



Impact of Demographic factors on Patient's fall's Risk Management in a Tertiary Care Hospital in NCR.

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ABSTRACT

Falls have been known for decades by health care professionals as an etiology for injury, but were not seen as an important independent marker of frailty until more recently. They are associated with a high mortality that is not always explainable by the fall injury itself (Tinetti et al 1995). The most common injuries related to falls include head injuries, wrist fractures, spine fractures and hip fractures. Falls can also cause injuries that are not visible to others, for example some people who experience a fall become fearful and worried that they will fall again. Being hospitalized increases a person's risk for falls as hospitalized persons are often weak from their illness. They may also be giddy, light-headed or unsteady from their illness, medications, or other treatments. Getting out of bed unassisted in the hospital is a very common reason for falls. Walking to the bathroom without help also puts patients at risk for falls. Even patients who do not need help at home, can fall in the hospital when getting up without assistance. The most important thing a patient can do to prevent falls while they are in the hospital is to ask for help when getting up out of bed. Many demographic factors like age and gender have an impact on patient fall statistics.

NABH Standards and International patient safety Goals focus on the importance of reducing patient falls in healthcare settings and how timely prevention and early risk detection can lead to patient safety.

This study is an attempt to identify gaps in risk assessment of patients at risk of fall in the current healthcare settings, finding the major contributors leading to increase probability of fall and give recommendation to enhance good practices in the future.

Aim: The aim of the study is to analyse the impact of Demographic factors on Patient's fall's Risk Management in a Tertiary Care Hospital in NCR with help of a self-administered questionnaire. The study will also assess the level of information shared with the patient regarding fall risk and the ease of use of infrastructure provided to the patients.

Settings and Design: The design of our proposed study is a descriptive study where we will use a self-administered questionnaire to assess the level of awareness of patient regarding Fall Prevention in the selected study setting.

Methods and Material: The NABH Standard were used as a guideline for preparing the self-administered questionnaire. All admitted vulnerable patients of the selected study area will consist of the population for the study. Simple Random sampling technique will be used to derive the sample out of the population.

Statistical analysis used: Frequency tables, Correlation and MANOVA were used to establish associations between the independent and dependent variables.

Results: As the results show that gender had no impact on the probability of patient falls but age played a role in affecting the probability of patient falls. Specifically patients above 40 had a higher risk of falling.

Conclusions: Early risk assessment and patient education are important to prevent patient falls. Certain predisposing factors like demographic factors, patient characteristics should be considered when assessing the risk and special attention should be given to patients who are more vulnerable.

KEYWORDS : Patient Fall, Risk Assessment, MFS, NABH, IPSG

Introduction

Falls represent a major public health problem around the world. Among older adults (those 65 or older) falls is the leading cause of injury related death - (CDC). They are also the most common cause of nonfatal injuries and hospital admissions for trauma. In the acute and rehabilitation hospitals, falls resulting in some injury range from 30% to 51% and falls resulting in fracture range from 1% to 3%. Falls are also associated with increased length of stay, an increased amount of health care resources and poorer health outcomes when specific fractures occur. Soft tissue injuries or minor fractures can also cause significant functional impairment, pain and distress. Even "minor" falls can prompt the older person to fear falling, causing him/her to limit activity, resulting in loss of strength and independence. (HRET 2013)

Falls have been recognized for decades by health care profes-

sionals as an etiology for injury, but were not seen as an important independent marker of frailty until more recently. They are associated with a high mortality that is not always explainable by the fall injury itself (Tinetti et al 1995). For good reason, today it is considered a health problem on its own and a unique geriatric syndrome.

Our study discusses falls that are not associated with a loss of consciousness, stroke or seizure, nor related to a violent blow. They can be other factors like Age and gender which can impact the probability of patient falls.

It is important to understand that many of these falls are multifactorial in origin and do not result from one intrinsic or extrinsic cause. However, many falls in the older adult occur when environmental hazards or demands outweigh the individual's ability to

maintain postural stability. While children have an even higher incidence of falls than the elderly, the elderly have a higher susceptibility to injury which makes their falls so devastating (American Geriatrics Society et al 2001).

