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Research Article

FALLS PREVENTION IN DUBAI HEALTH CARE CENTERS

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Abstract

Importance: Falls are reported by millions of adults aged 65 years or above and can result in substantial morbidity, mortality, and health care expenditures. **Background:** Falls are considered as one of the most serious issues contributing to a disability in elderly population, Tinetti *et al.* defined a fallin 1988 as "an event that results in a person coming to rest on the ground or other lower-level unintentionally, which is not as a result of a major intrinsic event (such as stroke) or overwhelming hazard". Falls are more common among elderly& children. In elderly, multiple comorbidities with adverse drug reactions, impaired balance, reduced gait velocity, muscle power& step length, all are long-term predisposing factors which increase the risks of falls, injuries& disability. Strengthening& balance exercise programs, home modifications, walking aids& avoidance of the drugs which increase the risks of falls helpin prevention.

Keywords: Digital banking, Cybersecurity, Payment systems security, Financialfraud, Risk management.

INTRODUCTION

More than one third of persons 65 years of age or older fall each year, and in half of such cases the falls are recurrent (Tinetti *et al.,* 1988). Falls among community-dwelling elderly individuals represent a significant public health concern, contributing to morbidity, mortality, and reduced quality of life. Various interventions have been explored to reduce the incidence of falls, with home exercise programs and home modifications being among the most commonly recommended approaches.

Benefits of active interventions

Interventions to prevent falls are diverse, ranging from passive awareness to active structured planned interventions. The latter were found to be more superior to passive awareness; Structured exercise at a center/home was associated with less major mobility disability than passive health education (35% vs 30%) in community dwelling sedentary seniors, who had physical limitations (Pahor *et al.,* 2014). Home exercise programs have been widely studied in fall prevention among the elderly. Gillespie *et al.* (2012) found that group-based or home-based exercise programs tailored to individual needs led to a reduction in falls by 15% to 30%. These exercises primarily focused on improving lower limb strength, balance, and coordination, which are essential in preventing falls. The study highlighted that regular exercise, especially when combined with education on fall prevention, has lasting benefits. This finding was supported by several large-scale trials, such as the FICSIT (Frailty, Incontinence, and Cognitive Impairment Study) trials, which demonstrated the effectiveness of exercise programs in improving balance and muscle strength, thus decreasing fall risk (Vellas *et al.,* 2009). In general, balance, strength and functional exercises reduced the rate of falls by approximately 23%, as shown in a meta-analysis by Sherrington *et al.* (2016) examined randomized controlled trials (RCTs) implementing these interventions to community-dwelling older adults. Similarly, a trial by Pynoos *et al.* (2003) demonstrated that seniors who underwent a home safety assessment and received targeted modifications (e.g., improved lighting, secure handrails) showed a reduction in fall rates by 22%. Home modifications not only reduce physical hazards but also encourage greater confidence in performing daily activities, which may indirectly lower fall risks.

Limiting factors

Despite the promising results from several studies, not all research supported the effectiveness of home exercise and home modifications in reducing falls in community-dwelling seniors. A Cochrane review by Gillespie *et al.* (2012) suggested that while exercise and home modifications are beneficial, their effect is variable; Some studies did not show significant reductions in fall rates, especially in individuals with severe cognitive impairments or those with advanced frailty. The authors noted that the quality of the studies and participant adherence were major factors affecting outcomes.

Another limitation of home modification was discussed in a study by Lord *et al.* (2007), which found that although modifications led to improvements in safety, they had a minimal effect in significantly reducing the incidence of falls in those who were already experiencing multiple chronic conditions. In this cohort, other factors such as frailty, comorbidities, and physical deconditioning were stronger contributors to fall risk than environmental factors alone.

Aim of the work

The purpose of this review is to evaluate the evidence supporting and refuting the benefits of home exercise and home modifications in reducing falls, the magnitude of these interventions' effects, explanations for their benefits or lack thereof.

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SUBJECTS AND METHODS

A review of medical records was done for newly referred outpatients attending the rehabilitation clinic in the Primary Healthcare clinic of Dubai Health Corporation throughout the month of June 2022. Medical information were extracted from the medical record for analysis, including age, gender, fall risk score, history of falls, comorbid condition, cognitive function. All patients and their caregivers (if present) received counseling on home exercise and modifications of home environment. Active falls prevention program (counseling, home exercise and home modifications) prevented all falls in all participants during 6 months of follow up after the intervention. The incidence of falls during the next 6 months of the follow up was recorded.

Exclusion: all patients with cognitive impairment, as they cannot adhere to the exercise program at home, and those who refused to do exercise or adhere to modifications.

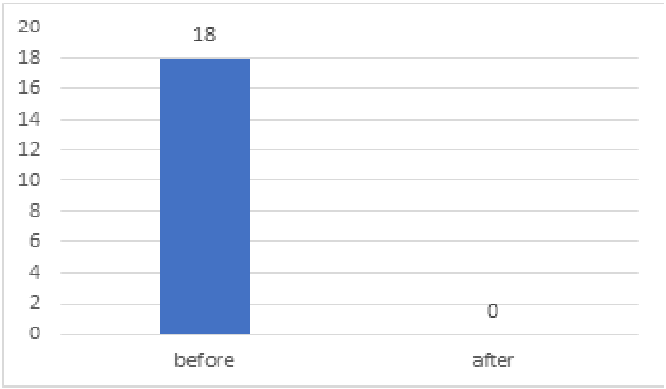
RESULTS

Over the month of June 2022, 113 patients were referred to the rehabilitation clinic for detection of a high risk for falls on screening, while none of them had fallen. Fourteen records were excluded from analysis as they had cognitive impairment and / or stroke. The records of the remaining 99 participants were studied;

The mean age of the patients was 72.9± 7.2 years, 71 of them were female (72%).

The risk of fall according to age and sex

	Low risk	High risk
Age		
60-69	14 (37.8%)	23 (62.2%)
70-79	3 (7.5%)	37 (92.5%)
≥80	2 (9.1%)	20 (90.9%)
Sex		
Male	5 (17.9%)	23 (82.1%)
Female	14 (19.7%)	57 (80.3%)



Distribution of patient according to history of fall

DISCUSSION

Compared to the expected rate of reduction of falls (23-35%) in other studies, no falls occurred in our study during the 6 months of follow up i.e., 100% reduction of incidence. The discrepancy in fall prevention may be explained by;

Good functional level of participants:

- In this study, records for patients with significant cognitive impairment were excluded from the analysis, as they were unable to adhere to home exercises. Senior patients who have significant cognitive impairment showed to receive less benefit form interventionsas concluded by Gillespie *et al.* (2012).
- The subjects in the study were referred through screening program in the family physician clinic during encounter for medical conditions other than falls. Sixty two percent of the participants had risk factors of falls without an actual fall. Nineteen of the referred patients (19%) had low risk of falls
- All patients were mobile, and they were independent in ADLs. Gillespie *et al.* (2012) showed in their study that frailty, comorbidities, and physical deconditioning were stronger contributors to fall risk than environmental factors alone.

Greater exercise adherence also significantly improved physical function.

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