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Falls prevention in hospitals-the need for a new approach an integrative article

Abstract

Currently, around the world, hospitals invest a considerable amount of effort into preventing patients' falls during hospitalization. Despite the intensive emphasis targeted in preventive intervention, reducing the prevalence of this phenomenon has been limited. At present, hospitals focus on measuring risk of fall rates based on specific and rigid risk assessment scales which are mainly focused on the assessment of the patient's medical condition, mobility, mental status, toileting, history of falls and medication therapy. Fall prevention programs are based on the above mentioned key factors, which focus on standard safety procedures associated with both patient's condition and hospital environment.

The purpose of this article is to describe the current developments on this topic and to suggest an additional direction of thinking strategy that includes three parts:

i. Engaging the patient into the assessment process to evaluate his/her medical condition and his/her perception of personal fall risk.

ii. Creating a customized/personalized fall prevention program for patients susceptible to falls.

iii. Evaluate the patient's intentions and ability to engage in the required behavior to prevent falls based on the Prevention program.

This new approach of incorporating all of the three elements may be the basis for decision-makers on a national and local level to formulate a new hospital policy and procedures to deal with patients' falls, on the basis of a comprehensive understanding of this long-standing concern.

Keywords: patients fall prevention, behavioral intentions, patient participation, risk fall assessment

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Abbreviations: NDNQI, the national database of nursing quality indicators; CDC, center for disease control; US, united states of America; IOM, the institute of medicine; AHRQ, agency for health research quality

Epidemiology of falls

Among adults (65years and over), falls are the leading cause of injuries that cause pain, emotional distress and loss of independence, reduced quality of life, increased number of hospitalization days, morbidity and mortality.[1] It is estimated that by 2025, this group of patients will constitute approximately 1.2billion of the world population, eighty percent of whom will live in developed countries.[2] The rate of falls among adult's increases with age, with the prospect of falls in people aged 65 and older at about 35%, increasing to about 42% for those over 75years of age. Fifteen percent (15%) of patients, who fall, have a history of falling twice or more a year. Falls are the second cause of death in the US (75% of them are elderly people) with the death rate in the United States reaching36.8 per 100,000 people.[3] Fall rates in hospitals range from about 30% to 50% or a range of 3.3 to 11.5 falls per 1,000 hospitalization days,[4] and they are the most frequently reported adverse events. Fall-related morbidity and mortality rates in hospitals are significant. It is estimated that at least 3-20% of the falls have resulted in injury.[5] About 30% of the hospitalized patients who fall suffer injuries due to the fall, of which 4-6% suffer from severe injuries, including fractures, brain hemorrhage, bleeding and mortality risks.[6] Fall-related injury rate during hospitalization accounts for up to 533 per 1,000 person-years for all injuries, 20 per 1,000 person-years for hip fractures, 270 per 1,000 person-years for head injuries.[7]

A 'fall' is defined as "an unplanned descent to the floor with or without injury to the patient".[8] The National Database of Nursing Quality Indicators (NDNQI) is the largest national database of US data relating to quality of nursing care.[9] Falls in hospitals is one of the quality indices measured by the NDNQI organization since 2003 as a proportion of all falls per 1,000 hospitalization days. The reported fall rates range from 1.3 to 8.9 falls/ 1,000 hospitalization days.[10,11]

The lowest rates of falls are reported in Intensive Care Units (1.3 per 1,000 hospitalization days), adult wards (3.92 per 1,000 hospitalization days), and the highest rates are reported in rehabilitation wards (7.3 per hospitalization 1,000 days).[12] The main risk factors for falls in hospitalized patients are impaired gait, confusion, urinary incontinence, history of falls and psychotherapeutic medications.[13]

Economical costs

The economic burden of falls in general hospitals is significant. Indeed, it was found that falls increased the cost of hospitalization per patients that have fallen to an average of $6,669, and if the injury was caused due to a fall, the extra cost is on average between $12,000 to $23,000.[14] In 2013, the gross expenditure from falls in the U.S was

more than $34 billion dollars.[15] The CDC estimates that costs related to falls could increase to $67.7 billion by 2020.[3]

