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## Epidemiology and outcomes of burn injury among older adults in a Ghanaian tertiary hospital

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### ABSTRACT

**Background:** Though older adults are affected by burn injuries, there has been limited exploration of their characteristics in Ghana.

**Objective:** To assess the epidemiology and outcomes of burn injury among older adults.

**Methodology:** A retrospective approach was utilised. Admission and Discharge Books were used to retrieve records of burn patients aged 60 years and above from 2008 to 2015. SPSS version 21 was used to perform descriptive and multivariate statistical analysis.

**Results:** Out of the 618 admissions, patients aged 60 years and above were 31 (5.0%). Burn injuries were commonest among the 60–69 year group (45.2%). A greater proportion of older adults in the study were farmers (38.7%). The year 2011 recorded the highest admission and death but mortality rates were equally high in all years represented in this study except in 2010. The mean age was 69.74 years. Though more females (67.7%) than males (32.3%) were involved in burn injuries, mortality was marginally higher in males than females. Thermal burns resulting from gas explosion (51.60%) and bush fires (22.60%) were major aetiological factors. Logistic regression analysis indicated that increasing age ( $p = .002$ ) and increasing TBSA ( $p < .001$ ) were associated with higher mortality rates.

**Conclusion:** As the older adult population is expected to increase, there is the need to execute appropriate interventions such as safe farming practises and proper household utilisation of Liquefied Petroleum Gas (LPG) products. Further studies are needed in understanding gender variations in burn survival among older adults.

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### 1. Introduction

Burn injuries are injuries that result in considerable morbidity and mortality within a given population [1]. Despite increased education on burn prevention, burn injuries continue to present a significant social and fiscal burden [2]. Burn injuries are not specific to any given population or location. They affect every age group, ethnicity and occupation. Aside children, elderly persons (defined as individuals aged 60 years and above [3]) have also been cited as individuals with a high risk of being involved in burn injury [4–6]. The incidence of burn injury among the older adult population has been attributed to decreased physical strength,

impaired protective mechanism, poor vision, existence of multiple co-morbidities and decreased reaction time [7]. Some incidence of burns in the elderly has been attributed to abuse and neglect [8]. Though older adults are affected by burn injury, burn related studies in Ghana have focused mostly on the paediatric population with limited exploration of characteristics of older burn patients. For instance, Adu and Koranteng [9] studied a ten year trend of burn injury in Kumasi but the discussion of their study focused heavily on patients aged 0 to ten (10) years. A similar trend was noted in the 2006–2009 epidemiological study by Agbenorku et al., [10] as discussion focused on the paediatric population. Also, Bayuo, Agbenorku and Amankwa [11] studied issues associated with burn injury survival among one hundred (100) survivors. However, the ages of the participants were within the ranges of 15–55 years.

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Thus, though older adults are also affected by burn injuries, no study currently exist that has explored their characteristics, epidemiology and outcomes of management. This fact necessitates the need to comprehend the trend of burn injury and management among older adults so as to plan appropriate health education interventions for this cohort of patients.

## 2. Materials and methods

### 2.1. Setting

This retrospective study was conducted using data available at the Burns Intensive Care Unit and Ward D2C of the Komfo Anokye Teaching Hospital (KATH). KATH is the second largest tertiary hospital in Ghana and the main referral point for the middle belt of Ghana serving the Ashanti, Brong Ahafo, the Northern, Upper West and Upper East regions of the country. The hospital was established in 1954 and is affiliated to the School of Medical Sciences of the Kwame Nkrumah University of Science and Technology (KNUST). The hospital currently has 1000 beds, with an annual hospital attendance of about 679,050 patients made up of both out- and in-patients. The two burn units are six bed capacity each dedicated to varying degrees of burn injuries. The Burns Intensive Care Unit is dedicated to severe burns as well as burns involving special parts of the body, inhalational injury and burns with comorbidities [12].

### 2.2. Ethical clearance

Ethical clearance for this study was obtained from KNUST School of Medical Sciences/KATH Committee on Human Research, Publications and Ethics, Kumasi.

