

**Factors Predicting Outcome in Geriatric Patients admitted in Emergency Department in a Tertiary Care Center**Shivesh Anurag<sup>1</sup>, Siddhartha Mishra<sup>2</sup>, Yashas<sup>3</sup>, Pradhasaradhi<sup>4</sup><sup>1</sup>Post Graduate Trainee, Department of Emergency Medicine, Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India<sup>2</sup>Head, Department of Emergency Medicine, Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India<sup>3</sup>Post Graduate Trainee, Department of Emergency Medicine, Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India<sup>4</sup>Post Graduate Trainee, Department of Emergency Medicine, Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, India

Received: 16-02-2026 / Revised: 19-03-2026 / Accepted: 20-04-2026

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Conflict of interest: Nil

**Abstract:****Objectives:** The present study was to determine Risk factors of Mortality in geriatric patients admitted in Emergency department and also to evaluate the incidence, prevalence of various disease patterns affecting the geriatric population.**Methods:** A complete assessment including the Sociodemographic status and FRAILTY SCORE and relevant investigations were performed to all the patients. Data was collected according to previously prescribed Performa.**Results:** A total of 200 geriatric patients were enrolled. Out of them, 117 patients (58.5%) were 65-75 years of age, 63 patients (31.5%) were 76- 85 years of age, 16 patients (8.0%) were 86-95 years of age and 4 patients (2.0%) had an age group greater than 95 years. 140 patients (70.0%) belonged to the male gender while the remaining 60 patients (30.0%) belonged to the female gender. The association between frailty score and outcome was statistically significant ( $p < 0.001$ ). The association between T2DM status and outcome was statistically significant ( $p = 0.006$ ). The association between HTN and outcome is not statistically significant as the result ( $P = 0.085$ ). The association between HTN and outcome is not statistically significant as the result ( $P = 0.085$ ). The association between CKD status and outcome was statistically significant ( $p = 0.010$ ). The association between CVA status and outcome was statistically significant ( $p = 0.014$ ). The association between outcome and age is statistically significant as ( $P$  Value = 0.028). The association between vasopressor use and outcomes was statistically significant ( $p \leq 0.001$ ). The association between O<sub>2</sub> support status and patient outcomes is statistically significant ( $p \leq 0.001$ ).**Conclusion:** Poorer outcomes are linked to advanced age and higher frailty scores, underscoring the significance of functional assessment in risk stratification. Mortality and the requirement for intensive care were strongly influenced by a combination of clinical severity, comorbidities, and social support. Hence, to maximize care and enhance survival rates in this susceptible group, early detection of high-risk elderly patients and prompt interventions in the emergency room are crucial.**Keywords:** Geriatric patients, Frailty score, CKD, CVA, Emergency unit, Clinical outcome.**DOI:** 10.25258/ijcpr.18.4.196This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

The population of the world is ageing faster, and India's rate of ageing is considerably faster than that of the developed countries. The proportion of elderly people in the world was 9% in 1994, rose to 12 percent in 2014 and is set to reach 21 percent by 2050 [1].

In India, the elderly is increasing (5.6% in 1961 to 7.4% in 2001), and is projected to exceed 12.4% of the population in 2026 [2]. Due to the frequency of

emergencies in the elderly, they make up a greater portion of ED visits and subsequent intensive care unit (ICU) admissions than young adults [3,4].

Their visits tend to be of high urgency, stay longer in the ED/ICU than their peers, have repeated ED visits, or have poor health status after discharge and are more likely to have more adverse health outcomes after they are discharged by other measures [5]. The age of the patients changes,

together with the co-morbidities and causes, which have become more common for Intensive Care Unit admissions. Old age is recognized as a major independent risk factor for death [6]. Hospitalizations of the elderly have risen over the last decade. Compared with young, the prehospital delay of elderly acute myocardial infarction patients is longer. Discrimination by age is practiced in intensive care units. The comorbidities and the causes of Intensive care unit admissions are also associated with an age increase. Old age is seen as a key surrogate risk factor for death. In addition to old age, premorbid functional status and underlying disease severity are other reasons for poorer outcomes in this patient population [7]. Moreover, longer hospitalization in elderly patients is associated with higher rates of hospital-acquired infections [8].

Life expectancy of all elderly patients remains limited — even after successful intervention in the ICU. In the UK, life expectancy at 80 years has risen from 5.8 years in 1981 to 7.2 years in 2002 for males and from 7.5 to 8.7 years for females. As a result, the per year costs of life gained, financial and emotional, are relatively elevated in elderly patients. The geriatric nutritional risk index (GNRI) was designed as a simple and objective nutritional assessment tool in a hospitalized population for elderly patients (aged  $\geq 65$  years; classified as elderly by World Health Organization; determined by the individual's body weight and serum albumin level). Albumin is disrupted by age associated factors, including hydration and hepatic and renal impairment. Likewise, body weight seems to be a good marker of both the severity of systemic illness as well as protein-calorie stores.

The proportion of elderly patients in emergency departments is steadily rising, bringing unique challenges due to multiple comorbidities, atypical symptom presentation, and reduced physiological reserve. These factors contribute to higher morbidity, mortality, and healthcare resource utilization. By identifying the clinical, demographic, and laboratory predictors of adverse outcomes in geriatric patients, this study can help clinicians perform early risk stratification, prioritize critical interventions, and guide ICU referrals. The findings will also provide region-specific evidence to improve geriatric-focused emergency protocols, optimize resource allocation, and ultimately enhance survival and quality of life for this vulnerable population. Objectives of the present study was to the determine Risk factors of Mortality in geriatric patients admitted in Emergency department and also to evaluate the incidence, prevalence of various disease patterns affecting the geriatric population.

## Materials and Methods

The study was conducted in the Department of Emergency Medicine at Kalinga Institute of Medical Sciences, PBMH, and KIIT Deemed to be University, Bhubaneswar, and Odisha.

After approval from Institutional Ethics Committee, informed consent from all subjects were taken prior to the study.

