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The Relationship Between Fall Rates and Fall Risk Inducing Drugs in Older Adult Patients in the Hospital Setting

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ABSTRACT

The aim of this study was to analyze the risk of falls relative to the use of fall risk inducing drugs (FRIDs) among older adult patients admitted to the hospital setting. Quality improvement of nursing fall risk assessment was of special interest. To analyze this a retroactive review of fall incident reports was conducted in collaboration with the study hospital's risk manager. Medications were correlated with injuries sustained to identify high risk FRIDs. The selected study population consisted of 166 patients over the age of 65 who fell on the acute care campus of a hospital in the mid-south region of the United States. The results demonstrated no correlation between drug classes and injury sustained from a fall. Anti-hypertensive and cardiovascular medications were found to be involved in the highest number of falls. The study was limited however by a small sample size of nurses who adequately reported fall incidents. Further studies are needed to identify relationships between medications and fall risk. Further studies are also needed to evaluate nurse compliance with incident reporting.

LITERATURE REVIEW

A fall is defined as an unintentional displacement of the body to a level that is lower than the initial position without having the ability to timely correct it (Ferreira Neto, Rocha, Schmidt, Almeida, Dutra, Rocha, 2015).Falls are the leading cause of non-fatal injury in all age groups in the United States; 9,369,406 falls resulted in injury in 2015 alone (CDC, 2015). It is estimated that between 700,000 and 1,000,000 of these falls occurred in an inpatient hospital setting (CDC, 2015). This is not merely an issue within the United States however, it stands as a major public health problem globally (Quigley, White, 2013). Healthcare providers have recognized the dangers associated with falls and have been studying fall implications, risks, causes, and preventions for decades (Thurston, 1957). But despite this long-term, widespread attention to falls, patients continue to fall within hospitals (The Joint Commission, 2016).

In the hospital setting, falls are reported to be the number one adverse event. 3-20% of patients fall at least once during their time in the hospital. Of those, 30 to 51% of falls in hospitals result in some injury (Oliver, Healey, & Haines, 2010). Between 6 and 44% of these injuries are severe enough to result in patient death (Quigley, White, 2013). Falls are associated with longer in hospital stays, higher costs of healthcare and higher rates of discharges to long term care and legal action against hospitals (Oliver et al. 2004). To a patient falls are more than just physical risks for fractures and injuries. They can also lead to debilitating long term social, health, psychological, and financial consequences (Czerwinski, Białoszewski, Borowy, Kumorek, Białoszewski, 2008).

The financial burden of falls weighs heavily on patients and hospitals alike. In 2010, a fall that did not result in serious injury costs an additional $3,500, patients who sustain more than two falls without serious injury increase their individual hospital costs by $16,500. Patients who

sustain a serious injury from their falls are the most weighted financially, costing an additional

$27,000 per patient (Wu, Keeler, Rubenstein, Maglione, & Shekelle, 2010). Psychological and

social damage from falling could be detrimental to patients as well. Anxiety produced from the

fear of falling again can lead to a loss of confidence in independent mobility, tasks, and a decline

in function (Hill et al., 2007). This anxiety and decrease in self-confidence in safe ambulation

may result in self-imposed limitations in activities of daily living (MacCulloch, Gardner, &

Bonner, 2007). The combination of the aforementioned factors can contribute to loss of

independence, decreased quality of life, and death, especially in the older adult population

(Krauss et al., 2007)

        While falls are a widespread phenomenon in all age groups, they are the most probable

and the most dangerous in the elderly population. A fall is the main cause of morbidity and

disability in persons above the age of 65. In fact, 35% of this age group falls annually, and more

than 50% are not the first fall for the individual (Tinetti, Kumar, 2010). In the elderly population,

to understand the pathophysiology or underlying cause of falls, it is necessary to first understand

that normal gait and uprightness requires fine neural networks, proper musculoskeletal structures

with appropriate muscle tone. It also requires adequate sensory function and information

processing, in combination with proper balance and cognition (Al-Aaama, 2011). These

processes degrade with the normal aging process, resulting in a greater risk for falls.

