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The Pattern of Emergency Department Use and Presenting Complaints of Older Patients at the Emergency Department at Suez Canal University Hospitals, Egypt

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Abstract

Background: Globally, the percentage of elderly is rising. The increasing use of emergency services by the elderly is linked to this age shift, which has become a significant health concern.
Objective: To describe the pattern of ED use by older patients, illustrate their demographic profiles, and describe present the main complaints.
Methods: The current cross-sectional descriptive study was done at the Emergency Medicine Department, Faculty of Medicine, Suez Canal University. The study included 77 patients aged 60 years and above, of both sexes, who attended the Emergency Department (ED) at SCUHs, Ismailia, Egypt during the period of study. Trauma patients were excluded from the study.
Results: mean age of the patients was 67.6 ± 7.09 years with a range from 60 to 93 years. Patients aged from 60 to 69 years formed the majority of the attendants (66.2%). Male patients formed 66% of the sample, while females showed a significantly higher death rate than males (p=0.0268). Our study demonstrates that the distribution of chronic illness showed statistical insignificant differences among different age groups as p value >0.05. Chronic kidney diseases, cancer and chronic liver diseases were significantly higher among died groups, while DM and hypertension were significantly higher among survived patients. In the current study the distribution of clinical presentations showed statistical insignificant differences among survived versus died patients as p value >0.05. Pulmonary, GIT and cardiac symptoms were significantly higher among higher age groups. died patients had sepsis, COVID, cancer, stroke, and respiratory failure more than survived, while higher age groups had stroke, pneumonia and sepsis.
Conclusions: The elderly population has quite diverse health care demands, which call for extra consideration. Compared to their younger counterparts, they require more admissions to high dependency units, stay longer, and are sicker. The trend of older people using the ED more frequently has clear implications for developing a system of specialized geriatric care in the ED, with a distinct triage process that takes into account their unique needs. It is necessary to conduct more targeted research to examine the connection between triage category and LOS as well as how it affects both short- and long-term outcomes

Key Words: ED, Patterns, Clinical presentations.

Introduction

In most countries, the proportion of people aged over 60 years is growing faster than any other age group, as a result of both longer life expectancy and declining fertility rates. According to a report by the Central Agency for Public Mobilization and Statistics (CAPMAS) the number of older people in Egypt in 2013 reached 6 461 078 persons, 7.8% of the total population.[1] The expected percentage of older people in Egypt may reach 10.9% in 2026.[2]

The number of older persons admitted to the Emergency Department (ED) is dramatically increasing due to their complex medical and social problems, which in turn lead to longer clinical evaluation times and increased use of resources compared to younger adults.[3]

Additionally, EDs are progressively being accessed by older people to either meet shortages in access to primary care or when usual primary care is unavailable.[4,5]

Reasons for presentation to the ED by older people for less urgent illnesses are reported to be affected by perceived urgency, difficulty accessing primary healthcare, referral to ED from Primary Healthcare Physician (PHP)[6] and staffing in Residential Aged Care Facilities (RACFs).[7,8] Reported risk factors for transfer to the ED included comorbidities such as chronic airways disease, congestive cardiac failure, and diabetes, as well as other functional considerations such as the presence of indwelling devices and the absence of an Advance Care Plan.[9]

Evidence of the efficacy of health service interventions aimed at providing appropriate care for aging populations is present in the literature with varying levels of success reported.[10,11]

With the graying of the population, the geriatric medicine specialty was developed and well-established in Egypt with continuous education and training programs for the health professionals dealing with elderly patients.[12] However, no data is available for the pattern of presentations of this population in the Egyptian Emergency Departments.

In order to enhance the emergency medical service provided to the elderly population in the ED at Suez Canal University Hospitals (SCUHs), this study aimed to describe the pattern of ED use by older patients, illustrate their demographic profiles, and describe present the main complaints.

Methods

The current cross-sectional descriptive study was done at the Emergency Medicine Department, Faculty of Medicine, Suez Canal University. The study included 77 patients aged 60 years and above, of both sexes, who attended the Emergency Department (ED) at SCUHs, Ismailia, Egypt during the period of study. Trauma patients were excluded from the study.

