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Pattern Analysis of Inpatient Falls in a Tertiary Hospital

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Abstract. We analyzed the spatial and temporal patterns of inpatient falls in a tertiary hospital. Data were obtained from the adverse-event self-reporting system and the electronic nursing record system of the hospital. Through chart reviews we reclassified the cases. Most falls occurred by the bedside, followed by the restroom and hallway, and they occurred most often between 2 a.m. and 6 a.m. These findings indicate when and where nurses should be most alert about falls.

Keywords. Inpatient falls, pattern analysis, electronic nursing records, adverse-event self-reporting system

1. Introduction

As a patient-safety factor, preventing inpatient falls has the greatest commonality and nursing needs in clinical settings. In many countries, patient falls and injurious falls are employed as national metrics for the quality of nursing care. As at 2008, the Centers for Medicare & Medicaid Services did not reimburse hospitals for certain types of traumatic injuries that occur while a patient is in a hospital, and many of these injuries can occur after a fall. [1] The Korea Institute for Healthcare Accreditation has included inpatient falls as a hospital accreditation criterion since 2018. This situation motivated us to investigate the pattern of fall occurrences in an inpatient setting. We hypothesized that knowledge of the spatial and temporal patterns of falls will make it possible to design more targeted alerts that include the risk of falling in individual patients. [2]

2. Methods

Asan Medical Center is the largest tertiary and academic hospital in the Republic of Korea, with a total size of 524,700 m^2 and including 2,705 beds. We analyzed cases of falling that were reported to the adverse-event self- reporting system of the hospital from January 1, 2014 to May 31, 2015. Data were collected from the self-reporting system and the electronic nursing record system of the hospital. The case reports were reviewed and reclassified according to the fall definition of the Patient Safety Index of the American Agency for Healthcare Research and Quality and the National Database of Nursing

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Quality Indicators. There were 422 falls in 2014 and 173 in 2015. Data were analyzed using the SPSS program (version 22.0). Descriptive analysis was used to identify the spatial and temporal patterns of fall occurrence. Approval for the study was obtained from the Institutional Review Board at the hospital. The events identified in the review of electronic nursing records were annotated by researchers in order to collect information about each fall event.

3. Results

Falls occurred most frequently by the bedside, followed by the restroom and hallway (Fig. 1a). They were observed most frequently in oncology units (27%), followed by gastroenterology units (16%) and liver transplantation surgery units (13%). They occurred most frequently between 2 a.m. and 6 a.m. (Fig. 1b). Nurses admitted that the cause of the fall was inadequate risk assessment and cognitive lack of attention on individual risk factors in one-quarter of cases. Another important issue was patients and caregivers not being sufficiently aware of the risk of falling, despite being frequently advised about this by nurses.

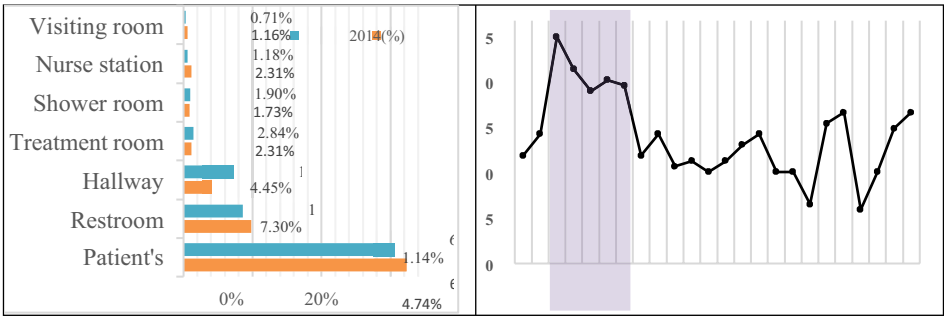

Figure 1. Patterns of fall occurrence.

4. Discussion and Conclusions

We found that the occurrence of falls showed clear patterns according to nursing unit, place, and time of day. These findings will be useful for designing a clinical decision support (CDS) service that can provide nurses with accurate alerts about which patients are at risk of falling and recommend actionable interventions in a timely manner. In addition, unit-based feedback and auditing should be considered in target management strategies. Addressing the need for information sharing and communication about falls with patients and caregivers should be combined with technical measures such as CDS.

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References

[1] Ganz DA, Huang C, Saliba D, Shier V. Preventing falls in hospitals [Online]. Prepared by RAND Corporation, Boston University School of Public Health, and ECRI Institute. 2013. Available: http://www.ahrq.gov/professionals/systems/hospital/fallpxtoolkit/index.html [Accessed March 2016].

[2] Cho I, Boo E-H, Chung E, Bates DW, Dykes P. Novel approach to inpatient fall risk prediction and its cross-site validation using time-variant data. Journal of Medical Internet Research. 2019;21(2):e11505.