Fall Risk Factors

        The act of falling in itself is a complex multifactorial phenomenon resulting from many

contributing factors. (Al-Aama, 2011). Recent studies have identified many predisposing and

contributing factors to falls, including: a history of falls, balance impairment, unsteady gait,

advanced age, female sex, low income, poor health, vertigo, muscle weakness, visual

impairment, sensory impairment, unsafe environment, walking aid use, Parkinson disease, and

postural hypotension. Polypharmacy and psychoactive drug administration have also been

widely attributed to fall risk (Mosnaim, Abiola, Wolf, Perlmuter, 2010; Deandrea, Lucenteforte,

Bravi, Foschi, La Vecchia, Negri, 2010; Castro, McCoy, Cagan, 2014; Grenier, Payette,

Langlois, 2014; Pohl, Nordin, Lundquist, 2014; Al-Aama, 2011). The complete list of fall risk

factors is expansive; a more inclusive description of predisposing factors to falls is the

acceptance of the more inclusive model of intrinsic and extrinsic factors.

Intrinsic and extrinsic factors both play a role in fall risks. Intrinsic factors (patient-

related factors) include age, disease, history of falls, and decreased physical and neurological

capabilities, acute illness. Medications are also considered as an intrinsic factor as their effects

occur within the patient (Bueno-Cavanillas, Padilla-Ruiz, Jiménez-Moleón, Peinado-Alonso,

Gálvez-Vargas, 2000; Choi, Lawler, Boenecke, Ponatoski, Zimring, 2011; Ferreira Neto, Rocha,

Schmidt, Almeida, Dutra, Rocha, 2015).). Extrinsic factors (environmental factors) refer to the

physical elements of hospitals, including floors, furniture, and footwear. (Bueno-Cavanillas et al,

2000; Choi et al., 2011).

Most falls that occur in the inpatient setting are related to intrinsic factors (Hendrich,

2006). This is an important distinction, because extrinsic factors can be manipulated, removed,

or adapted for patient safety, but intrinsic factors cannot be altered. Medications are an exception

to the rule of removal of intrinsic factors, as medications can be discontinued and their effects

can be removed.

Fall Risk Inducting Drugs

Medications are a well-established intrinsic risk factor for falls (Al-Aama, 2011). The risks that medications pose are linked to both their expected and unexpected side effects. Many of the aforementioned risk factors for elderly patient falls are side effects of many commonly prescribed drugs: 1) orthostatic hypotension; 2) arterial hypotension; 3) arterial hypertension; 4) bradycardia; 5) psychomotor agitation; 6) mental confusion; 7) dizziness; 8) drowsiness/sedation; 9) reduced eyesight; 10) seizures; 11) muscle weakness; 12) hypoglycemia; 13) urgent urination and 14) urgent defecation/diarrhea (Ferreira Neto, Rocha, Schmidt, Almeida, Dutra, Rocha, 2015). Medications that contribute to fall risk factors, such as those mentioned above, are often called fall risk inducing drugs, or FRIDs.

One recent meta-analysis of FRID research has identified that the use of sedatives and hypnotics, antidepressants, and benzodiazepines is significantly association with falls in elderly patients (Woolcott, Richardson, Wiens, Patel, Marin, Khan, Marra, 2009).

Another study, conducted by Ferreira Neto, Rocha, Schmidt, Almeida, Dutra, and Rocha in 2015, recently identified medication fall risk factors based on the number of fall risk inducing side effects associated with particular medication classes. Medications that posed 0 risk factors for patient falls were deemed level 0. Medications that posed 1-2 risk factors for patient falls were deemed level 1. Medications that posed 3-5 risk factors for patient falls were deemed level 2. Medications that posed 6-9 risk factors for patient falls were deemed level 3. Medications that posed 10-14 risk factors for patient falls were deemed level 4 (Ferreira Neto, Rocha, Schmidt, Almeida, Dutra, Rocha, 2015).

