identified

on the referral to occupational therapy rather than by a comprehensive EAM assessment performed by the occupational therapist. For example, if the referral had been for difficulties related to activities of daily living in the bathroom, the focus of the home assessment tended to be around the bathroom. Twenty-one charts documented a formal client goal setting agreement form. These charts were specifically from the community based services who had actively sought to include goal setting as part of all services. Results from this audit indicate that none of the patients received a high intensity intervention for falls prevention according to Clemson et al's criteria for a comprehensive environmental falls prevention intervention (Clemson et al., 2008) (Figure 1).

Focus Group Discussions

Twelve occupational therapists participated in two semi-structured focus groups. Group 1 included occupational therapists providing services in rural areas and group 2 consisted of occupational therapists based in the regional centre. The focus groups comprised of 5 and 7 participants respectively and lasted approximately 75 minutes. Videoconference technology was used to link rural participants where necessary. Analysis revealed three key themes influencing the local adoption of EAM: 1) confidence in, and awareness of evidence by occupational therapists; 2) knowledge and support from colleagues, referrers, patients and the organisation; and 3) time, cost and availability of resources to deliver EAM.

Results revealed several contextual issues unique to regional and rural service delivery which influenced uptake, including geographical and sociocultural diversities of communities being served, differing organisational structures which result in occupational therapists being line managed by other professions, and limited access to professional development. Respondents discussed possible strategies to improve the adoption of EAM in this regional and rural context

which included: 1) access to peer support; and 2) the need for consultation and engagement with key stakeholders to support change.

Confidence in, and awareness of evidence

In the focus group discussions, most participants displayed uncertainty towards the evidence underpinning occupational therapy led EAM, specifically for falls prevention. Some advised that they believed evidence was lacking due to the difficulty in conducting research in falls prevention, as indicated in the following comment:

> *...I think there isn't a lot of research yet... So many variable[s] that impact on falls prevention...*Occupational Therapist 4. (Rural)

Most also agreed that gathering evidence for occupational therapy was particularly difficult due to the complex nature of what occupational therapists do; how they see the person, environment-fit; and their unique approach to home assessment, which is different from other professions. Many believed that, because the approach was so subjective, conducting research would be difficult. Despite this, all agreed that occupational therapy did provide a unique and important contribution to falls prevention through EAM because of its approach to person, occupation and environment focused strategies.

> *It's (EAM) part of our core skills and core business, really, because no one else - no other professions do that to the extent that we do it.* Occupational Therapist 11 (Regional).

Indeed, participants acknowledged a reliance on past experience, clinical reasoning and attendance at workshops to guide intervention.

> *I suppose what ends up happening is we go on experience and what we've seen work well before, and that type of evidence.* Occupational Therapist 6 (Regional)

This was, however, dependant on how much of their role incorporated EAM as a regular work activity. Participants expressed that there were varying levels of expertise between the different occupational therapy groups for example rural, hospital based or community based staff. As a result, those who were not as frequently involved in EAM, including those from rural areas or more acute hospital based roles, felt they lacked skills in this area, especially for more complex patients.

All participants believed that it was important to seek out evidence and be responsive to adopting best practice. Implementation of evidence was considered important, not just for ensuring good outcomes but also for legitimising the need for interventions such as EAM. All agreed that, due to a perceived lack of research, it was important for occupational therapists to continue to advocate their role in EAM for the profession. However, many also felt that occupational therapists were not good at self-advocating.

> *We understand it. We live it, we do it and we understand the value of it but I think it's really important for us to be advocates of the value of that to both the people that we're working with and the patients that we're seeing as well.* Occupational Therapist 1 (Regional)

Knowledge and support from colleagues, referrers, patients and organisation

Respondents indicated they mostly had support from their team to conduct comprehensive falls prevention home assessments. Existing organisational structures such as access to vehicles and equipment for home assessments and existing falls prevention priorities within the health service were also identified as strong enablers for supporting EAM by occupational therapists. As one participant explained:

> *...the organisation is currently supportive of us doing it and we have local forms and processes and our workplace guides and our role descriptions say that's what we'll do.* Occupational Therapist 9 (Regional).

