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Effectiveness of Falls Prevention Education on its Prevention Behavior among Older Adults: A Systematic Review

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Abstract

Introduction: Falls prevention education is important to provide early awareness of falls prevention among older adults. However, information on the effectiveness of falls prevention education on its prevention behavior among older adults is limited.

Objective: The objective of this systematic review was to identify effects of falls prevention education on the practice of falls prevention behavior among older adults.

Method: A search of three electronic databases: PEDRO, EBSCHOHOST and OVID & MEDLINE, was performed in May and June 2018. Studies with falls prevention education as a single prevention intervention either in the hospital, long term care or community settings, participants aged 60 years and above and falls prevention behavior as an outcome measure were included.

Results: A total of 129 studies were found with 16 being duplicates. A total of 14 and 62 studies were excluded for review after screening by title and abstract respectively. Another 31 studies were excluded for not fulfilling the inclusion criteria. Only six studies were finally eligible for inclusion in our present review. The results of our review suggested that falls prevention education significantly improved falls prevention behavior practice among older adults. However, there is limited information on periodic falls risk screening or assessment practice among older adults.

Conclusion: Falls prevention education seems to be effective in heightening falls prevention behavior among older adults. More information about the effects of periodic falls risk screening or assessment on falls prevention behavior among older adults is required.

Keywords: *Falls prevention education; Falls prevention behavior; Elderly; Older adults.*

Introduction

Falls among older adults have been reported as one of the major causes of mortality and morbidity among older adults,[1] which can lead to serious and devastating consequences to older adults themselves, their families and their communities due to burden of care. Even though falls prevention programs have been implemented, the number of falls has not decreased. Moreover, the number of older adults who can be categorized as "old" is increasing and, as a result, the number of falls will also be increasing.[2]

Falls prevention behavior is referred as the prevention strategies adopted and practiced by older adults in their daily life, to protect themselves from falls.[3] It had been reported that older adults tend to behave carefully to prevent falls with advancing age which indicate their awareness about falls prevention.[4] Nevertheless, there are older adults who fall due to risky behaviors. Jeon et al.[5] reported that the reasons behind such risky behaviors were increased self-confidence, pride and contentment.

Hence, falls prevention education, in particular, the identification of individual risky behaviors, is significant to provide early and self-awareness of falls prevention among older adults. While, falls prevention education is an important components in the efforts to prevent falls, its focus has been on the fall rate and

number of injurious falls and percentage of older adults who fall.[6,7] Information assessing the effectiveness of falls prevention education as an intervention on its own right and in the adoption of falls prevention behaviors is limited. Our current review was conducted to identify the effects of falls prevention education program on the practice of falls prevention behavior among older adults.

Methodology

Search Strategy: We searched for computer-based electronic databases: EBSCHOHOST, OVID & Medline, and PEDRO, in May and June 2018.

The search was done based on the Population Intervention Comparisons Outcomes Study Design framework. The search applied the following keywords: "falls prevention education", "falls prevention behavior" or "falls prevention practice" and "elderly" or "aged" or "older" or "elder" or "geriatric". Similar keywords were used in each database. The keywords were truncated to search for any studies which were related to the root words. Boolean operator 'OR' and 'AND' were applied to combine the keywords.

Study Selection: Literature selection criteria were as follows: studies in which (1) participants were aged 60 years and above; (2) falls prevention education was used as a single intervention; (3) falls prevention behaviors were addressed as an outcome measure; (4) peer-reviewed publications; (5) full text; and (6) available in English language. The researcher excluded retrospective studies, such as case-control studies, studies that were not diagnostic, not original or did not provide sufficient information to identify falls prevention behaviors.

All duplicates were removed from the initially retrieved articles. Inclusion and exclusion criteria were then used to examine the titles and abstracts. If it was difficult to decide whether to include a retrieved article, its main text was reviewed. Two independent reviewers reviewed all processes and a third party was consulted if there was any disagreement.

