

Background

Advanced age is a well-known risk factor for mortality in Upper Gastrointestinal Bleeding (UGIB). However, the characteristics and outcomes of elderly patients hospitalized for UGIB remains understudied.

Methods and Materials

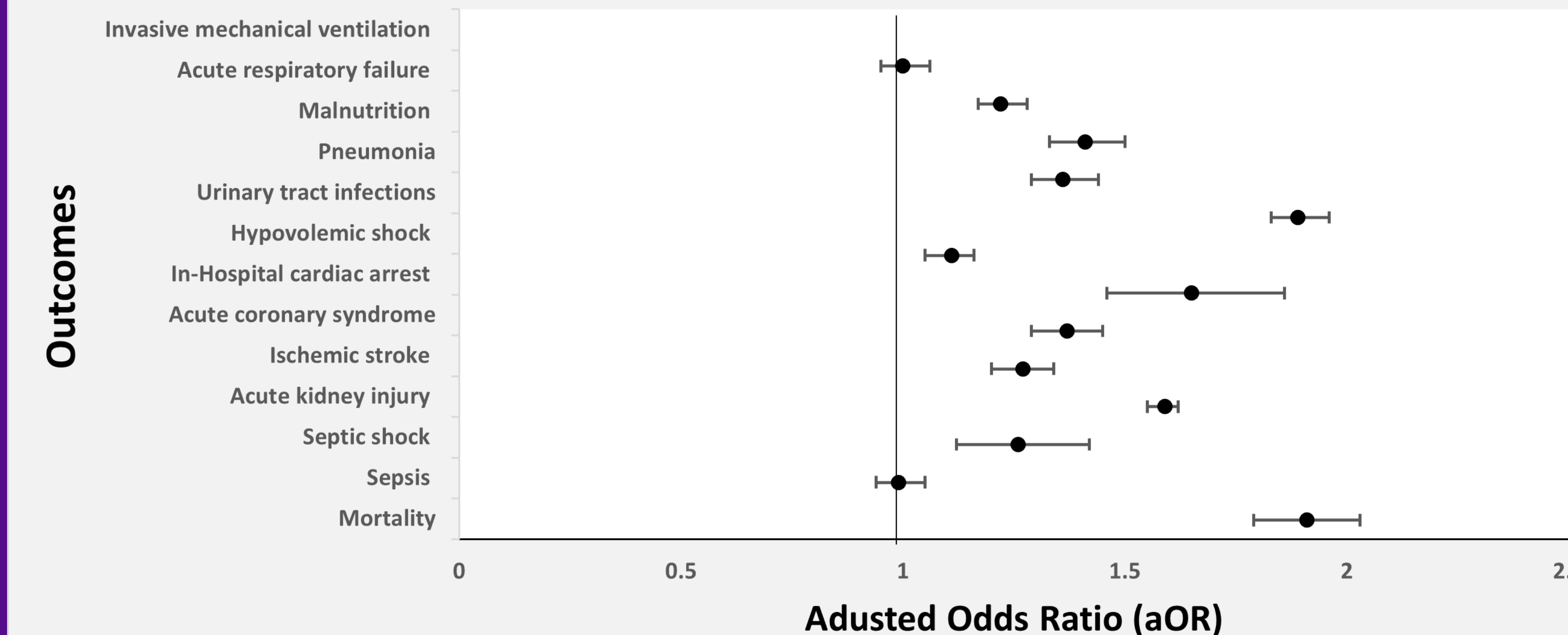
Using ICD-10 codes, the National Inpatient Sample database of the years 2016 to 2019 was searched for to geriatric (≥ 65 years old) and non-geriatric (18-65 years old) patients who were admitted with a primary diagnosis of UGIB. Multivariate logistic regression analysis was performed to determine the risk of mortality and in-hospital complications in geriatric patient admitted for UGIB compared to their younger counterparts. Baseline patients and facilities characteristics were incorporated into the analysis. Data was considered statistically significant if p-value was < 0.05 .

Results

Among 1,656,594 adults' patients who were hospitalized in US with a primary diagnosis of UGIB from 2016 - 2019, 1,022,295 (61.7%) were ≥ 65 years old. Age-stratified patients baseline characteristics are listed in Table 1. Geriatric patients have a 1.7-fold increase in risk of UGIB (OR 1.74, $p < 0.001$) with 1.9-fold increase in risk of mortality (OR 1.91, $p < 0.001$). In term of in-hospital outcomes (Figure 1), Geriatric patients had a higher risk of septic shock (OR 1.26, $p < 0.001$), acute kidney injury (OR 1.59, $p < 0.001$), acute coronary syndrome (OR 1.37, $p < 0.001$), in-hospital cardiac arrest (OR 1.65, $p < 0.001$), hypovolemic shock (OR 1.11, $p < 0.001$), UTIs (OR 1.89, $p < 0.001$), pneumonia (OR 1.36, $p < 0.001$), malnutrition (OR 1.41, $p < 0.001$) and acute respiratory failure (OR 1.22, $p < 0.001$) when compared to non-geriatric patients. Interestingly, geriatric/UGIB patients had no significant difference in length of stay (Coefficient 0.28 days, $p < 0.001$) and cost of care (Coefficient -750\$, $p < 0.001$) when compared to younger subjects.

