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Emergency department management of falls in the elderly: A clinical audit and suggestions for improvement



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ABSTRACT

Introduction: Falls are a major source of injury in the elderly and their incomplete management is a cause for concern by health systems. The present study looks at the current state of managing fall victims in Iran and offers suggestions for improvement.

Methods: This was a clinical care audit comparing the state of current care with an institutionally approved optimum. Patients aged 60 years and over presenting with a fall were evaluated and deficiencies in their care were recorded and categorized. These were presented to an expert panel, where the Delphi method was used to come up with a list of actions to address the deficiencies. Furthermore an educational program was implemented based on these suggestions. Chi-squared and t-test were used to evaluate the efficacy of this program in improving treatment. Linear regression analysis was used to find factors affecting care.

Results: Overall 431 cases were reviewed. The most common errors during clinical examination were: not performing Romberg test (92.75%) and lack of physiotherapy consultation (82.75%). The educational program had a modest effect on improving the clinical audit processes ($\beta = 3.79$; $P < 0.001$) and medical interventions ($\beta = 2.004$; $P = 0.002$); however, performing the correct diagnostic tests was worse after the program ($\beta = -1.21$; $P = 0.008$).

Conclusion: There is a wide gap between the care services delivered in the management of falls and international standards. Therefore, measures should be adopted to close this gap. Education may have a modest positive effect in this regard.

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1. Introduction

Falls are responsible for much of the injury related morbidity and mortality in the elderly, and the resultant fractures are a major source of economic burden in this population (Marks, 2010). One-third of individuals over 65 and more than half those over 80 years of age suffer at least one fall-related injury each year (Akyol, 2007; Moore et al., 2010). The importance of falls as a source of elderly trauma and its economic burden has been documented around the world (Goodwin et al., 2010; Kwan et al., 2011; Moore et al., 2010; Pfortmueller et al., 2014). Falling is the leading mechanism of injury in the elderly, and is responsible for 70% of all elderly trauma in Iran (Ghodsi et al., 2003). In general, the annual incidence of fall-related injuries in Iran is 143.5 for men and 88.2 for women in 100,000 of

the population. The numbers increase significantly in individuals over 80 years of age, reaching 848.3 and 854.7 per 1000 in males and females respectively (Abolhassani et al., 2006). The incidence of falls and the resultant complications is on the rise with an increase in the elderly population and this increase will continue unless measures are adopted to improve the services delivered to at risk populations (Hatamabadi et al., 2014).

Effective fall prevention can reduce serious fall-related injuries, emergency department visits, hospitalizations, nursing home placements, and functional decline (Panel on Prevention of Falls in Older Persons, American Geriatrics Society and British Geriatrics Society, 2011). Organized and systematic services based on national standards and evidence-based guidelines can decrease complications, prevent subsequent falls and even decrease mortality and morbidity significantly (Kannus et al., 2005; Moreland et al., 2003). One of the most important considerations in delivering services to elderly patients suffering from fall-related injuries is the quality of the services with emphasis on correct patient evaluation and determination of risk factors which increase susceptibility to falling.

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Unfortunately the chance to offer such interventions in the emergency department is often missed by doctors and nurses (Paniagua et al., 2006; Pfortmueller et al., 2014). Proper treatment and offering standard instructions in order to prevent future falls are an integral part of a holistic approach to treatment of falls and their resultant fractures (Kannus et al., 2005). Reports show that in the elderly who undergo comprehensive geriatric evaluations the odds of mortality or morbidity are low and there is a rapid improvement in their cognitive functioning (Feder et al., 2000).

The elderly commonly seek treatment in the emergency department (ED) following falls, especially due to traumatic injuries after falling. While ED physicians and nurses focus on possible traumatic injuries, often the critical “teachable moment” after injury is lost. The ED is the best place to diagnose functional disorders leading to and resulting from falls, and ED personnel have the most important role in proper patient referral (Bell et al., 2000; Lee et al., 2012; Shaw et al., 2003). However, current data indicate that a significant percentage of elderly patients are discharged from ED without a proper diagnosis and follow-ups (Goodwin et al., 2010), thus leading to a wide gap between the services offered and international standards and guidelines (Barker et al., 2009; Kalula et al., 2006; Salter et al., 2006). Therefore, it is necessary to revise the therapeutic measures taken up by emergency physicians and nurses in the management of fall victims in an attempt to close the gap with international standards (Goodwin et al., 2010).

