Using Balanced Scorecard on Reducing Fall Incidents and Injuries Among Elderly Cancer Patients in a Medical Center in Taiwan

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Article info

Background: Elderly cancer patients undergoing cancer treatments were vulnerable to fall incidents and injuries, an important issue in patient safety. The aims of this study were to explore the effects of using balanced scorecard management strategies on reducing fall incidents and injuries among elderly cancer patients in a medical center.

Methods: A prospective, intervention study was employed using records of fall incidents of elderly cancer patients retrieved from Taiwan Patient Safety Reporting system (TPR). The intervention, balanced scorecard measures designed to reduce fall incident and injury, was added to the customer, internal process, learning and growth, financial perspectives of the balanced scorecard implemented by the medical center. SPSS 20.0 was used to in statistic analysis for frequency, percentage, mean, standard deviation, and Chi-square test.

Results: Prior to the intervention, 41 fall incidents (all sustained injury) recorded in 2010: fall incident (3.26%), fall injury (100%). With the intervention, 24 fall incidents (17 sustained injuries) recorded 2011: fall incident (1.87%; \( \chi^2 = 4.985, P = 0.026 \)) and fall injury (62.5%; \( \chi^2 = 17.845, P < 0.001 \)) both significantly reduced. With the intervention extended in 2012, 17 fall incidents (11 injuries) in 2012: fall incident (1.38%; \( \chi^2 = 0.914, P = 0.339 \)) and fall injury (64.7%; \( \chi^2 = 0.021, P = 0.885 \)) maintained low.

Conclusion: The results of present study provided references to healthcare institutes using balanced scorecard management strategies as intervention to reduce fall incidents and injuries in elderly cancer patients and to prompt patient safety and quality of care.

1. Introduction

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) added fall prevention as one of the patient safety goals in 2005. In recent years, most hospitals were committed to promote and improve patient safety and quality of care. The Taiwan Joint Commission on Hospital Accreditation constantly monitors fall incidents reported from the local healthcare organizations and highlights fall incidents as important patient safety issues.

The structure of Taiwanese population exhibits a rapid shift toward an aging society. In 1993, only 7% of total population was people ages 65 and above, whereas today, Taiwan is recognized as an aging society. In 2015, 2.93 million (12.51%) were senior citizen. One-third of people older than 65 has fall experiences annually in global statistics. Elderly face fluctuating health conditions causing by chronic illnesses such as osteoporosis. Fall incidents have more serious consequences: physical injuries, lowering quality of life, or even death. Fall incidents are common cause of psychological stress and extending hospitalization and costs incurred.

Fall incidents are among the most common accidents happened in hospitals. Elderly inpatients increasingly become victims of fall incidents.
incidents due to chronic frailty or treatments of their illnesses. The fall injuries sustained are generally severer than those of younger patients. Statistics from the Taiwan Patient Safety Reporting System (TPR) showed that patient fall incidents in 2014 posited second in the list of patient safety accidents. There were 12,928 reported patient fall incidents of which 2898 (40.9%) pertained to elderly patients ages 65 and above and 35% elderly patients had fall-related injuries. Inpatient fall incidents can cause various degrees of damage; fall injuries degrade health condition extend hospital stay and medical cost. Fall incidents are preventable. Individual characteristics such as age, gender, falls history, diabetes, visual impairment, and low hemoglobin attributed to the occurrence of fall incidents. Characteristics in falls history, fear of fall, losing balance, frailty, immobility, emotional condition, and whether family accompanied during falls were attributed to fall incidents. Fall injuries affect patient behaviors, independence, sense of security, and willingness to engage in activities and rehabilitation, and increase hospital liability and medical disputes.

Cancer patients are high risk group of fall incidents; frailty, fatigue, insomnia and functional degradation due to chemotherapy can increase their risk to fall incidents. Studies confirmed elderly cancer patients undergoing treatments such as chemotherapy, adjunct endocrine therapy, and cancer medication were at high risk to fall incidents. In recent years, new therapies and medicines prolong cancer patients’ survival and risk factors linking fall incidents were well explored, these make fall incidents and patient safety in elderly cancer patients more pressing.

The balanced scorecard (BSC) was often used in industrial enterprises for performance improvement. Growing number of hospitals implemented BSC to elevate performance for financial and non-financial senses. The BSC proposed by Kaplan and Norton in 1992 was consisted of four perspectives: financial, customer, internal process, and learning and growth. BSC helps organizations identify visions, formulate strategies, and ultimately achieve target goals. The internal process involved coordinating limited resources for optimal results and the learning and growth involved vesting personnel competence and professionalism: these two were for optimal results and the learning and growth involved vesting goals. The internal process involved coordinating limited resources to identify visions, formulate strategies, and ultimately achieve target goals. BSC was found to improve family satisfaction and performance drivers. Items in the customer and financial perspectives were represented as the performance drivers. The control variables encompassed demographics and care factors.

2. Materials and methods
A prospective, intervention study was employed. Fall incidents of elderly cancer patients (patients ages 65 and above) admitted to the medical center between 2010 and 2012 were retrieved from TPR. 82 elderly cancer patients were identified. A set of BSC measures was designed for fall prevention merging into the overall BSC matrix of the medical center. The effects were explored. The dependent variables included ‘fall incident rate’ and ‘fall injury’. The control variables encompassed demographics and care factors. Demographics covered patient’s gender, whether patient belongs to high-risk group, fall history, and level of consciousness. Care factors included work shifts, daily companion, and whether patient was accompanied during fall incidents. The statistical methods included frequency distribution, percentage, standard deviation, Chi-square tests, and StatXact Pearson’s Chi-square test. Ethical approval for the present study was obtained from the Institutional Review Board (13MMHIS066) of the medical center. Patient consent was waived for present study.

2.1. Balanced scorecard measures for fall prevention
A set BSC measures was developed as fall prevention in 2011. With success on reducing fall incident and injury in elderly cancer patients, the BSC measures were extended in 2012 and minor modified. These BSC measures were depicted in Table 1. Items in the internal process and the learning and growth perspectives were designed as the performance drivers. Items in the customer and the financial perspectives were regarded as the outcomes.

3. Definitions
Fall incidents: patient fall events documented in the TPR system of the medical center.
Fall incident rate: division, the numerator number of elderly cancer patients involved in fall incident and denominator the number of elderly cancer patients admitted by the medical center in one calendar year.
Fall injury: a dichotomous value, one represented fall incident sustained in injury that met severity levels specified by the Taiwan Clinical Performance Indicator otherwise zero.
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