Evidence of support by external services and providers, such as General Practitioners, through appropriate referrals, was acknowledged. It was also considered that the community's understanding of the need for falls prevention had been supported by recent aged care changes and increased service awareness, resulting in an increase in demand for EAM. As one participant explained:

> *High level of knowledge now exists, particularly amongst the community that falls present a risk. My Aged Care has created a virtual call point for the elderly so they can call and say oh I'm worried about slipping in the shower and I'm worried about falling outside.* Occupational Therapist 4 (Rural).

However, some participants reported that the lack of understanding, awareness and value for the occupational therapy role in EAM by other professionals sometimes affected the number and type of referrals. As one participant explained:

> *...at times you do come up against colleagues who don't see the worth in what you're doing or that may not view the need to refer on for home assessment for falls.* Occupational Therapy 1 (Regional).

In particular, many thought that the biggest challenge was conveying the importance of EAM to patients and their families. This was mainly because the process was sometimes perceived as common sense or able to be completed by others such as a relative. Because of this, many respondents acknowledged the need to further advocate the role of occupational therapy to the wider community and to ensure firm relationships with external providers.

Time, cost and availability of resources required within context.

Participants noted that the biggest procedural barrier to the implementation of EAM was the time required to complete paperwork, availability of equipment for hire or purchase, and timely completion of modifications by external agencies. This concern was heightened for participants working with clients in small towns or in isolated communities or properties. That is, time required varied considerably between clients' needs and whether they lived in an area with good access to external home modification or equipment providers. Management of time was also reported as more of a challenge in the acute setting where there was already a set time limitation on occupational therapy interventions and, therefore, restriction on what could be achieved. Many believed that the variability in access to equipment and adaptation providers and issues relating to time were scarcely acknowledged by management, particularly in rural areas.

> *I think too we're sort of in an environment of efficiencies, data collection and so it's around that acknowledgement that it takes time to do these assessments and there's a*

lot of follow up that's not direct patient care. So all that time needs to be factored into it as well.... I guess it's that acknowledgement at the management level that this takes a lot of occupational therapy resources for it to be done well and for good patient outcomes. Occupational Therapy 3 (Rural)

In addition to this, the regional and rural setting also meant that working with populations from diverse geographic, economic and socio-cultural backgrounds, such as rural aboriginal and other isolated communities, also influenced capacity to carry out EAM and uptake of recommendations. In particular, modifications, following environmental assessments, could be negatively affected by the agreement and ability of clients to meet any out of pocket expense. As one respondent explained:

I certainly think different towns and different populations in economic situations influence what - not necessarily what we prescribe but the alternatives that we offer to somebody. Certainly, over the time I think that my advice and recommendations have probably changed with experience and with knowing all those other factors. Occupational Therapy 5 (Rural)

Suggested solutions

Participants identified that future implementation of best practice EAM requires a core group of experienced occupational therapists to support their peers.

I'd say we've got a really good core group of experienced occupational therapists who do this (EAM) as their day-to-day business. So there's enough mass for any less

> *experienced occupational therapists or occupational therapists who don't do home visits often, to call on for help.* Occupational Therapist 9 (Regional).

This would be particularly helpful to staff who did not regularly have to carry out EAM such as those in more rural generalist roles.

> *From a cultural point of view I agree with what (Participant 1) said of creating more meets between the OTs in our district. Yeah, just the links between I guess the (Regional) OTs and the rural generalist OTs. I think that would help a lot because there can be a lot more bouncing around of ideas or thoughts. When you have something that you're not familiar with or that you haven't done before, just being able to know who to go to or who to ask. Just better links. I think that would be a great cultural shift*. Occupational Therapy 2 (Rural).

Consultation and involvement of all key stakeholders in future implementation processes were acknowledged by most as extremely important to facilitate ownership in adoption of best practice. This would also mean including operational managers who were not occupational therapists but managed occupational therapists in rural services. This is best explained by one participant:

> *I guess if it's (EAM) going to be implemented … you'd have to have those discussions amongst your individual teams. But then also they need to have a discussion at district level, you know, from an OT perspective and OT profession what do we want to get out of implementing this? …I feel like if it happens, yes, it happens at our level but then it needs to happen at a team level and then a service level or professional level as well.* Occupational Therapist 4 (Rural).