Quality Assessment: Modified McMaster Quantitative Critical Appraisal Tool (MMQCAT) was used to critically appraise the quality of each included studies. MMQCAT was developed by Law et al. (1998) to critically appraise the papers which report the quantitative studies by considering 15 criteria (Table 1). A higher total score with a maximum total score of 14, was then indicates a higher quality of the reporting studies.

Results

Selection process and bias risk assessment: A total of 129 articles were retrieved from the electronic databases. Sixteen duplicate articles were removed and the titles and abstracts of the remaining (113) articles were examined based on the inclusion and exclusion criteria. The main text was reviewed if it was difficult to make a decision. Finally, 6 articles were included for review.

Participant Characteristics: The effectiveness of falls prevention education on the practice of its prevention behavior was examined among a total of 459 older adults aged ≥60 in the six reviewed studies. Three studies were conducted in the senior community centers, facilities or housings.[8–10] One study was carried out in long term care setting, a nursing home. Whereas, another two studies were conducted among patients in hospitals[11] and those discharged to the community.[12] The reviewed studies were from mainly Asia[3,8,10] and Asia Pacific regions.[9,11,12]

Comparison Groups: In two studies falls prevention education was compared to usual care.[10,12] In one study there was no comparison group.[3] General education for the comparison group was provided in one study.[8] While, in another study the effectiveness of education provided was compared between that delivered via workbook and DVD.[11] Specifically tailored falls prevention education between two groups (authenticity and motivation) was compared in one study.[9]

Quality Assessment: The assessment of the methodological quality for each study is presented in Table 1.

The total scores of MMQCAT of the review studies ranged from 9 to 12 out of a maximum score of 15.

Table 1: Quality assessment

Authors	Criteria (Modified McMaster Critical Appraisal Tool for Quantitative Study)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total Score
Uymaz & Nahcivan (2015)[3]	/	/	Pre-post	x	x	/	/	/	x	x	/	/	x	/	/	9
Jang & Lee (2015)[8]	/	/	Q-E	/	/	/	/	/	x	x	/	/	x	/	/	11
Chen (2013)[10]	/	/	Q-E	/	/	/	/	/	x	x	/	/	x	/	/	11
Hill et al. (2013)[12]	/	/	Pilot RCT	/	/	/	/	/	x	x	/	/	x	/	/	11
Schepens et al. (2011)[9]	/	/	RCT	x	x	/	/	/	x	x	/	/	/	/	/	12
Hill et al. (2009) [11]	/	/	RCT	x	x	/	/	/	x	x	/	/	x	/	/	9

MMQCAT Criteria: 1) clearly stated study purpose; 2) background of literature review; 3) appropriateness of study design; 4) sample described in details; 5) sample size justification; 6) reliability of outcomes measures; 7) validity of outcomes measures; 8) intervention description; 9) contamination avoided; 10) co-intervention avoided; 11) result were reported based on statistical significance; 12) appropriateness of statistical analysis method; 13) clinical implication reported; 14) dropouts reported; 15) relevant conclusion RCT = Randomized Control Trial; PRCT= Pilot Randomized Control Trial; Q-E = Quasi-Experimental = Yes (1 point); x = No, Not Address, Not Applicable (0 point).

Contents of falls prevention education: In most of the studies, falls prevention education included topics such as definition, causes, risk and consequences of falls. As for falls preventive measures, regular exercise, periodic eye examination, safe drug use, environmental change and protective behavior development were the main highlights.

Method used to deliver falls prevention education in each setting

Mode of delivery: Majority of the studies used face-to-face session as the mode of delivery for falls prevention education.[3,8–12]

Intervention settings: One-to-one education session was applied mostly,[3,9–12]while only in one study a group-based settings for falls prevention education was used.[8]

Material provided: Multimedia such as videos (DVD), was the most common method used to deliver the falls prevention education in most settings (5 studies).[3,9–12] The combination of video materials, medication counseling and poster presentations were used in one study[3] with both video and written falls prevention education materials used in another one.[12] In the study by Jang & Lee [8], both booklets and presentation files were used. Individually tailored multimedia based falls prevention education was applied in one study.[9]

Duration of intervention: Multiple sessions of falls prevention education were used in two studies.[8,12] In the rest of the studies only one session was conducted.[3,9–11] The overall duration for each session ranged from 15 minutes up to 1 hour.

