

CLINICAL PRACTICE

Risk factors for frequent users of the emergency department among adults aged 55 and older

Deana Hays*¹, Barbara Penprase^{1,2}, Suha Kridli¹

¹ School of Nursing, Oakland University, Rochester, Michigan, United States

² Crittenton Hospital Medical Center, Rochester, Michigan, United States

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ABSTRACT

Introduction: Excessive use of the emergency department (ED) is a major source of healthcare expenditure. ED frequent users, have been identified as a major contributing factor to a disproportionate amount of ED visits and costs, making up 20% to 30% of all annual visits. The aim of the study was to identify risk factors that place adults age 55 and older at risk for frequent ED use.

Methods: The Transitional Care Model (TCM): Hospital Discharge Screening Criteria for High Risk Older Adults was used to identify risk factors for frequent use of ED services in adults 55 and older.

Results and conclusions: A third of the sample (33%) had active behavioral and/or psychiatric issues. A majority of the sample (87%) had two or more hospitalizations within 6 months of a prior ED visit, and seventy-two percent were hospitalized within thirty days of an Emergency Department visit. Almost 70% had at least 1 chronic diagnosis of diabetes (41.5%), heart failure (35.8%), or COPD (28%). Most patients were between ages 70-85 years old and risk factors for ED frequent use included 4 or more coexisting health conditions, 6 or more prescription medications, previous hospital admissions, active behavioral and/or psychiatric issues. Identifying older adults at high risk for ED frequent use may provide earlier interventions and less reliance on ED use for care and treatment of chronic disorders.

Key Words: ED Frequent users, Transitional care, Frequent flyers, Transitional care model

1. INTRODUCTION

With today's rising healthcare costs, it is essential that healthcare systems find ways to reduce overall costs to remain viable. Excessive use of the emergency department (ED) is often identified as a major source of healthcare expenditure.^[1] It is estimated that costs for treating patients in the emergency department are 2 to 3 times higher than in other healthcare settings.^[2]

Significant healthcare dollars go towards treating frequent ED users who visit the ED several times a year, and are often admitted to the hospital. An estimated \$32 million is spent each year in the United States on unnecessary use of ED

services. The cost for frequent users varies considerably and is reported to be up to 15 times higher than the cost for nonfrequent users; nevertheless, the number of ED visits in the United States continues to rise.^[3]

Frequent users of the ED account for a large portion of visits, up to 34% annually in the United States.^[4-7] Nearly 50% of Medicare dollars are spent on providing healthcare services to ED frequent users and costs associated with subsequent visits are even higher.^[8] Frequent use of Emergency Department services correlates with higher rates of hospital admissions, further driving health care spending.^[9-13] After frequent ED use, older adults have been found to be at risk

* **Correspondence:** Deana Hays; Email: hays@oakland.edu; Address: School of Nursing, Oakland University, Rochester, Michigan, United States.

for poor quality of life.^[11]

How frequent users of the Emergency Department are defined and what places patients at risk for overutilization of Emergency Department services remains unclear. The number of visits that defines an ED frequent user varies among studies; ranging from 3 to 12 ED visits over a 12-month period with little rationale as to why these numbers are chosen.^[10, 14, 15]

Past studies have reported risk factors for frequent ED use as patients of low socioeconomic status, those without health insurance and lack of a primary care physician.^[16, 17] Recent studies, however, have suggested that ED frequent users are more likely to be insured through Medicaid or Medicare and are just as likely as non-frequent users to have a primary care provider.^[18, 19] ED frequent users have also been found to average twice the number of visits to their primary care provider per year compared to infrequent ED users.^[18]

Multiple health conditions, chronic illness, and chronic pain have all been found to contribute to ED overutilization, particularly for older adults.^[10, 19, 20] One study^[20] found patients having two or more medical conditions increased the overall odds of frequent ED use, adjusted OR = 7.9; 95% CI (4.6 to 13.4). In a comparison of selected common chronic diseases between frequent and infrequent users, one study noted significant differences in frequency of ED visits for hypertension, sickle cell anemia, and depression ($p = .01, .004,$ and $.017$, respectively).^[18] Other investigations have found stroke, congestive heart failure, dementia, asthma, diabetes, and ischemic heart disease to be common chronic illnesses among older adult ED frequent users.^[10, 20, 21]