Other solutions identified included educating internal and external referrers and formalising modification reporting, in consultation with external providers. These were thought to facilitate timely and appropriate referrals; and improve consistency in processes. Other opportunities identified to support change included; telehealth technology to minimise the impact of rural barriers, and capitalising on falls prevention being a health service priority and part of the role of occupational therapy.

Discussion

The results provide insight into the local adoption of best practice in occupational therapist led EAM in falls prevention in a regional and rural setting. Survey results identified that most occupational therapists were aware of, confident in, and experienced with EAM, however, chart audits revealed no documentation that any of the patients had received comprehensive EAM. This reflects a real lack of insight, on the part of the therapists, particularly because there was no evidence of practical application of the intervention.

This discrepancy appears to be embedded in a perceived lack of robust evidence; the impact of time and resource constraints; and, lack of understanding of EAM and the role of occupational therapy by referrers and within the organisation. These factors link to i-PARIHS framework evidence and context elements.

Perceived lack of robust evidence (E)

Published evidence for occupational therapy led EAM exists, but actual awareness of available research was lacking, as demonstrated in the focus group discussions. Participants were certain that occupational therapy makes a unique contribution to falls prevention, but this was complicated by a belief that the complexity of falls prevention and occupational therapy were

not ‘researchable’. In particular, participants acknowledged a tension between the philosophy of occupational therapy and scientific rigour, provoking feelings of ambivalence towards best practice. This phenomenon is not a unique finding for occupational therapy. Previous literature has identified that occupational therapists typically associate best practice with the use of scientific inquiry only (Reagon, Bellin, & Boniface, 2008). However, evidence-based occupational therapy should be based on a range of evidence, including critical review of relevant research, expert consensus, past experience and clinical reasoning, coupled with a client centred approach (Hoffman, 2010; Reagon et al., 2008).

Although it has been suggested that occupational therapy has tended to lag behind other disciplines in terms of research output (Dixon et al., 2007; Rappolt, 2003; Steultjens et al., 2003), this study focused on an area of enquiry where there is an abundance of scientific evidence that confirms the important role occupational therapists play. The study demonstrated an uncertainty around the availability of evidence for occupational therapy led EAM despite evidence indicating the value of this practice. This appears to be in contrast to findings from studies examining research translation and implementation of other, well researched, occupational therapy interventions, such as stroke care (Kristensen, Ytterberg, Jones, & Lund, 2016). This study demonstrates the ongoing need to embed the concept of evidenced based occupational therapy to ensure uptake for both undergraduate and practicing occupational therapists. Participants in this study conceded that a perceived dearth of research evidence, in a tight fiscal environment, thwarted arguments for material and time resources to undertake EAM. Lack of self-assurance may also precipitate poor advocacy for the occupational therapy role, and conflict with role expectation by colleagues, referrers, patients and external providers.

Implications of context (C)

The complexity of implementation of best practice was influenced by being in a regional and rural setting. Community contexts not only increase travel distance and time required but also limit patient choice and uptake of recommendations. The context appeared to have a significant effect on delivery of best practice EAM, including the variability of clients' needs; impact of servicing large geographical areas; economic environment; the service in which the occupational therapist worked (acute vs community); operational management arrangements for the occupational therapists; and, access to training, work shadowing opportunities and resources. Previous research has highlighted the perceived barriers to implementing EBP which include: insufficient time, resources and skills; professional isolation; and, lack of motivation and sustainability of service change for a dispersed and often transient occupational therapy workforce (Graham, Robertson, & Anderson, 2013; Metcalfe et al., 2001). These may be exacerbated in a rural context. Distance involved in travelling to conduct home visits intermittent demand for services provided by rural Occupational Therapists and access to peer support were all highlighted as potential barriers. Inconsistency in documentation for EAM including assessment and referral forms were identified in the chart audit, particularly between teams. A coordinated approach to documentation, knowledge translation and advocacy for the occupational therapy role, across diverse work areas, would be beneficial to remove inconsistencies.

