Falls among the persons with Dementia and interventions to reduce falls in a Dementia ward

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Abstract

Falls in an acute hospital are extremely challenging to avoid and as the world ages, there will be increasing number of older adults requiring hospitalisation. Falls are often due to multiple factors and there is no single intervention which is shown to be effective. Fall prevention in a hospital should be approached as multifactorial in aetiology, involving different disciplines and professionals like nursing, medical and allied health professionals.

Key words: dementia, falls, elderly, behavioural symptoms, restraint

Introduction

Falls are common among the elderly persons with dementia (PWD). For the elderly PWD, the risk of serious injurious falls is 3-4 times higher compared to their peers without dementia. In a hospital setting, the elderly with dementia and delirium make up for more than 90% of the hospital falls.

Risk Factors for falls among PWD in the hospital

The older adults especially those with history of frequent falls in the community often have multiple predisposing factors for falls when they are admitted to the hospital. Among the well documented risk factors for falls are gait and balance disorders, peripheral neuropathy, visual impairment, lower limb weakness, multiple medications, functional dependency, vestibular dysfunction. Extrinsic factors which may increase fall risks include poorly fitting footwear, footwear with poor grip, environmental factors like loose carpets, toys, etc. The older adults are often on a long list of prescription medications for various ailments, culprit medications known to increase fall risks include psychotropic, antihypertensive and anti-arrythmic drugs. Among the risks mentioned above, the more on accumulates, the higher the fall risk. (1)

The seniors carry with them the intrinsic risk factors mentioned above, at admission to hospital. While we consider in-hospital falls, we add in additional risk factors which are associated with the hospital environment. The hospital is built for the staff's convenience, with wide corridors, wheeled furniture, sparsity of furniture, single rooms, grab bars which are interrupted and wide doorways. The wide corridors are meant for easy passage of trolleys, wheelchairs, meal trolleys, computers, patients' beds, etc. However, the wider corridors make the patients feel less confident, especially among the older adults who are used to furniture cruise. The much wider corridors may cause them to dive for the next wall. Wide door-ways, similarly can be frightening for the seniors when they need to cross over without any support.

The furniture in the hospitals are wheeled so movement is easier for the staff and the cleaning staff. However, wheeled furniture are unstable if the patients were to use them as support while they mobilise near their bed side. Drip stands are wheeled too, and are frequently used as a walking aid. Drip stands are not the most suitable walking aid as the patients may get tangled up by the drip, infusion pumps and infusion fluids. Unlike walking aids, drip stands are not designed to bear or support patients' weight and putting weight on the stand may cause it to topple. (2)

Most of the staff in a general hospital received no formal training on gerontology or mental health, therefore care for the PWD is suboptimal particularly in the general ward setting where staff work under a tight schedule. A survey done in the NHS showed that over 90% of older persons with dementia became more confused during their hospital stay and their loved ones felt that they were frightened by the hospital environment. (3, 4) Delirium is a risk factor for hospital falls, and was present in over 90% of the falls among the inpatient fall incidents. (5) The hospitalised elderly often have undiagnosed delirium precipitated by newly prescribed medications, medical or surgical issues. A confident diagnosis of delirium is difficult especially among the older adults who have background dementia and behavioural symptoms. It is challenging to be sure if the changes in mental status or behavioural symptoms are new, especially if the PWD's caregiver is unavailable to give a clear history. The confused PWD often exhibit behavioural symptoms like wandering, restlessness and agitation which are challenging for the untrained staff. The behavioural symptoms may lead to usage of physical or chemical restraints which may further increase the fall risks.

Dementia and Fall Risks

Dementia affects global brain function gradually and a diagnosis of dementia is itself an independent risk factor for falls among the seniors. Dementia may cause gait abnormalities like gait apraxia, slower gait speed, gait abnormalities associated with normal pressure hydrocephalus, Binswanger's syndrome. Dementia also causes poor safety awareness, poor judgement, disorientation and executive dysfunction. (6)

Depression is known to predispose to falls. Dementia and depression are often closely associated. Depression is recognised as a prodrome and risk factor for AD. Severity of depression correlates positively with slowing in gait speed, and a slower gait speed is a predictor of morbidity and disability. Among the PWD, depression is common, present in about 40% of AD and more among the vascular dementia. In addition, depression and dementia share common aetiological pathways as frailty. Depression has a bidirectional association with frailty. (7) The seniors identified as pre-frail and frail are at a higher risk of developing dementia. Cognitive assessment and monitoring is therefore recommended for the seniors who are frail. (8) Frailty itself increases fall risk by causing muscle weakness, wasting and problems with balance. (9)

Behavioural symptoms are common among the PWD. Restlessness, agitation, wandering behaviours are all known to predispose to falls. The psychotropic medications (antipsychotics, sedatives and antidepressants) used for the management of behavioural symptoms are well known to increase fall risk, due to sedation and extrapyramidal side effects. The use of physical restraints to manage behavioural symptoms is common in institution setting, especially when manpower is short. Restraining the PWD aim to reduce autonomy of movement and in doing so, reduce risk of fall. However, physical restraints have not been convincingly shown to reduce falls. Conversely, it has been associated with injurious falls and fatal injuries like strangulation and fractures. Physical restraints must therefore be reserved as the last resort when all else failed. (10)

