



Evidence for Completion of Home Modifications for Decrease in Risk of Falls and Preservation of Autonomy

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Objectives: To review current literature on home modifications related to decreasing risk of falls and/or impact on autonomy to support best practice methods.

Results: Our review revealed three studies suggesting that for community dwelling older adults aged 65 years and older, a home modification intervention may decrease risk for falls and maintain autonomy.

Conclusion: Home modifications are effective and may reduce the risk of falling and maintain autonomy in older adults.

Keywords: Home modification; Risk of fall; Autonomy; Older adults; Activities of daily living; Occupational therapy; Randomized controlled trial

Introduction

Within the community dwelling population about 1/4-1/3 of persons aged 65-79 fall every year. Persons aged >80 years have about 1/2 fall every year Nikolaus & Bach [1]. More than 1/2 of the persons who have experienced a fall will have multiple episodes a year. Falls can result in loss of independence of activities of daily living (ADLs) Pardessus et al. [2]. Home modifications are utilized by occupational therapists (OTs) to provide environmental changes to remove hazards which can cause falls [3,4]. Effectiveness of home modifications has been debated. Risk for falls is an imbalance between the patient's autonomy and environmental hazards [2-5]. The purpose of this study was to review current literature on home modifications related to decreasing risk of falls and/or impact on autonomy to support best practice methods. For the purpose of this study, we created a clinical/research PICO question (Population, Intervention, Comparison, and Outcome), a key to evidence-based decision [6]. The PICO formed for our study is as follows:

(P): For community dwelling older adults aged 65 years and older

(I): Does a home modification intervention

(C): No comparison

(O): Decrease risk for falls and/or impact autonomy?

Methods**Review of literature and search strategy**

A research has been made in the following databases: Ovid, CINAHL, and PubMed. Keywords and Search items used to search articles for our study were home modification, risk of fall, autonomy, older adults, activities of daily living, occupational therapy, randomized controlled trial. By combining the search results, we found articles on home modifications for decrease in risk of falls and preservation of autonomy. Based on the format of PICO question, three most relevant articles were selected for our study. Studies cited in the reference of the three articles along with other articles were also used to collect important information. After all, the strongest evidence-based article was chosen based on level of evidence and significance level to highlight and confirm our results and conclusions.

Results

The three selected articles were related to the effectiveness of home modifications for decrease in risk of falls and preservation of autonomy. All articles were related to our PICO question. A summary of the three articles in relation to our PICO is presented (Table 1).

Table 1: A summary of Reviewed Articles in Relation to our PICO.

Article	Our PICO	Relate to PICO (Article Summary)
Cumming et al. [5]	(P): For community dwelling older adults aged 65 years and older	(P): For community dwelling older adults with a risk of fall
	(I): Does a home modification intervention	(I): Home modification intervention
	(C): No comparison	(C): No comparison
	(O): Decrease risk for falls and/or impact autonomy?	(O): Decrease the risk of falls *No information provided about autonomy
Pardesseus et al. [2]		(P): For community dwelling older adults with a risk of fall
		(I): Home modification intervention
		(C): No comparison
		(O): did not decrease the risk of falls however, autonomy was preserved
Nikolaus & Bach [1]		(P): For community dwelling older adults with a risk of fall
		(I): Home modification intervention
		(C): No comparison
		(O): Decrease the risk of falls
		*No information provided about autonomy

Discussion

Cumming et al. [5] which examined the effectiveness of home modifications for decrease in risk of falls was selected as the strongest evidence-based article. Based on the hierarchy of levels of evidence in evidence-based practice, this study was a level II (Evidence obtained from at least one well designed RCT) [7]. They used a large sample size of 530 subjects. The intervention group (n=264) received home visits from an occupational therapist (OT), provided with a list of recommended home modifications, and further home visits were also provided if needed. Phone calls were made to encourage compliance with modifications, and a completion of monthly falls calendar was conducted. In the control group (n=266), no home visits were provided, and a completion of monthly falls calendar was conducted. In this study,

the number of falls between intervention group (226) and control group (324) was not statistically significant. For subjects who experienced >1 fall in follow up period there was a reduction in risk of falling by 19% (p=.05). For subjects with a history of falls, there was a reduction in risk of falling in the intervention group by 36% (p=.001). For subjects with no history of falls the reduction in risk of falling was not significant. Evidence for decrease in risk of falls was supported by Cumming et al. [5]. In addition, evidence for preservation of autonomy was supported by Pardessus et al. [2]. Home modifications can be effective for decreasing the risk of falls and maintaining autonomy amongst community dwelling older adults. Thus, the following plan has been developed in our study and can be executed in clinics to ensure implementation of recommendations on home modifications for individuals with a history of falls who plan to return home (Table 2).