Participants also commented on the influence of patient expectation and their interpretation of the occupational therapy role as barriers. However, previous research indicates that adherence to occupational therapy home safety recommendations is relatively high, between 40-60%, with a client's belief that home modifications can prevent falls and relatives' support both strong predictors of follow-through of recommendations (Cumming et al., 2001; Nyman & Victor, 2011; Pighills et al., 2011). In addition, research indicates that a patient's sense of

control also influences follow-through (Clemson, Cusick, & Fozzard, 1999). Therapists can address falls prevention in positive and empowering ways, to maximize outcomes through adherence to recommendations, by working with clients on mutually agreed goals, understanding clients' unique perspectives and their need to exert control and exercise choice. Occupational therapy, indeed, focuses on a client centred model.

Implications for facilitation (F) of a successful implementation (SI) strategy

Facilitation of a successful implementation strategy, to embed best practice EAM, should consider enhancing accessibility of the evidence underpinning the intervention. This is particularly important for rural clinicians who have limited access to resources, such as librarians and the internet. The evidence outlining the unique role of occupational therapy in falls prevention has been summarised in systematic reviews and clinical guidelines (Australian Commission on Safety and Quality in Healthcare, 2009; Clemson et al., 2008; College of Occupational Therapists, 2015; Gillespie et al., 2012; National Institute of Clinical Excellence, 2013). Regional and rural occupational therapists need to be educated on the existing evidence base, including evidence of how the intervention should be delivered to enhance consumer engagement and adherence to recommendations.

Approaches to facilitate implementation of best practice EAM will need to consider the unique characteristics of the regional and rural health service setting. These contextual factors include the generalist workload, large geographical areas serviced, access to professional development, availability of peer support and the operational management structures of teams in which occupational therapists work. Strategies to support uptake and sustainability of EBP are important, particularly for rural therapists, thus, EBP should be embedded through the application of implementation frameworks which address the relevance and applicability of the

evidence within the local context (Dizon, Machingaidze, & Grimmer, 2016; Satterfield et al., 2009). Formal training programs in EAM are required to improve confidence and skills. Existing online training programs should be leveraged (Clemson, 2018) and access to video-conferenced remote training, peer support and mentorship provided. Structured mentoring programs, targeted at EAM, provided by experts via tele health technology could be one way forward. However, increasing access to informal peer support provided by experienced local occupational therapists will also assist in solving some of the local issues.

Occupational therapists need to be able to clearly communicate the effectiveness, concepts and requirements of EAM to non-occupational therapists. This will allow for easier translation for occupational therapists in sole positions operationally managed by other professions and assist in educating referrers and other multidisciplinary team members. The development of standardised, evidence based, risk assessments and treatment protocols for occupational therapy falls prevention will assist in sustaining change.

Limitations

The medical chart audit was restricted to a convenience sample of charts from the regional area where occupational therapists were more likely to provide regular EAM type intervention. Excluding the rural centres limited the ability of the audit to provide complete insight into the uptake of EAM in the rural areas. The medical chart audits indicated no documented evidence of the use of EAM, however, not including participant observation as part of the methodology may have resulted in a biased review of actual practice.

An external facilitator was employed to reduce moderator bias in the focus groups. The facilitator was not an occupational therapist and this may have influenced probing questions

and discussion transitions for specific occupational therapy concepts. To mitigate this, the facilitator was briefed by one of the researchers on priority questions for discussion and background to the study to ensure clarity of direction of discussions.

Survey responses indicated that most occupational therapists perform home assessments weekly for falls prevention, which may have increased self-reported knowledge, confidence and attitude towards EAM. In particular, self-report bias may have influenced the responses, whereby participants may have provided false responses, which they considered to be more acceptable. We also acknowledge that the self-selection method for survey recruitment has the potential to bias results, with some staff electing not to participate based on lack of confidence in their practice.

The small sample size of the survey reduced the ability to generalise the results to other populations and limited the value of correlation analysis. The conclusions drawn from this research are, therefore, more relevant to this particular setting and the participants involved. Future research is required to expand this important area of implementation research and implications for different contexts.

Conclusions and Implications for practice and future research

There is a disconnect between what occupational therapists perceive that they do and what they actually do in clinical practice. This research indicates that occupational therapists are not providing evidence based falls prevention interventions. However, it identifies implementation barriers and provides an opportunity introduce strategies to improve occupational therapy uptake of EAM in regional and rural settings. Uptake of evidence based practice, in regional and rural settings, is influenced by many unique factors that should be acknowledged when

designing and improving services. Novel approaches to facilitate uptake of best practice EAM, particularly in a rural context, are required, including: innovative training modalities for EBP and falls prevention; possible use of telehealth technology for supervision and potentially for assessment of the home environment in the future; and, expanded scope practice and delegation models of care.