The present study aims to design a clinical audit to identify the deficiencies, and to present domestic guidelines and suggestions to improve patient care in fall victims. Finally, the authors tested the efficacy of implementing the suggestions through an interventional educational program, on improving the quality of the services delivered.

2. Materials and methods

This was a three step quasi-experimental study aiming to assess the level of care provided to elderly fall victims, to make suggestions for improving care, and then to assess the effectiveness of these suggestions. Graph 1 presents a summary of the study steps. The study protocol was approved by the Ethics Committee of Shahid Beheshti University of Medical Sciences.

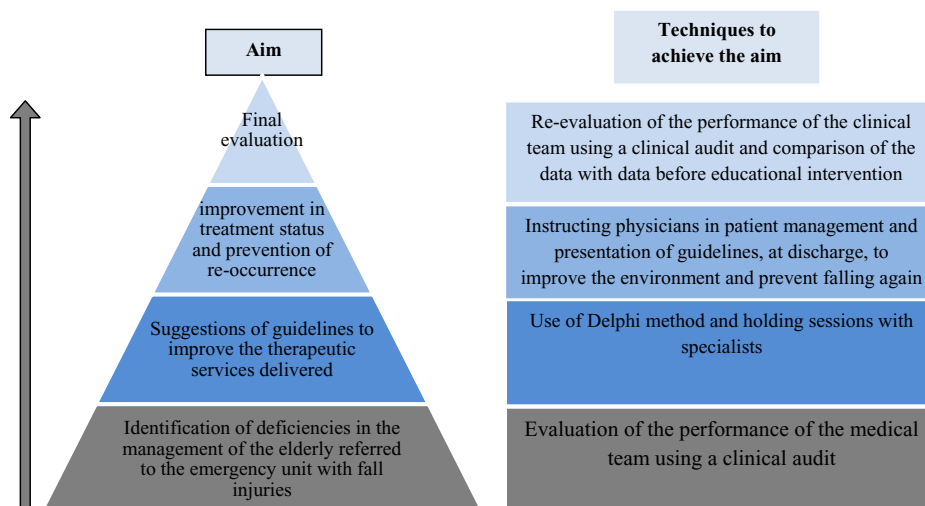
The first step was a prospective clinical audit of the care provided to elderly fall victims. All patients over 60 years of age who presented to the ED at the Imam Hussein Teaching Hospital in Tehran, Iran with a complaint of falling between January 2012 and December 2012 were included in the study. The care provided to

Table 1
Summary of audit questionnaire.

Demographic information	• Age, gender, marital status, educational level, etc.
Admission information	• type of admission, initial diagnosis, the patient's ability to present information, stability of the clinical status
Important events leading to fall	• Location and time of the fall, loss of consciousness, type of the activity leading to the fall, barriers, etc.
Patient history	• Past medical history, drug history, social history, history of falls and movement limitations etc.
Review of systems	
Physical examination	• Including (but not limited to) vital signs, full neurologic examination, cerebellar examinations, Romberg test, visual acuity, evaluating for hearing loss, etc.
Evaluation of daily functions	• Ability of patient to perform daily activities
Evaluation of psychosocial functions	• Cognitive abilities based on the mini-mental state examination (MMSE), signs of depression, anxiety, or other psychiatric disorders
Diagnostic tests	• Complete blood count, Blood Urea, electrolytes, Electrocardiography, etc.
Treatment interventions	• Including (but not limited to) proper consults, correction of medications, admission, etc.
Preventive measures	• Patient education, improvement of living environment, etc.

patients was monitored over a 24 hour period and compared with an institutionally approved guideline of optimal care derived from scientific literature. An eleven-part questionnaire was devised to facilitate data extraction (Table 1). This checklist evaluates the delivery of diagnostic and therapeutic services and also steps taken to prevent accidents in future. Initial care for all victims was provided by junior emergency medicine residents and nursing staff. The clinicians providing the care in the ED were not aware of the audit taking place. Descriptive data alongside errors and deficiencies in the management of each patient were recorded.

The second step was a qualitative study aiming to generate expert suggestions to improve patient care for elderly fall victims. To achieve this aim the Delphi method was used, which is a widely accepted method used to identify innovative and reliable ideas to prepare proper data for decision-making processes (Linstone and Turoff, 1975). The results of the first step were presented to a panel of



Graph 1. The aims of the study and the guidelines to achieve them.

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