

Clinico-Epidemiological Characteristics of Elderly Patients Presented in a Newly Established Geriatric Wing of a Tertiary Level Hospital in Bangladesh

Abdus Sattar¹ Rashed Mirjada² Mohammad Moinuddin Chowdhury³ Mirja Nurul Karim³
Enshad Ekram Ullah³ Mahmud Hassan Arif^{3*} Md Habib Hassan³ Taznuba Tahreen⁴
Md Sazzad Hossain Chowdhury⁵ M A Hasan Chowdhury⁶ Sujat Paul⁶

Abstract

Background: Ageing is an emerging issue for global public health including Bangladesh which is underwound a demographic transition and experiencing an increasing proportion of the elderly population. We conducted this study to document the characteristics of the patients admitted into a newly established geriatric centre in a tertiary-level hospital in Bangladesh.

Materials and methods: We conducted this descriptive cross-sectional study among 194 older adults admitted into the geriatric centre of Chittagong Medical College Hospital of Bangladesh. A structured questionnaire was utilized to collect the information. The study participants' Socio-Economic (SE) class was determined by modified Kuppuswamy's classification. The data were analyzed with Stata SE 17.0 for descriptive and inferential statistics.

Results: Among the 194 participants, 66.5% represented the middle SE class while about one-fourth were from the Upper SE class. Gender (p-value: 0.029) education (p-value: <0.0001), smoking (p-value: 0.034) and BMI (p-value: 0.040) were found to be associated with the SE class. The common presenting complaints were respiratory distress, cough, lethargy, constipation, vomiting, anorexia, chest pain and insomnia, while the predominant clinical signs were tachypnoea, cardiological abnormalities, anaemia and fever.

Conclusion: More extensive research is needed for the increasing population of the elderly in Bangladesh to understand the epidemiology and determinants of different co-morbidities.

Key words: Ageing; Elderly; Geriatrics.

Introduction

Population ageing is an inevitable phenomenon that has received considerable attention over the past century.¹ Ageing is a multi-dimensional process in which the body underwent some biochemical alteration over time and causes several physical and psychological changes in people.² Due to the age pyramid's inversion, this process has become more prominent in many countries, representing a global socio-demographic transition by an increased proportion of the elderly population.³ According to global statistics, the number of elderly people aged 60 and above has expanded from 962 million to 1 billion between 2017 and 2019 and it is likely to be increased to 1.4 billion by 2030 and 2.1 billion by 2050, with a growing rate of 3.26%.^{4,5} Moreover, the population of older people aged 80 or above is also substantially growing compared to other people in the world.⁶ Lately, the amplitude of the ageing population is becoming more notable in many developed and developing countries.⁷ The United Nations (UN) showed that, in 2017, developing countries accommodated around two-thirds of elderly people of the total global population.⁸ Between 2017 and 2050, the proportion of older people (those over 60) is expected to more than double in developing countries, while in many developed regions, the number of aged people is expected to rise by 38% during that time, rising from 310 million in 2017 to 427 million in 2050.⁹

-
1. Professor of Medicine
Chittagong Medical College, Chattogram.
 2. Associate Professor of Medicine
Chittagong Medical College, Chattogram.
 3. Assistant Professor of Medicine
Chittagong Medical College, Chattogram.
 4. Lecturer of Anatomy
Southern Medical College, Chattogram.
 5. Assistant Director (Retired)
Chittagong Medical College Hospital, Chattogram.
 6. Professor of Medicine (Retired)
Chittagong Medical College, Chattogram.

***Correspondence:** Dr. Mahmud Hassan Arif

Cell : 01711 88 31 86

E-mail: arif.mahmud@gmail.com

Submitted on : 02.04.2023

Accepted on : 29.04.2023

Like other countries, the ageing population is also a major concern in Bangladesh.¹⁰ Bangladesh has the largest older population among all the developing countries, and it is forecasted that this country will share more than half of the people worldwide by 2025.¹¹ The primary cause of this acceleration could be the longer life expectancy, which has increased from 46.59 years in 1972 to 72.87 years in 2020, resulting in a higher number of older people in this country.¹² Moreover, the medical sector in the country has been more advanced than before, which, in turn, is contribute to lengthening the lifespan of older people in Bangladesh.¹³ A recent study stipulated that there will be around 36 million aged people, accounting for 22% of the entire population in Bangladesh in 2050.¹⁴