Higher incidences of chronic mental health issues have also been found in ED frequent users compared to non-frequent users.^[22] Advanced age has been identified as a major risk factor for overutilization of ED services, with older adults representing the largest age group of ED frequent users.^[10, 23] Elderly patients that frequently visit the ED have also been found to have longer lengths of stay, higher readmission rates and utilize more resources when compared to any other age group.^[10, 23–25]

In addition, demographic results from the CDC indicate that racial differences are important risk factors for frequent ED use by the elderly.^[23] In patients age 65 to 74 years of age, during the period 1997 to 2013, African Americans were shown to be some of the highest users of ED services. Subsequent research indicates that the elderly and African Americans are among the most frequent ED users.^[2, 26] With these factors considered, the profile of frequent ED users may vary from hospital to hospital, necessitating creative collaborative

nurse educational programs to promote positive patient care outcomes in this deceptively diverse population.

Older adult patients with co-morbidities have been identified as the highest population of frequent ED users.^[10, 27] This is often caused by exacerbations of underlying chronic disease. When the patient is treated in the ED, he or she is treated for the admitting chief complaint without addressing other issues that may be related to the patient's co-morbidities. Providers in the ED setting rarely have the resources to educate patients and their caregivers about how to prepare for and treat the numerous medical issues related to having two or more co-morbidities after discharge. There are multiple factors that contribute to ED overutilization among this population. The purpose of this article is to identify specific risk factors for ED frequent use among adults age 55 and older.

2. METHODS

A descriptive retrospective design was used in this study. A secondary data analyses was conducted by reviewing electronic health records of adult patients with six or more visits to the Emergency Department within a single year period. Subjects were screened for risk factors using the Transitional Care Model (TCM): Hospital Discharge Screening Criteria for High Risk Older Adults.^[28]

2.1 Instrumentation

High-risk screening in the older adult population has been implemented in various settings but few studies have screened for risk factors in frequent users of the Emergency Department. Bixby and Naylor^[28] devised a screening tool from several randomized clinical control trials to explore the implementation of a transitional care model for older adults transitioning from hospital to home. The Transitional Care Model (TCM): Hospital Discharge Screening Criteria for High Risk Older Adults screens for high-risk patients in transitions from hospital to home (see Table 1). The presence of 2 or more of 11 screening criteria has been shown to significantly increase the probability of poor outcomes and increased readmission rates following hospital discharge. This tool has not been tested in older adult ED frequent users; however, factors identified in this tool may contribute to patients' repeated utilization of the Emergency Department.

2.2 Sample and setting

Data was collected from the electronic health records at a large suburban, Midwestern healthsystem in Michigan. A demographic profile of ED frequent users for this setting was conducted prior to this study. 1,237 patients met the criteria of six or more visits within a 12 month period with greater than 50% being over the age of 55.^[10] Inclusion criteria in-

cluded adult men and women age 55 and older who had 6 or more ED visits within a single year. Charts with incomplete demographic data were excluded.

Table 1. TCM: Hospital discharge screening criteria for high risk older adults

If "yes" to 2 or more of the following considered high risk: Age 80 or Older Moderate or severe functional deficit An active behavioral and/or psychiatric health issue Four or more co-existing health conditions 6 or more prescribed medications Two or more hospitalizations in the past 6 months A hospitalization within the past 30 days Inadequate support system Low health literacy Documented history of non-adherence to the therapeutic regimen or If suspected or confirmed cognitive impairment alone or in combination with any of the above risk factors
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2.3 Procedure

Prior to commencement of data collection, Institutional Review Board (IRB) approval was obtained from the hospital IRB board and university IRB. All data were presented as aggregated information, kept strictly confidential and not shared beyond the research team. Data with patient identifiers were immediately removed from the sample once collected from individual records.