Best practice guidelines for occupational therapy led EAM for falls prevention need to be promoted. Further work is required to enable occupational therapists to understand the concept of EBP and incorporate this into their work. Nurturing research active clinicians may help facilitate this process. If occupational therapists continue to lack confidence in the evidence that already exists to support their role, attempts to advocate for more occupational therapists, within the current fiscal constraints, may be thwarted.

Successful research implementation is most likely to occur when: evidence is viewed as sound and fits with professional and patient beliefs; the healthcare context is receptive to implementation through supportive leadership, culture and evaluation systems; and, appropriate mechanisms to facilitate implementation exist. Further research is required to investigate the application of novel approaches to facilitate uptake of EAM in a regional and rural context, such as evaluating the effectiveness of using telehealth as a medium for environmental assessment.

KEY POINTS FOR OCCUPATIONAL THERAPY

- Occupational therapists reported that they carried out best practice environmental assessment and modification for falls prevention but the medical chart audit provided no evidence of this happening in practice

- Implementing best practice in a regional and rural setting is influenced by geographical, economic and organisational contexts. A structured approach to facilitating best practice uptake of environmental assessment and modification, which takes context into consideration, is required.
- Further work is needed to promote practice guidelines and empower occupational therapists to understand occupational therapy best practice in environmental assessment and modification for falls prevention.
- Referrers, colleagues, patients and their families need education about the benefits of occupational therapy led environmental assessment and modification for falls prevention, which is an occupational therapy core skill.

Authors declaration of contribution

AT, AP and LF were involved in initial discussions of research concept. AP, AT, LF and MR all participated in development of final research design. LF coordinated the data collection with assistance from AT and AP. Initial drafts of manuscript were completed by AT and AP. LF and MR provided assistance with data entry and analysis for manuscript. All authors provided critical review of manuscript drafts and have read and approved final version.

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Conflict of interest

There is no conflict of interest

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REFERENCES

Australian Bureau of Statistics. (2018). Australia's leading causes of death (2016 data). Retrieved from http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2016~Main%20Features~Australia's%20leading%20causes%20of%20death,%202016~3

Australian Commission on Safety and Quality in Healthcare. (2009). Preventing Falls and Harm From Falls in Older People: Best Practice Guidelines for Australian Community Care. Canberra: Comminwealth of Australia.

Boshoff, K., & Hartshorne, S. (2008). Profile of occupational therapy practice in rural and remote South Australia. *The Australian Journal Of Rural Health, 16*(5), 255-261. doi:10.1111/j.1440-1584.2008.00988.x

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. doi:10.1191/1478088706qp063oa

Campbell, A. J., & Robertson, M. C. (2007). Rethinking individual and community fall prevention strategies: a meta-regression comparing single and multifactorial interventions. *Age and Ageing, 36*(6), 656-662. doi:10.1093/ageing/afm122

Clemson, L. (1997). *Home fall hazards: a guide to identifying fall hazards in the homes of elderly people and an accompaniment to the assessment tool, the Westmead Home Safety Assessment (WeHSA)*. West Brunswick Victoria: Co-ordinates Publications.

Clemson, L. (2018). Falls prevention online workshop. Retrieved from http://www.fallspreventiononlineworkshops.com.au/

Clemson, L., Cusick, A., & Fozzard, C. (1999). Managing risk and exerting control: determining follow through with falls prevention. *Disability and Rehabilitation, 21*(12), 531-541. doi:10.1080/096382899297189

Clemson, L., Donaldson, A., Hill, K., & Day, L. (2014). Implementing person-environment approaches to prevent falls: A qualitative inquiry in applying the Westmead approach to occupational therapy home visits. *Australian Occupational Therapy Journal*. doi:10.1111/1440-1630.12132

Clemson, L., Mackenzie, L., Ballinger, C., Close, J., & Cumming, R. G. (2008). Environmental interventions to prevent falls in community-dwelling older people: A meta-analysis of randomized trials. *Journal of Ageing and Health, 20*(8), 954-971. doi:10.1177/0898264308324672

College of Occupational Therapists. (2015). *Falls: the role of occupational therapy in the prevention and management of falls - practice guideline* (M. Sainty Ed.). London: COT Ltd.

