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A Quality Improvement Study On Inpatient Fall Prevention In A Tertiary Care Facility

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Abstract
Background: *Maintaining patient safety is the most important priority in health care. Health care organizations implement protocols, policies and procedures to ensure that, the care is provided in a safe manner to minimize preventable harms. However, falls are unexpected incidences that occur in health care settings but are considered to be preventable. Falls or sentinel events can lead to serious injuries and even death. In patient falls are one of the top reported sentinel events occurring in hospitals and are considered as a serious problem as it compromises patient safety.*
Methodology: *According to PDSA Cycle Planning Phase assessed the existing situation regarding inpatient falls. In the month of March 2023 there were 03 Inpatient falls and 06 Inpatient falls in the month of April 2023 were reported through incidence reporting system. We have analysed the demographics of fall patients, fall incidents data, risk factors, environmental conditions, existing fall prevention protocols and established specific, measurable, achievable, relevant and time-bound (SMART) goals for fall prevention. This includes staff training on fall risk assessment tools, patient and family education, environmental modifications to reduce the hazards, risk assessment protocols and the implementation of technologies to assist the fall prevention and to put the planned strategies into action. The data was collected during the implementation phase to track the effectiveness of the strategies. The fall incidents, near-misses, compliance with protocols and any challenges faced during execution were also documented.*
Results: *The data was analyzed in order to evaluate the success of the strategies put into practice. On comparison of present results with the previously set bench marks and goals, it was observed a progressive decrease in the inpatient fall rate with 02 falls in May and June months, 01 fall in July and August month and September and October reported no falls. In spite of the strategies that were put in place it was observed there were gaps in procedures, employee training, environmental changes, or patient compliance that led to the falls that happened*
Conclusion: *This outcome amply demonstrated the effectiveness of the Quality Improvement Program in lowering inpatient falls and achieving zero patient falls.*
Keywords: *Harm reduction, PDSA, quality improvement, patient safety.*

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I. Introduction

Inpatient falls are a critical concern in healthcare settings worldwide, representing a significant challenge for patient safety and well-being. These incidents involve patients within hospital premises experiencing an unintentional descent to the ground or a lower level, leading to varying degrees of injuries or complications. Falls in healthcare facilities have substantial implications, both for the individuals involved and the healthcare system as a whole.[1]Statistics surrounding inpatient falls highlight the gravity of the issue within healthcare settings. While figures may vary based on regions and specific facilities, they consistently reveal a concerning pattern:[2]

Falls are among the most frequently reported adverse events in hospitals and care facilities, accounting for a significant portion of patient-related incidents. Studies suggest that roughly 3% to 20% of hospitalized patients experience at least one fall during their stay, with variations influenced by patient demographics, healthcare setting, and health conditions.[3,4]

The factors contribute to increased fall risk among inpatients includes age such as elderly patients are more vulnerable, impaired mobility, cognitive deficits, medication side effects, environmental hazards, and underlying health conditions.[5]Falls can result in varying degrees of injuries, from minor bruises or abrasions to severe fractures, head trauma, or even fatalities. They often lead to extended hospital stays, additional treatments, increased healthcare costs, and potential long-term consequences for the patient's health and quality of life[6].

The repercussions of inpatient falls extend beyond the immediate physical injuries. They pose multifaceted impacts on patients, healthcare providers and the healthcare system. Falls can have severe implications for the affected individuals. Injuries sustained may lead to pain, functional decline, loss of independence, fear of falling again which can affect mobility, psychological distress and a diminished quality of life [7]. Falls contribute significantly to healthcare expenses due to increased hospital stays, additional diagnostic tests, treatments, surgeries, rehabilitation services, and potential legal implications if the fall leads to lawsuits or claims.[8] Addressing fall incidents requires healthcare providers to allocate additional time, resources and attention to prevent future occurrences. This can strain healthcare staff, impacting their ability to attend to other patients effectively. Persistent issues with patient falls can affect the reputation of healthcare facilities potentially leading to reduced trust among patients and their families.

Healthcare institutions implement various strategies to mitigate the risk of inpatient falls through, Risk assessment which includes, conducting thorough patient assessments to identify fall risk factors upon admission and throughout the hospital stay, Environmental modifications including ensuring a safe physical environment with proper lighting, non-slippery flooring, grab bars, and removing hazards that could contribute to falls, Patient and Family Education by educating patients and their families about the risks associated with falling and promoting involvement in fall prevention initiatives, Staff Education by ensuring that medical personnel receive sufficient instruction on fall prevention techniques, interventions, and patient management approaches for individuals who are at risk of falling.[9]

Hence inpatient falls represent a complex challenge in healthcare, necessitating comprehensive approaches to reduce their occurrence. Addressing this issue requires a multifaceted strategy involving risk assessment, environmental modifications, education and ongoing vigilance to ensure patient safety and well-being while mitigating the broader impacts on healthcare systems and resources.