If the healthcare organisation does not explicitly screen for falls, there is a missed opportunity to prevent future incidents.

The study analyses the impact of demographic on patient falls and also assesses the ease of use of infrastructural facility that the management has provided keeping in mind the goals of international patient safety goals emphasizing on fall prevention strategies.

Research design:

The current study was conducted at a super-specialty hospital. A descriptive research design was utilized in the current study. This design is concerned with description of a phenomenon of interest and focused on a single group or population characteristics without trying to make interference. A sample of convenience including 70 patients, representing all those who are admitted in the IPD units of the selected study setting was taken. A structured questionnaire was developed, tested for clarity and feasibility, and then used to collect data. Development of this questionnaire was guided by NABH Standards (Continuous Quality Improvement, Facility Management System and Patient Rights and Education Chapter) and Morse Fall Scale. Designed tools were examined for content validity by a panel of five experts.

Ethical Clearance and confidentiality: The current study was approved by ethical committee of the selected Hospital. Confidentiality and anonymity of each subject were assured through coding of all data.

Methodology:

Our Study population consisted of High risk Patients Identified at the selected study Setting using Morse fall Scale.

Classification of patients into High Risk category at the selected study setting:

Assessment using Morse Scale: All admitted patients are assessed for Falls Risk using the Morse Scale in the selected study setting. Nurses assess patients using the Morse scale on admission, and the assessment is repeated on transfer, with a change in a patient's condition, as well as after a fall. The Morse Scale Assessment is based on History of falling, Secondary diagnosis, Ambulatory aids, IV therapy/saline lock, Gait and Mental status. Once assessed, each patient receives an overall score. All patients will be considered at risk for falling when in a hospital setting. This assumption is based on the fact that patients are vulnerable when they are unwell, when they are receiving treatments/tests/medications and are in an unfamiliar environment. If the assessment results in a score of 45 or higher the patient is categorised as a High Risk Patient. All these patients identified as High Risk formed our study population. A sample was drawn based on convenience and availability of patients from this population.

The current study was conducted in two phases: the preparation phase and implementation phase. As regards to the preparation phase; it was concerned with construction and preparation of data collection tools, in addition to obtaining managerial agreement to carry out the study. This phase lasted for about four months. Concerning the implementation phase; it was carried out after obtaining official permissions to carry out the study. Data of the current study were collected over a period of four months starting from November 2014 to February 2015. The researcher/research associate was available during the time of filling the data collection sheet to answer any question, and to provide the needed explanations. Filling the questionnaire required about 15 minutes from each patient. Obtained data was fed into Microsoft Excel for further analysis. The questionnaire had two parts. The first part was aimed to record the demographic details i.e. gender and age of the respondents while, the second part of the questionnaire had 15 questions pertaining to Risk Assessment focussing on Patient Characteristics (3 questions), Fall Prevention focussing on Patient Education (7 questions) and Ease of Use of Infrastructure (5 questions).

Results and Discussion:

Table 1; Demographic Distribution of the Sample

Gender	F	42
	M	28
Age	Below 30	7
	30-40	15
	Above 40	48

Table 1 depicts the demographic distribution of the sample under study. 60% of the respondents were female (42 out of 70) while around 70% were above 40 years (48 out of 70). In later discussion the impact of demographics on various variables will be studied.

As discussed earlier the questionnaire had two parts. Part one was aimed to record the demographic details i.e. gender and age of the respondents while, the second part of the questionnaire had 15 questions pertaining to Risk Assessment focussing on Patient Characteristics (3 questions), Fall Prevention focussing on Patient Education (7 questions) and Ease of Use of Infrastructure (5 questions). The following discussion is on the findings of the third part of questionnaire where the responses on ease of use of Infrastructure were analysed.

