Risk Factors Related to Caregivers in Hospitalized Children's Falls

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ARTICLE INFO

ABSTRACT

Purpose: This study aimed to evaluate the risk factors for falls in hospitalized children in relation to their caregivers.
Methods: This was a case control study to evaluate the risk factors for falls in hospitalized children in relation to their caregivers. The children included in our study were at the hospital between June 2014 and June 2015. Demographic data of patients, caregivers, some habits; education level; and number of siblings were recorded.
Results: The data of 117 patients were evaluated, and there were 39 patients with a fall event and 78 patients who did not experience a fall. The mean age for the fall group and the non-fall group were 14.71 ± 9.36 and 15.62 ± 10.65 months, respectively. The mean age for the caregivers of the fall group and the non-fall group were 29.33 ± 5.89 and 29.53 ± 5.56 years, respectively. There was a statistically significant difference in fall risk related to the caregivers' education level ($p < 0.01$) and caregivers' habit of smoking ($p < 0.01$). The analysis of risk factors related to caregivers for pediatric inpatient falls, by multivariate logistic regression, showed that low educational level of caregivers (OR = 0.361; CI = 0.196–0.665; $p < 0.01$), caregivers' smoking (OR = 4.863; CI = 1.058–22.358; $p < 0.05$) and increased length of stay for the children (OR = 1.994; CI = 1.475–2.696; $p < 0.01$) carried a higher risk for pediatric inpatient falls.
Conclusions and Practice Implications: The data obtained in our study have shown that caregivers play a key role in fall events in hospitalized children. Nurses and other health workers should consider children's caregivers educational level and habits for prevention of hospitalized children falls.

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Introduction

Falls and Pediatric Inpatients Falls

Patients admitted to the hospital to rehabilitate can sometimes be exposed to an accident in the hospital. These accidents are desirable by neither patients nor health care providers. One of the most common of these accidents is a fall (Hendrich, Bender, & Nyhuis, 2003). In terms of being an indicator of the quality of health care, many hospitals are trying to take all necessary measures to reduce falls that occur in hospitals (Oliver, Daly, Martin, & Mcmurdo, 2004).

Falls can be caused by environmental factors such as falling on slippery floors or from physiological reasons such as dizziness (Kingston, Bryant, & Speer, 2010). A fall can be defined as "an event which results in a person coming to rest inadvertently on the ground or floor or other lower level" (World Health Organization, 2008, p. 101).

Falls can be divided into three types: accidental, unanticipated physiological and anticipated falls. Accidental falls are unintentional. Environmental factors such as a slippery floor can cause deterioration of balance in a person which often results in falls. However, there is no risk of patients falling in unanticipated physiologic falls, and the conditions of unanticipated falls are not predictable. Meanwhile, anticipated falls can be determined using fall risk assessment tools (Morse, 2002).

The rate of falls in hospitalized patients were reported to range between 3.44–7.6 falls per 1.000 patient-days in the United States for all patient groups (Staggs, Mion, & Shorr, 2014; Czernuszenko & Czlonkowska, 2009). In previous studies, the fall rates for pediatric inpatient have been shown to vary from 0.57 to 1.36 per 1.000 patient days (Jamerson et al., 2014; Cooper & Nolt, 2007; Hill-Rodriguez et al., 2009; Kingston et al., 2010; Fujita, Fujita, & Fujiwara, 2013).

Since fall events in the adult inpatients may result in significant morbidity and mortality, there are lots of studies available in the literature. However, little data exists about the fall events in pediatric inpatients. The rate of fall events in pediatric inpatients is lower than adults (Oliver, 2006; Child Health Corporation of America Nursing Falls Study Task Force, 2009; Jamerson et al., 2014).

Fall risk Assessment Tools

Numerous pediatric fall risk assessment tools have been developed for patients at high risk of falling (Graf, 2011; Razmus & Davis, 2012; Hill-Rodriguez et al., 2009). However, the sensitivity and specificity of

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these pediatric fall risk assessment tools vary greatly, and most tools are insufficient to determine the risk of a fall (Ryan-Wenger, Kimchi-Woods, Erbaugh, LaFollette, & Lathrop, 2012; Harvey, Kramlich, Champman, Parker, & Blades, 2010). Numerous fall risk assessment tools are available to determine the risk of children falling. One tool is the General Risk Assessment for Pediatric Inpatient Falls (GRAF PIF), which consists of five items for assessment: length of stay, absence of intravenous therapy, physical or occupational therapy underway, seizure medications and orthopedic diagnoses (Harvey et al., 2010). The GRAF PIF fall risk assesment tool has reported 75% for sensitivity and 76% for specificity (Graf, 2011). The Humpty Dumpty Falls Scale (HDFS) is another tool consisting of seven items for evaluation: age, sex, diagnosis, cognitive disorders, environmental factors, surgical/sedation/anesthesia responses and usage of medications. The HDFS had sensitivity of 85% and specificity of 24% (Hill-Rodriguez et al., 2009), while another study using HDFS found 39% sensitivity and 57% specificity (Messmer, Williams, & Williams, 2013). The CHAMPS Pediatric Fall Risk Assessment Tool uses six evaluation items: changes in altered mental status, history of fall, age less than 3 years, altered mobility, parental involvement and safety interventions. The CHAMPS scale had a sensitivity of 79% and a specificity of 75% (Razmus & Davis, 2012). The I'M SAFE scale evaluates six items: impairment, medications, sedation, admitting diagnosis, fall history and the environment (Neiman, Rannie, Thrasher, Terry, & Kahn, 2011). The Cummings Pediatric Fall Assessment Scale is determined by evaluating six items: cognitive/psychological, equipment, functional status, history of falls, medications and seizures/epilepsy (Harvey et al., 2010). The Harizmi Falling Scale is used in Turkey to determine the risk of inpatient children falling. This scale evaluates nine items: neurological disease/symptoms present, oxygenation changes, decrease risk of disease/symptoms presence, bearing relevance, visual impairment of assets, the patient connected to equipment, standing/walking physical support needs, postoperative first 48-hour period and risky drug use (Ministry of Health of Republic of Turkey, 2011; Tanil, Cetinkaya, Sayer, Avsar, & Iskit, 2014). However there is a dearth of enough studies on the validity and reliability of this scale. (Tanil et al., 2014).