After approval from the local ethical committee of the Faculty of Medicine, Suez Canal University. Data was collected from all subjects in a pre-organized data sheet. The sheet was fulfilled by the researcher and included the data of history, clinical examination, laboratory investigations treatment, and outcome. All the subjects included in this study undertook the following:

A)- **Full history** with a prepared questionnaire which will include data regarding the name, age, sex, special habits of medical importance, complaint of the patient, comorbid diseases{hypertension (blood pressure > 140/90 by Joint National Committee (JNC) 8) [13], diabetes mellitus (random blood sugar > 200 mg/dl [14] or history if the patient on insulin or oral hypoglycemic drugs or both), ischemic heart disease (by history, ECG, echocardiography or previous history of cardiology care unit admission), heart failure (by history or echocardiography or previous history of cardiology care unit admission, patients on diuretics

or digitalis or both)}, family history of sudden cardiac death, medications, and allergy.-presenting complaint and associated symptoms.-cause of presentation at ER

B)- **Clinical evaluation**: Clinical evaluation of the patients will be carried out on arrival to Emergency Department regarding Initial assessment of vital signs. The regional examination of the neurological (motor, sensory, special tests for equilibrium, cranial nerves examination) and heart (including inspection, palpation, percussion, and auscultation).

C)- **Investigations** included Complete blood count, random blood sugar, serum creatinine, serum sodium, serum potassium, and cardiac enzymes for the high-risk group (creatine kinase, creatine kinase MB, lactate dehydrogenase).

Electrocardiogram: apparent changes in serial ECG including ischemic changes and arrhythmias.

Radiological investigations if needed: echocardiography (General Electric Healthcare Company, Vivid seven Dimensions Vingmed and Horten- Norway machine with the TDI mode with 2.5-MHz phased array probe, Conventional 2D, M-mode, and Doppler studies), computed tomography CT will be performed using Aquilion 16 detector (Toshiba medical system) for (cerebral vascular accident, intracranial hemorrhage, or subarachnoid hemorrhage).

Advanced investigations if needed regarding the condition of the patients: EEG (Nihon Kohden EEG), coronary angiography (Philips Allura XPer FD10 device), and Holter monitoring.

D-) **Treatment** was given to the patient:

E) **Outcomes:**

- Discharged
- Admitted to inpatient
- Admitted to ICU
- Died

Data analysis & management

Data were coded, entered, and analyzed using Microsoft Excel software. Data were imported into SPSS (Statistical Package for Social Sciences) software program version 22.0 for analysis. According to the type of data, the following tests were used to test differences for significance; Chi-square, t-test, and one-way ANOVA with the least significant difference. The chi-square test is used to compare categorical variables. The p-value was set at <0.05 for significant results. A multiple logistic regression analysis was used to estimate the adjusted odds ratio for hospitalization. Data were presented in the form of graphs, numeric presentations & tubular presentations.

Results

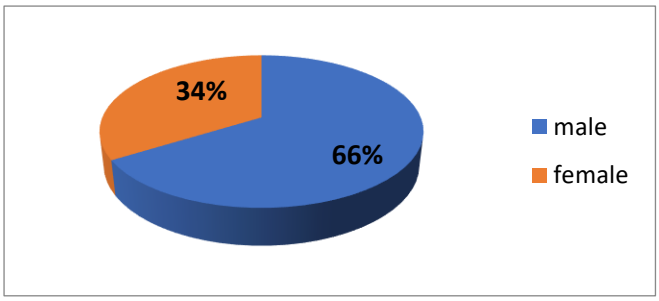

Figure 1 shows that male patients formed 66% of the sample, while females formed 34%.

Table 1. Baseline characteristics of the study population (n= 77)				
Variables	**Total**	**Survived patients 54**	**Died patients 23**	**p-value**
Age (years)				
mean ± SD	67.6 ± 7.09	68± 7.3	67.13± 6.2	0.6189
median (range)	33 (60– 93)	33(60-93)	18(60-78)	
Age groups				
60-	51(66.2%)	36(66.7%)	15(65.2%)	
70 -	21(27.3%)	18(24.1%)	8(34.8%)	0.369
80+	5 (6.5%)	5 (6.5%)		
Gender				
Male	51(66%)	40(74.1%)	11(47.8%)	**0.0268***
Female	26(34%)	14(25.9%)	12(52.2%)	

*Significant difference at p <0.5

Table 1 shows that the mean age of the patients was 67.6 ± 7.09 years with a range from 60 to 93 years. Patients aged from 60 to 69 years formed the majority of the attendants (66.2%) followed by the age group (70 – 79) (27.3%). The age group (80 – 89) represented 5.2% of the patients and those aged 90 years and older were the least (1.3%). Females showed a significantly higher death rate than males (p=0.0268).