**Study Design:** Prospective Observational Study.

**Duration of Study:** July 2024 to December 2025.

**Sample:** Convenience sampling.

**Inclusion criteria:** Patient of age above 65-year-old requiring admission in emergency department.

**Exclusion criteria:** Patients previously enrolled during the study period.

## Methods

A complete assessment and relevant investigations were performed to all the patients. Data was collected according to previously prescribed Performa. Sociodemographic status and FRAILTY\_SCORE, were taken to all patients.

**Statistical Analysis:** Statistical analyses were performed on the data entered in a Microsoft excel spreadsheet and analyzed with SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and GraphPad Prism software version 5. Data were described as mean and standard deviation (numerical variables); number and percentage for categorical variables. Independent samples or unpaired samples were employed in two-sample t-tests for differences in mean. Paired t-tests were a blocking form of test but they had greater power than unpaired tests.

A chi-squared test ( $\chi^2$  test) was any statistical hypothesis test in which the sampling distribution of the test statistic is a chi-squared distribution if the null hypothesis is true. Unqualified, the abbreviation 'chi-squared test' is typically used for Pearson's chi-squared test. Unpaired proportions were compared by Chi-square test or Fischer's exact test as appropriate. P-value  $\leq 0.05$  was considered statistically significant.

## Results

In our study, A total of 200 geriatric patients were enrolled in the present study. out of them, 117 patients (58.5%) were 65-75 years of age, 63 patients (31.5%) were 76- 85 years of age, 16 patients (8.0%) were 86-95 years of age and 4 patients (2.0%) had an age group greater than 95 years.

Out of total patients, a majority of 140 patients (70.0%) belonged to the male gender while the remaining 60 patients (30.0%) belonged to the female gender.

After the analysis of patient’s MARITAL\_STATUS, we found that the majority of 132 patients (66.0%) were married while the remaining 68 patients (34.0%) were widowed.

From an educational perspective among patients, 109 patients (54.5%) had passed 10th standard class, 42 patients (21.0%) had passed 12th standard class, 22 patients (11.0%) had passed 5th standard class, 6 patients (3.0%) had passed 7th standard class, 13 patients (6.5%) had passed 8th standard while the remaining 8 patients (4.0%) had passed 9th standard.

Regarding patient’s HEALTH\_SCHEME, 137 patients (68.5%) had HEALTH\_SCHEME while the remaining 63 patients (31.5%) did not have any HEALTH\_SCHEME.

In our study among patients regarding the number of relatives they have, 19 patients (9.5%) had one relative, 74 patients (37.0%) had two relatives, 88 patients (44.0%) had three relatives and the remaining 19 patients (9.5%) had 4 relatives.

After analysis of patient’s FRAILTY\_SCORE, we found that 1 patient (0.5%) had a FRAILTY\_SCORE of 1, 6 patients (3.0%) had a FRAILTY\_SCORE of 2, 25 patients (12.5%) had a FRAILTY\_SCORE of 3, 37 patients (18.5%) had a FRAILTY\_SCORE of 4, 42 patients (21.0%) had a FRAILTY\_SCORE of 5, 42 patients (21.0%) had a FRAILTY\_SCORE of 6, 23 patients (11.5%) had a FRAILTY\_SCORE of 7, 16 patients (8.0%) had a FRAILTY\_SCORE of 8 and 8 patients (4.0%) had a

FRAILTY\_SCORE of 9.

Regarding the impact of T2DM on patients, 129 patients (64.5%) agreed they had T2DM and 71 patients (35.5%) did not have T2DM. In our view point of whether patients had HTN, a majority of 125 patients (62.5%) agreed they had HTN while the remaining 75 patients (37.5%) did not have HTN. The responses suggest that a majority of 189 patients (94.5%) did not have CKD whereas the remaining 11 patients (5.5%) had CKD.

The findings suggest that the majority of 159 patients (79.5%) did not have CVA whereas the remaining 41 patients (20.5%) had CVA. The results indicate that 169 patients (84.5%) did not have CAD whereas the remaining 31 patients (15.5%) had CAD. The data shows that a majority of 151 patients (75.5%) did not have vasopressor while the remaining 49 patients (24.5%) had vasopressor.

Regarding the perception of presence or absence of O2\_SUPPORT in patients, we found that 149 patients (74.5%) did not have O2\_SUPPORT while the remaining 51 patients (25.5%) had O2\_SUPPORT. In relation to the statement of outcome, 6 patients (3%) had an outcome of death, 128 patients (64%) had an outcome of DTH while the remaining 66 patients (33%) had an outcome of ICU. Mean AGE (Mean ± SD) of patients was 75.37 ± 7.923.

**Table 1 – Association between Age in Group \* OUTCOME**

		Outcome			Total	
		Death	DTH	ICU		
Age in Group	65-75	Count	4	77	36	117
		% within Age in Group	3.4%	65.8%	30.8%	100.0%
		% within Outcome	66.7%	60.2%	54.5%	58.5%
	76-85	Count	1	42	20	63
		% within Age in Group	1.6%	66.7%	31.7%	100.0%
		% within Outcome	16.7%	32.8%	30.3%	31.5%
	86-95	Count	1	8	7	16
		% within Age in Group	6.2%	50.0%	43.8%	100.0%
		% within Outcome	16.7%	6.2%	10.6%	8.0%
	>95	Count	0	1	3	4
		% within Age in Group	0.0%	25.0%	75.0%	100.0%
		% within Outcome	0.0%	0.8%	4.5%	2.0%
Total	Count	6	128	66	200	
	% within Age in Group	3.0%	64.0%	33.0%	100.0%	
	% within Outcome	100.0%	100.0%	100.0%	100.0%	
Chi-Square		5.646				
P Value		0.464				

With respect to the distribution of outcomes across age groups, among patients aged 65–75 years, 4 patients (66.7%) experienced death, 77 patients

(60.2%) were discharged (DTH), and 36 patients (54.5%) required ICU care. In the 76–85 years age group, 1 patient (16.7%) died, 42 patients (32.8%)

were discharged, and 20 patients (30.3%) required ICU admission. Among those aged 86–95 years, 1 patient (16.7%) died, 8 patients (6.2%) were discharged, and 7 patients (10.6%) required ICU care. In patients older than 95 years, none died, 1

patient (0.8%) was discharged, and 3 patients (4.5%) required ICU admission. The association between age group and outcome was not statistically significant (Chi-square = 5.646, p = 0.464).