However, when people grow older, they become more susceptible to developing different chronic diseases and face several physical challenges in their life.¹⁵ A study reported that the illness of aged people causes a total 23% of burden in the health sector.¹⁶ In these circumstances, it is essential to provide specialized geriatric care for older people which will not only help them to lead a healthier life but also contribute in reducing the disease burden in the world.¹⁷ Not with standing, the geriatric health care in developing countries is still in its infancy compared to many developed nations.¹⁸ For instance, while the United States has about 51.2% of physicians in geriatric medicine, many developing nations are still could not even start geriatric care as a training program in their regions.¹⁹

A similar scenario can also be observed in Bangladesh where the medical facilities for elderly people are very limited. A study showed that there is lack of adequate resources (Physicians, nurses, clinics) in Bangladesh, and as a result of this the geriatric care of the medical sector is constantly being challenged over there.¹² Earlier, there was no other public-sector initiatives in the geriatric health wings except the oldest medical school in Dhaka, the capital city of Dhaka.¹³ Another study, conducted during COVID-19, revealed that, none of the hospitals in the country possesses adequate beds and ambulances facilities in the geriatric intensive care unit which not only affects the quality of the geriatric care but putting the older people at risk

in Bangladesh.²⁰ This paper aims to examine the socio-demographic characteristics, clinical presentation and associated co-morbidities of the elderly patients admitted in this geriatric unit with an overall goal to inform the scientific community regarding the importance of geriatric care in the developing countries like Bangladesh.

Materials and methods

We conducted this descriptive cross-sectional study in Chittagong Medical College Hospital (CMCH).

The study participants were the older adults of 60 years of age or more who were admitted into the geriatric unit of CMCH during the data collection period of four months between May 2022 through August 2022.

In total, 194 patients participated in this study, and these participants were recruited through convenience sampling method.

We utilized a validated pre-tested structured questionnaire to collect information either from the participant him/herself, or from their caregivers, if necessary. The data was transferred from paper-based tool into Microsoft Excel 2016 and checked for inconsistencies. Finally, the data was analyzed for descriptive statistics by using Stata SE V17.0.

The ethical approval was obtained from Chittagong Medical College Ethical Review Committee.

Results

Among the 194 study participants, about two-thirds (66.5%) represented the middle socio-economic class while 23.6% were from upper SE class and the rest (11.3%) were in lower SE category. The mean age of the participants was 65.3 years (± 5.6) years with a range of 60-80 years. More than 60% of the study population were male and the majority (87.1%) were Muslims. About half (46.9%) of the participants had no formal education, while only 6.2% had more than 10 years of education of whom two-thirds (66.7%) were from lower SE class. More than 75% of the participants were not financially independent. Significant differences were documented for gender and education between the groups. The socio-demographic characteristics of the study participants are presented in Table I.

Table I Socio-demographic characteristics of the study participants (n=194)

Variables [Frequency (%) / Mean \pm SD]	Upper SE Class (n=45)	Middle SE Class (n=127)	Lower SE Class (n=22)	Total	p-value
Age, in years	64.8 \pm 5.6	65.3 \pm 5.5	65.8 \pm 6.0	65.3 \pm 5.6	0.134*
Gender					
Female	22 (29.7)	40 (54.1)	12 (16.2)	74 (38.1)	0.029†
Male	23 (19.2)	87 (72.5)	10 (8.3)	120 (61.9)	
Religion					
Muslim	40 (23.7)	113 (66.9)	16 (9.5)	169 (87.1)	0.102†
Non-Muslims	5 (20.0)	14 (56.0)	6 (24.0)	25 (12.9)	
Education					
No Formal Education	37 (40.6)	44 (48.4)	10 (11.0)	91 (46.9)	0.000‡
5 years	2 (5.0)	38 (95.0)	0 (0.0)	40 (20.6)	
6-10 years	4 (7.8)	43 (84.3)	4 (7.8)	51 (26.3)	
> 10 years	2 (16.7)	2 (16.7)	8 (66.7)	12 (6.2)	
Marital Status					
Married	35 (22.2)	104 (65.8)	19 (12.0)	158 (81.4)	0.681†
Single	10 (27.8)	23 (63.9)	3 (8.3)	36 (18.6)	
Family Type					
Nuclear	16 (29.6)	30 (55.6)	8 (14.8)	54 (36.3)	0.197†
Joint / Extended	29 (20.7)	97 (69.3)	14 (10.0)	140 (58.5)	
Economic Dependency					
Dependent	40 (26.5)	97 (64.2)	14 (9.3)	151 (77.8)	0.052†
Independent	5 (11.6)	30 (69.7)	8 (18.6)	43 (22.1)	

*ANOVA

† Chi-square test

‡ Fisher's Exact test.