Frequency Table

Table 2; Patients responses on ease of accessing night-light

	Frequency	Percent	Cumulative Percent
VERY DIFFICULT TO ACCESS	29	41.4	41.4
MODERATELY DIFFICULT TO ACCESS	30	42.9	84.3
EASY TO ACCESS	11	15.7	100.0
Total	70	100.0	

Table 2 revealed that only 15.7% of the patients found it easy to access the nightlight while 84.3% of the patients found it difficult to access the nightlight, of which 41.4% of the patients found it extremely difficult to access the nightlight while 42.9% of the patients found it moderately difficult to access. Hence, it was evident that the lack of ease of accessing nightlight was an issue which might trigger the vulnerability among the patients towards patient fall.

Table 3; Patients responses on ease of accessing wash-room

	Frequency	Percent	Cumulative Percent
VERY DIFFICULT TO ACCESS	26	37.1	37.1
MODERATELY DIFFICULT TO ACCESS	35	50.0	87.1
EASY TO ACCESS	9	12.9	100.0
Total	70	100.0	

Table 3 revealed that only 12.9% of the patients found it easy to access the washroom while 87.1% of the patients found it difficult to access the washroom, of which 37.1% of the patients found it extremely difficult to access the washroom while 50% of the patients found it moderately difficult to access. Hence, it was evident that the lack of ease of accessing the washroom was another issue which might act as a hindrance towards prevention of patient fall and might increase the chances or probability of patient falling.

Table 4; Patients responses on ease of accessing nurse call bell

	Frequency	Percent	Cumulative Percent
VERY DIFFICULT TO ACCESS	17	24.3	24.3
MODERATELY DIFFICULT TO ACCESS	38	54.3	78.6
EASY TO ACCESS	15	21.4	100.0
Total	70	100.0	

Table 4 revealed that only 21.4% of the patients found it easy to access the nurse call bell while 78.6% of the patients found it difficult to access the nurse call bell, of which 24.3% of the patients found it extremely difficult to access the nurse call bell while 54.3% of the patients found it moderately difficult to access. Hence, it was evident that the lack of ease of accessing the nurse call bell at the time of emergency might increase the patient fall among the vulnerable patients.

Table 5; Patients responses on ease of accessing bed rails

	Frequency	Percent	Cumulative Percent
VERY DIFFICULT TO ACCESS	25	35.7	35.7
MODERATELY DIFFICULT TO ACCESS	33	47.1	82.9
EASY TO ACCESS	12	17.1	100.0
Total	70	100.0	

Table 5 revealed that only 17.1% of the patients found it easy to access the bed rails while 82.9% of the patients found it difficult to access the bed rails, of which 35.7% of the patients found it extremely difficult to access the bed rails while 47.1% of the patients found it moderately difficult to access. Hence, it was evident that the lack of ease of accessing the bed rails could hinder in the process of pulling up the rails while sleeping therefore increasing the risk while turning in bed.

Table 6; Patients responses on ease of accessing grab bars at the washroom

	Frequency	Percent	Cumulative Percent
VERY DIFFICULT TO ACCESS	19	27.1	27.1
MODERATELY DIFFICULT TO ACCESS	41	58.6	85.7
EASY TO ACCESS	10	14.3	100.0
Total	70	100.0	

Table 6 revealed that only 14.3% of the patients found it easy to access the grab bars at the washroom while 85.7% of the patients found it difficult to access the grab bars at the washroom, of which 27.1% of the patients found it extremely difficult to access the grab bars at the washroom while 58.6% of the patients found it moderately difficult to access. With about half the per cent of patients finding it difficult to use the grab bars in the toilets or washrooms the chances of patient falls being reported are very high as various study suggest that maximum falls happen while using the washroom due to poor support, slippery floors and inaccessible grab bars. Hence, it was evident that the lack of ease of accessing the grab bars at the washroom was a major issue in the infrastructure related to the patient fall risk prevention and it could come in the way of effective patient fall risk prevention measures.

Upon analyzing the patients' responses on the ease of accessing different infrastructural components meant for minimizing fall risk among the patients it was evident that the patients were facing difficulties in accessing them which was a major area of concern since it could prevent from implementing effective patient fall risk prevention system.