Urinary incontinence is common among the elderly, more so among the elderly with dementia. Urinary incontinence among the PWD is associated high caregiver stress and institutionalisation. The PWD with incontinence is an additional risk factor for falls. Among falls in hospitals, urinary incontinence is a known risk factor. (11) In the author's hospital, most of the falls occur at the bedside or on the way to toilet. Getting out of bed for toileting needs was the commonest reason for patients falling at their bedsides. Urinary incontinence among PWD are multifactorial in aetiology. New onset of urinary incontinence under 4 weeks' duration is known as transient incontinence and once management is in place for the identified cause, incontinence should recover in due course (table 1). Urinary incontinence of longer duration is classified under established incontinence (figure 2). In addition to the physiological changes of the lower urinary tract due to ageing, the diagnosis of dementia contributes to additional risk factors, classified under the functional causes of urinary incontinence. (12) Managing the PWD with incontinence aims to achieve social dryness, reduce morbidity and to reduce caregiver burden, as pharmacological interventions have limited success.

Assessment and management of PWD with high fall risk

In the author's hospital, the nurses are mandated to do fall risk assessment at least once a day. The patients identified as high fall risk will be on fall precaution and education materials given out to patients and their family. However, inpatient fall was above 1.2 per 1000 patient days. The author was asked to lead a team to look into ways to reduce inpatient falls further.

Falls are common among the older adults and are likely to recur once they had a fall. Causes for a fall are often multifactorial. In the attempt to further reduce falls in the hospital, the author's team adopted a multifactorial approach to fall prevention. The common risk factors identified among the older inpatient fallers in the previous years were postural hypotension, multiple medications, psychotropic medications, delirium, dementia and incontinence. The hospital recognises that delirium was the main risk factor for falls, present but mostly undiagnosed among 90% of the inpatient fallers in the previous years.

The work started with creation of a delirium pathway, with the nursing staff taking the lead in screening for delirium once a shift. The patients who screened positive for delirium are referred to their team doctor to work up for causes of delirium. The patients with cognitive issues (delirium and or dementia) are identified using a purple colour wrist tag. The purple wrist tag carries with it a care bundle which includes regular orientation, ensuring adequate hydration and nutrition, good sleep hygiene, continence care and regular mobilisation. Concurrently, there is a hospital wide training programme for all the nurses and doctors to create awareness for delirium, with early recognition, work up and management of delirium. The care bundle for patients wearing the purple wrist tags also hopes to reduce incident delirium.

The patients identified as high fall risk wears a green wrist tag in the author's hospital. If the patients wear both the green and purple colour wrist tags, they are grouped together in the same cubicle where the nurses are taught to provide closer supervision. Restraint use is kept to the minimum among the elderly with cognitive issues, unless the patients are at risk of endangering themselves or others in the immediate vicinity.

Postural hypotension is a well-documented risk for falls, especially among the older adults with multiple medical illnesses on multiple medications. Postural hypotension is typically asymptomatic and is not part of the routine medical or nursing assessment. However, if discovered, postural hypotension is easily manageable. In the author's hospital, there is an auto trigger for measurement of postural blood pressure for patients assessed to have high fall risk or previous history of falls or syncope. The patients who screened positive for postural hypotension, defined as >20mmHg drop in systolic BP or >10mmHg drop in diastolic BP at 3 minutes of standing up from a supine position, will be informed to the team doctor for work up and further management. Non-pharmacological management of postural hypotension is initiated by the nursing staff while the medical staff work up for causes of postural hypotension with a referral to the pharmacist if necessary for medication reconciliation.

The patients in the general wards spend most of their days resting in their beds and are at risk of functional decline. Decline in function predisposes to muscle weakness and dependency. In the author's hospital, there are reminders for referrals to physio and occupational therapists for all patients to reduce risk of functional decline, unless the patients are for strict bed rest. The physiotherapists highlight the patients' needs for walking aid and the level of assistance needed for ambulation in their notes and this information is conveyed to the nursing teams.

Falls in the dementia ward

The author is the geriatrician responsible for developing the Dementia Ward in the hospital. The Dementia ward has 20 beds equally distributed for male and female patients. The ward is selectively catered for the needs of older PWD who are medically unwell and exhibiting difficult to manage behavioural symptoms. The patients have cognitive problems which are mainly delirium and dementia. There is a visiting liaison psychogeriatrician who sees patients on request by the geriatricians. The ward has a no restraint policy and the nurses practise person-centred model of care. The physical environment of the ward id homely and patients are encouraged to mobilise. (13)

Since the ward opened in 2015, the fall rate was 1.02 per 1000 patient bed days. There were 13 falls reported between December 2015 to September 2017. The average age of the fallers was 82. The male patients were more likely to fall than women (72% Vs 28%). The falls resulted in minor injuries, with no serious reportable injuries like fractures or intracranial complications. Dementia was present in 85% of the fallers, and delirium was documented in 23% of the fallers. The falls occurred either at the bedside (85%) or in the bathroom. All of the fallers were taking more than 5 medications. The culprit medications identified included, antihypertensives in various combinations (64%), antipsychotics (36%), antidepressants (28%) and mood stabiliser

(36%).