Regarding the lifestyle related risk factors, 117 (60.3%) participants were found to ever smoked in their lifetime, of whom more than 16% were current smokers. However, only 1% reported of alcoholism. Almost two-thirds (64.4%) of the participants mentioned that they performed mild to moderate physical activity daily. Among the upper and middle SE class participants, more participants reported to be physically active, while among the lower SE class, this was reciprocal. Overall, the mean sleeping time was 6.2 ± 1.6 hours and mean BMI was 20.6 ± 3.3 kg/m². When BMI was categorized, 43.3% were found to be underweight and 7.8% were either overweight or obese. Only 12.9% of all the participants are independent regarding functional capability while 65.5% needed help sometimes. Smoking status and BMI were found to be significantly associated with socioeconomic classes. The findings related to lifestyle related risk factors are shown in Table II.

Table II Risk factors related to Lifestyle of the study participants (n=194)

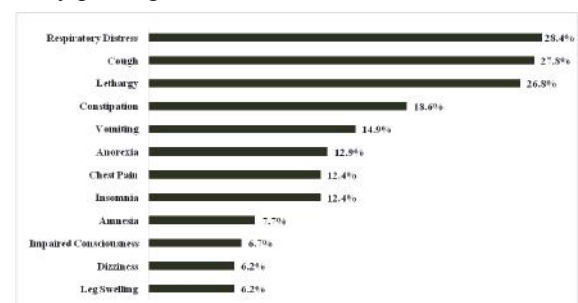
Variables [Frequency (%) / Mean \pm SD]	Upper SE Class (n=45)	Middle SE Class (n=127)	Lower SE Class (n=22)	Total	p-value
Smoking status					
Never smoked	19 (24.7)	44 (57.1)	14 (18.2)	77 (39.7)	0.034†
Ever smoked	26 (22.2)	83 (70.9)	8 (6.8)	117 (60.3)	
Alcoholism					
No	45 (23.4)	125 (65.1)	22 (11.5)	192 (99.0)	0.58†
Yes	0 (20.0)	2 (100.0)	0 (0.0)	2 (1.0)	
Physical activity					
No	12 (17.4)	47 (68.1)	10 (14.5)	69 (35.6)	0.271†
Yes	33 (26.4)	80 (64.0)	12 (9.6)	125 (64.4)	
Sleeping hours	6.1 \pm 1.4	6.1 \pm 1.7	7.0 \pm 0.7	6.2 \pm 1.6	0.209*
BMI, in kg/m ²	20.1 \pm 3.5	20.6 \pm 3.1	21.5 \pm 3.9	20.6 \pm 3.3	0.040*
Underweight	25 (29.8)	55 (65.5)	4 (4.8)	84 (43.3)	
Normal	16 (16.8)	63 (66.3)	16 (16.8)	95 (49.0)	
Overweight	3 (27.3)	7 (63.6)	1 (9.1)	11 (5.7)	0.057‡
Obese	1 (25.0)	2 (50.0)	1 (25.0)	4 (2.1)	
Functional capability					
Fully Dependent	3 (16.7)	13 (72.2)	2 (11.1)	18 (9.3)	0.880‡
Needs help mostly	7 (29.2)	13 (54.2)	4 (16.7)	24 (12.4)	
Needs sometimes	30 (23.6)	84 (66.1)	13 (10.2)	127 (65.5)	
Independent	4 (20.0)	17 (68.0)	3 (12.0)	25 (12.9)	

*ANOVA

† Chi-square test

‡ Fisher's Exact test.

The most common presenting complaints (More than 10%) of the patients attended in the geriatrics ward included respiratory distress, cough, lethargy, constipation, vomiting, anorexia, chest pain and insomnia. However, there were several other sorts of clinical presentation like amnesia, impaired consciousness, dizziness, leg swelling. Weakness in the limbs, Visual and auditory difficulties, abdominal pain, weight loss etc. Figure 1 shows the frequency distribution (%) for the most frequent presenting complaints of our study participants.