The following discussion will illustrate the impact of demographic on various variables.

Table 7; MANOVA Results

Effect		Sig.
Gender	Pillai's Trace	.426
	Wilks' Lambda	.426
	Hotelling's Trace	.426
	Roy's Largest Root	.426
Age	Pillai's Trace	.000
	Wilks' Lambda	.000
	Hotelling's Trace	.000
	Roy's Largest Root	.000
Gender * Age	Pillai's Trace	.322
	Wilks' Lambda	.312
	Hotelling's Trace	.303
	Roy's Largest Root	.066

2 Way MANOVA was conducted to analyze the impact of the demographic factors (age and gender) towards the patients' responses and the results are depicted in Table 7. Table 7 revealed that results for MANOVA indicated that while gender had no impact on the patients' responses towards accessing different patient fall risk preventive measures, however age was an influencing factor (Since all the measurements were below the set level of significance, .05) in patients' responses. Further, the interaction effect of age and gender was not evident in the study (Since Sig Value for all the measurements were greater than .05).

Table 8: Tests of Between-Subjects Effects

Demography	Dependent Variable	F	Sig.
Gender	Patients response on ease of accessing nightlight	.861	.357
	Patients responses on ease of accessing washroom	.727	.397
	Patients responses on ease of accessing nurse call bell	.852	.360
	Patients responses on ease of accessing bed rails	2.263	.137
	Patients responses on ease of accessing grab bars at washroom	.229	.634
Age	Patients response on ease of accessing nightlight	32.584	.000
	Patients responses on ease of accessing washroom	25.123	.000
	Patients responses on ease of accessing nurse call bell	32.123	.000
	Patients responses on ease of accessing bed rails	36.019	.000
	Patients responses on ease of accessing grab bars at washroom	26.184	.000
Gender * Age	Patients response on ease of accessing nightlight	.792	.457
	Patients responses on ease of accessing washroom	.009	.991
	Patients responses on ease of accessing nurse call bell	.689	.506
	Patients responses on ease of accessing bed rails	1.739	.184
	Patients responses on ease of accessing grab bars at washroom	3.125	.051

Table 8 revealed the results for Test of between Subject Effects so as to analyze the impact of each demographic factor (age and gender) along with their interaction effect on patients' responses towards each component of infrastructural facilities meant for minimizing fall risk among the patients. The results revealed that while age had an influence over patients' responses towards each component of infrastructural facilities meant for minimizing fall risk among the patients, there was no impact of gender or the interaction effect of gender and age on patients' responses.

Post Hoc Tests

Age

Table 9; Post Hoc Test Results

Dependent Variable	(I) Age	(J) Age	Mean Difference (I-J)	Sig.
Patients response on ease of accessing nightlight	Below 30	30-40	-.10	.894
		Above 40	1.03*	.000
	30-40	Below 30	.10	.894
		Above 40	1.14*	.000
	Above 40	Below 30	-1.03*	.000
		30-40	-1.14*	.000

Patients responses on ease of accessing washroom	Below 30	30-40	.03	.992
		Above 40	.97*	.000
	30-40	Below 30	-.03	.992
		Above 40	.94*	.000
	Above 40	Below 30	-.97*	.000
		30-40	-.94*	.000
Patients responses on ease of accessing nurse call bell	Below 30	30-40	.26	.483
		Above 40	1.21*	.000
	30-40	Below 30	-.26	.483
		Above 40	.95*	.000
	Above 40	Below 30	-1.21*	.000
		30-40	-.95*	.000
Patients responses on ease of accessing bed rails	Below 30	30-40	.25	.533
		Above 40	1.24*	.000
	30-40	Below 30	-.25	.533
		Above 40	.99*	.000
	Above 40	Below 30	-1.24*	.000
		30-40	-.99*	.000
Patients responses on ease of accessing grab bars at wash-room	Below 30	30-40	-.04	.984
		Above 40	.82*	.000
	30-40	Below 30	.04	.984
		Above 40	.86*	.000
	Above 40	Below 30	-.82*	.000
		30-40	-.86*	.000