Corcoran, M. A. (2006a). Using mixed methods designs to study therapy and its outcomes. . In G. Kielhofner (Ed.), *Research in Occupational Therapy: Methods of Inquiry for Enhancing Practice* (pp. 411-419). Philadelphia, USA F. A. Davis Company.

Corcoran, M. A. (2006b). *Using mixed methods designs to study therapy and its outcomes. In G. Kielhofner (Ed.), Research in Occupational Therapy: Methods of Inquiry for Enhancing Practice. pp 411-419*. USA: Philadelphia: F. A. Davis Company.

Cumming, R. G., Thomas, M., Szonyi, G., Frampton, G., Salkeld, G., & Clemson, L. (2001). Adherence to occupational therapist recommendations for home modifications for falls prevention. *American Journal of Occupational Therapy, 55*(6), 641-648. Retrieved from http://ajot.aota.org/article.aspx?articleid=1869052

Cumming, R. G., Thomas, M., Szonyi, G., Salkeld, G., O'Neill, E., Westbury, C., & Frampton, G. (1999). Home visits by an occupational therapist for assessment and modification of environmental hazards: A randomised trial of falls prevention. *Journal of the American Geriatrics Society, 47*, 1397-1402.

Currin, M. L., Comans, T. A., Heathcote, K., & Haines, T. P. (2011). Staying Safe at Home. Home environmental audit recommendations and uptake in an older population at high risk of falling. *Australasian Journal on Ageing*, no-no. doi:10.1111/j.1741-6612.2011.00545.x

Dixon, L., Duncan, D. C., Johnson, P., Kirkby, L., O'Connell, H., Taylor, H. J., & Deane, K. (2007). Occupational therapy for patients with Parkinson's disease. *Cochrane Database of Systematic Reviews*(3). doi:10.1002/14651858.CD002813.pub2

Dizon, J. M., Machingaidze, S., & Grimmer, K. (2016). To adopt, to adapt, or to contextualise? The big question in clinical practice guideline development. *BMC research notes, 9*(1), 442. doi:10.1186/s13104-016-2244-7

Gillespie, L., Robertson, M., Gillespie, W., Sherrington, C., Gates, S., Clemson, L., & Lamb, S. (2012). Interventions for preventing falls in older people living in the community. *Cochrane database of Systematic Reviews,*(9), 1-416. doi:DOI: 10.1002/14651858.CD007146.pub3.

Gitlin, L. N. (2009). Environmental adaptations for older adults and their families in the home and community *International handbook of occupational therapy interventions* (pp. 53-62): Springer.

Graham, F., Robertson, L., & Anderson, J. (2013). New Zealand occupational therapists' views on evidence-based practice: A replicated survey of attitudes, confidence and behaviours. *Australian occupational therapy journal, 60*(2), 120-128. doi:10.1111/1440-1630.12000

Green, J., & Thorogood, N. (2018). *Qualitative methods for health research.* (4 ed.). London: Sage.

Harvey, G., & Kitson, A. (2016). PARIHS revisited: from heuristic to integrated framework for the successful implementation of knowledge into practice. *Implementation Science, 11*(1), 33. doi:10.1186/s13012-016-0398-2

Hoffman, T., Bennett, S. & Del Mar, C. (2010). Introduction of evidence-based practice. In S. B. C. D. M. T. Hoffman (Ed.), *Evidence-based practice across the health professions* (pp. 1-15). Chatswood: Elsevier.

Kilbourne, A. M., Neumann, M. S., Pincus, H. A., Bauer, M. S., & Stall, R. (2007). Implementing evidence-based interventions in health care: application of the replicating effective programs framework. *Implementation Science, 2*(1), 1.