Many of these scales are not sufficiently effective in predicting the risk of falling (Harvey et al., 2010; Ryan-Wenger et al., 2012). This condition may be due to the lack of assessed risk factors in scales. According to us, this lack is related to risk of caregivers. Only the CHAMPS fall risk assessment tool evaluates caregivers' involvement in the care and safety actions for hospitalized children. Studies have demonstrated that caregivers' impact on falls among hospitalized patients (Lee, Yip, Goh, Chiam, & Ng, 2013; Tung, Liu, Yang, Syu, & Wu, 2009). However, there are no fall risk assessment tools available to evaluate the caregiver-related risk factors in hospitalized children's falls.

Caregivers

In most countries, mothers participate in the process of taking care of their inpatient child and stay with the child during the period of hospitalization. Maternal stress and anxiety can affect the mothers' childcare ability (Commodari, 2010; Burke, Handley-Derry, Costello, Kauffmann, & Dillon, 1997; Kristensson-Hallstrom, 2000).

While it is difficult to predict whether or not an inpatient child will fall or when they will fall, fall risk assessment tools can be used to identify individuals at risk of falling. Falls occurring in pediatric patients in hospitals may arise from the children themselves, from hospital conditions and from caregivers accompanying children during hospitalization. As caregivers are the most important environmental factor for hospitalized children, caregiver stress, anxiety and habits directly affect inpatient child care. Studies have reported that caregivers' increased awareness of falls results in fewer falls among hospitalized patients (Lee et al., 2013; Tung et al., 2009). However, only a few studies have identified risk factors for falls among hospitalized children which associated with caregivers (Cooper & Nolt, 2007; Razmus, Wilson, Smith, & Newman, 2006; Kingston et al., 2010).

Aim

Providing a safe environment for hospitalized children and educating their family members, especially mothers, are of vital importance. As mothers' educational level increases, home accidents involving children decrease (Stewart, 2001; Erkal & Şafak, 2006). The present study is based on the hypothesis that caregivers, particularly mothers, are the most significant factor in falls of hospitalized children. This study is aimed at evaluating the risk factors for falls in hospitalized children which are related to their caregivers. For this purpose, we examined inpatient children's socio-demographic data and their caregivers' health conditions, demographic characteristics, and habits.

Methods

Study Design

A prospective case-control study design was applied to evaluate the caregiver-related risk factors for falls in hospitalized children.

Setting

This study was performed in the Department of Pediatrics at Adiyaman University Training and Research Hospital in Adiyaman City, Turkey. The hospital is a 600-bed, public, university-affiliated teaching hospital in southeastern Turkey which provides primary to tertiary care. The pediatric clinic has a total bed capacity of 118 (pediatric ward: 65 beds, pediatric intensive care unit: 11, neonatal intensive care unit: 25, emergency department: 17).

Sample

Hospitalized children who fell between June 2014 and June 2015 were included in the study. A fall was defined as "an event which results in a person coming to rest inadvertently on the ground or floor or other lower level" (World Health Organization, 2008, p. 101).

The inclusion criteria for the study group were as follows: (1) the patient and caregivers have no chronic diseases; (2) the patient and caregivers do not take any medication that causes anxiety, increases stress level, or causes sleep deprivation or restlessness; and (3) the caregivers have no known psychiatric disorder. Thirty-nine patients who experienced falls and their caregivers were enrolled in the study. The control group was also randomly selected from the pediatric clinic, and 78 non-fall patients were matched by age and gender to the patients and caregivers in the non-control group. The study and control groups were selected during the same time period.

Procedure

Approval from the Institutional Review Board (IRB) of Adiyaman University was received for this study. Oral consent was obtained from parents, and after the researchers explained the study objectives and procedures in detail, parents signed written, informed consent forms. Participants were informed that their data would be kept confidential. One researcher took part in the data collection, which was conducted after patients experienced fall events. Data were collected with a questionnaire which inquired about caregivers' habits (e.g., smoking) and education level and patients' demographic characteristics, number of siblings, length of stay, and previous fall history.

Data Analysis

The general characteristics of the patients were analyzed using descriptive statistics, with results expressed as percentages, means, and standard deviations. Next, quantitative data from the two groups were compared using Chi-square test, independent t-test, and Mann-