**Figure 1** Clinical presentation of the study participants

Among the clinical signs found on the clinical examination, more than half of the study participants had tachypnoea (54.1%) while about 36% had some cardiological abnormalities. More than one-fourth of the patients had anemia and a similar proportion had fever or hyperthermia. The other signs included neurological or abdominal abnormalities, tachycardia, hypertension, edema, jaundice, thyroid abnormalities, lymph node enlargement etc. The most frequent clinical signs are shown in Figure 2.

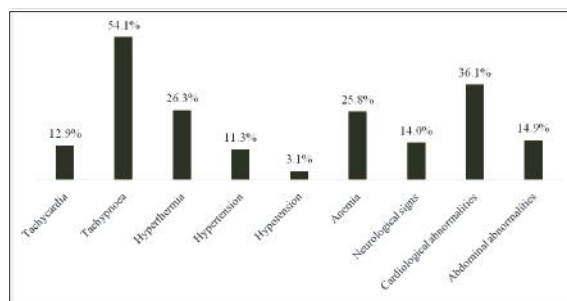


Figure 2 Clinical signs of the study participants

Discussion

In this study, two-thirds of the patients represented the middle SE class while about one-fourths were from the Upper SE class and the participation showed a male predominance (61.9%). Most of them (87.1%) were Muslims by religion and just less than half (46.9%) had no formal education. About 66.7% of the participants with >10 years of schooling represented lower SE class, while among the participants with no formal education, only 11.0% were from this class. More than two-thirds of the participants were not financially independent and nearly 60% of the patients were from joint families. About 43.3% patients were underweight and only 7.8% were overweight or obese. The common presenting complaints were respiratory distress, cough, lethargy, constipation, vomiting, anorexia, chest pain and insomnia, while the predominant clinical signs were tachypnoea, cardiological abnormalities, anemia and fever.

Most of our study participants represented the middle SE class. A study that looked for patient satisfaction in six (6) tertiary level health facilities, both public and private, reported that

most of their patients were from middle class families.²¹ However, the findings of this study contradicts with our finding when only the public hospitals are concerned. Although the poor people in Bangladesh visits the public health facilities more than others, the discrepancy with our study can be explained because our study site has been the first of its kind in the region and hence, old, frail people irrespective of their background have visited here for taking service.²²

More than two-thirds of the study participants were male in the current study. Similar gender differences were found in another study conducted in rural Bangladesh.²³ However, another study reported a contradictory finding where females suffered more from co-morbidities and sought care.²⁴ The male predominance of our study findings can be explained by the patriarchal nature of our society where the males are given more importance in comparison to the females.²⁵ Close to ninety percent of our study participants were Muslims which aligns with the findings of the latest census of Bangladesh according to which, 91.04% of the country's population are Muslims.²⁶ In our study, 46.9% of the study participants had no formal education. A study, conducted in rural Bangladesh to document health profile of the elderly population in 2010, found 45.7% of their study population to be uneducated and this finding mimics with our study.²⁷ Interestingly, about two-thirds of the participants with >10 years of schooling represented lower SE class, while among the participants with no formal education, only 11.0% were from this class. This may be explained by the consciousness about their health among the more educated people among the lower SE class, and thus, they tend to show up to the health care facility to seek care.²⁸

In our study, most of the study participants were financially dependent on other family members. This is expected in countries like Bangladesh where many men earn their livelihood by physical labour, and with ageing, physical strength diminishes, and the elderly people becomes more vulnerable and dependent.²⁹ In addition, we found that about 60% of the patients were from joint or extended families. For the elderly patients, it is better to be from extended family since this increases the chances for the availability of caregivers for them, especially in the low resource

settings.³⁰ Among the elderly patients, 7.8% were either overweight or obese. The findings regarding the nutritional status are scarce in the scientific literature, especially in the contexts similar to Bangladesh. However, a study conducted among the elderly people in Brazil reported 12.5% of prevalence of obesity and 14.8% prevalence of underweight.³¹ Although the finding of this study contradicts with ours, the differences in the socio-economic status between Brazil and Bangladesh can justify the dissimilarities. In the present study, we identified 16% participants as current smokers and just above 60% as ever-smokers. A recent study conducted in Bangladesh reported that nearly half of the elderly population are the current smokers.³² However, the low prevalence in our study might be due to the fact that we conducted our study among the hospitalized elderly adults.