Since Gender along with the interaction effect of Age and Gender had no impact on the patients' responses towards each component

of infrastructural facilities meant for minimizing fall risk among the patients, the Post Hoc Test was carried out only for Age and each infrastructural facility so as to locate the demographic level at which there was a discrepancy in the responses and the results are depicted in Table 9. From the results it was evident that while there were no significant differences between "Below 30" and "30-40" group, there was a significant difference between the responses of patients who were "Above 40" and the two lower age groups. This was because that for each category the Sig value was higher than the set level of significance, .05 for the difference between "Below 30" and "30-40", however it was lower than .05 for the differences between "Above 40" and the two lower age groups. This was an indication that the younger groups found it easier to access the infrastructural facilities, however the eldest age group (Above 40) found it difficult to access them which was making the eldest group most vulnerable towards fall risk.

Conclusion

As patient falls are a serious threat to the community and contribute to a significant mortality, morbidity and cost, fall prevention becomes and implied need of the healthcare institution.

Early risk assessment and patient education are important to prevent patient falls. Certain predisposing factors like demographic factors, patient characteristics should be considered when assessing the risk and special attention should be given to patients who are more vulnerable. The organisation should also focus the ease of use of infrastructure, to provide support to the patients who are vulnerable to fall.

REFERENCES

1. Implementation Guide to Prevention of Falls with Injury, Health research and Educational Trust (HRET), 2013, <http://www.healthcare.gov/compare/partnership-for-patients/resources/index.html> | 2. Conley D, Schultz A, Selrin R. The challenge of predicting patients at risk for falling: Development of the Conley Scale. *MEDSURG Nursing*. 1999;8(6):348-354. | 3. Hendrich A, Bender P, Nyhuis A. Validation of the Hendrich II Fall Risk Model: A large concurrent case/control study of hospitalized patients. *Applied Nursing Research*. 2003 Feb;16(1):9-21. | 4. Morse JM, Morse R, Tylko S. Development of a scale to identify the fall-prone patient. *Canadian Journal on Aging*. 1989;8:366-377. | 5. Boushon B, Nielsen G, Quigley P, Rutherford P, Taylor J, Shannon D. *Transforming Care at the Bedside How-to Guide: Reducing Patient Injuries from Falls*. Cambridge, MA: Institute for Healthcare Improvement; 2008. Available at: <http://www.IHI.org>. | 6. Panzer, R. J., Gitomer, R. S., Greene, W. H., Webster, P. R., Landry, K. R., & Riccobono, C. A. (2013). Increasing demands for quality measurement, *JAMA*, doi:10.1001/jama.2013.282047. | 7. Morse, J. M. (1997). *Preventing patient falls* (Vol. 4). London: Sage publications. | 8. Terkowski, R. *Reducing Falls: From the Patient's Perspective*. Retrieved from https://www.haponline.org/Portals/0/docs/PAHospitals/Achievement-Awards/AA_PS_Penn_Medicine_Chester_County_Hospital_2014.pdf. | 9. Tinetti ME. 2003. Preventing falls in elderly persons. *N Engl J Med*, 348:42-9. | 10. Currie, L., M. (2006). Fall and injury prevention. *Annual review of nursing research*, 24(1), 39-74. | 11. Hodgkinson, B., Lambert, L., Wood, J., & Kowanko, I. (1998). Falls in acute hospitals: a systematic review. *Joanna Briggs Institute for Evidence Based Nursing and Midwifery*, | 12. Schwendimann, R., De Geest, S., Milisen, K. (2006). Evaluation of the Morse Fall Scale in hospitalized patients. Retrieved from <http://ageing.oxfordjournals.org/content/35/3/311.full> | 13. Sizewise. (2007). Understanding fall risk prevention & protection. Retrieved from | <http://www.sizewise.net/getattachment/2d5c6915-509c-4d99-a653-bef8bcc56fdc/sw-fall-risk-toolkit.aspx>