

FALLS' RISK ANALYSIS OF OLDER PATIENTS IN NURSING DEPARTMENTS: ONE MONTH STUDY

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Abstract

BACKGROUND: Falls are a major public health problem, especially in the elderly. Of people who suffer falls, 20- 30% experience mild to severe injuries. Timely assessment of risk factors can prevent some of these falls occurring.

PURPOSE OF STUDY: To assess the falls risks factors of patients in nursing departments.

METHODS: The study was conducted January to September, 2015 in a Lithuanian long-term care and treatment hospital. The Morse Fall Scale was used for assessment of falls risk, which were evaluated within 48 hours and then after one month of admission to the hospital.

RESULTS: The study involved 177 respondents. After one month of admission to the hospital, 129 participants took part in the survey. During the first stage of the study, the difference in falls between the age groups and falls risk was statistically significant ($p = 0.019$). In addition, statistically significant differences ($p = 0.004$ and $p = 0.000$) were found between the patients' cognitive impairment, falls within the past 1-year period, and the risk of falls during 48 hours after hospitalization. After one month of admission to the hospital, it was found that differences in falls risk was not statistically significant among age groups ($p = 0.360$) or the patients' cognitive impairment ($p = 0.200$).

CONCLUSION: An assessment of patients within 48 hours of hospitalisation revealed a statistically significant difference between the patients having suffered a fall within the past year and the current risk of falls.

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Keywords: falls, elderly, risk, factors, nursing.

Introduction

Population ageing is a phenomenon resulting in a variety of social and economic outcomes. With the average life expectancy increasing, the share of older people in society is growing on an annual basis. In 2014, there were 715,500 people aged 60 and older in Lithuania. The number of elderly females was 1.8 times that of elderly males. According to forecasts, by the beginning of 2030, nearly one third (28.9%) of the Lithuanian population will account for people aged 60 and older. Society is likely to continue to age: nearly 37% of the Lithuanian population will be elderly by the beginning of 2060 (Gražulienė, Serapinaitė, Ustinavičienė & Želvienė, 2016).

Ageing of an individual is a complex process, during the course of which the structure of all the body's organs and systems, their functional particularities, and adaptation possibilities change. One key problem that challenges a person who is aging is falls, which are defined as any unintentional change in position where the person lands on the floor, ground, or other lower level; includes falls that happen while being assisted by others (Morris, Fries, Bernabei, Steel, Ikegami, Carpenter et al., 2009). Researchers claim that every individual over 65 falls at least once a year (Hornbrook, Stevens, Wingfield, Hollis, Greenlick & Ory, 1994; Hausdorff, Rios & Edelber, 2001), and this frequency increases as an individual grows older (Barret-Connor, Weis, McHorney, Miller & Siris, 2009). Individuals living in nursing homes fall three times more than those living at home; at least 30–50% of nursing home residents fall at least once a year. Every tenth individual falls at least twice, and approximately 15% of individuals fall three or more times (Tinetti, 1994). Falls were the third leading cause of unintentional-injury-related death in the United States in 2011 and the leading cause of unintentional-injury-related death of people age 69 and older (National Safety Council, 2015).

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Rubenstein and Josephson (2002) stated that up to 60% of elderly individuals suffer some sort of injury as a result of a fall.

Aim

The purpose of our study is to conduct comparative analyses of falls risk among males and females, dependent on age group, patient's mental condition, and previous falls, at one of Lithuania's long-term care and treatment hospitals.