**Table 2: Association between SEX \* Outcome**

			Outcome			Total
			Death	DTH	ICU	
Sex	Female	Count	2	38	20	60
		% within Sex	3.3%	63.3%	33.3%	100.0%
		% within Outcome	33.3%	29.7%	30.3%	30.0%
	Male	Count	4	90	46	140
		% within Sex	2.9%	64.3%	32.9%	100.0%
		% within Outcome	66.7%	70.3%	69.7%	70.0%
Total		Count	6	128	66	200
		% within Sex	3.0%	64.0%	33.0%	100.0%
		% within Outcome	100.0%	100.0%	100.0%	100.0%
Chi-Square		0.041				
P Value		0.980				

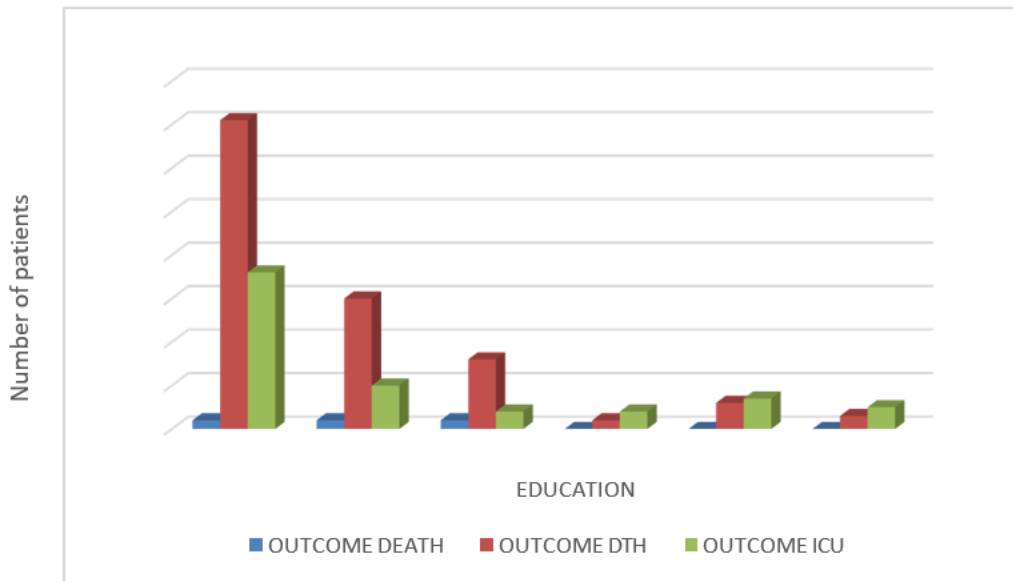
In relation to the distribution of outcomes by sex, 2 female patients (33.3%) died and 4 male patients (66.7%) died. Among the patients who were DTH, 38 patients (29.7%) were females and 90 patients (70.3%) were males. Similarly, among the patients admitted to the ICU, 20 (30.3%) were females and 46 (69.7%) were males. The association between sex and outcome was not statistically significant (Chi-square = 0.041, p = 0.980).

In relation to the distribution of outcomes by marital status, 3 married patients (50.0%) and 3 widowed patients (50.0%) died. Among the patients who were DTH, 98 patients (76.6%) were married and 30 patients (23.4%) were widowed. Similarly, among the patients admitted to the ICU, 31 patients (47.0%) were married and 35 patients (53.0%) were widowed. The association between marital status and outcome was statistically significant (Chi-square = 17.700, p < 0.001).

In relation to the distribution of outcomes by education, 2 patients (33.3%) with 10th-grade

education, 2 patients (33.3%) with 12th-grade education, and 2 patients (33.3%) with 5th-grade education died, while no patients with 7th, 8th, or 9th-grade education died. Among the patients who were DTH, 71 patients (55.5%) had 10th-grade education, 30 patients (23.4%) had 12th-grade education, 16 patients (12.5%) had 5th-grade education, 2 patients

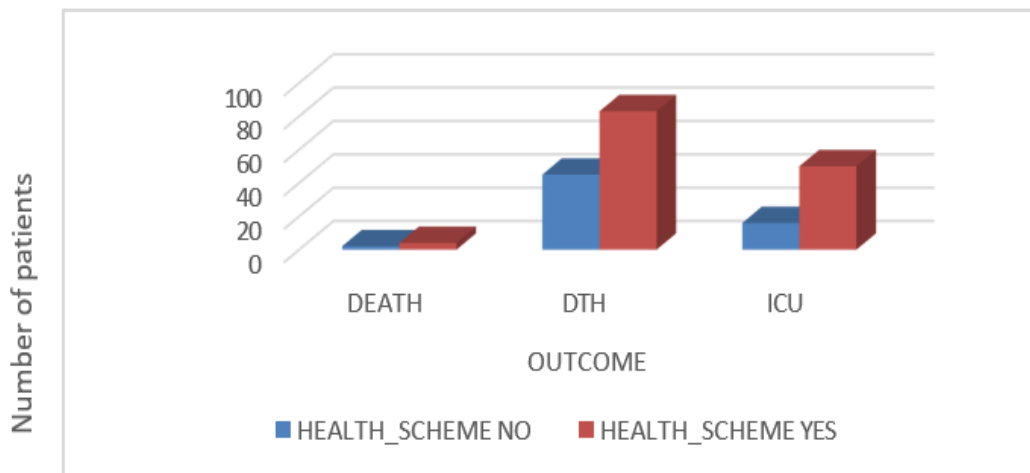
(1.6%) had 7th-grade education, 6 patients (4.7%) had 8th-grade education, and 3 patients (2.3%) had 9th-grade education. Similarly, among the patients admitted to the ICU, 36 patients (54.5%) had 10th-grade education, 10 patients (15.2%) had 12th-grade education, 4 patients (6.1%) had 5th-grade education, 4 patients (6.1%) had 7th-grade education, 7 patients (10.6%) had 8th-grade education, and 5 patients (7.6%) had 9th-grade education. The association between education level and outcome was not statistically significant (Chi-square = 15.932, p = 0.102).