### 2.3. Data collection

A retrospective approach was utilised. Information regarding burn older patients (individuals aged 60 years and above) who were admitted to the burn units from January 2008 to December 2015 were retrieved from the wards' Admission and Discharge Books. Also their folders were retrieved to confirm data obtained from the Admission and Discharge Books. Folders with missing data such as age were excluded from the study. Also, absconded patients were excluded from the study as outcome of their management could not be determined. The Admission and Discharge Books were double checked to ensure that all patients transferred to Ward D2C from the Burns Intensive Care Unit were captured only once onto the study data. To this end, data were obtained from the documents of 31 patients. All retrieved folders were studied closely from period of admission till death or discharge. Data obtained include age, gender, history of burn injury, aetiology, occupation, date of admission, date of discharge/death and outcome of management. Also, the burn wound charts of the patients were obtained from their folders to confirm per cent Total Body Surface Area (% TBSA).

### 2.4. Data analysis

Data obtained from the records were entered into Statistical Package for Social Science (SPSS) version 21 [13]. Descriptive statistics in the form of tables and cross tabulations were generated to understand the characteristics of the study subjects ( $n = 31$ ). Multiple linear regression was also carried out to assess predictors of outcomes of burn care among older persons with a probability value ( $P$ -value) of less than 0.05 considered to be statistically significant at 95% confidence interval.

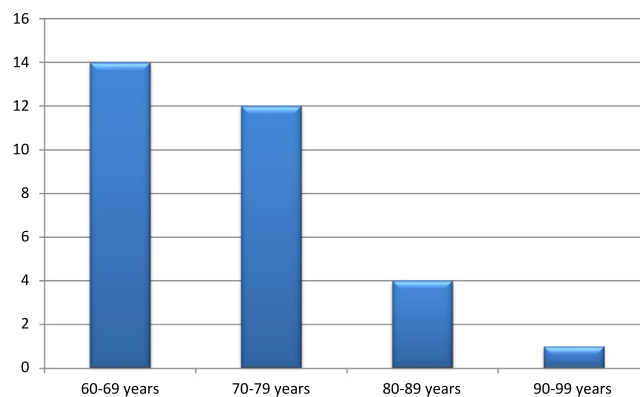
## 3. Results

Out of the 618 admissions, patients aged 60 years and above were 31 (5%) as shown in Table 1. Out of the total number of older burn cases recorded ( $n = 31$ ), the year 2011 had the greatest number of admissions of older adults ( $n = 7$ ) out of a total population of 105 burned patients for that year and the least admission was noted in 2009 ( $n = 2$ ). However, the year 2010 did not record any admission of an older burned patient.

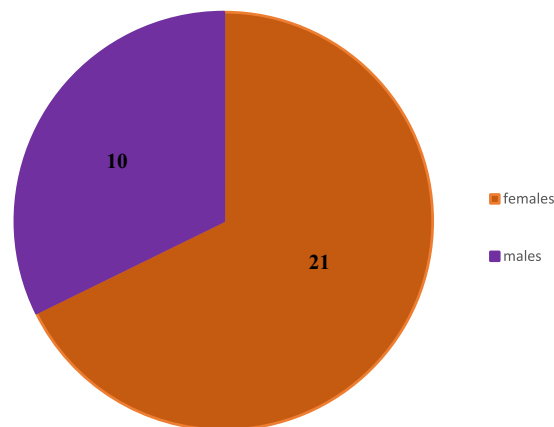
In addition, all the years presented in Table 1 above indicate that the mortality rate was higher than the discharge rate. Overall, a greater proportion of older adults died (67.7%) as compared to those who were discharged (32.3%).

**Table 1**  
Eight year trend analysis of burns outcomes in older adults.

Year * Outcome Cross Tabulation		Outcome		Total
Count		Died	Discharged	
Year	2008	1	2	3
	2009	1	1	2
	2010	0	0	0
	2011	5	2	7
	2012	6	0	6
	2013	2	1	3
	2014	3	0	3
	2015	3	4	7
Total		21	10	31



**Fig. 1.** Age distribution of patients.



**Fig. 2.** Gender distribution of patients.

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