This study identified that blood products and IV fluids are the primary classes in level 0. Level 1 was primarily comprised of stomach acid medications, antithrombotic, blood products, and analgesics. Level 2 was primarily comprised of diabetic medications, diuretics, GI medications, and mild analgesics. Level 3 was primarily comprised of stomach acid medications, GI medications, analgesics, and psycholeptics, Level 4 was solely comprised of psycholeptics (Ferreira Neto, Rocha, Schmidt, Almeida, Dutra, Rocha, 2015). It has also been identified that fall risk increases with the number of medications that an individual is taking (Ziere, Dieleman, Hofman, Pols, van der Cammen, Stricker, 2006).

Anti-hypertensive and other cardiovascular medications have recently been identified as fall risk inducing drugs. A recent study done at the Yale School of Medicine evaluated the correlation between anti-hypertensive medications and injury from falls. This study specifically analyzed anti-hypertensives due to their rising risk levels (Tinetti, Han, Lee, McAvay, Peduzzi, Gross, Bingqing Zhou, Lin, 2014).

Preventing Injury from Falls

Injuries sustained from falls can lead to mortality (Tinetti et all, 2014). Preventing injury from falls is a task that weighs on all healthcare professionals, but nurses have a unique ability to directly affect patient care and prevent injury from falls (Graham, 2012). Nurses have the ability to implement evidence-based interventions first hand. Nurses are able to identify at-risk patients at first admittance to the hospital setting by way of fall risk assessment. Once the at-risk patients are identified, the nurses can apply preventative measures, which, when applied to this vulnerable population, can have profound public health effects (Al-Aama, 2011). It has been established in the literature that nursing fall risk assessment is one of the most important first

steps to preventing injuries from falls (Tanaka, Suemaru, Ikegawa, Tabuchi, Araki, 2008). The

Joint Commission requires accredited hospitals to conduct fall risk assessments for all

hospitalized patients (The Joint Commission, 2013).

Figure A. The Morse Fall Scale (Morse, 1997).

Item	*Scale*		*Scoring*
1. History of falling; immediate or within 3 months	No Yes	0 25	_____
2. Secondary diagnosis	No Yes	0 15	_____

3. Ambulatory aid
    Bed rest/nurse assist
    Crutches/cane/walker
    Furniture
		0
		15
		30
			_____

4. IV/Heparin Lock	No Yes	0 20	_____

5. Gait/Transferring
    Normal/bedrest/immobile
    Weak
    Impaired
		0
		10
		20
			_____

6. Mental status
    Oriented to own ability
    Forgets limitations
		0
		15
			_____

The Morse Fall Scale (Figure A) is utilized by the study hospital and many hospitals

nationally. This assessment was designed by J.M. Morse in 1989 to identify fall risk in patients.

The above assessment has six variables: History of falls within 3 months, Secondary diagnosis,

Use of an ambulatory aid, IV access, Gait strength, and Mental status assessing orientation to

self-limitations. It is important to note that this particular fall risk assessment tool does not assess

a patient's medication usage or consider the risk factors that they produce.

A recent study assessed the validity and prediction capability of the Morse Fall Risk

Assessment tool in Brazil. According to this study, the Morse Fall Risk Assessment is effective

in predicting which patients are likely to fall in the hospital setting (De, Pasa, Bittencout, Franz,

Prazido Rosa, de Souza, Tânia, 2016). However, this study noted that the Morse assessment does

not adequately assess medication use or level of consciousness. Despite this limitation to the

assessment, the Morse is still produces adequate fall risk ratings 95.2% of the time, meaning that

the patients who fall have been given high Morse scores (De et all, 2016). The tool was

compared to Chinese, Korean , German, and Brazilian versions of fall risk assessments. In

comparison to these assessments, the Morse was more accurate than each of the others (De et all,

2016). Studies focused on falls are complex due to multifactorial causation of falls (Al-Aama,

2011; De et all, 2016).