Table 2. Chronic illnesses of the study patients according to age distribution and outcome (N=77).

Chronic illnesses	N=77	60-69 years n=51	70+ n=26	p-value	**Survived patients**	Died	p-value
Asthma	3 (3.9%)	2(66.7%)	1(33.3%)	0.8	1(33.3%)	2(66.7%)	0.2
Chronic obstructive pulmonary disease	8(10.4%)	7(87.5%)	1(12.5%)	0.5	8(100%)	0(0%)	**0.04***
Chronic kidney disease	10(13.0%)	4(40.0%)	6(60.0%)	0.3	4(40%)	6(60%)	**0.03***
End-stage renal disease on hemodialysis	6 (7.8%)	3(50.0%)	3(33.3%)	0.3	3(50%)	3(50%)	0.2
Diabetes mellitus	30(39.0%)	21(70.0%)	9(30.0%)	0.2	17(56.7%)	13(43.3%)	**0.03***
Cancer	6(7.8%)	3(50.0%)	3(50.0%)	0.7	2(33.3%)	4(66.7%)	**0.04***
Chronic liver disease	18(23.4%)	13(72.2%)	5(22.2%)	0.5	7(38.9%)	11(61.1%)	**0.002***
Cerebrovascular stroke	10(13.0%)	4(40.0%)	6(40.0%)	0.2	9(90%)	1(10%)	0.1
Coronary artery disease	9(11.7%)	6(66.7%)	3(33.3%)	0.6	5(55.6%)	4(44.4%)	0.2
Hypertensive	39(50.6%)	27(69.2%)	12(25.6%)	0.5	23(59%)	16(41%)	**0.02***

Table 2 shows that the distribution of chronic illness showed statistical insignificant differences among different age groups as p value >0.05. Chronic kidney diseases, cancer and chronic liver diseases were significantly higher among died groups, while DM and hypertension were significantly higher among survived patients.

Table 3. Clinical presentations of the study patients according to age distribution and outcome (N=77).

Clinical picture (associated symptoms)	N=77	60-69	70+	p-value	**Survived patients**	Died	p-value
Pulmonary symptoms				**0.02***			0.7
Cough	1(1.2%)	0(0%)	1(100%)		1(100%)	0(0%)	
Dyspnea	16(20.7%)	14(87.5%)	2(12.5%)		11(68.8%)	5(31.2%)	
Gastrointestinal symptoms							0.4
Diarrhea	1(1.2%)	0(0%)	1(100%)	**0.007***	1(100%)	0(0%)	
Poor oral feeding	3 (3.9%)	0(0%)	3(100%)		2(66.7%)	1(33.3%)	
Vomiting	1 (1.2%)	0(0%)	1(100%)		1(100%)	0(0%)	
Vomiting, jaundice, dysuria	1(1.2%)	1(100%)	0(0%)		0(0%)	1(100%)	
Hematemesis and melena	2(2.5%)	2(100%)	0(0%)		1(50%)	1(50%)	
Neurological symptoms							0.6
Mouth deviation, dysarthria, pinpoint pupil	1(1.2%)	1(100%)	0(0%)	0.9	1(100%)	0(0%)	
Confusion	45(58.4%)	30(66.7%)	15(33.3%)		29(64.4%)	16(35.6%)	
Weakness	2(2.5%)	0(0%)	2(0%)		2(100%)	0(0%)	
Fits, confusion	2 (2.5%)	2(100%)	0(0%)		1(50%)	1(50%)	
weakness, Dysarthria	1(1.2%)	1(100%)	0(0%)		1(100%)	0(0%)	
Cardiac symptoms							0.7
Chest pain	1(1.2%)	1(100%)	0(0%)	**<0.05***	0(0%)	1(100%)	
Lower limb edema	1(1.2%)	0(0%)	1(0%)		1(100%)	0(0%)	

Table 3 shows that the distribution of clinical presentations showed statistical insignificant differences among survived versus died patients as p value >0.05. Pulmonary, GIT and cardiac symptoms were significantly higher among higher age groups.