The main components of the additional cost due to falls are extra days of hospitalization and the rehabilitation process.[14,16,17] Falls and fall-related injuries in hospitals lead to prolonged hospitalization on average by 8 days, compared to patients who do not fall; in addition, in case of fall-related injuries, the length of stay is extended by 4 more days.[14]

Due to these dismal facts, insurance companies in the US have taken a punitive economic policy to reduce the overall phenomenon, including a non-payment action for inpatient complications. When a similar policy was implemented due to complications from bedsores or infections caused by central IV or urinary catheters, there was a decrease of 11 % in sepsis and 10 % of urinary tract infections. However, this policy did not achieve a significant reduction in falls or injurious falls.[18]

Falls prevention policy in hospitals

In light of the health consequences and the economic burden associated with falls in hospitals, a targeted policy was implemented focusing on preventive actions. Today's policy includes activities to identify risk factors and fall prevention interventions.[19,20] Special attention was primarily directed toward identifying and dealing with two types of risk factors:

Factors related to the patient's medical condition

Including old age, anxiety, confusion or disorientation, weakness, impaired gait, urinary incontinence, history of previous falls, impaired vision or use of certain medications (sleep, tranquilizers, vasodilators, diuretics, antidepressants, etc.).[21]

Factors related to the environment

Risk Factors at the bedside/ward environment. These factors include presence/absence of bed side rails, height and stability of any type of seats (including toilet seats) or obstacles such as furniture, power cables, slippery shoes, and an over-equipped patient's environment.[21,22]

To assess the patient's fall risk in acute hospital settings, different fall risk assessment scales have been developed for prevention purposes. These scales are based on some of the factors related to the patient's medical condition. The scales that were found to have good predictive validity for identifying potential falls are the Morse, Stratify and Schmid tools, and these are recommended for use by most health organizations.[21,23,24] All scales have one risk category in common: a history of falls. In addition, each scale includes other categories that are related to different risk factors contributing to falls. The Morse scale for example includes risk categories such as" Impaired gait, Ambulatory aids, Poor orientation to own ability, IV Therapy, Secondary Diagnosis". The Stratify scale includes the following risk categories: Impaired mobility, Transfer/mobility, Agitation, Diarrhea/ Help to toilet, Visual Impairment".

In all scales, each category gets a numerical value, that are all summarized into one score. According to a predetermined cut-off value, the patient is considered to be at risk or not at risk, based on the score he/she received from the scale. Some scales have two categories (at risk/no risk), while others contain three risk categories (low, medium and high).

Despite the widespread policy of using scales to identify patients at high risk of falling, there are major differences among the min terms of disparate results, diagnostic accuracy as well as a number of problematic methodological issues. All in all, their validity for their widespread use is questionable at best since they vary considerably depending on the targeted population and medical environment in which the tool is used. In fact, some of these risk assessment tools have been used in different environments than those for which they were developed, thus, adjustments have been made to accommodate various types of hospital settings, making it difficult to compare results and assess validity. Moreover, significant validity differences were measured between the original authors' version and those used in practice, resulting in poor fall prediction. The valid scale was found to apply mainly to original target populations for which it has been developed for. Also there is excessive heterogeneity in terms of determining the exact cutoff points for identifying patients at risk for falls. These considerations highlight controversies and inconsistencies regarding the widespread use of instruments used in general hospitals. No difference in predicting risk for falls was found between the assessment based on a formal scale and an assessment from a nurse using her best clinical judgment.[21]

Fall prevention programs

The common interventions to reduce hospital falls are based on the rationale that measuring the causes of falls and effectively assessing fall risk factors would help to accurately identify the root causes of the problem. Falls prevention programs in general hospitals are designed to handle both risk factors to falls, associated with the patient's clinical condition and the environmental hazards. These programs are applicable to all patients and consist mainly the nursing staff providing patients' education, and ensuring that standard safety practices are in place such as nurse call bell, bedrails, and non-slippery floor in the bathroom, non-slippery shoes, keeping the floor dry, a wet floor warning and provision of vitamin D supplementation.