Present study focusses on assessment to increase patient and attendant awareness in the care process, developing an efficient fall risk procedure, the tools required to identify risk groups and to attain a zero-fall rate.

II. Methodology

PDSA (Planning phase, Do phase, Study phase and Act phase) CYCLE

The initial phase of this study began with the GM Nursing or Patient Safety officer (PSO)developing a program that focused on promoting patient mobility to assist in reducing a patient's risk of fall. According to PDSA Cycle Planning Phase assessed the existing situation regarding inpatient falls through incidence reporting system. The demographics of fall patients, fall incidents data, risk factors, environmental conditions and existing fall prevention protocols were analysed and established specific, measurable, achievable, relevant and time-bound (SMART) goals for fall prevention. This includes staff training on fall risk assessment tools, patient and family education, environmental modifications to reduce the hazards, risk assessment protocols and the implementation of technologies to assist the fall prevention and to put the planned strategies into action. The data was collected during the implementation phase to track the effectiveness of the strategies. The fall incidents, near-misses, compliance with protocols and any challenges faced during execution were also documented

Do phase put the planned strategies into action through training the staff on fall risk assessment tools, role plays on fall prevention education based on case scenarios from wards and critical areas. Caution Boards are hanged bedside vulnerable and high-risk category patients to alert staff and also to have close monitoring of patients, Bilingual patient education leaflets are handed over to patients or attendants to increase their awareness on fall risk prevention measures. Staff received training on fall prevention through educational aids. The surrounding environment was modified to reduce hazards and integrate protocols into daily routines. New call bells systems introduced at 7th A & C, 4th A & C, 2nd A & C floors. Call bells in washrooms also introduced on pilot basis in 2nd floor A block. In case of attendant non-availability patient will be shifted to High dependency unit (HDU) for close monitoring and staff from home care services are arranged. It is made mandatory to report complaints about patient safety equipment, such as grab bars, side rails, and call bells, through the Complaint Management System (CMS) in order to improve tracking. A Grab Bars check has been started. Patient safety officer (PSO) and Quality Nurse conducted vigilant rounds in high-risk areas with high-risk patients the strategies.

III. Results

Table 1 shows the various causes for inpatient falls. These root causes were classified as staff, environment, patient and others, process. The language barrier for staff and patient, failure to monitor and educate the patient about fall is the most important factor for fall. Environment also play a major role in patient fall. The gap in between the rail, slippery door mats and nonfunctioning of side rail lock will increase the risk of fall in patients. Most of the patients will go to washrooms without informing the concern staff and also refuse

the assistant which aids in patient fall. Improper cleaning and drying of washrooms also increases the risk of fall in elderly patients.

Table 2 explains the hurdles and steps taken to reduce the inpatient falls. Vigilant rounds made by the staff during evening and night imparted knowledge on prevention of falls in patients and attendants. Placing of side rails and anti-skid rubber mats reduced the risk of fall mostly in elderly patients. The patients and attendants utilized most of the free time in studying the in, formation brochures, leaflets and educational aids on measures taken to prevent the fall which reduced the fall percentage. Training the staff through educational aids also helped them to handle the non-cooperative patients very easily. Mandatory reporting through complaint box helped the staff and management to implement various preventive steps to reduce the fall.

Table no 1 Analysis of root cause for incidence (Falls)

S.No	Staff	Environment	Patient and others	Process
1	Language barrier	Gap in between side rails	Going alone to the wash rooms without informing the concern staff	Improper cleaning and drying of washrooms
2	Failure to monitor or the movement of the patient (Bed to wheel chair	Slippery door mat	Giddiness due to patient clinical condition	Lack of periodic check.
3	Failure to educate the patient or attendant on fall prevention	Nonfunctioning of side rail lock	Refused assistant	

Study phase aanalysed the collected data to assess the effectiveness of the implemented strategies. In the month of March 2023 there were 03 Inpatient falls and 06 Inpatient falls in the month of April 2023 when strategies were not implemented. After implementing the strategies, the outcomes were compared with the established benchmarks and goals. Results depicts that, the inpatient fall rate gradually decreased showing a fall rate of 02 falls in the months of May and June., July and August reported 01 fall and September and October reported No falls at all (Table 3). In spite of the strategies that were put in place it was observed there were gaps in procedures, employee training, environmental changes, or patient compliance that led to the falls that happened**.**

Act phase iimplemented the revised strategies and continue the cycle to sustain objectives. All patient fall incidents are being investigated thoroughly by PSO and Quality Team for any opportunities for further improvement. Post fall assessment is done by using a comprehensive checklist. Fall incidents are discussed daily in HOD meetings and Nursing review meetings. Fall incidents are discussed in monthly Nursing quality improvement committee and outcome, areas of improvement and measures are being apprised to all Nursing Supervisors