Materials and Methods

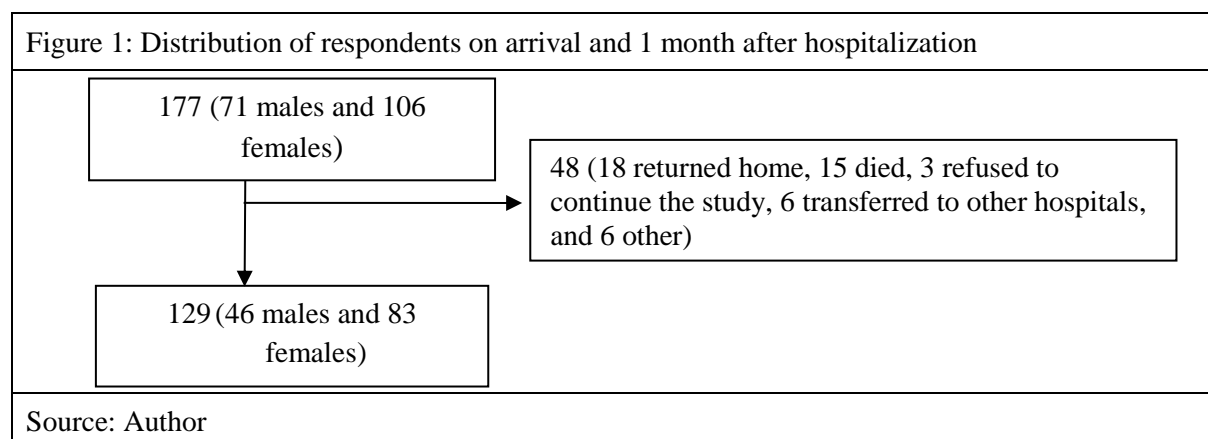
Subjects

The longitudinal prospective study was carried out between January and September 2015 at a Lithuanian long-term care and treatment hospital. The inclusion criteria of participants were defined as the following: patients older than 60 years of age who understand and speak Lithuanian, and consented to participate in the study. Exclusion criteria: 1) palliative care patients; 2) younger than 60 years of age; 3) patients in a coma; 4) patients who do not speak or are diagnosed aphasia; and 5) patients do not understand and do not speak Lithuanian.

The authors received permission from the Vilnius Regional Biomedical Research Ethics Committee to conduct study. Informed written consent was obtained from all patients.

Sampling

The study involved 177 respondents after the first 48 hours and by the end of our study, the number of respondents still participating was 129 people (Figure 1).



One month after hospitalization, 24 patients in the study were discharged to home or were referred to another healthcare institution, nearly 15 of the respondents died, and a few respondents discontinued their participation in the study. Both within the first 48 hours and at one month after hospitalization, the number of female respondents was nearly twice that of the number of male respondents.

Data Collection and Analysis

The Morse Fall Scale was used to assess the risk of falls (Morse, Morse & Tylko, 1989; Spirginienė & Macijauskienė, 2006). This scale consists of six items: history of falling, secondary diagnosis, ambulatory aids, intravenous therapy, gait, and mental status. Cognitive functions were assessed using a short Mini Mental State Examination (MMSE) (Folstein, Folstein & McHugh, 1975). The risk of falls was evaluated twice, i.e., within 48 hours and then one month after admission to the hospital. The questions were read out aloud and the respondents' answers were written down on the study sheet.

We evaluated the risk of falls in relation to gender, age, and the patients' mental condition, and previous falls. Data were analyzed using the SPSS Statistics® (version 20) software. Descriptive statistical analysis was used to calculate frequencies, mean values, range, Pearson's chi-squared test, degrees of freedom (df), and the p-value, with a significance level of 0.05.

Results

Of the 177 respondents included in this study, 71 (40.1%) were males and 106 (59.9%) were females. The average age was 78.93 ± 8.95 years. The age of the youngest patient was 61 and the oldest 97 years. One month after admission to the hospital, 129 participants, i.e., 46 (35.7%) men and 83 (64.3%) women, completed the study.

There was no statistically significant difference in risk of falls when comparing gender on admission with that one month after admission to the hospital. Within 48 hours after hospitalization, nearly three quarters (72%) of males and two thirds (66%) of females demonstrated a high risk of falls. Only 11% of patients in the study demonstrated a low risk of falls.

One month after hospitalization, a high risk of falls was established for over three-fifths (76%) of males and nearly three-fifths (58%) of females. A low risk of falls was only recorded for 2% of females. This meant that, one month after hospitalization, a high risk of falls remained: this risk increased by four percentage points for males and decreased by eight percentage points for females.

Statistically, the risk of falls was significantly different among age groups during the first 48 hours (Table 1).

However, no statistically significant differences in the risk of falls among age groups of the subjects were found one month after hospitalization.

Statistically, the risk of falls was significantly different among patients' degree of cognitive impairment when assessed during the first 48-hours after admission (Table 2).

