The relation between Falls and medication use among elderly in elderly homes

Thesis

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Ibrahim M. Fouad

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Abb.	Full term
ACEIs	Angiotensin converting enzyme inhibitors
AD	Alzheimer's disease
ADL	Activities of daily living
ADWEs	Adverse drug withdrawal events
AF	Atrial fibrillation
AGS	American Geriatrics Society
BMI	Body Mass Index
FRIDs	Fall-risk-increasing drugs
GDS	Geriatric Depression Scale
IADL	Instrumental daily living
IHD	Ischemic heart Disease
IQ	Intelligent Questions
MMSE	Mini mental status examination
NSAIDs	Non-steroidal anti-inflammatory drugs
PIMs	Potentially inappropriate medications
PRT	Progressive resistance training
QOL	Quality Of Life
RCT	Randomized controlled trial
SD	Standard Deviation
SSRIs	Selective serotonin reuptake inhibitors
STOPP	Screening tool of older person's prescriptions
TCAs	Tri cyclic anti-depressants
TUGT	Timed Get Up and Go Test
USPSTF	U.S. Preventive Services Task Force
WHO	The world health organization

INTRODUCTION

A fall is defined by The World Health Organization (WHO) as inadvertently coming to rest on the ground or to lower level ***(WHO, 2007).***

Approximately 35-40% of the elderly living in the community aged 65 years and above fall every year. Higher rates are found in those who are 75 years and above. ***(Rubenstein & Josephson, 2002).***

Falls have serious physical, psychological and financial consequences to the patient and also to the society. The physical costs of falls include serious injuries, emergent care, hospitalization, reduced activity, loss of independence and even may lead to death. Older adults are 4 times more likely to be hospitalized due to a fall than for any other reason ***(Schwendimann et al., 2006)***.

Falling is considered as a major health problem in nursing homes. Risk factors of falls can be categorized as extrinsic (e.g., inappropriate footwear or poor lighting), intrinsic (e.g., vestibular problems or vision loss), and behavioral. Psychotropic drugs are considered as an independent intrinsic risk factor for falls in elderly ***(Hill & Wee, 2012).***

Each year, about 100 to 200 falls are reported in a typical nursing home with 100 beds. Many falls go unreported.

Between half and three-quarters of nursing home residents experience a fall each year ***(Rubenstein, 1997).***

Falls result from an interactive mix of biological, medical, behavioral and environmental factors, many of these factors are amenable to intervention; most injuries result from preventable factors rather than random accidents ***(Deandrea et al., 2010).***

Although, Falls are multi-factorial, medication use is an important risk factor among the different risk factors of falls ***(Kerse et al., 2008).***

There is clear evidence that polypharmacy and especially the use of psychotropic drugs,or the use of cardiovascular medications or administration of both of them as therapeutic duplication, increase the risk of falls ***(Tanaka et al., 2008).***

Institutionalized elderly people have a higher risk of over prescription of psychotropics than others. In addition, multiple comorbidities, changes in metabolism and pharmacokinetics, and polypharmacy make this population particularly more vulnerable to medication-related adverse effects like sedation, falls, and cognitive impairment ***(Haasum et al., 2012)***.

A meta-analysis of interventions targeting the prevention of falls in the elderly showed that slow withdrawal of psychotropics markedly reduced the risk of falling and that

prescribing modification programs for primary care physicians markedly reduced the fall risk ***(Deandrea et al, 2010).***

Surprisingly, recent observations show that the rate of prescription of psychotropic drugs is increasing instead of decreasing in nursing homes ***(Ruths et al., 2013).***

It is not clear whether this over prescription is a result of better awareness of mental problems. On the other hand, stress in nursing home staff and logistic factors (e.g.; lower staff/patient ratio, and a higher number of patients living in one room) seem to correlate with a higher use and/or inappropriate use of these medications in most of the studies ***(Mann et al., 2013).***

There is moderate evidence that interventions aiming to reduce the use of psychotropic medications, as a single intervention or preferably as a part of a multifactorial intervention, are effective in reducing falls in elderly ***(Hill & Wee, 2012).***

Aim of the Work

The aim of this study is to assess the relation between medication use and falls among elderly in elderly homes.