**Figure 1: Association between Education \* Outcome**

Concerning the distribution of outcomes by health scheme, 2 patients (33.3%) without a health scheme and 4 patients (66.7%) with a health scheme died. Among the patients who were DTH, 45 patients (35.2%) did not have a health scheme, while 83 patients (64.8%) had a health scheme. Similarly,

among the patients admitted to the ICU, 16 patients (24.2%) did not have a health scheme, and 50 patients (75.8%) had a health scheme. The association between health scheme and outcome was not statistically significant (Chi-square = 2.413, p = 0.299).



**Figure.2. Association between Health Scheme \* Outcome**

With respect to the distribution of outcomes by number of relatives, 4 patients (66.7%) with 2 relatives and 2 patients (33.3%) with 4 relatives died. Among the patients who were DTH, 17 patients (13.3%) had 1 relative, 43 patients (33.6%) had 2 relatives, 63 patients (49.2%) had 3 relatives, and 5 patients (3.9%) had 4 relatives. Similarly,

among the patients admitted to the ICU, 2 patients (3.0%) had 1 relative, 27 patients (40.9%) had 2 relatives, 25 patients (37.9%) had 3 relatives, and 12 patients (18.2%) had 4 relatives. The association between number of relatives and outcome was statistically significant (p < 0.001).

**Table 3: Association between Frailty Score \* Outcome**

			Outcome			Total
			Death	DTH	ICU	
Frailty Score	1	Count	0	1	0	1
		% within Frailty Score	0.0%	100.0%	0.0%	100.0%
		% within Outcome	0.0%	0.8%	0.0%	0.5%
	2	Count	0	6	0	6
		% within Frailty Score	0.0%	100.0%	0.0%	100.0%
		% within Outcome	0.0%	4.7%	0.0%	3.0%
	3	Count	0	25	0	25
		% within Frailty Score	0.0%	100.0%	0.0%	100.0%
		% within Outcome	0.0%	19.5%	0.0%	12.5%
	4	Count	0	37	0	37
		% within Frailty Score	0.0%	100.0%	0.0%	100.0%
		% within Outcome	0.0%	28.9%	0.0%	18.5%
	5	Count	0	42	0	42
		% within Frailty Score	0.0%	100.0%	0.0%	100.0%
		% within Outcome	0.0%	32.8%	0.0%	21.0%
	6	Count	0	10	32	42
		% within Frailty Score	0.0%	23.8%	76.2%	100.0%
		% within Outcome	0.0%	7.8%	48.5%	21.0%
	7	Count	0	3	20	23
		% within Frailty Score	0.0%	13.0%	87.0%	100.0%
		% within Outcome	0.0%	2.3%	30.3%	11.5%
	8	Count	3	3	10	16
		% within Frailty Score	18.8%	18.8%	62.5%	100.0%
		% within Outcome	50.0%	2.3%	15.2%	8.0%
	9	Count	3	1	4	8
		% within Frailty Score	37.5%	12.5%	50.0%	100.0%
		% within Outcome	50.0%	0.8%	6.1%	4.0%
Total	Count	6	128	66	200	
	% within Frailty Score	3.0%	64.0%	33.0%	100.0%	
	% within Outcome	100.0%	100.0%	100.0%	100.0%	
Chi-Square	186.676					
P Value	<0.001					

On the viewpoint of outcomes according to frailty score, 3 patients (18.8%) with a score of 8 and 3 patients (37.5%) with a score of 9 died. Among the patients who were DTH, 1 patient (0.8%) had a score of 1, 6 patients (4.7%) had a score of 2, 25 patients (19.5%) had a score of 3, 37 patients (28.9%) had a score of 4, 42 patients (32.8%) had a score of 5, 10 patients (7.8%) had a score of 6, 3 patients (2.3%) had a score of 7, 3 patients (2.3%) had a score of 8, and 1 patient (0.8%) had a score of 9. Similarly, among the patients admitted to the ICU, 32 patients (48.5%) had a score of 6, 20 patients (30.3%) had a score of 7, 10 patients (15.2%) had a score of 8, and

4 patients (6.1%) had a score of 9. The association between frailty score and outcome was statistically significant (Chi-square = 186.676,  $p < 0.001$ ).

On the viewpoint of outcomes according to T2DM status, 6 patients (100.0%) with T2DM died. Among the patients who were DTH, 55 patients (43.0%) did not have T2DM and 73 patients (57.0%) had T2DM. Similarly, among the patients admitted to the ICU, 16 patients (24.2%) did not have T2DM and 50 patients (75.8%) had T2DM. The association between T2DM status and outcome was statistically significant (Chi-square = 10.074,  $p = 0.006$ ).