Findings of the Studies: Falls prevention behavior was assessed using a variety of self-reported outcome measures. Some of these outcomes were used in combination. In all studies, falls prevention education was found to have a positive effect on at least one practice of falls prevention behavior among older adults. In two thirds of the studies, a positive effect on various aspects of falls prevention behavior was demonstrated in older adults.[3,9,10,12] One out of six studies addressed positive impact on the behavioral intention towards or on home renovation.[8] While, in one study significant effect of falls prevention education on identifying its strategy to reduce falls was reported.[11]

Discussion

In our review, we aimed to identify the effectiveness of falls prevention education as a stand-alone intervention on the practice of its prevention behavior among older adults. We found that falls prevention education has been used as a single intervention, delivered using several method and was effective in promoting at least one falls prevention behavior among older adults.

The results of our review demonstrated that face-to-face session was the most preferable mode of delivery for falls prevention education. The possible reason for this preference may be due to the report that such method leads to a larger positive effects.[13] Mostly,

falls prevention education was conducted via one to one education session with group education method used only in one study by Jang & Lee (2015).[8] Falls among older adults could be due to multiple risk factors and may be different in individuals. Hence using individually tailored method may be more effective in addressing the specific risk in individuals.[9,15]

Our review results suggested that there is no difference in the contents for falls prevention education based on settings of the study. Generally, falls prevention education components that were delivered focused on falls consequences, risks, and its prevention strategies such as regular exercise, periodic eye examination, safe drug use, environmental changes and protective behavior development. This is in line with the updated falls prevention guidelines by National Institute for Health and Clinical Excellence (2015, updated 2017). Recent emphasis has been on early falls risk identification using multifactorial assessment identification among older adults with risk of falls. Suggested multifactorial assessment includes: (1) falls history; (2) balance, gait, mobility and muscle weakness; (3) risk of osteoporosis; (4) perceived functional ability and fear of falling; (5) visual impairment; (6) cognitive and neurological impairment; (7) urinary incontinence; (8) home environment and; (9) medication review.

In regard to the method used for falls prevention education, video (DVD), written information and posters were mostly used. However, video educational delivery method was most preferred by older adults due to its attention grabbing aspects, ability to relate and engage multiple senses.[16] Our results showed that the outcomes were not influenced by the method used to provide falls prevention education. In most studies, these method were used in combination. Similar method were utilized to engage participants below age 60 in falls prevention practice.[17] Up to date, there were no falls prevention education delivered via web based method. It is noteworthy that web-based education has been demonstrated to improve awareness of physical activity among older adults.[18]

Facilitating positive effects on practice of falls prevention behavior through related educational intervention has been explained using health belief model (HBM).[19] Summarized findings from a previous review[20] suggested that falls prevention education may have a positive effect across a range of outcomes, but the findings focused primarily on falls rate, number of injurious falls, perception of falls risk, knowledge and self-efficacy. Despite consistent positive outcomes, the measures were neither uniform nor clear.

One of our study limitation is that by including falls prevention education as a single intervention, there were limited studies which fulfilled this inclusion criteria. Although the general is ability of our review findings may be limited, it provided information if falls prevention education could be used as a single intervention. This method may be more cost effective in addressing falls prevention as an early health promotion and prevention strategy among community dwelling older adults.

Our review has highlighted the need for developing and implementing generic falls prevention education programs and standardized outcomes measures in future research. The results of our review indicate that falls prevention education as a single intervention is effective in facilitating the practice and engagement of falls prevention behaviors among older adults. To determine futuristic best practice in engaging the community in the prevention of falls among older adults, it is important to determine the effectiveness of using mobile health falls prevention education and periodic falls risk screening or assessment.

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Conflict of Interest: Nil

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