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Sustainability of community-based fall prevention programs: A systematic review

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ABSTRACT

Background: Fall prevention programs may be implemented but not sustained. We conducted a systematic review to identify any theories, models, frameworks, influencing factors or interventions for sustaining fall prevention programs in the community. *Methods:* Peer-reviewed publications describing, investigating, or evaluating program sustainability were accessed. A narrative review was conducted to compare and synthesize study findings. *Results:* Nineteen publications were included. Three conceptual frameworks were identified describing how programs may be better sustained. While ongoing financial support and the participation of older people were commonly reported influences, other factors specific to the type of program and setting were also reported. Planning, training, and collaboration between program stakeholders may facilitate sustainable programs. *Impact on industry:* Organizations can use these findings when planning for sustainable programs. However more robust empirical studies are needed to confirm the value of conceptual frameworks, the critical factors and most effective interventions for sustaining community-based fall prevention programs.

1. Introduction

The effectiveness of interventions to prevent falls among older people living in the community is well established (American Geriatrics Society & British Geriatrics Society, 2011; Australian Commission on Safety & Quality in Health Care, 2009; Gillespie et al., 2012). The use of such interventions however, appears limited. Few older people are asked by their medical practitioner about falls or offered interventions to prevent falls (Wenger et al., 2003). Despite the high and recurrent use of healthcare services by older people entering emergency departments following a fall (Close et al., 2012; Hartholt et al., 2011; Woolcott, Khan, Mitrovic, Anis, & Marra, 2011), treatments usually focus on the injuries sustained with little consideration given to the prevention of future falls (Kalula, de Villiers, Ross, & Ferreira, 2006; Miller et al., 2009; Salter et al., 2006). Few community-based organizations regularly offer fall prevention services (Laing, Silver, York, & Phelan, 2011) and it has been shown that fall prevention programs funded initially from research grants or as demonstration projects were not sustained beyond the project timeframe (Shekelle et al., 2003). The rate of falls has not changed over time (Gribbin, Hubbard, Smith, Gladman, & Lewis, 2009; Hill et al., 2002) and fall-related hospitalization rates are increasing (Hartholt et al., 2010). With projected increases in the population of older people, falls will remain a serious health issue for a growing number of older people (World Health Organisation, 2007). The focus therefore, must now shift to understanding how fall prevention interventions shown to be effective in research can be translated into effective and sustainable programs in practice (Close, 2005; Edwards, 2011; Stevens, Baldwin, Ballesteros, Noonan, & Sleet, 2010).

Studies conducted to date on the translation of fall prevention research into practice have focused on the factors influencing program participation by older people (Bunn, Dickinson, Barnett-Page, McInnes, & Horton, 2008; Child et al., 2012; Dickinson et al., 2011; Høst, Hendriksen, & Borup, 2011), barriers and facilitators to program implementation by health professionals (Child et al., 2012; Jones, Ghosh, Horn, Smith, & Vogt, 2011), and the evaluation of methods to improve the implementation of fall prevention programs in practice (Goodwin, Jones-Hughes, Thompson-Coon, Boddy, & Stein, 2011; Tinetti et al., 2008). Despite a growing understanding of the issues surrounding the uptake and implementation of community-based fall prevention programs, factors impacting on the sustained use of such programs in practice are less understood (Clemson, Finch, Hill, & Lewin, 2010).

Program sustainability can be defined as the continued use of programs by organizations over time to achieve desired health outcomes (Scheirer & Dearing, 2011). Although linked, program sustainability can be distinguished from the phases of program adoption (the decision of an organization to use a new program) and program implementation (the process of putting the program into use within a particular setting; Rabin, Brownson, Haire-Joshu, Kreuter, & Weaver, 2008). Program

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sustainability is an important consideration to ensure that investments in time, resources, and people are not wasted (Pluye, Potvin, & Denis, 2004). A range of factors may influence program sustainability in healthcare settings. The nature of the program, the context within which the program is implemented, the processes used to sustain the program, and the organizational capacity have been identified in one review as possible influences on whether programs are sustained (Wiltsey-Stirman et al., 2012). Despite these findings, uncertainty remains as to how health programs can be successfully sustained over time given the diversity of definitions, conceptual frameworks, study methods, timeframes, and outcomes measured in each of the studies included in the review. To compound the uncertainty, the sustainability of fall prevention programs has not been the focus of reviews conducted to date within the broader literature on program sustainability (Gruen et al., 2008; Scheirer, 2005; Wiltsey-Stirman et al., 2012).

We systematically reviewed the published literature to: (a) identify any theories, models, or frameworks that have been developed for the sustainability of community-based fall prevention programs; (b) determine which factors affect program sustainability; and (c) ascertain if any interventions are effective for promoting, enhancing, or achieving program sustainability.