We also documented the major clinical symptoms and signs presented by our study participants which mostly align with the findings for other studies. For instance, in our study, we found the respiratory distress and cough as the most common presenting complaints, both of which are the symptoms of Acute Respiratory Distress Syndrome (ARDS) in adults. ARDS is one of the major reasons of the morbidity of the older adults.³³ The neurological abnormalities are common among the elderly patients, mainly because of electrolyte imbalance or cerebrovascular disorders.¹⁶ The gastrointestinal symptoms like constipation, omitting, anorexia etc. are frequent findings among the older adults.³⁴ The cardiovascular status of the patients usually worsens with the age and hence, the symptoms and signs related to cardiovascular system are also prominent among the elderly patients.¹⁶ Anemia is another common finding among the hospitalized old, frail patients a documented by many studies, and is recognized as an emerging problem of the world.

Limitation

Limitation of this study was the issue of generalizability since the population that availed the private facilities for geriatric care was not included in this study.

Conclusion

This study will provide the foundation of geriatrics research with the hospitalized patients. However, since the world's population is ageing and the demographic transition is in place in many countries, more emphasis should be given towards the research on geriatric population so that our older generation can lead a healthier life.

Recommendation

More research should be done in this neglected area focusing not only on the geriatric care, but also common geriatric illnesses like Alzheimer's disease, stroke, paralysis and so forth.

Acknowledgement

The authors want to acknowledge the efforts of all the participants in the study.

Contribution of authors

AS-Conception, study design, manuscript writing & Final approval.

MAHC-Conception, critical revision & final approval.

SP-Conception, design, critical revision & final approval.

RM-Interpretation of data, critical revision & final approval.

MMC-Interpretation of data, manuscript writing & final approval.

MNK-Interpretation of data, manuscript writing, critical revision & final approval

EEU-Interpretation of data, critical revision & final approval.

MSHC-Data analysis, acquisition of data, critical revision & final approval.

MHH-Data analysis, acquisition of data, drafting & final approval.

TT-Interpretation of data, drafting & final approval.

MHA-Data collection, data analysis, manuscript writing & final approval.

Disclosure

The authors declared no conflicts of interest.