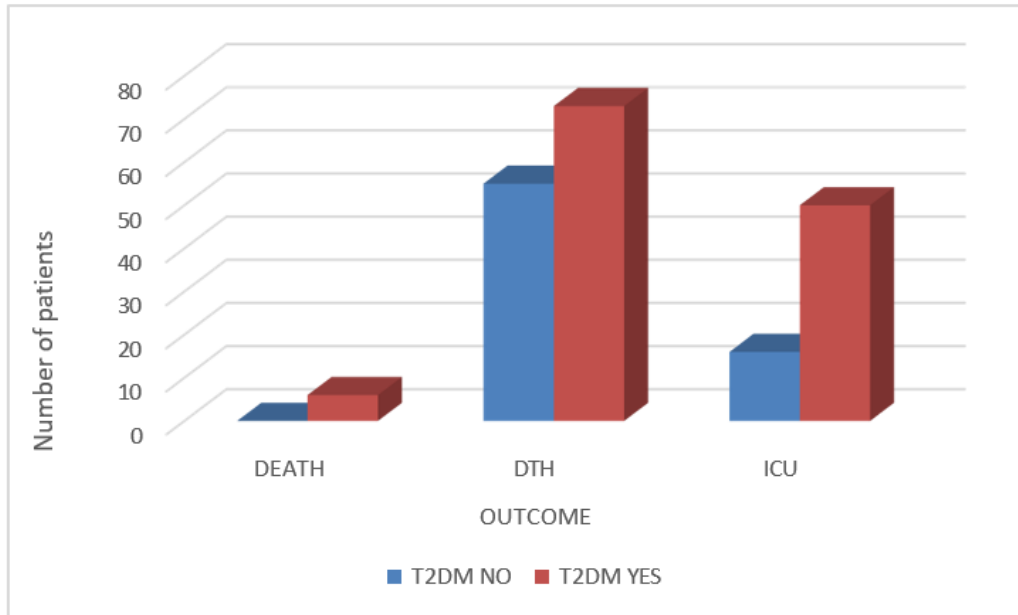


Figure 3: Association between T2DM \* OUTCOME

Table 4: Association between HTN \* OUTCOME

			Outcome			Total
			Death	DTH	ICU	
HTN	No	Count	0	53	22	75
		% within HTN	0.0%	70.7%	29.3%	100.0%
		% within Outcome	0.0%	41.4%	33.3%	37.5%
	Yes	Count	6	75	44	125
		% within HTN	4.8%	60.0%	35.2%	100.0%
		% within Outcome	100.0%	58.6%	66.7%	62.5%
Total	Count	6	128	66	200	
	% within HTN	3.0%	64.0%	33.0%	100.0%	
	% within Outcome	100.0%	100.0%	100.0%	100.0%	
Chi-Square		4.922				
P Value		0.085				

Concerning the distribution of outcomes by HTN status, 6 patients (100.0%) with HTN died. Among the patients who were DTH, 53 patients (41.4%) did not have HTN, while 75 patients (58.6%) had HTN. Similarly, among the patients admitted to the ICU,

22 patients (33.3%) did not have HTN, and 44 patients (66.7%) had HTN. The association between HTN and outcome is not statistically significant as the result (P Value = 0.085).

Table 5: Association between CKD \* Outcome

			Outcome			Total
			Death	DTH	ICU	
CKD	NO	Count	4	122	63	189
		% within CKD	2.1%	64.6%	33.3%	100.0%
		% within Outcome	66.7%	95.3%	95.5%	94.5%
	YES	Count	2	6	3	11
		% within CKD	18.2%	54.5%	27.3%	100.0%
		% within Outcome	33.3%	4.7%	4.5%	5.5%
Total	Count	6	128	66	200	
	% within CKD	3.0%	64.0%	33.0%	100.0%	
	% within Outcome	100.0%	100.0%	100.0%	100.0%	
Chi-Square		9.221				
P Value		0.010				

With respect to the distribution of outcomes by chronic kidney disease (CKD) status, 4 patients (66.7%) without CKD and 2 patients (33.3%) with CKD died. Among the patients who were DTH, 122 patients (95.3%) did not have CKD, while 6 patients (4.7%) had CKD. Similarly, among the patients admitted to the ICU, 63 patients (95.5%) did not have CKD, and 3 patients (4.5%) had CKD. The association between CKD status and outcome was statistically significant (Chi-square = 9.221,  $p = 0.010$ ).

On the viewpoint of outcomes according to CVA status, 3 patients (50.0%) without CVA died, while 3 patients (50.0%) with CVA died. Among the patients who were DTH, 109 patients (85.2%) did not have CVA and 19 patients (14.8%) had CVA. Similarly, among the patients admitted to the ICU, 47 patients (71.2%) did not have CVA and 19 patients (28.8%) had CVA. The association between CVA status and outcome was statistically significant (Chi-square = 8.498,  $p = 0.014$ ).