Kingston, G. A., Williams, G., Judd, J., & Gray, M. A. (2015). Hand therapy services for rural and remote residents: Results of a survey of Australian occupational therapists and physiotherapists. *Australian Journal of Rural Health, 23*(2), 112-121. doi:doi:10.1111/ajr.12141

Kristensen, H. K., Ytterberg, C., Jones, D. L., & Lund, H. (2016). Research-based evidence in stroke rehabilitation: an investigation of its implementation by physiotherapists and occupational therapists. *Disability and Rehabilitation, 38*(26), 2564-2574. doi:10.3109/09638288.2016.1138550

Law, M., Cooper, B., Strong, S., Stewart, D., Rigby, P., & Letts, L. (1996). The person-environment-occupation model: a transactive approach to occupational performance. *Canadian Journal of Occupational Therapy, 63*, 9-22.

Metcalfe, C., Lewin, R., Wisher, S., Perry, S., Bannigan, K., & Moffett, J. K. (2001). Barriers to Implementing the Evidence Base in Four NHS Therapies: Dietitians, occupational therapists, physiotherapists, speech and language therapists. *Physiotherapy, 87*(8), 433-441. doi:10.1016/s0031-9406(05)65462-4

National Institute of Clinical Excellence. (2013). The assessment and prevention of falls in older people. Retrieved from http://www.nice.org.uk/guidance/cg161

Nyman, S. R., & Victor, C. R. (2011). Older people's participation in and engagement with falls prevention interventions in community settings: an augment to the Cochrane systematic review. *Age and Ageing, 41*(1), 16-23. doi:10.1093/ageing/afr103

Pighills, A., Ballinger, C., Pickering, R., & Chari, S. (2016). A critical review of the effectiveness of environmental assessment and modification in the prevention of falls amongst community dwelling older people. *British Journal of Occupational Therapy*. doi:10.1177/0308022615600181

Pighills, A. C., Torgerson, D. J., Sheldon, T. A., Drummond, A. E., & Bland, J. M. (2011). Environmental assessment and modification to prevent falls in older people. *Journal of the American Geriatrics Society, 59*(1), 26-33. doi:10.1111/j.1532-5415.2010.03221.x

Rappolt, S. (2003). The Role of Professional Expertise in Evidence-Based Occupational Therapy. *American Journal of Occupational Therapy, 57*(5), 589-593. doi:10.5014/ajot.57.5.589

Reagon, C., Bellin, W., & Boniface, G. (2008). Reconfiguring evidence-based practice for occupational therapists. *International Journal of Therapy and Rehabilitation, 15*(10), 428-436. doi:10.12968/ijtr.2008.15.10.31211

Roots, R. K., & Li, L. C. (2013). Recruitment and retention of occupational therapists and physiotherapists in rural regions: a meta-synthesis. *BMC Health Services Research, 13*, 59-59. doi:10.1186/1472-6963-13-59

Rubenstein, L. Z. (2006). Falls in older people: epidemiology, risk factors and strategies for prevention. *Age and Ageing, 35*(Supplement 2), ii37-ii41. doi:10.1093/ageing/afl084

Satterfield, J. M., Spring, B., Brownson, R. C., Mullen, E. J., Newhouse, R. P., Walker, B. B., & Whitlock, E. P. (2009). Toward a transdisciplinary model of evidence-based practice. *The Milbank Quarterly, 87*(2), 368-390. doi:10.1111/j.1468-0009.2009.00561.x

Scuffham, P., Chaplin, S., & Legood, R. (2003). Incidence and costs of unintentional falls in older people in the United Kingdom. *Journal of Epidemiology and Community Health, 57*(9), 740-744. doi:10.1136/jech.57.9.740

Steultjens, E. E. M. J., Dekker, J. J., Bouter, L. M., Cardol, M. M., Van den Ende, E. C. H. M., & van de Nes, J. (2003). Occupational therapy for multiple sclerosis. *Cochrane Database of Systematic Reviews*(3). doi:10.1002/14651858.CD003608

Stevens, J. A., Mahoney, J. E., & Ehrenreich, H. (2014). Circumstances and outcomes of falls among high risk community-dwelling older adults. *Injury epidemiology, 1*(1), 5. doi:10.1186/2197-1714-1-5

Talbot, L., Musiol, R., Witham, E., & Metter, E. J. (2005). Falls in young, middle-aged and older community dwelling adults: perceived cause, environmental factors and injury. *BMC Public Health, 5*(1), 1-9. doi:10.1186/1471-2458-5-86