Table 1: The risk of falls and the relation to age group

Falls risk	Within 48 hours				After one month			
	60-64 n (%)	65-74 n (%)	75-84 n (%)	85+ n (%)	60-64 n (%)	65-74 n (%)	75-84 n (%)	85+ n (%)
Low	-	3 (6%)	6 (9%)	-	-	-	2 (4%)	-
Moderate	1 (9%)	22 (47%)	14 (21%)	11 (20%)	4 (44%)	13 (36%)	19 (39%)	8 (23%)
High	10 (91%)	22 (47%)	46 (70%)	42 (80%)	5 (56%)	23 (64%)	28 (57%)	27 (77%)
Total	11 (100%)	47 (100%)	66 (100%)	53 (100%)	9 (100%)	36 (100%)	49 (100%)	35 (100%)
	$\chi^2 = 25.338$, df = 6, p = 0.019				$\chi^2 = 6.596$, df = 6, p = 0.359			

Source: Authors

A high risk of falls was indicated for most patients (85%) with severe cognitive impairment (Table 2) as well as 74% of patients with moderate cognitive impairment and 69% of patients with mild cognitive impairment. One month after hospitalization, the risk of falls remained, but no statistically significant differences were observed between the increase in the risk of falls and the cognitive impairment of the subjects.

During the first 48 hours, respondents were asked whether they had fallen during the preceding 12 months, with results shown in Table 3.

The survey conducted within 48 hours after hospitalization revealed that 87% of the participants had fallen during the preceding 12 months. Of this group, 75% had a high risk of falls, whereas the remaining had moderate risk of falls.

Table 2: The risk of falls and the relation to cognitive functioning

Falls risk	Within 48 hours				After one month			
	Severe n (%)	Moderate n (%)	Mild n (%)	WCI* n (%)	Severe n (%)	Moderate n (%)	Mild n (%)	WCI* n (%)
Low	1 (5%)	2 (3%)	4 (11%)	2 (4%)	-	-	-	2 (5%)
Moderate	2 (10%)	17 (23%)	7 (20%)	22 (44%)	2 (18%)	17 (31%)	9 (35%)	16 (43%)
High	16 (85%)	54 (74%)	24 (69%)	26 (52%)	9 (82%)	38 (69%)	17 (65%)	19 (52%)
Total	19 (100%)	73 (100%)	35 (100%)	50 (100%)	11 (100%)	55 (100%)	26 (100%)	37 (100%)
	$\chi^2 = 17.043$, df = 6, p = 0.004				$\chi^2 = 8.552$, df = 6, p = 0.2003			

*WCI – without cognitive impairment

Source: Authors

Table 3: The risk of falls and the relation to falls during the previous year

Falls risk	Within 48 hours	
	Yes n (%)	No n (%)
Low	-	9 (39%)
Moderate	39 (25%)	8 (35%)
High	115 (75%)	6 (26%)
Total	154 (100%)	23 (100%)
	$\chi^2 = 67.846$, df = 2, p = 0.000	

Source: Authors

Discussion

The probability of falls increases as one grows older due to the biological changes in the body. Age is a main risk factor for falls with people over 80 years being more prone to falls (Kannus, Palvanen, Niemi & Parkkari, 2007; World Health Organization, 2007). The importance of age was emphasized by Rubenstein and Josephson (2006), who analyzed 16 studies and found evidence in eight suggesting that being over 80 years of age was a key factor influencing an individual's frequency of falls. In five of the eight studies, the age group above 80 years was statistically significant in this respect. Vieira, Tappen, Engstrom, and da Costa (2015) comprehensively analyzed data relating to individuals who experienced falls and revealed a statistical significance between falls and the age group of 75 years and above. Analysis of the data of our study also revealed a statistical significance with the risk of falls corresponding to the respondents' age.

Our study revealed a strong relationship between severe cognitive impairment and high risk of falls. Rubenstein (2006) found that in eight of the 16 controlled studies they studied, cognitive impairment

was a key factor leading to falls with statistically significant differences established in four of their eight studies.

Griškonis, Strukčinskienė, Raistenskis, Stukčinskaitė & Griškonytė (2013) described a study that involved 312 individuals who were aged over 65 years and had been treated at inpatient healthcare establishments due to injuries caused by falling. Alekna, Šliažaitė, Tamulaitienė & Kalibaitienė (2002) described a study that involved 250 individuals aged over 60 years from Vilnius nursing homes (185 females and 65 males). Over the past 12 months, 86 (34.4%) individuals had fallen at least once. Falls risk of elderly people increases with precedence of previous falls.

Conclusion

An assessment of patients within 48 hours of hospitalization showed statistically significant relationships between the patients' age, cognitive impairment, and the risk of falls. Moreover, an assessment of patients within 48 hours of hospitalisation revealed a statistically significant relationship between the patients having suffered a fall within the past year and the current risk of falls.

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