Table no 2 Steps taken to reduce the inpatient falls

Hurdles	**Recommendations**
Lack of Awareness Lack of periodic checks Improper and Incomplete Assessment	Role Plays on Fall Prevention Education based on Case Scenarios from wards and critical areas. Vigilant rounds by Evening & Night SOD's, PSO and QN
No caution / Sign Boards Loose Grab Bars Gap b/w side rails	Caution boards at bedside to alert care providers Preventive check of Grab bars Proper positioning of side rails Anti-skid rubber mats Mandatory reporting through CMS (Complaint Management System) a nd follow-up till rectification. Installation of new patient call bell system
In effective Patient / Attendant Educati on No attendant in single / sharing room	Patient Education Information brochures / Leaflets Education in known language and translators Implementation of no attendant shift out policy.
Endorsement / Handover Communication	Documentation of at-risk status in Nursing Handovers
Non-Cooperative Patients	Close monitoring and attender education regarding the same is done. Document further issues in this aspect in the Case note.

Table no 3 Inpatient fall rate reported in various month

Month	Number of falls
March -23	03
April-23	06
May- 23	02
June-23	01
July-23	01
August-23	01
September -23	Nil
October -23	Nil

IV. Discussion

The prevalence of patient falls in hospitals varies globally, nationally, and even within states or regions due to diverse healthcare systems, demographics, reporting methodologies, and interventions in place. However, a general overview of trends and statistics based on January 2022, shows that, in the world-wide healthcare systems patient falls are of considerable concern. According to the World Health Organization (WHO), falls are among the leading causes of injury-related deaths and disabilities globally, especially among older adults. However, specific worldwide statistics on inpatient falls across all hospitals may not be consistently documented or easily accessible due to variations reporting practices and data collection methods.

The Centers for Disease Control and Prevention (CDC) notes that falls are the leading cause of injury-related deaths among individuals aged 65 and older in the United States. Regarding inpatient falls, the Agency for Healthcare Research and Quality (AHRQ) highlights that between 700,000 to 1 million patient falls occur in hospitals each year in the U.S.[10] In the UK, the National Health Service (NHS) has also recognized falls as a significant concern. NHS Improvement reported over 250,000 falls recorded in hospitals annually, although this figure may vary year to year.

The Australian Institute of Health and Welfare (AIHW) indicates that falls are the most common adverse event reported in hospitals in Australia. However, specific nationwide statistics on inpatient falls might vary and may not be consistently reported across all states.[11]For instance, if a hospital finds that 30% of falls resulted in injuries, they need to look into organizational structure, patient safety, and environmental risks that can cause injuries. To reduce their trauma when a patient falls, hospital administrators need to assess the infrastructure and capabilities at the organizational and unit levels. In addition, they need to look at ways to remove sharp edges, anything that could fall on a patient when they're moving from one floor to another, and blunt force injuries from exposed floors in restrooms, showers, and bedrooms. Compared to published research, this injury rate is higher; between 30 and 51 percent of falls result in some sort of damage.[12]

Similar concerns and reporting methodologies exist in various other countries, but comprehensive and up-to-date nationwide or state-specific statistics on inpatient falls might not be universally available or consistently documented. For detailed and current statistics on inpatient falls at the national or state level in specific countries or regions, accessing healthcare regulatory bodies, government health departments, or healthcare quality improvement organizations may provide more precise and updated information. They often compile and publish reports, databases, or studies focusing on patient safety, including falls in healthcare settings.

Falls among patients in India, especially in healthcare settings like hospitals and care facilities, are a recognized concern, particularly among the elderly population. However, specific nationwide statistics on inpatient falls in India may not be extensively documented or easily accessible due to variations in reporting practices and healthcare infrastructure across different regions and facilities. Some studies revealed that healthcare providers view bed and chair alarms as a very successful fall prevention approach, even in the face of guidelines and laws.[13] In the current study call bells were arranged in different floors and blocks which reduced the fall rate. In India, falls among the elderly are a significant issue due to issues with balance, mobility, and chronic health conditions that predispose them to falls. In the present study the floors made non slippery which provided a strong grip to the elderly patients and reduced the fall.

Falls might be under reported due to various reasons including lack of standardized reporting systems, varying definitions of what constitutes a fall, and limited awareness or priority given to data collection specifically related to inpatient falls. Our study included a training session held to the staff with educational aids and also to the patients and attendants which make them aware of falling options and preventive steps to be taken. All these steps helped to reduce the falls in the hospitals. Efforts are being made by healthcare organizations, academic institutions, and government bodies in India to address patient safety issues, including falls among inpatients.

V. Conclusion

Present outcome made it abundantly evident that the Quality Improvement study was successful in achieving Zero Patient Falls and a reduction in inpatient falls. The implementation of comprehensive fall prevention programs is necessary to enhance the standard of care provided to adult patients in hospitals. These studies should identify modifiable risk factors, conduct regular risk assessments, and offer customized interventions in order to prevent falls and the issues they cause. By addressing fall risk factors and implementing efficient preventative measures, healthcare systems can make major strides toward improving care and ensuring the health and safety of the adult population.

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