Table 4: Radiological investigations of the study patients (N=77).

Radiological investigations	
CT chest	
Normal	30 (47.6%)
GGO	5(7.9%)
Pleural effusion	7(11.1%)
Cavitary lesions	1(1.6%)
Mets	2(3.2%)
Pneumonia	2(3.2%)
COVID, lung abscess	1(1.6%)
Basal atelectasis	3(4.8%)
Covid	9(14.3%)
Resolved pneumonia	1(1.6%)
Pneumonia, empyema	1(1.6%)
Pulmonary edema	1(1.6%)
CT brain	
Normal	43(70.5%)
Subarachnoid hemorrhage	1(1.6%)
Stroke	6(9.9%)
Old stroke	3(4.9%)
Hematoma	2(3.3%)
Old, new stroke	2(3.3%)
Cavernous sinus thrombosis	1(1.6%)
Intracranial hemorrhage	3(4.9%)

Table 4 shows that the distribution of clinical presentations showed nearly half of patients had normal CT chest and brain.

Table 5. Diagnosis of the study patients according to age distribution and outcome (N=77).

Diagnosis of the studied patients	N=77	60-69	70-79	80-89	≥90	p-value	**Survived patients**	died	p-value
Meningitis	1(1.3%)	1(100%)	0(0%)	0(0%)	0(0%)	0.5	1(1.5%)	0(0%)	0.4
Dehydration and poor oral feeding	3(3.9%)	1(33.3%)	2(66.7%)	0(0%)	0(0%)		3(4.6%)	0(0%)	
Subarachnoid hemorrhage	1(1.3%)	0(0%)	1(100%)	0(0%)	0(0%)		1(1.5%)	0(0%)	
Hypoglycemia	1(1.3%)	0(0%)	1(100%)	0(0%)	0(0%)		1(1.5%)	0(0%)	
Stroke	7(9.1%)	5(71.4%)	2(14.3%)	1(14.3%)	0(0%)		7(100%)	0(0%)	
Hematoma	1(1.3%)	0(0%)	1(100%)	0(0%)	0(0%)		1(1.5%)	0(0%)	
Cavernous sinus thrombosis	1(1.3%)	1(100%)	0(0%)	0(0%)	0(0%)		1(1.5%)	0(0%)	
Covid	8(10.4%)	6(75%)	2(25%)	0(0%)	0(0%)		3(5.6%)	5(21.7%)	

Pneumonia	3(3.9 %)	2(66.7 %)	1(0%)	1(33.3%)	0(0%)		3(5.6 %)	0(0%)	
DKA	4(5.2 %)	4(100 %)	0(0%)	0(0%)	0(0%)		4(7.4 %)	0(0%)	
Sepsis	21(27.3%)	15(71.4%)	5(23.8%)	0(0%)	1(4.8 %)		10(18.5%)	11(47.8%)	
Hepatic encephalopathy	3(3.9 %)	1(33.3 %)	2(33.3%)	1(33.3%)	0(0%)		2(3.7 %)	1(4.3 %)	
Hypertensive encephalopathy	2(2.6 %)	1(50%)	(0%)	1(50 %)	0(0%)		2(3.7 %)	0(0%)	
Cancer	3(3.9 %)	1(33.3 %)	2(66.7%)	0(0%)	0(0%)		1(1.9 %)	2(8.7 %)	
Hypoxia,stroke	1(1.3 %)	0(0%)	1(100 %)	0(0%)	0(0%)		0(0%)	1(4.3 %)	
Intracranial hemorrhage	3(3.9 %)	0(0%)	3(100 %)	0(0%)	0(0%)		3(5.6 %)	0(0%)	
Respiratory failure	6(7.8 %)	6(100 %)	0(0%)	0(0%)	0(0%)		4(7.4 %)	2(8.7 %)	
Cardiogenic shock	2(2.6 %)	2(100 %)	0(0%)	0(0%)	0(0%)		2(3.7 %)	0(0%)	
Stroke,covid	1(1.3 %)	1(100 %)	0(0%)	0(0%)	0(0%)		1(1.9 %)	0(0%)	
Covid, hematoma	1(1.3 %)	0(0%)	1(100 %)	0(0%)	0(0%)		1(1.9 %)	0(0%)	
Hematemesis,melena	1(1.3 %)	1(100 %)	0(0%)	0(0%)	0(0%)		1(1.9 %)	0(0%)	
Acute coronary syndrome	1(1.3 %)	1(100 %)	0(0%)	0(0%)	0(0%)		0(0%)	1(4.3 %)	
Unknown	2(2.6 %)	2(100 %)	0(0%)	0(0%)	0(0%)		2(3.7 %)	0(0%)	

Table 5 shows that died patients had sepsis, COVID, cancer, stroke, and respiratory failure more than survived, while higher age groups had stroke, pneumonia and sepsis.