In several numbers of review articles on fall prevention there is no clear and definite evidence for the effectiveness of prevention programs in spite of positive evidence indistinct trials; however, even these results were not effective to reduce the incidence of falls over time.[25–30] As a result, there have been attempts in recent years to develop smart technologies to detect falls in real time. These technologies include virtual monitoring of the patient. Information based on fall prevention technologies such as virtual monitoring has not yet been scientifically proven, and are based mainly on personal alarms placed on the patient environment which are activated when the patient changes in position, gets out of bed or moves.[31]

Patient centered care and fall prevention

The Institute of Medicine (IOM) recognizes the centrality of the patient as a core component to achieve health quality. Patient Centered Care is regarded by the IOM as the way to establish a partnership among practitioners, patients and their families in order to ensure their place in the decision-making process with regard to treatment and taking joint responsibility of the therapeutic process.[10] At present, based on the current hospital strategy to detect fall risk, the patient is not a partner to any of the risk assessment or the program designed to prevent his fall. As a normal practice, after assessing the patient's condition, the nurse determines the level of risk based on the risk assessment scale score and instructs the patient on the precautions to take to prevent falls and injury. In this process, the patient is passive

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at best and does not take any part in the measurement process or decision-making associated with the desired behavior to prevent the fall. For the intervention to be effective there should be an enhanced partnership between the healthcare team and the patient; moreover, the patient should be aware of the assessment process, be willing to participate in building the desired intervention so that there is compliance with the process.

The theoretical basis-perceptions leading to behavior

The occurrence of falls is a complex phenomenon. The literature to date suggests that medical professionals are dealing with the phenomenon of human behavior using unsuitable approaches. They use only rigid parameters to deal with the unpredictability of human behavior, while the patient's perceptions and intentions are kept out of the assessment and prevention process. Since prevention programs practiced today are at most partially effective, it is important to include other components, especially those that are related to the patient. Using this approach can determine the validity or degree of objectivity of how a patient views the situation (risk) as a threat to his health, and what are his behavioral intentions–i.e., adhering to the prevention plan and refraining to behave in a dangerous way(may cause a fall). There are several theories that may explain what leads people to action: Theory of Reasoned Action/Planned Behavior.[32] The theory aims to explain the relationship between attitudes and behaviors within human action. The theory is used to predict how individuals will behave based on their pre-existing attitudes and behavioral intentions. An individual's decision to engage in a particular behavior is based on the outcomes; the individual' expectations will come as a result of engaging in a safe behavior. The main factor affecting the actual behavior is the intention to perform it, and the more serious it is, the more likely that it will occur.

Protection motivation theory

A person who feels a threat to his health will take action to prevent the damage. Variables associated with the perception of fear are the danger of injury, assessment of the risk level and a danger from the threat itself.[33] Both theories seem to complement each other in understanding the phenomenon of falls prevention from the view point of the individual's voluntary behavior and the individual's basic motivation to perform an action.

The suggested new approach for fall prevention

Despite the widespread use of fall assessment tools and associated prevention programs, interventions to reduce falls and their consequences are still not entirely successful. All the interventions made so far are based exclusively on identifying risk of falling by the nursing and medical staff. Unfortunately, this assessment lacks the importance of patient participation in the process. As stated earlier, the purpose of this article is to suggest an innovative approach to deal with this major problem. Our approach includes the idea of incorporating in the process two significant elements. Patient participation in the process of identifying risk of falling - in recent years, the concept of incorporating patient and family into the treatment process and decision-making has become more prominent. This approach is recommended both conceptually and practically by two major organizations AHRQ and IOM.[10,30,34] Based on this approach, and on a limited experience in small nursing homes and community settings, assessing risk of falling independently by the patient based on his clinical condition should be incorporated into the risk assessment process. Using this strategy, the patient is more aware of his risks of falling and is cognizant of his ability to understand and participate in his or her physical and competence condition.[27]