Chapter 1
EPIDEMIOLOGY &RISK FACTORS OF FALLS IN ELDERLY

Defining Falls:

The actual definition of falls in older people has been open to some debate as a fall has different meanings for different people. Every person intuitively knows what a fall is; however, when asked to define it, people struggle for words ***(Zecevic et al., 2006).***

An accidental fall can be defined as a sudden and unintentional change of posture to the ground or to a lower level, on to an object, floor, pavement, ground, or any other surface, and also includes slipping, tripping (stumbling), falling on other people, loss of balance, and accidental stooping ***(Tinetti & Williams, 1997).***

Also there is a frequently used definition which is "unintentionally coming to the ground or some lower level and other than as a consequence of sustaining violent blow, loss of consciousness, sudden onset of paralysis as in stroke or an epileptic seizure" ***(Feder et al., 2000).***

This definition excludes the overwhelming external disturbances which result in an older person being knocked

over, and the major internal disturbances which cause an older person to collapse instead of fall ***(Stubbs & Haslam, 2005).***

Epidemiology:

The size of the population aged 75 years and older is projected to increase to more than double in the next 20 years ***(Australian Bureau of Statistics, 2013).***

The number of elderly living in residential aged care, also the number of fall-related hospital admissions, and the costs of follow-up care are also expected to rise ***(Church et al., 2011).***

Unfortunately, the majority of falls are not reported. This leads to many difficulties in estimating the exact prevalence and the exact incidence of falls in the older population ***(Masud & Morris, 2001).***

Each year, about one in three seniors experience at least a fall ***(Morrison et al., 2013).***

This prevalence increases with age, from 17% among people aged 65 to 69 years to 27% among those aged 85 years or older ***(Pearson et al., 2014).***

In an Egyptian prospective study done at three geriatric homes, the incidence of falls among the residents was 5.3 falls/1000 resident-days, and 63.1% of the participants fell at least once during the study period ***(Khater & Mousa, 2012).***

In a "graying world" with increased longevity, falls in the elderly are responsible for substantial morbidity and mortality ***(Kalache & Keller, 2000).***

Burden of falls:

Hospitalization & Death:

Unintentional injuries are the fifth leading cause of death in elderly after cardiovascular, neoplastic, cerebrovascular and pulmonary causes. Falls are responsible for two-thirds of the mortalities resulting from unintentional injuries ***(Ganz et al., 2007).***

Falls are also considered as the leading cause of injury related hospitalizations among seniors ***(Public Health Agency of Canada, 2014).***

Studies showed that patient's falls occurred more frequently in geriatric wards followed by general medical and surgical wards and hospitalization itself can be an important risk factor for falls, representing a great change in elderly patients' life habits ***(Schwendimann et al., 2008).***

Falls result in an average length of hospital stay of approximately 3 weeks, which is 75% longer than the average length of stay for all other causes of hospitalization combined ***(Public Health Agency of Canada, 2014).***

The falls occurred during hospitalization are one of the most important instances of the lack of security, and are often responsible for the rise in number of hospitalization days and the worse recovery of patients ***(Abreu et al., 2012).***

The majority of studies have focused on falls among community-dwelling older adults. However, the number of falls reported among residents of aged care facilities is three times greater ***(Cameron et al., 2012).***

In nursing homes, fall rates are more than twice as high when compared to non-institutionalized populations ***(Rubenstein & Josephson, 2002).***

Falls are recorded as a leading factor in 40% of admissions to nursing homes and the incidence of falls is doubled after older people are relocated to a new environment and then return to its baseline after the first three months ***(Salkeld et al., 2000).***

Falls in the hospital and nursing home settings occur more frequently and are associated with greater morbidity than falls that occur in the community. In a crosssectional study of nursing homes in the United States (230,730 patients), 21 percent of newly admitted residents who stayed in the nursing home at least 30 days had at least one fall within 30 days of a post admission assessment ***(Leland et al., 2012).***

Injuries:

Falls in the older population are a major health concern and are considered as the leading cause of unintentional fatal and nonfatal injuries in those aged 65 years and older ***(Kalyani et al., 2010)***.

In the United States approximately 30 % of people over the age of 65 years and 50 % of people over the age of 80 years fall each year with about 10 % of falls resulting in a serious injury ***(Gallagher et al., 2007).***

The consequences of falls are often traumatic, including reduced independence, injury, and death ***(Fatovich et al., 2013).***

Fall-related injuries are associated with a significant disability, reduced mobility and independence, higher probability of admission to a nursing home and an increased risk of early death ***(Gill et al., 2013).***

Quality of life may deteriorate dramatically after a fall; at least 50% of elderly who were ambulatory before fracturing a hip do not recover their previous level of mobility ***(Alexander, 2002).***

Falls are responsible for 95% of hip fractures in elderly. ***(Wolinsky et al., 2009)*** leading to death in more than 20% of cases ***(Ioannidis et al., 2009).***