Discussion

Our study describes the patterns of elderly patient visits in comparison to the young adults visiting the ED of the university hospital in Ismailia. In low income countries due to limited primary healthcare systems, EDs serves as the front door for critical and noncritical illness for all, especially for the elderly population. Our study shows that mean age of the patients was 67.6 ± 7.09 years with a range from 60 to 93 years. Patients aged from 60 to 69 years formed the majority of the attendants (66.2%). Male patients formed 66% of the sample, while females showed a significantly higher death rate than males (p=0.0268).

In another study, 23.8% of all patients visiting the ED are more than 60 years old. These old age patients constitute only 5.3% of the general population [15]. A study shows similar results; 24.3% of all ED visits were of elderly patients while only 8.4% of the general population was elderly [16]. Such disproportionate usage by elderly is also supported by western studies that had shown increasing proportion of aging population.[17–19]

Our study demonstrates that the distribution of chronic illness showed statistical insignificant differences among different age groups as p value >0.05. Chronic kidney diseases, cancer and chronic liver diseases were significantly higher among died groups, while DM and hypertension were significantly higher among survived patients. In the current study the distribution of clinical presentations showed statistical insignificant differences among survived versus died patients as p value >0.05. Pulmonary, GIT and cardiac symptoms were significantly higher among higher age groups. died patients had sepsis, COVID, cancer, stroke, and respiratory failure more than survived, while higher age groups had stroke, pneumonia and sepsis

Similarly another study found that the majority of patients presented with generalized weakness and, although the most common diagnoses were UTI, TIA, and dehydration, the frequencies of these diagnoses were not high enough to comment on disease patterns, as there were no clearly predominant diagnoses.[20]

This discrepancy between our findings and those of other studies, most of which were conducted in Europe, may be due to the definition and application of the NSC label. In one of the most prominent studies, the Basal Non-Specific Complaints (BANC) study, NSC was defined as "all complaints that are not part of a set of specific complaints, or signs, or where an initial working diagnosis cannot be definitively established," and applied following physician assessment and validated by an expert panel.[21]

Several predictive models have been studied in elderly patients presenting to the ED to determine hospital admission and outcome. The Identification of Seniors at Risk (ISAR) screening tool is a six-item questionnaire designed to assess for functional decline and has been found to accurately identify patients most likely to return to the ED within 30 days of index visit. It has also been found to predict admission to hospital, mortality, and decreased functional status after follow-up at four months and six months. The Triage Risk Screening Tool (TRST) is a prospectively derived and validated five-item screening tool ; however, a prospective study found that the TRST has insufficient diagnostic accuracy to predict whether Egyptian ED elders will have an ED revisit, hospital admission, or long-term care placement at 30 or 120 days.

We were unable to identify any reliable predictors of outcome from our chosen independent variables, but this was almost certainly because of our low outcome event rate, and thus a much larger sample would be required for future studies addressing this question.

The age range above 60 years is broad and heterogeneous in health and functional profile; there is a strong need of studies that focus at the pattern of visits and their outcomes by stratification. We assumed uniform quality of clinical care for all patients coming to the ED. The quality of care can have an effect on patient outcomes but could not be adjusted in our study.

Conclusion

Compared to young individuals, the elderly population has quite diverse health care demands, which call for extra consideration. Compared to their younger counterparts, they require more admissions to high dependency units, stay longer, and are sicker. The trend of older people using the ED more frequently has clear implications for developing a system of specialized geriatric care in the ED, with a distinct triage process that takes into account their unique needs. It is necessary to conduct more targeted research to examine the connection between triage category and LOS as well as how it affects both short- and long-term outcomes.

Budget

All of the possible expenses are to be provided for by the researchers themselves.
No conflict of interest.

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