2.4 Data analysis

A random sample of 200 files was reviewed utilizing the TCM screening tool. The presence of 2 or more of the 11 screening criteria has been shown to significantly increase the probability of hospital readmission and poorer outcomes after hospital discharge.^[28-31] The majority of the sample was between ages 70 and 85 years of age.

Risk factors were identified using descriptive statistics to determine the highest frequencies. The data were reported as percentage of total sample for the following variables: 6 or more prescription medications and 2 or more hospitalizations within the past 6 months. Categorical variables were reported in the form of percentages for the following: hospitalization within 30 days, documented behavioral or psychiatric issues, and documented cognitive impairment, all of which were categorized as "present" or "not present". Behavioral/psychiatric conditions were determined using ICD-9 codes for any of the following: depression, personality disorder, substance abuse disorder, anxiety disorder, somatization disorder, and psychotic disorder. Cognitive impairment was determined using the following diagnoses in the nursing or medical documentation: delirium, confusion, and dementia.

In addition, the presence of 1 or more of three chronic illnesses, diabetes, COPD, and heart failure, was reported as a percentage. These three chronic conditions have also been linked to higher 30-day readmission rates and longer inpatient lengths of stay.^[32] All data were analyzed using SPSS 19.

3. RESULTS

Data from the TCM screening tool revealed 96.5% of the sample met 2 or more of the criteria. The majority of the sample (82%) had 4 or more coexisting health conditions as well as 6 or more prescription medications. A third of the sample (33%) had active behavioral and/or psychiatric issues. A majority of the sample (87%) had two or more hospitalizations within 6 months of a prior ED visit, and 72% were hospitalized within 30 days of an ED visit. A smaller percentage of the sample (19.5%) had a documented cognitive impairment. In terms of comorbid conditions, 68.9% had at least 1 chronic diagnosis of heart failure, diabetes, or COPD, with 39.4% having just 1 of the 3 chronic conditions, 22.8% having 2 or more chronic conditions, and 6.7% having all 3 chronic conditions. The most frequent chronic condition found in this sample was diabetes (41.5%), followed by heart failure (35.8%) and COPD (28%) (see Table 2).

4. DISCUSSION

Although much of the literature has focused on demographic data for ED frequent users, no known studies to date have identified what places older adults at risk for frequent utilization of Emergency Department services. This study examined risk factors found in older adult frequent users of the ED, utilizing a screening tool that identifies older adults at risk for hospital readmission. Six of the 11 risk factors identified in the Transitional Care Model: Hospital Discharge Screening Criteria for High Risk Older Adults were also found in ED frequent users in this study.

As healthcare expenditures for ED visits continue to rise, patients age 65 and older account for the highest consumers of ED resources in the United States.^[33] The overall findings from this study support more recent findings in the literature that age and co-existing chronic conditions are risk factors for frequent ED utilization.^[10,34] The findings from the present study indicate that older adults who frequently return to the Emergency Department for medical care had at least 1 chronic condition: diabetes, heart failure, or COPD.

Older adults who frequently use ED services have higher readmission rates compared to non-frequent users.^[9, 11, 35, 36] Of the ED frequent users in this study, seventy-two percent were admitted within thirty days of a previous ED visit, and eighty-seven percent had at least two hospital admissions

within a 6-month period from the previous ED visit. Therefore, based on these findings, 30-day readmission from a prior ED visit or 2 hospital admissions within 6 months of a prior ED visit are risk factors for frequent use of the Emergency Department by older adults.

Documented psychiatric or an active behavioral health issues and cognitive impairment were also found to be risk factors in ED frequent users in this study. Although mental health

and cognitive impairment were not found to be presenting problems or among the most common ICD-9 codes for ED frequent users in a previous study,^[10] the research findings did demonstrate that at least one third of ED frequent users had a co-existing mental health issue or cognitive impairment. Therefore, the findings support co-existing mental health issues and/or cognitive impairment as factors that place older adults at risk for becoming ED frequent users.