Adequately predicting fall risk can prevent patient injury from falls if adequate nursing

interventions are placed. The Morse Fall Risk Assessment tool is a valid fall risk assessment that

can be used to assign fall risk. This tool lacks medication assessments which would further

identify at risk patients. If the fall risk assessment tool does not take medications into account, it

is necessary that nurses are knowledgeable about fall risk inducing drugs. Knowing the risk

factors associated with medications prevents and reduces falls, especially when the patient's

medications cannot be altered (Ferreira Neto, Rocha, Schmidt, Almeida, Dutra, Rocha, 2015).

PURPOSE

The aim of this study is to analyze the risk of falls relative to the use of fall risk inducing

drugs (FRIDs) among older adult patients admitted to the hospital setting. Patients who sustained

fall related injuries are of particular interest, in accordance with recent literature. This project

will expand upon the existing literature base detailing which medications have been involved in

the highest rates of falls. Much of the existing literature is set in long-term care facilities; this

study's inpatient setting will help to diversify the literature base. Nursing fall risk assessment

quality and fall risk interventions implementation will also be analyzed in an effort to provide

clinical quality improvement recommendations.

METHODOLOGY

This research project was conducted in following approval from the University of

Arkansas and the study hospital's Institutional Review Boards. A retroactive incident report

review was conducted in collaboration with the study hospital's risk manager. The present study

assessed the frequency of patient falls and potential medication-associated risk factors using

regularly collected incident data. All patient data was de-identified according to the Health

Insurance Portability and Accountability Act (HIPAA) to protect patient privacy. The study

hospital utilized Clarity Healthcare Safety Zone® incident reporting software to gather data on

falls and other incidents within the hospital system. This reporting system was designed to be

filled after a patient fall by the patient's nurse. The data categories collected by the software are

as follows: Date, Location, Sub-Location, Patient Age, Patient Gender, Fall Risk Prior to Fall,

Physical Injury Sustained, Activity Level Prior to Fall, Fall Observation, Who Observed the

Fall, Fall Assistance, Who Assisted the Fall, Additional Tests Ordered, Floor Wet, Bed Alarms,

Were the Alarms On, Assistive Devices, Post Fall Huddle, Last Time Voiding, Elimination

Problems, Type of Fall, Family Presence During Fall, Action Recommendation, Post-

Operational, Day of Stay, Orders Received, Mental Status Prior to Fall, Mental Status After Fall,

Interventions in Place Prior to Fall, Type of Footwear, and Patient Medications.

Study Population

The retrospective incident report review was conducted to generate a group of patients

who experienced a fall while admitted to the study hospital between January 2017 and December 2017. The selected study population consisted of mentally stable patients over the age of 65 who fell on the main campus of the study population. Patients admitted to the hospital with a diagnosis of dementia, Alzheimer's, or other mental health disorders were excluded from this study. After removal of ineligible patients, 163 patients remained in the study group. Of these, 81 were female and 82 were male. 86 patients were between the ages 65 and 75, 62 patients were between the ages 75 and 84, and 18 patients were above the age of 85.

For the purpose of this study, a data collection tool was designed to focus the scope of data collection from the incident reporting tool. Data points gathered are as follows: Date, Location, Sub-Location, Patient Age, Patient Gender, Fall Risk Prior to Fall (The study hospital utilizes the Morse Fall Scale to determine fall risk among their patients daily), Physical Injury Sustained, Activity Level Prior to Fall, Mental Status Prior to Fall, Mental Status After Fall, Interventions in Place Prior to Fall, Type of Footwear, and Patient Medications.

Data were gathered from the study hospital's electronic clarity system. Data were revised, typed, and processed in Microsoft® Office Excel 2018. Data were then analyzed in IBM® Statistical Package for the Social Sciences statistics software. Chi square analyses were conducted on several categories. The critical value was set to 0.05.