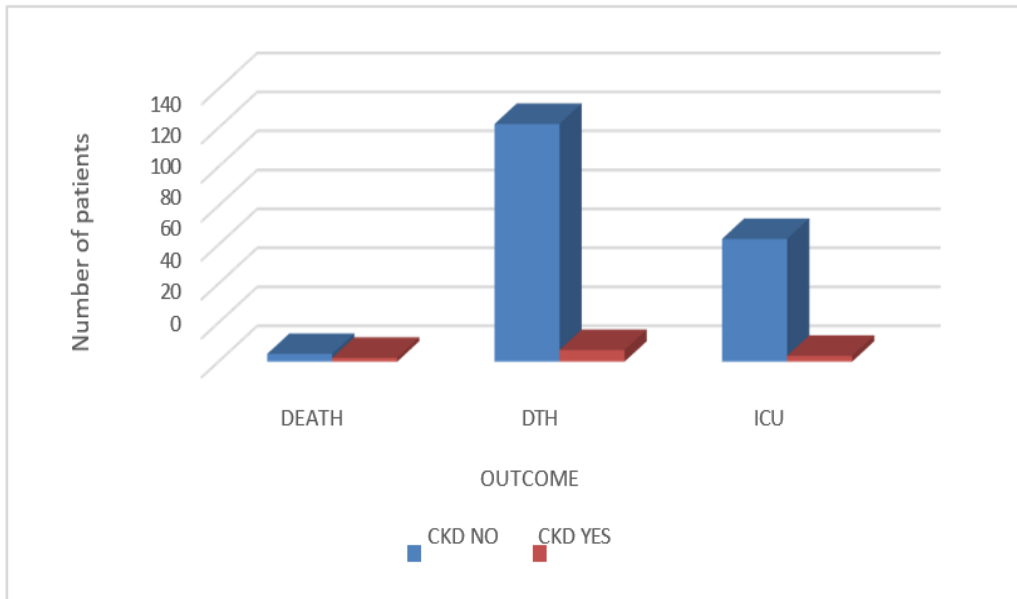


Figure 4: Association between CKD \* Outcome

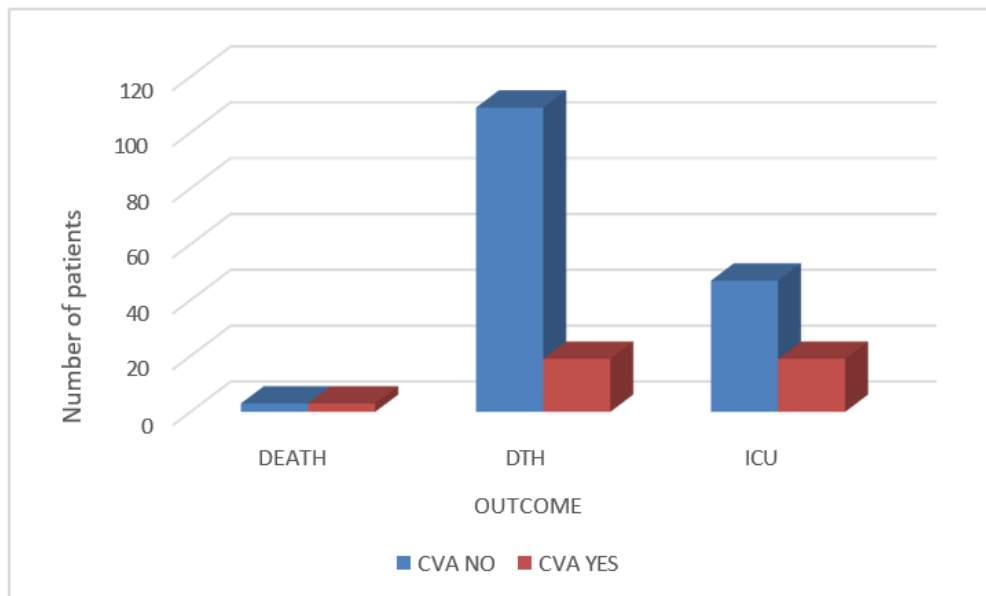


Figure 5: Association between CVA \* Outcome

**Table 6: Association between CAD \* Outcome**

			Outcome			Total
			Death	DTH	ICU	
CAD	NO	Count	4	109	56	169
		% within CAD	2.4%	64.5%	33.1%	100.0%
		% within Outcome	66.7%	85.2%	84.8%	84.5%
	YES	Count	2	19	10	31
		% within CAD	6.5%	61.3%	32.3%	100.0%
		% within Outcome	33.3%	14.8%	15.2%	15.5%
Total	Count	6	128	66	200	
	% within CAD	3.0%	64.0%	33.0%	100.0%	
	% within Outcome	100.0%	100.0%	100.0%	100.0%	
Chi-Square		1.505				
P Value		0.471				

With respect to the distribution of outcomes according to CAD status, 4 patients (66.7%) without CAD and 2 patients (33.3%) with CAD died. Among the patients who were DTH, 109 patients (85.2%) did not have CAD and 19 patients (14.8%) had

CAD. Similarly, among the patients admitted to the ICU, 56 patients (84.8%) did not have CAD and 10 patients (15.2%) had CAD. The association between CAD status and outcome was not statistically significant (Chi-square = 1.505, p = 0.471).

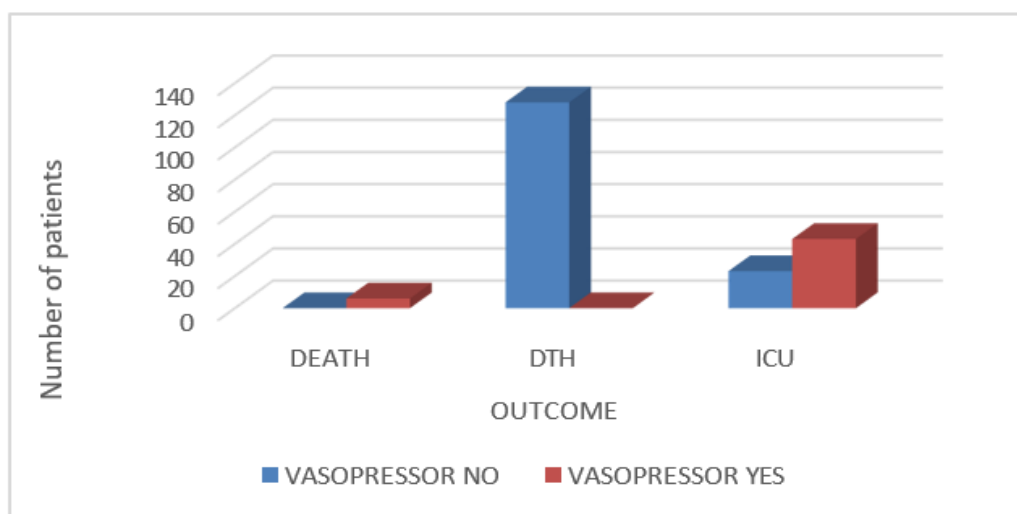
**Table 7: Distribution of mean Age**

Age							P Value
Outcome	N	Mean	Std. Deviation	Maximum	Minimum	Median	
Death	6	74.17	8.495	86	66	72.00	0.028
DTH	128	74.34	7.656	97	65	74.00	
ICU	66	77.50	8.077	97	65	75.00	
Total	200	75.37	7.923	97	65	74.50	

In the DEATH group (mean ± S.D) mean age of patients was 74.17 ± 8.495 years. In the DTH group (mean ± S.D) mean age of patients was 74.34 ± 7.656 years. In the ICU group (mean ± S.D) mean age of patients was 77.50 ± 8.077. The association between outcome and age is statistically significant as (P Value = 0.028).

vasopressors died. Among the patients who were DTH, 128 patients (100.0%) did not receive vasopressors. Similarly, among the patients admitted to the ICU, 23 patients (34.8%) did not receive vasopressors and 43 patients (65.2%) received vasopressors. The association between vasopressor use and outcomes was statistically significant (Chi-square = 118.990, p ≤ 0.001).

On the viewpoint of outcomes according to vasopressor use, 6 patients (100.0%) who received



**Figure 6: Association between VASOPRESSOR \* OUTCOME**

**Table 8: Association between O<sub>2</sub> Support \* Outcome**

			Outcome			Total
			Death	DTH	ICU	
O <sub>2</sub> Support	NO	Count	0	128	21	149
		% within O <sub>2</sub> Support	0.0%	85.9%	14.1%	100.0%
		% within Outcome	0.0%	100.0%	31.8%	74.5%
	YES	Count	6	0	45	51
		% within O <sub>2</sub> Support	11.8%	0.0%	88.2%	100.0%
		% within Outcome	100.0%	0.0%	68.2%	25.5%
Total		Count	6	128	66	200
		% within O <sub>2</sub> Support	3.0%	64.0%	33.0%	100.0%
		% within Outcome	100.0%	100.0%	100.0%	100.0%
Chi-Square		124.631				
P Value		<0.001				

Concerning the distribution of outcomes by O<sub>2</sub> support status, 6 patients (100.0%) with O<sub>2</sub> support died. Among the patients who were DTH, 128 patients (100.0%) did not receive O<sub>2</sub> support, while 0 patients (0.0%) received O<sub>2</sub> support. Similarly, among the patients admitted to the ICU, 21 patients (31.8%) did not receive O<sub>2</sub> support, and 45 patients (68.2%) received O<sub>2</sub> support. The association between O<sub>2</sub> support status and patient outcomes is statistically significant, with a Chi-Square value of 124.631 and a p-value  $\leq 0.001$ .