References

1. Lloyd-Sherlock P. Population ageing and health. Population ageing and international development. Policy Press. 2010:91-116.
2. Amarya S, Singh K, Sabharwal M. Ageing process and physiological changes. Gerontology. IntechOpen. 2018.
3. Garcia MA, García C, Markides K. 5 Demography of Aging. Handbook of Population. Springer. 2019:143-161.
4. Fita F, Mekonnen HS, Endalew HL, Azagew AW. Knowledge, attitude, and associated factors towards older people care among nurses working at public hospitals in West Shoa zone, Oromia region, Ethiopia. BMC nursing. 2021;20(1):1-12.
5. Hamiduzzaman M, Kuot A, Islam MR. Toward Family-Focused Geriatric Care for Rural Older Adults in Low-and Lower-Middle-Income Countries. 2018.
6. Sara HH, Chowdhury MAB, Haque MA. Multimorbidity among elderly in Bangladesh. Aging medicine. 2018;1(3):267-275.
7. He W, Goodkind D, Kowal PR. An aging world: 2015. United States Census Bureau Washington, DC. 2016.
8. Mollah MAH. Aging Policy Analysis and Evaluation. 2019;
9. United Nations. World population ageing: 2017 highlights. UN. 2017.
10. Rahman MM, Begum M, Uddin MT, Rahman M. Factors affecting health status of urban aged population: evidence from Sylhet, Bangladesh. Indian J Gerontol. 2018;32(1):103-118.
11. Kabir R, Khan HT, Kabir M, Rahman MT. Population ageing in Bangladesh and its implication on health care. European Scientific Journal. 2013;9(33):34-47.
12. Barikdar A, Ahmed T, Lasker SP. The situation of the elderly in Bangladesh. Bangladesh Journal of Bioethics. 2016;7(1):27-36.
13. Kabir R, Kabir M, Uddin MSG, Ferdous N, Chowdhury MRK. Elderly population growth in Bangladesh: Preparedness in public and private sectors. IOSR Journal of Humanities and Social Science. 2016;21(8):58-73.
14. Rahman A. The increasing 'burden' of the elderly in Bangladesh. The Daily Star. <https://www.thedailystar.net/opinion/news/the-increasing-burden-the-elderly-bangladesh-1970349>.
15. Grande G, Marengoni A, Vetrano DL, et al. Multimorbidity burden and dementia risk in older adults: the role of inflammation and genetics. Alzheimer's & Dementia. 2021;17(5):768-776.
16. Prince MJ, Wu F, Guo Y, et al. The burden of disease in older people and implications for health policy and practice. The Lancet. 2015;385(9967):549-562.
17. Farahani MS. The Impacts of Aging on Economic Growth and Sustainable Development (Case Study of G20 Countries). International Journal of Social Sciences (IJSS). 2022;12(1).
18. Gutiérrez-Robledo LM. Looking at the future of geriatric care in developing countries. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences. 2002;57(3):M162-M167.
19. Tan MP. Healthcare for older people in lower and middle income countries. Age and Ageing. 2022;51(4):afac016.
20. Ali SB, Alam MA. Health Care Facilities for Senior Citizens in Selected Tertiary Hospitals During Covid-19 Pandemic. Journal of Preventive and Social Medicine. 2021;40(1):51-58.
21. Begum F. Hospital Management and Patient Satisfaction in Bangladesh: A Comparative Study between Private and Public Sectors. University of Rajshahi. 2013.
22. Mannan M. Access to public health facilities in Bangladesh: a study on facility utilisation and burden of treatment. The Bangladesh Development Studies. 2013:25-80.
23. Ahmed SM, Adams AM, Chowdhury M, Bhuiya A. Gender, socioeconomic development and health-seeking behaviour in Bangladesh. Social science & medicine. 2000;51(3):361-371.
24. Hossain SJ, Ferdousi MJ, Siddique MAB, Tipu SMU, Qayyum MA, Laskar MS. Self-reported health problems, health care seeking behaviour and cost coping mechanism of older people: Implication for primary health care delivery in rural Bangladesh. Journal of family medicine and primary care. 2019;8(3):1209.
25. Ismail SA, McCullough A, Guo S, Sharkey A, Harna S, Rutter P. Gender-related differences in care-seeking behaviour for newborns: A systematic review of the evidence in South Asia. BMJ global health. 2019;4(3):e001309.
26. Bangladesh Bureau of Statistics. Preliminary Report on Population and Housing Census. 2022.
27. Uddin MT, Chowdhury M, Islam MN, Baher GU. Status of elderly people of Bangladesh: health perspective. Proc Pakistan Acad Sci. 2010;47(3):181-189.
28. Ahmed SM, Tomson G, Petzold M, Kabir ZN. Socioeconomic status overrides age and gender in determining health-seeking behaviour in rural Bangladesh. Bulletin of the world health organization. 2005;83:109-117.
29. Malak MA, Sajib AM, Quader MA, Anjum H. "We are feeling older than our age": Vulnerability and adaptive strategies of aging people to cyclones in coastal Bangladesh. International Journal of Disaster Risk Reduction. 2020;48:101595.

- 30.** Ugargol AP, Hutter I, James K, Bailey A. Care needs and caregivers: Associations and effects of living arrangements on caregiving to older adults in India. *Ageing international*. 2016;41(2):193-213.
- 31.** Barreto SM, Passos V, Lima-Costa MFF. Obesity and underweight among Brazilian elderly: The Bambuí Health and Aging Study. *Cadernos de saude publica*. 2003;19:605-612.
- 32.** Mistry SK, Ali AM, Rahman MA, et al. Changes in tobacco use patterns during COVID-19 and their correlates among older adults in Bangladesh. *International Journal of Environmental Research and Public Health*. 2021;18(4):1779.
- 33.** Matthay MA, Zemans RL, Zimmerman GA, et al. Acute respiratory distress syndrome. *Nature reviews Disease primers*. 2019;5(1):1-22.
- 34.** Samaras N, Chevalley T, Samaras D, Gold G. Older patients in the emergency department: a review. *Annals of emergency medicine*. 2010;56(3):261-269.