RESULTS

This study analyzed 166 reported fall events during 2017. Table 1 shows 84 falls occurred on a medical surgical unit, 41 falls occurred on a cardiology unit, 16 falls occurred on a neurology unit, 11 falls occurred in the emergency department, 6 falls occurred in the intensive care unit, and 8 falls occurred elsewhere in the hospital (i.e. admissions, hallway, or imaging).

156 patients were identified as fall risk patients prior to the fall event, 34 were not identified as fall risk patients prior to the fall event. This indicates that 93.9% of the patient population that fell was identified as a fall risk prior to their fall.

Table 2 shows what medications patients were reported to be taking at the time of the fall event. 66 patients of the 166 falls were reported to be taking medication of any kind at the time of the fall, 5 were reported to be on no medications at the time of the fall, 95 patients were not documented to be on medication or not. 10 patients were taking anti-anxiety medications, 13 patients were taking anti-coagulant medications, 4 patients were taking anti-depressant medications, 37 patients were taking anti-hypertension medications, 29 patients were taking cardiovascular medications, 13 patients were taking diuretics, 27 patients were taking narcotics, and 6 patients were taking antipsychotic medications. This indicates that 39.7% of the patient population that fell had medications documented on the incident report and 60.3% of the patient population that fell had inadequate documentation.

Of the 66 patients who were identified to have been taking medication before their fall, 6 patients were taking 1 medication, 15 patients were taking 2 medications, 12 patients were taking 3 medications, and 13 patients were taking 4 or more medications.

Of the 166 patients who fell during the year 2017, 29 patients sustained injuries from their fall, 135 patients did not sustain injuries from their fall, and 2 patients did not have adequate documentation to assess if they sustained injuries from their fall. This indicates that 17.7% of the patient population that fell sustained injuries, 81.1% of the patient population that fell did not sustain injuries, and 1.2% had inadequate documentation.

Table three shows a two-way contingency table analysis conducted to evaluate whether specific fall risk inducing drugs, gender, age, or prior fall risk had an effect on whether an injury

was sustained at the time of the fall. Of the 166 patients who fell, 29 patients (17.7%) sustained injuries. In this test, alpha = 0.05. Gender comparison: p=0.769. Fall risk prior comparison: p=0.390. Age range comparison: p=0.684. Anti-anxiety medication comparison: p=0.843. Anti-coagulation medication comparison: p=0.968. Anti-depressant medication comparison: p=0.89. Anti-hypertensive medication comparison: p=0.45. Cardiovascular medication comparison: p=0.945. Diuretic medication comparison: p=0.945. Narcotic medication comparison: p=0.371. Anti-psychotic medication comparison: p=0.947.

Table 1 –Falls in sub-locations of the study hospital

Location	Frequency	Percent
Medical Surgical Units	84	50.6
Cardiology Units	41	24.7
Neurology Unit	16	9.7
Emergency Department	11	6.6
Other	8	4.8
Intensive Care Unit	6	3.6
Total	166	100%

Table 2 – Medication prescription frequency among study population

Medication Class	Frequency	Percent
Anti-hypertensive	37	56%
Cardiovascular	29	43.9%
Anti-coagulant	13	19.7%
Diuretic	13	19.7%
Anti-anxiety	10	15%
Anti-psychotic	6	9%
Anti-depressant	4	1.5%

Table 3—Chi Square analysis evaluating relationship between injury and FRID classes.

Chi Square Results	n (%)	Sustained injury n (%)	x^2	p
Total Sample	166	29 (17.7)		
Male	81 (49.7)	14 (17.1)		
Female	82 (50.3)	14 (17.7)	.526	.769
Fall Risk Prior	132 (84.6)	23 (17.6)	.739	.390
Age 65-74	86 (51.8)	15 (17.4)		
Age 75-84	62 (37.3)	12 (20.0)		
Age 85+	18 (10.8)	2 (11.1)	.759 (2)	.684
Anti-anxiety	10 (6)	2 (20.0)	.039	.843
Anti-coagulant	23(13.9)	4 (17.4)	.002	.968
Anti-depressant	5 (3)	1 (20)	.019	.890
Anti-hypertensive	37 (22.3)	5 (13.5)	.571	.450
Cardiovascular	29 (17.5)	5 (17.2)	.005	.945
Diuretics	29 (17.5)	5 (17.2)	.005	.945
Narcotics	26 (15.7)	3 (11.5)	.801	.371
Anti-psychotics	6 (3.6)	1 (16.7)	.004	.947