2. Methods

We conducted a systematic review based on methods for reviewing studies of diverse designs (Centre for Reviews and Dissemination, 2009; Higgins & Green, 2009; Liberati et al., 2009).

2.1. Inclusion and exclusion criteria

We included publications from the peer-reviewed scientific literature and set no restrictions on the type of study design or research methods used. No limits on language, publication date, or publication status were imposed, other than those limits inherent within the design of each database searched.

Any publications referring to interventions or programs that aimed to reduce the risk of falls, rate of falls, or the effect of or exposure to any risk factor for falling were included. Publications referring to older men and women aged 65 years and over and living in the community were included. In accordance with other systematic reviews, we included publications if the participants were described as elderly, seniors, or older adults, if 50% and over of the total number of participants were aged 65 years and over and were living either at home or in similar residences such as independent living units in retirement villages (Gillespie et al., 2009). Publications referring to hospitals or formal residential aged care settings (such as hostels and nursing homes) were excluded, given the specific nature of these settings compared to the broader community (Gillespie et al., 2009).

Any publications investigating the sustainability of fall prevention programs, relevant to the three review objectives were included. Program sustainability can be evaluated at the level of organization or individual (Glasgow, Vogt, & Boles, 1999). Given our review objectives, we defined program sustainability as the continuation of programs by organizations over time (Pluye et al., 2004; Scheirer & Dearing, 2011; Shediac-Rizkallah & Bone, 1998). Thus, publications referring to the ongoing effect of the program on individuals participating in the program, rather than the sustainability of the program itself, were excluded.

2.2. Searches

Publications were identified by searching electronic databases, scanning the reference lists of included publications, and from the personal collections of the authors. The Medline, Embase, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, PubMed, Cinahl, OTseeker, PEDro, AMED, PsycINFO, and Ageline databases were searched at the end of August 2011. We did not search the "grey literature" as our aim was to only include publications from the peer-reviewed scientific literature. The search strategy was first piloted and then refined for each database. Multiple terms and phrases previously used in the literature for the concept of program sustainability were included in the search (Supplementary file 1). All searches were conducted by one author.

2.3. Publication selection and data extraction

After removal of duplicates, each publication was screened by title and abstract for relevance. The full text of each relevant publication was then independently assessed for eligibility by two authors using a standard form. Any uncertainties or discrepancies were resolved by consensus. For all included publications, we extracted the following data: the country, publication type, and the aspect of program sustainability addressed in the publication. For empirical studies we extracted additional data: the study aim, setting, population, intervention, research methods, and main study findings. One author extracted the data which were checked for accuracy by a second.

2.4. Study quality assessment and data analysis

Assessment of study quality was limited to empirical study designs for which quality assessment was appropriate. We used quality assessment criteria specific to each study design, based on a previous systematic review of publications of multiple study designs (Greenhalgh, Robert, Bate, Macfarlane, & Kyriakidou, 2005). One author conducted the quality assessments that were verified by a second. To analyze the data we first categorized the publications according to each of the three review objectives and summarized relevant data from each publication into evidence tables. We conducted a narrative review to synthesize the data and identify similarities and differences in findings across publications (Verbeek, Ruotsalainen, & Hoving, 2012). Given the heterogeneity of the included publications it was not possible or appropriate to calculate summary measures across studies or conduct a meta-analysis.

3. Results

Fig. 1 shows the publication selection and exclusion process. Of the 132 potentially relevant publications identified, 113 were excluded (Supplementary file 2), leaving 19 publications included in the review. Table 1 summarizes key characteristics of the included publications according to each of the review objectives. Publications were from the United States (US) (n = 8), Australia (n = 7), Canada (n = 2), and the United Kingdom (UK) (n = 2), published from 1998 to 2011, with most published after 2002. We included four publications that were not specific to the community setting, but were clearly relevant to older people living in the community. For most publications we were unable to determine if 50% or more of the participants were aged 65 years and over. Hence we included publications if they referred to older people, older adults, the elderly or seniors. For many of the included publications, program sustainability was not the primary focus but was referred to in some way. Thus, when extracting the data, we focused only on the parts of the publication relevant to program sustainability.

Three of the included publications were related to the Stay on Your Feet (SOYF) fall prevention program in Australia (Barnett et al., 2003, 2004; van Beurden, Barnett, Molyneaux, & Eakin, 2003). Two publications were related to the same fall prevention demonstration project in Canada (Hanson, Salmoni, & Volpe, 2009; Hanson & Salmoni, 2011), while another two publications were related to the Telecare fall prevention project in the United States (Ganz, Yano, Saliba, & Shekelle, 2009; Miake-Lye et al., 2011).

Fifteen of the included publications were empirical studies while four were descriptive in nature. The empirical studies included program/project evaluations (n = 5), survey studies (n = 4), qualitative studies (n = 2), study protocols or designs (n = 2),