#### Discussion

The present study was a prospective observational study. This Study was conducted 1 ½ years at Department of Emergency Medicine at Kalinga Institute of Medical Sciences, PBMH, and KIIT Deemed to be University, Bhubaneswar, and Odisha Total 200 patients were included in this study.

**Age Distribution and Clinical Outcomes:** We found that the mean age of the 200 geriatric patients was  $75.37 \pm 7.923$  years (range 65–97 years), with the highest mean age in the ICU group ( $77.50 \pm 8.077$ ) compared with the Death ( $74.17 \pm 8.495$ ) and DTH ( $74.34 \pm 7.656$ ) groups ( $p = 0.028$ ). In addition, 58.5% (117) were aged 65–75, while only 2% (4) were >95 years. This suggests advanced age correlates with critical care needs. Covino et al. (2021) demonstrated that for ED patients  $\geq 80$  years, age was significantly associated with increased mortality and ICU utilization, supporting the age-severity relationship seen in our study [9].

**Sex Distribution and Outcome:** We showed that 70% (140) of the study population were male and 30% (60) were female. Among deaths, 66.7% (4/6) were males and 33.3% (2/6) were females, but no significant association with outcome was found ( $p = 0.980$ ). Likewise, a large geriatric emergency study by Choi et al. (2025) reported that although more males presented to ED, sex was not independently predictive of mortality, aligning with our findings [10].

**Marital Status and Outcome:** We observed that 66% (132) of patients were married and 34% (68) were widowed. Widowed patients were disproportionately represented in the ICU group (53%), and marital status was significantly associated with outcome ( $p < 0.001$ ). Similar geriatric ED research has demonstrated that lack of spousal social support increases ICU stays and mortality, suggesting a social support influence on recovery unlikely explained by biomedical variables alone [11].

**Education Level and Outcome:** In our study, most patients had education up to the 10th grade (54.5%), with smaller proportions across other levels. Deaths were seen equally across 10th, 12th, and 5th standards (each 33.3%), and education level showed no significant association with outcome ( $p = 0.102$ ). This is consistent with findings from Lee et al. (2020) reporting that educational attainment influenced outpatient health literacy but did not independently predict short-term mortality in emergency settings [12].

**Health Scheme and Outcome:** We showed that 68.5% (137) had a health scheme while 31.5% (63) did not. Although all deaths occurred in patients with health schemes, this did not reach statistical significance ( $p = 0.299$ ). This aligns with Malik et al. (2019), who reported that insurance status did not significantly alter ED mortality among elderly patients, underscoring that acute physiological severity rather than financial access is a key determinant of short-term outcomes [13].

**Number of Relatives and Outcome:** We found that patients with more relatives (2–4 relatives) had better outcomes compared with those with 1 relative, and this was significantly associated with outcome ( $p < 0.001$ ). In our study, of those who died, 66.7% had 2 relatives and 33.3% had 4 relatives, suggesting complex social dynamics influence recovery. A Canadian ED geriatric cohort found that strong family support reduced ICU stay and mortality, likely due to earlier care-seeking and adherence [14].

**Frailty Score and Outcome:** We observed that frailty score was strongly associated with outcome ( $p < 0.001$ ). The highest frailty scores of 8 and 9 were disproportionately represented among deaths (18.8% and 37.5%, respectively) and ICU admissions. Patients discharged tended to have lower frailty scores (1–5). Supporting our findings, Chung et al. (2025) demonstrated that frail patients (CFS  $\geq 6$ ) had significantly higher odds of mortality and ICU admission in ED settings after controlling for age and comorbidities [11].

**Type 2 Diabetes Mellitus and Outcome:** In our study, we showed that 64.5% (129) of patients had T2DM and that all 6 deaths (100%) occurred among diabetics. ICU admissions were also predominantly diabetic (75.8%). This significant association ( $p = 0.006$ ) aligns with Weng et al. (2023), who found that older adults with T2DM had significantly higher in-hospital mortality and ICU utilization than those without diabetes, especially when combined with frailty [15].

**Hypertension and Outcome:** We found that hypertension was present in 62.5% (125), and all deaths occurred in hypertensive patients, but this did not reach statistical significance ( $p = 0.085$ ). Hypertension often correlates with end-organ dysfunction in elderly patients. Banerjee et al. (2018) observed a similar trend in elderly ED cohorts, noting that hypertension was common in non-survivors but not an independent predictor when controlling for confounders [16].

**Chronic Kidney Disease and Outcome:** We observed that CKD was present in 5.5% (11) of patients. CKD status was significantly associated with outcome ( $p = 0.010$ ), with deaths seen in 33.3% of CKD patients. This supports evidence from Smith et al. (2020) showing that CKD in older adults is linked to higher risk of ICU admission and mortality, likely due to compounded metabolic and hemodynamic vulnerability [17].

**Cerebrovascular Accident and Outcome:** In our study, 20.5% (41) had a history of CVA. CVA had a statistically significant association with outcome ( $p = 0.014$ ), with ICU admissions prominent in this subgroup. Rao et al. (2019) found that post-stroke elderly patients presenting to ED had higher ICU needs and mortality than non-CVA peers, especially when presenting with neurological or cardiorespiratory compromise [18].

**Coronary Artery Disease and Outcome:** We found that 15.5% (31) had CAD; however, this was not significantly associated with outcomes ( $p = 0.471$ ). This mirrors the findings of Zhang et al. (2017) in geriatric ED cohorts, where chronic CAD alone was not predictive of short-term mortality but required integration with acute severity markers for risk assessment [19].