DISCUSSION

This study was designed to determine if a correlation exists between drug classes and injury sustained from a fall. This study also serves as a quality improvement project for the study hospital focusing on fall rates, nursing fall risk assessment, and incident reporting. Relationships between each drug class (anti-anxiety, anti-coagulant, anti-depressant, anti-hypertensive, cardiovascular, diuretics, narcotics, and anti-psychotics) and patient falls were examined. Further information surrounding the fall was gathered to allow for a more complete picture of the fall and what could have contributed to its causation. After evaluation, no correlation can be concluded between medication classes and falls or injuries sustained from a fall. This conclusion may be the result of limited incident reporting provided by the study hospital's nursing staff. Correlation and causation of falls are also inherently complex due to the multifactorial influences on falls (Al-Aama, 2011; De et all, 2016).

Fall Location

This data was collected as part of the quality improvement aspect of the project. In this study hospital, falls occur most frequently (50.6%) in medical surgical units and least frequently (3.6%) in the intensive care unit. The data does not support that this finding is related to medication usage. More potent medications are administered in the intensive care unit than the medical surgical unit. Rather, this increase in fall frequency could be related to higher mobility of patients in the medical surgical unit compared to the relatively immobile patients in the intensive care unit. One must also take into account the number of beds on each of the units. Of the total 450 beds in the study hospital, 120 beds are in the combined medical surgical units compared to 60 in the combined intensive care units. It is recommended that the study hospital

conduct a more focused quality improvement project utilizing data that is not self-reported by the nursing staff.

Medication Fall Involvement

The frequency of a medication in this study describes how many of the patients were taking that particular drug on the day of their fall. This does not indicate that this medication was the only prescription the patient was taking. The results show that 56% of patients had taken an anti-hypertensive medication, among their other medications, on the day of their fall. This is followed closely by cardiovascular medications: 43.9% of patients. Anti-hypertensives and cardiovascular medications are related to several fall risk inducing risk factors: orthostatic hypotension; arterial hypotension; bradycardia; dizziness; etc. This may be relevant in classifying anti-hypertensives and cardiovascular medications as FRIDs. This finding is consistent with recent meta-analysis that reported a 24% increased risk of falling associated with use of antihypertensive agents (Woolcott et al 2009). However, due to the small sample size, this data should not be extrapolated to other patients without a replicated study. Only 66 patients were reported to have been taking medications.

Medication and Injury Independence

The results of the two-way contingency table analysis were not statistically significant. Due to this, the null hypotheses of the chi square independence tests are accepted. Gender and injury sustained from a fall are independent. Fall risk prior and injury sustained from a fall are independent. Age and injury sustained from a fall are independent. Anti-anxiety medication use and injury sustained from a fall are independent. Anti-coagulation medication use and injury

sustained from a fall are independent. Anti-depressant medication use and injury sustained from a fall are independent. Anti-hypertensive medication use and injury sustained from a fall are independent. Cardiovascular medication use and injury sustained from a fall are independent. Diuretic medication use and injury sustained from a fall are independent. Narcotic medication use and injury sustained from a fall are independent. Anti-psychotic medication use and injury sustained from a fall are independent. This insignificance indicates that in this sample population, medications do not correlate with injuries sustained from falls. This insignificance is likely due to the small sample size of patients who took medications (66), and the smaller sample size of patients who reportedly sustained injuries from a fall (29). Chi-square analyses typically require sample sizes greater than 50. Due to the small sample size, a chi-square analysis of the data was inappropriate.