Variable	Overall UGIB % No.	NON-GERIATRICS % No.	GERIATRICS % No.	P value
	100.0 (1,656,594)	38.2% (634,299)	61.7 (1,022,295)	
Patient's characteristics				
Age, mean years	67.6	51.0	77.9 (796368)	< 0.001
Female	46.7 (773629)	38.8 (246108)	51.6 (527504)	< 0.001
Racial distribution				
White	69.4 (1149676)	60.1 (381214)	75.1 (767744)	
Black	14.7 (243519)	19.1 (121151)	12.0 (122675)	
Hispanic	9.47 (156879)	13.2 (83727)	7.14 (72992)	
Others	2.40 (39758)	2.97 (18839)	2.05 (20957)	
Insurance type				
Medicaid	66.3 (1098322)	24.2 (153500)	91.6 (936422)	< 0.001
Medicare	12.1 (200448)	29.9 (189655)	1.43 (14619)	
Private	17.2 (284934)	35.2 (223273)	6.39 (65325)	
Uninsured	4.27 (70737)	10.5 (66601)	0.52 (5316)	
Charlson comorbidity index score				
1	21.9 (362794)	26.9 (170626)	18.9 (193214)	
2	17.3 (286591)	15.3 (97048)	18.5 (189125)	
≥ 3	49.0 (811731)	41.1 (260697)	53.9 (551017)	
Median annual income, us\$				
1-43,999	31.1 (515201)	35.3 (223908)	28.5 (291354)	< 0.001
44,000-55,999	26.5 (438997)	26.3 (166821)	26.6 (271930)	
56,000-73,999	23.5 (389300)	22.2 (140814)	24.4 (249440)	
$\geq 74,000$	18.7 (309783)	15.9 (100854)	20.4 (208548)	
Hospital characteristics				
Hospital region				
Northeast	18.0 (298187)	15.7 (99585)	19.5 (199348)	
Midwest	22.1 (366107)	20.5 (130031)	23.0 (235128)	
South	39.8 (659324)	41.3 (261965)	38.8 (396650)	
West	20.0 (331319)	22.3 (141449)	18.5 (189125)	
Hospital bed size				
Small	20.3 (336289)	19.2 (121785)	20.9 (213660)	< 0.001
Medium	30.7 (508574)	30.2 (191558)	31.0 (316911)	
Large	48.9 (810074)	50.5 (320321)	47.9 (489679)	
Hospital location				
Rural location	9.10 (150750)	7.53 (47763)	10.1 (103252)	< 0.001
Urban location	23.9 (395926)	22.8 (144620)	24.7 (252507)	
Teaching hospital	66.8 (1106605)	69.6 (441472)	65.1 (665514)	
Comorbidities				
Hypertension	39.2 (649385)	35.8 (227079)	41.3 (422208)	< 0.001
Hyperlipidemia	40.1 (664294)	23.5 (149060)	50.4 (515237)	< 0.001
Smoking history	40.4 (669264)	45.9 (291143)	37.0 (378249)	< 0.001
Diabetes mellitus	32.1 (531767)	25.9 (164283)	35.9 (367004)	< 0.001
Congestive heart failure	21.8 (361137)	10.7 (67870)	28.7 (293399)	< 0.001
Atrial fibrillation	17.5 (289904)	6.12 (38819)	24.6 (251485)	< 0.001
Atrial flutter	1.43 (23689)	0.68 (4313)	1.91 (19526)	< 0.001
Coronary artery disease	29.8 (493665)	14.9 (94511)	39.0 (398695)	< 0.001
Carotid artery disease	1.10 (18223)	0.36 (2283)	1.57 (16050)	< 0.001
Peripheral vascular disease	4.80 (79517)	2.16 (13701)	6.44 (65836)	< 0.001
Chronic obstructive lung disease	18.5 (306470)	12.4 (78653)	22.5 (230016)	< 0.001
Chronic kidney disease	26.2 (434028)	15.6 (98951)	32.9 (336335)	< 0.001
Obesity	12.6 (208731)	14.9 (94511)	11.2 (114497)	< 0.001
Chronic liver disease	15.8 (261742)	27.0 (171261)	8.86 (90575)	< 0.001
Peptic ulcer disease	12.6 (208731)	13.4 (84996)	12.1 (123698)	< 0.001
Hiatal hernia	21.5 (356168)	17.7 (112271)	24.0 (245351)	< 0.001
Portal hypertension	6.58 (109004)	11.9 (75482)	3.25 (33225)	< 0.001
Gastroesophageal reflux disease	27.9 (462190)	26.7 (169358)	28.7 (293399)	
Alcohol use	13.1 (217014)	26.8 (169992)	4.75 (48559)	< 0.001
Esophageal varices	4.81 (79682)	8.58 (54423)	2.48 (25353)	< 0.001

Forest plot of study outcomes



Conclusion

Geriatric population suffering UGIB have higher rates of mortality, septic shock, acute kidney injury, acute coronary syndrome, in-hospital cardiac arrest, hypovolemic shock, UTIs, pneumonia and acute respiratory failure with similar healthcare resources utilization to younger subjects. These results are likely related to the higher comorbidities and the benefits/risk balance of undergoing invasive therapeutic measures in this friable age group. This necessitates proper risk stratification, treatment protocols and early identification of goals of care for geriatric patients admitted for UGIB.

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