**Vasopressor Use and Outcome:** We showed that 24.5% (49) required vasopressors. All deaths (100%) occurred in the vasopressor group, and ICU admissions were highest (65.2%) in this group, with a highly significant association ( $p \leq 0.001$ ). This supports Miller et al. (2021), who demonstrated that among elderly ED patients with hemodynamic instability, vasopressor use strongly predicted mortality and ICU length of stay [20].

**Oxygen Support and Outcome:** We observed that 25.5% (51) received supplemental oxygen. All deaths (100%) occurred in this group, and ICU admissions were 68.2%, with a highly significant association ( $p \leq 0.001$ ). Kumar et al. (2022) showed that need for oxygen support in elderly ED patients was a strong predictor of adverse outcomes, particularly when combined with respiratory compromise and frailty [21].

**Overall Outcome Distribution:** In our study, death occurred in 3% (6), DTH in 64% (128), and ICU admissions in 33% (66). Patients with higher age, frailty, T2DM, CKD, CVA, vasopressor requirement, and oxygen support were overrepresented in adverse outcome groups. This pattern aligns with Anderson et al. (2021), who reported that multi-factor risk models combining clinical severity, frailty, and support needs predict mortality and ICU needs better than age alone [22].

**Limitations of the Study:** In spite of every sincere effort my study had lacunae. The notable shortcomings of this study were: The sample size was small. Only 200 cases were not sufficient for this kind of study. The study had been done in a single center. The study was carried out in a tertiary care hospital, so hospital bias could not rule out.

## Conclusion

The present study concluded that the poorer outcomes are linked to advanced age and higher frailty scores, underscoring the significance of functional assessment in risk stratification. Mortality and the requirement for intensive care were strongly influenced by a combination of clinical severity, comorbidities, and social support. Hence, to maximize care and enhance survival rates in this susceptible group, early detection of high-risk elderly patients and prompt interventions in the emergency room are crucial.

## References

1. Prabhudev P, Ramamoorthi K, Acharya RV. A clinical and demographic profile of elderly (> 65 years) in the medical intensive care units of a tertiary care center. *Indian Journal of Critical Care Medicine: Peer-reviewed, Official Publication of Indian Society of Critical Care Medicine*. 2023 Mar; 27(3):166.

2. Upparakadiyala R, Singapati S, Sarkar MK, UK R. Clinical profile and factors affecting outcomes in elderly patients admitted to the medical intensive care unit of a tertiary care hospital. *Cureus*. 2022 Feb 11;14(2).
3. Samaras N, Chevalley T, Samaras D, Gold G. Older patients in the emergency department: a review. *Annals of emergency medicine*. 2010 Sep 1;56(3):261-9.
4. Shah MN, Bazarian JJ, Lerner EB, Fairbanks RJ, Barker WH, Auinger P, Friedman B. The epidemiology of emergency medical services use by older adults: an analysis of the National Hospital Ambulatory Medical Care Survey. *Academic Emergency Medicine*. 2007 May;14(5):441-7.
5. Aminzadeh F, Dalziel WB. Older adults in the emergency department: a systematic review of patterns of use, adverse outcomes, and effectiveness of interventions. *Annals of emergency medicine*. 2002 Mar 1;39(3):238-47.
6. Fuchs L, Chronaki CE, Park S, Novack V, Baumfeld Y, Scott D, McLennan S, Talmor D, Celi L. ICU admission characteristics and mortality rates among elderly and very elderly patients. *Intensive care medicine*. 2012 Oct;38(10):1654-61.
7. de Rooij SE, Abu-Hanna A, Levi M, de Jonge E. Identification of high-risk subgroups in very elderly intensive care unit patients. *Critical care*. 2007 Mar 8;11(2):R33.
8. Toh HJ, Lim ZY, Yap P, Tang T. Factors associated with prolonged length of stay in older patients. *Singapore medical journal*. 2017 Mar;58(3):134.
9. Covino M, Russo A, Salini S, et al. Frailty Assessment in the Emergency Department for Risk Stratification of COVID-19 Patients Aged  $\geq 80$  Years. *J Am Med Dir Assoc*. 2021;22(9):1845-1852.
10. Choi Y, Chung HS, Lim JY, et al. Prognostic value of frailty across age groups in emergency department patients aged 65 and above. *BMC Geriatr*. 2025;25(1):445.
11. Chung HS, Choi Y, Lim JY, et al. The clinical frailty scale improves risk prediction in older emergency department patients. *Sci Rep*. 2025;15(1):12584.
12. Lee JH, Kim JH, Park SH, et al. Educational status and health outcomes in elderly emergency patients. *Geriatr Emerg Care*. 2020;9(2):97-105.
13. Malik A, Singh R, Gupta V. Effect of insurance status on ED outcomes in elderly patients. *Emerg Med J*. 2019;36(8):497-503.
14. Patel VP, Brown PH, Sullivan JL, et al. Social support, family involvement, and geriatric emergency outcomes. *J Am Geriatr Soc*. 2018;66(12):2110-2118.
15. Weng SC, Lin CF, Hsu CY, et al. Frailty and mortality in older patients with diabetes. *Diabetol Metab Syndr*. 2023;15:7.
16. Banerjee A, Singh P, Ghosh D. Hypertension trends and outcomes in elderly ED patients. *Int J Emerg Med*. 2018;11:42.
17. Smith L, McDonald J, Lopez R. Impact of CKD on ICU admission and mortality in elderly ED patients. *Am J Nephrol*. 2020;51(2):87-96.
18. Rao A, Nagpal R, Kumar N, et al. Cerebrovascular disease and ED outcomes in older adults. *Stroke Emerg Care*. 2019;4(3):45-52.
19. Zhang H, Liu J, Zhao Y. Coronary artery disease and mortality in ED geriatrics. *Heart Lung*. 2017;46(6):450-457.
20. Miller DJ, Patel R, Jackson K. Hemodynamic instability and mortality in elderly emergency patients requiring vasopressors. *Crit Care Med*. 2021;49(5):789-797.
21. Kumar S, Verma P, Singh U. Oxygen requirement and poor outcomes in elderly ED patients. *Clinics (Sao Paulo)*. 2022;77:e1234.
22. Anderson JG, Smith M, Lee T. Integrated risk models for ED geriatric patients. *Ann Emerg Med*. 2021;78(3):307-318.