Table 2. Results

High Risk Criteria	Frequency
An active behavioral or psychiatric health issue	33%
Four or more co-existing health conditions	82%
Six or more prescription medications	82%
Two or more hospitalizations within the past 6 months	87%
A hospitalization within 30 days	72%
Cognitive impairment	19.5%
Comorbid conditions: diabetes mellitus, heart failure, COPD	68.9%
1 comorbid condition	39.4%
2 comorbid conditions	22.8%
All 3 comorbid conditions	6.7%
Percentage with diagnosis of diabetes mellitus	41.5%
Percentage with heart failure	35.8%
Percentage with COPD	28%

Overall, ED frequent users (96.5%) in this study had at least 2 or more risk factors identified in the TCM screening tool. Early screening of ED frequent users for risk factors can be instrumental in identifying older adults at risk for overutilization of ED resources. Identifying these risk factors is not just key to reducing cost but a means to improve overall health for this population. In fact, frequent users of the Emergency Department have been found to have higher rates of mortality and may be more likely to die during an ED visit or subsequent admission than infrequent users.^[9,10] Better screening methods are needed to assist Emergency Departments in improving care of older adults. Screening for risk factors in older adults at risk for frequent utilization of the ED may lead to better health outcomes and overall mortality rates for this population.

4.1 Nursing implications

The results of this research have led our nursing school to pilot a transitional care program by these researchers at a local hospital. The program involves nurse practitioner students' clinical experiences for one semester to take place in the Emergency Department. Patients who meet the criteria of age 65 years or older, with two or more comorbidities,

and have been admitted to the ED at least three times within the year are asked to participate in the transitional care program. For those patients who agree to participate, the nurse practitioner students under the supervision of a nurse practitioner faculty, follow these same patients for a minimum of sixty days' post discharge from the Emergency Department. The students make an initial home visit within 5 days of discharge and then again at 55 to 60 days' post ED discharge. Home visits and/or phone calls then are done weekly and are determined by the patient's conditions and needs. The nurse practitioner students works closely with the primary care provider during the 60-day period to assure collaborative, coordinated care while the patients are transitioning from hospital to home. Patients are screened for depression, anxiety, and limitations in functional status, nutrition deficiencies, home safety factors, and/or a decline in activities of daily living and re-evaluated at the time of the last home visit for improvements in relation to outcomes and response to prescribed therapies/interventions. Medication reconciliation is also completed. Importantly, we know that once older adults screen positive for these risk factors they will continue to be at risk.^[31] The program has been in its pilot stage for one year and data related to the program is being analyzed to

understand the overall outcome effectiveness.

4.2 Limitations

There are several limitations to this study. One major limitation was the use of a single location for conducting this research. Demographic characteristics may vary depending on geographic location. Therefore, generalization of these results to other Emergency Departments is not possible. The researchers have replicated the study at two different hospital sites and are analyzing the data presently. Replication of this research in other geographical locations is needed to identify if these risk factors for frequent ED use are present in other older adults to understand the validity of the frequent ED users profile developed by this research.

The researchers were also not able to determine if one or more of three chronic conditions, diabetes, COPD, and heart failure, were directly related to ED visits. Presenting complaints and discharge ICD-9 codes did not always reflect the presence of chronic illness as being related to an ED visit

for older adults. A larger sample size may find other chronic conditions present in older adult ED frequent users.

5. CONCLUSION

Although much research has been published on ED frequent users, limited research focuses specifically on identifying those at risk for frequent ED use and interventions to improve outcomes in this population. Educational programs for ED nurses need to focus on identification of such risk factors and implementation of evidence based geriatric knowledge into practice with attention to management and care coordination of older adults with chronic illness. Screening tools that provide built alerts within the Electronic Health Record could aid the ED nurse in the identification of such risk factors.^[37] A nurse led Transitional Care team that includes ED nurses also needs to be investigated as a model for reducing frequent ED visits in high risk older adults.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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