Evaluation of patient's behavioral intentions

Despite the importance of this issue, there are almost no projects to study the concept of patient's perceptions regarding his physical condition, and his behavioral intentions based on these perceptions. It is assumed that the more a patient is involved in understanding his condition, and the more the staff guides him to express his behavioral intentions more openly, the easier it would be to implement a preventive program tailored individually for each patient based on the individual's characteristics and his risk profile. This concept is similar to that used for personalized medicine, currently and widely spread around the globe.[34]

Based on this approach, study by Twibell et al.[35] suggested to measure the patient's perception of his condition and his behavioral intentions to prevent the fall.[35] This study was based on the assumption that preventing falls during hospitalization depends in part on the patient's perception and behavior to prevent falls. The findings suggest that patients with low intention to request assistance from the staff to prevent falls perceive little likelihood of falling and are confident to perform various actions that may increase the risk of falling. The study findings support the idea that perception leads to deliberate behavior. The intention to carry out fall prevention activities is related to the perception of the risk of falling, patient's fear from the fall and the perception of the consequences of falling. In this study, it was suggested that the staff should take into account the patient's fear of falling and his intentions to act in accordance with this concern in order to construct a customized individual prevention program.

Conclusion

Falls and related injuries of hospitalized patients have a tremendous impact on health and healthcare costs. Despite the great efforts invested by hospitals to reduce this phenomenon, no success has been made based on the current method of using risk fall scales and building standardized fall prevention programs.

Patient participation in the process of evaluating his/her condition is crucial to understand his/her condition and adherence to an effective treatment. However, this process while necessary is not sufficient. In addition, it is necessary to assess the perceptions and intentions of the patients to effectively evaluate safety behavior during their hospitalization.

To obtain a reduction of inpatient falls, the healthcare system needs to change its strategy of dealing with this problem today. It is proposed that instead of the team's exclusive estimate of the patient's condition and of building a general prevention plan, hospitals should embrace a broader attitude and effort to deploy a customized approach for the prevention of falls. This approach should include an estimate of the patient's medical condition, his participation in the assessment process in addition to his understanding about his medical condition and evaluation of his behavioral intentions. An individualized intervention program should be built based on the patient's specific characteristics. Although the suggested process of including the patient in evaluating the risk to fall, and the importance of evaluating his/her adherence to the prevention plan, extensive research is needed to fully understand its impact, implementation implications and outcomes. Based on the results, a policy that is compatible with this approach can be formulated.

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Declarations

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Authors' contributions

The two authors contributed equally to the preparation of this article. Both authors read and approved the final manuscript.

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Conflict of interest

The authors declare no conflict of interest.