Table 2: A summary of recommendations, plan, and audit tool.

Recommendation	Implementation Plan	Criteria	Audit Method	Compliance Plan
1. Occupational Therapy staff will be presented with evidence to support home modifications to decrease risk of falls.	Schedule a formal in service to be provided to all occupational therapy team members	100% of occupational therapy team members will attend the in service.	A sign-in list will be provided to document attendance. Also a certificate of attendance will be provided to participating staff and a copy of certificate will be kept in staff personnel file.	The OT manager will check the sign-in sheet for full attendance. If staff has not attended in service within 1 month he will be subject to formal write-up
2. New staff members will receive home modification in service as part of orientation process	OT manager will ensure information supporting home modifications will be provided to new staff during orientation	New staff will receive home modification information within 3 days of hire	OT manager will review orientation check-list to ensure home modification in service task has been completed	The OT manager will inform the new staff and the orienting staff member the pending in service on home modification and a grace period of 7 days will be allotted within which the task has to be fulfilled

3. Therapists will demonstrate proficiency in home modifications.	The proficiency of the therapists will be assessed by the OT manager by completion of one home visit followed by discussion of the recommendations with the OT manager.	The therapists demonstrating 90% agreement of recommended home modifications with the OT manager will complete home evaluations.	The OT manager will supervise the home visit with the treating therapist to ensure proficiency.	The therapist who has not demonstrated proficiency will receive further education regarding home modification techniques
4. The OT manager will assign a lead therapist to train and supervise new staff/therapists.	The OT manager distinguishes the lead therapist based on the proficiency in home modifications to train and supervise new staff/therapist.	The lead therapist will ensure that 100% of the new staff/therapists are trained.	Based on the reports provided by the lead therapist, the OT manager will document the completion of training to the new staff in their personnel file.	The OT manager will make sure that the lead therapist provides training to 100% of the new staff. If training was not provided, the lead therapist is given an extension of 2 weeks to train staff. In the event that training is not provided within extension time a verbal warning will be issued to the lead therapist
5. The new staff on the home evaluation team observes and completes home evaluation checklist as the lead therapist carries out the home visit.	At the time of home evaluation both the lead therapist and the new staff will complete the checklist.	The new staff will demonstrate 90% agreement with the lead therapist on recommendations within 3 home evaluations.	The recommendation by the new staff will be compared to those of the lead therapist at the end of 3 home evaluations.	If agreement is < 90%, the new staff will be allowed 3 more home visits under the supervision of the lead therapist.
6. Patients with a history of falls and within the eligibility criteria will be identified by the lead therapist for completion of a home evaluation.	Patients with upcoming discharge within 2 weeks having safety issues will be identified by the treating therapist for completion of home evaluation.	100% of the patients identified will be enlisted to receive home evaluations	The OT manager will ensure that all patients with potential safety risks will be enlisted for home evaluations.	Patients not enlisted for home evaluations will be included.
7. All patients scheduled for home evaluations will receive them.	The home evaluation therapist will complete the home evaluation of all identified patients.	100% of the identified patients will receive home evaluation within 1 week of their discharge.	The OT manager ensures that all the identified patients receive home evaluation by reviewing documentation	The therapist will be allotted 2 extra days to complete all scheduled evaluations or will receive a verbal warning.
8. All patients who have received a home evaluation will be provided with a completed home evaluation form with the recommendations.	After the home evaluation is completed the therapist will provide the patient with the completed home evaluation form.	100% of the patients who receive home evaluations will be provided with the completed home evaluation form.	The OT manager will review the patient's chart to ensure presence of completed home evaluation form.	If a home evaluation form is not completed and placed into the patients chart the therapist who completed the evaluation will be verbally warned.
9. A follow-up phone call to check for compliance of recommendations will be completed for all patients who have received a home evaluation.	The OT manager completes a follow-up phone call to the patient to check compliance with the modification recommendations.	Calls are made to 100% of the patients after 2 weeks of discharge.	The OT manager will document follow up phone calls within the patient's soft chart.	The OT manager will review all discharged patients, who received a home evaluation, chart monthly to ensure phone calls were completed.

Conclusion

Our review suggested that home modifications are effective and may reduce the risk of falling and preserve autonomy in older adults. Thus, clinical guidelines, recommendations, a plan and audit tool have been created in our study to implement home modifications in clinics. The clinical guidelines for recommended intervention, the plan, and the audit tool recommend therapists to apply home modifications with older adults who are at risk of falls.

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None.

Conflict of interest

Author declares that there is no conflict of interest.

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