However recent studies have found similarly inconclusive data when examining fall risk inducing drugs and injury likelihood. Tinetti, Han, Lee, McAvay, Peduzzi, Gross, Bingqing Zhou, and Lin, (2014) concluded that there was no correlation between antihypertensive medications and injury sustained from falls.

Fall Safety

In this study population, only 29 (17.7%) patients sustained physical injury from a fall. The national average, according to Quigley and White (2013), is 33% of falls result in physical injuries. Despite the study hospital's lack of attention to medications in fall risk assessments, injuries from falls were prevented. This casts a new light on the previous assumption that fall risk assessments need to perfectly capture all of the aspects that could lead to a fall. If the study of falls is difficult due to multifactorial causation, then the prediction capacity of fall risk

assessments is also under question (De et all, 2016). No assessment could include all of the

potential risk factors involved in patient falls. In addition to this, predicting that a patient will fall

is not beneficial to patient safety unless interventions are set in place. What remains vital to

patient safety is reduction of injury from falls that could potentially lead to mortality or severely

decreased functional ability (Tinetti et al, 2014). Further studies are needed to identify the

methods utilized by the study hospital to reduce patient injury from falls.

Limitations

It is believed that the data gathered was lacking documentation of patient medications. Of

the 166 falls reported, only 66 were identified to be taking medication at the time of the fall.

Given that older adults over the age of 65 are more likely to be taking at least two medications,

(Mukete, Ferdinand, 2016), and 42% older adults over the age of 65 are taking more than 4

medications per day (Mozaffarian, Benjamin, Go, 2015), it is unlikely that 60% of this older

adult population was truly unmedicated. A follow-up study of nurse compliance with incident

reporting would be an interesting addition to the gathered data. If the data was truly insufficiently

documented, then this study must be repeated with an element evaluating nurse compliance with

incident reporting. This component is vital to a successful quality improvement study.

Due to the small sample size, a chi-square analysis of the data was inappropriate. In

future studies, if the sample size cannot be made larger, a different statistical analysis should be

used, potentially a goodness of fit test.

Due to the unreliability of incident reporting (Evans, Berry, Smith, Esterman, Selim,

O'Shaughnessy, DeWit, 2006), this study needs to be repeated utilizing chart review rather than

the Clarity incident reporting system. Utilizing chart review would allow for access to complete

medication records, complete patient information, and nurses and doctors notes on the true

nature and after effects of the fall. With this clear data the study would be more successful.

Recommendations

Improving nurse compliance with incident reporting will allow for improvement within

not only the study hospital, but hospitals worldwide. Nurse reporting is vital to improvements but

is time consuming for already busy nurses. Incident reports are subjective in nature, lack

consistency, and underreport the incidents (Evans, Berry, Smith, Esterman, Selim,

O'Shaughnessy, DeWit, 2006).This prevents incident reports from being used as a reliable tools

to measure events and outcomes. This also prevents incident reports from improving patient

safety (Evans, Berry, Smith, Esterman, Selim, O'Shaughnessy, DeWit, 2006). If incident reports

are accurately reported, patient outcomes could improve.

It is recommended that incident report data be auto-populated via the electronic medical

record. If the complete medication record, complete patient information, and environmental

information can be accurately moved from the record to the incident report system instantly,

outcomes could improve.

CONCLUSION

Following a retroactive incident report review of patients who fell in 2017, the results

demonstrated no correlation between drug classes and injury sustained from a fall. Anti-

hypertensive and cardiovascular medications were found to be involved in the highest number of

falls. The study was limited however by a small sample size of nurses who adequately reported

fall incidents. Further studies are needed to identify relationships between medications and fall risk. Further studies are also needed to evaluate nurse compliance with incident reporting. There were limitations present in the study that suggest this data cannot be generalized to larger populations. These limitations are primarily due to small sample sizes resulting from poor compliance with incident reporting at the study hospital. Further studies should be conducted utilizing retroactive chart review rather than incident reports to draw more reliable data. Further studies should also be conducted to identify methods for auto populating incident reports from the electronic medical record.

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