Once the ward implemented the extra measures for falls with better communication between the care teams, postural BP monitor, delirium screening and care bundle, there were 445 fall free days between October 2017-January 2019.

Conclusion

Falls are not completely preventable in the hospitals, despite the best effort. Among the elderly patients, it is important to assess fall risk daily. Most of the fall assessment tools are not robust enough to include assessment for delirium, postural hypotension, incontinence and checking for culprit drugs. The elderly PWD have special needs which are often not communicated to the hospital staff and are vulnerable to iatrogenic complications like falls and delirium during their hospital stay. A multifactorial approach which includes heightened awareness of the needs of PWD and individualised care plans are effective to reduce hospital falls among the persons with dementia.

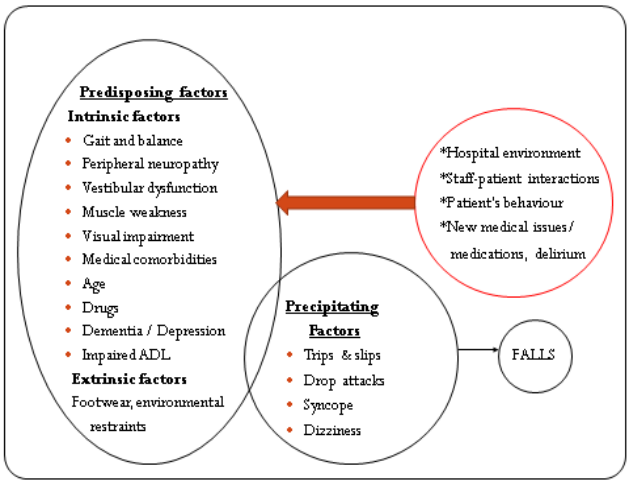

Figure 1- factors contributing to inpatient falls

D- Delirium	Incontinence is a secondary feature and resolves once delirium improve. Common causes of delirium includes acute medical conditions like stroke, infection, pain, fractures, medications, changes in environment, recent surgery, etc.
I-Symptomatic urinary infection	Asymptomatic bacteriuria is common among the elderly and does not cause UI.
A- Atrophic vaginitis	Causes local irritability and contributes to UI.
P- Pharmacological	Anticholinergics, diuretics, antidepressants, antipsychotics, sedatives/hypnotics, anti-Parkinson's treatment, etc.
P- Psychological	Depression
E- Excessive urine output	Diabetes Insipidus, excess fluid intake, diuretics- incl alcohol and caffeinated drinks, heart failure. Peripheral oedema.
R- restricted mobility	Immobility due to restraint use, pain, lower limb arthritis, functional decline.
S- Stool impaction	Causes compression of urethra- bladder outlet obstruction.

Table 1. Causes of Transient UI (DIAPPERS) (12)

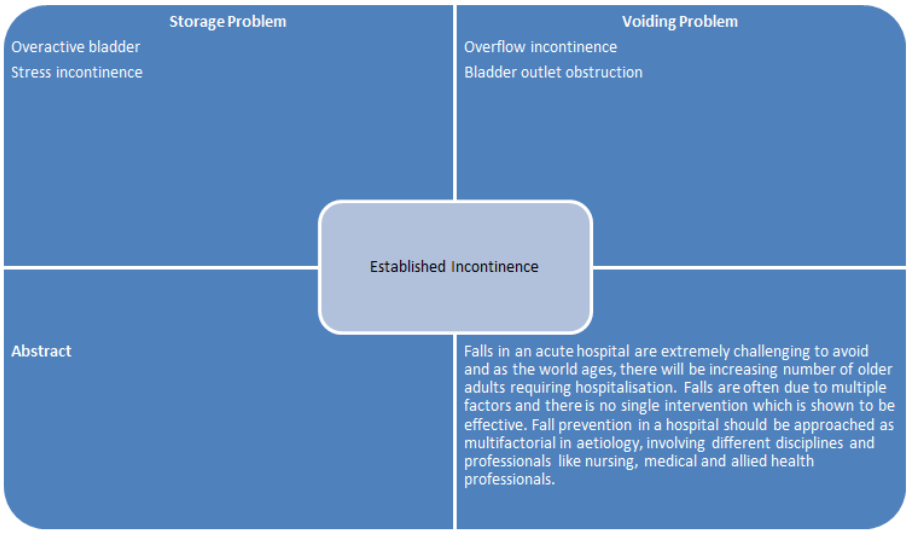

Figure 1- causes of established urinary incontinence (12)

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