References

1. Greenberg MR, Nguyen MC, Stello B, et al. Mechanical falls: are patients willing to discuss their risk with a health care provider? *J Emerg Med*. 2015;48(1):108–114 e2.
2. World health organization. Active Agein: A policy framework Geneva; 2002.
3. Dawn Back, Tori Hamilton Kelly, Marty Cangany. AACN No Fall Zone 2013; 2016.
4. Gholam Hosseini H, Baig MM, Connolly MJ, et al. A multifactorial falls risk prediction model for hospitalized older adults. *Conf Proc IEEE Eng Med Biol Soc*. 2014;2014:3484–3487.
5. Inouye SK, Brown CJ, Tinetti ME. Medicare nonpayment, hospital falls, and unintended consequences. *N Engl J Med*. 2009;360(23):2390–2393.
6. Hitcho EB, Krauss MJ, Birge S, et al. Characteristics and circumstances of falls in a hospital setting: a prospective analysis. *J Gen Intern Med*. 2004;19(7):732–739.
7. Nurmi I, Luthje P. Incidence and costs of falls and fall injuries among elderly in institutional care. *Scand J Prim Health Care*. 2002;20(2):118–122.
8. Israel ministry of health - Division of geriatrics. Procedure: preventing falls and accidents in patients; 2007.
9. Staggs VS, Davidson J, Dunton N, Crosser B. Challenges in defining and categorizing falls on diverse unit types: lessons from expansion of the NDNQI Falls Indicator. *J Nurs Care Qual*. 2015;30(2):106–112.
10. How do you measure fall rates and fall prevention practices? Agency for healthcare research and quality.
11. National Quality Measures C. Acute care prevention of falls: rate of inpatient falls per 1,000 patient days; 2012.
12. Lake ET, Shang J, Klaus S, Dunton NE. Patient falls: Association with hospital magnet status and nursing unit staffing. *Res Nurs Health*. 2010;33(5):413–425.
13. Oliver D, Daly F, Martin FC. Risk factors and risk assessment tools for falls in hospital in-patients: a systematic review. *Age Ageing*. 2004;33(2):122–130.
14. Morello RT, Barker AL, Watts JJ, et al. The extra resource burden of in-hospital falls: a cost of falls study. *Med J Aust*. 2015;203(9):367.
15. Centers for disease control. Important facts about falls; 2015.
16. Bohl AA, Phelan EA, Fishman PA, et al. How are the costs of care for medical falls distributed? The costs of medical falls by component of cost, timing, and injury severity. *Gerontologist*. 2012;52(5):664–675.
17. Zecevic AA, Chesworth BM, Zaric GS, et al. Estimating the cost of serious injurious falls in a Canadian acute care hospital. *Can J Aging*. 2012;31(2):139–147.
18. Waters TM, Daniels MJ, Bazzoli GJ, et al. Effect of medicare's nonpayment for hospital-acquired conditions: lessons for future policy. *JAMA Intern Med*. 2015;175(3):347–354.
19. Kannus P, Khan KM, Lord SR. Preventing falls among elderly people in the hospital environment. *Med J Aust*. 2006;184(8):372–373.
20. Oliver D. Prevention of falls in hospital inpatients: agendas for research and practice. *Age Ageing*. 2004;33(4):328–330.
21. Harrington L, Luquire R, Vish N, et al. Meta-analysis of fall-risk tools in hospitalized adults. *J Nurs Adm*. 2010;40(11):483–488.
22. Cox J, Thomas Hawkins C, Pajarillo E, et al. Factors associated with falls in hospitalized adult patients. *Appl Nurs Res*. 2015;28(2):78–82.
23. Morse JM, Black C, Oberle K, et al. A prospective study to identify the fall-prone patient. *Soc Sci Med*. 1989;28(1):81–86.
24. Schmid NA. 1989 Federal Nursing Service Award Winner. Reducing patient falls: a research-based comprehensive fall prevention program. *Mil Med*. 1990;155(5):202–207.
25. Berry S, Kiel D. Falls: Prevention in nursing care facilities and the hospital setting: Up To Date; 2016.
26. Coussement J, De Paepe L, Schwendimann R, et al. Interventions for preventing falls in acute- and chronic-care hospitals: a systematic review and meta-analysis. *J Am Geriatr Soc*. 2008;56(1):29–36.
27. Hempel S, Newberry S, Wang Z, et al. Hospital fall prevention: a systematic review of implementation, components, adherence, and effectiveness. *J Am Geriatr Soc*. 2013;61(4):483–494.
28. Miake Lye IM, Hempel S, Ganz DA, Shekelle PG. Inpatient fall prevention programs as a patient safety strategy: a systematic review. *Ann Intern Med*. 2013;158(5 Pt 2):390–396.
29. Oliver D, Connelly JB, Victor CR, et al. Strategies to prevent falls and fractures in hospitals and care homes and effect of cognitive impairment: systematic review and meta-analyses. *BMJ*. 2007;334(7584):82.
30. Tzeng HM, Yin CY. Patient Engagement in Hospital Fall Prevention. *Nurs Econ*. 2015;33(6):326–334.
31. Care view communications. Beyond video monitoring: predictive technology for fall prevention; 2016.
32. Ajzen I, Fishbein M. Understanding attitudes and predicting social behaviour; 1980.
33. Rogers RW. A protection motivation theory of fear appeals and attitude change1. *Journal of Psychology*. 1975;91(1):94–114.
34. Quigley PA, White SV. Hospital-based fall program measurement and improvement in high reliability organizations. *Online J Issues Nurs*. 2013;18(2):5.
35. Twibell RS, Siela D, Sproat T, et al. Perceptions related to falls and fall prevention among hospitalized adults. *Am J Crit* Care. 2015;24(5):e78–85.