



Full Length Research Paper

A One Year Retrospective Review of Admissions into the Accident and Emergency Department of Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria

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ABSTRACT

The Usmanu Danfodiyo university teaching hospital (UDUTH), Sokoto receives patients from Sokoto and surrounding states of the north-western region of Nigeria. Being faced with increasing population and dwindling finances, an idea of admission pattern into the accident and emergency (A and E) department will greatly enhance policy formulations to meet the challenges of providing quality health care. To describe the admission pattern into the A and E department of UDUTH, Sokoto. A retrospective descriptive study in which the case notes of all patients seen at the accident and emergency department of UDUTH between 1st January and 31st December 2011 were reviewed. The results were analyzed using windows SPSS statistics 17.0. A total of 5,546 patients were seen. 3,302 (54.8%) were males and 2,504 (45.2%) were females giving a male: female ratio of 1.2:1. The age range was from New born – 99 years old. The median age group was 20 – 39 years. There were more medical patients compared to surgical patients in ratio 7.5:1. 4,816 (87%) medical cases were seen while 632(11%) surgical cases were seen (P value was < 0.001). The commonest medical emergencies were malaria 1,509 (27.2%), Peptic ulcer disease (PUD) 955 (17.2%) and gastroenteritis 525 (9.5%), while the commonest surgical emergencies included acute appendicitis 127 (2.3%), head injury 101 (1.8%) and extremity fractures 75 (1.4%). The highest admissions occurred in the month of June, 893(16.1%) while the lowest admission was recorded in January, 200(3.6%). 92(1.7%) patients died while on admission in the department while 15(0.3%) patients were brought in dead bringing the total mortality to 107(2.0%). Medical emergencies constitute 87% of admissions into the A and E department of UDUTH while surgical admissions constitute 11%.

Keywords: Accident and emergency, Admissions, Health quality, Internal audit

INTRODUCTION

Hospital accident and emergency departments are responsible for receiving and managing acute medical and surgical conditions that may present to them from time to time. The accident and emergency (A and E) department of Usmanu Danfodiyo university teaching hospital (UDUTH) receives the following emergencies: medical, gynaecological, ophthalmic, maxillofacial,

haematological and general surgical emergencies. Others include paediatric surgical, burns and plastic, urological, neurosurgical and orthopaedic emergencies. The hospital has a dedicated trauma centre that takes care of extremity fractures and traumas presenting within forty eighth hours of injury and an Institute of Child Health (ICH) that takes care of medical paediatric emergencies.

Month	Sex		Total
	Male	Female	
January	99	101	200
February	302	136	438
March	315	265	580
April	163	137	300
May	387	311	698
June	496	397	893
July	256	246	502
August	197	226	423
September	256	196	452
October	225	245	470
November	190	174	364
December	146	80	226
Total	3032	2504	5546

Bar chart showing the sex distribution of patients in 2011

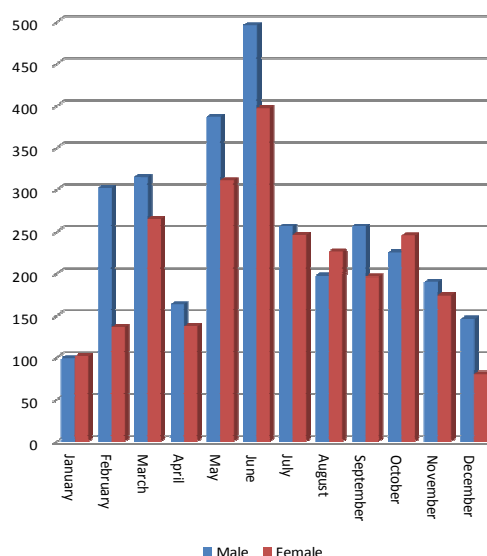


Table 1 and figure 1. Overall distribution and sex distribution of patients in 2011.

Age distribution	Patients seen
0 - 19 yrs	901
20 - 39 yrs	2638
40 - 59 yrs	1454
60 - 79 yrs	485
80 - 99 yrs	68
Total	5546

Bar chart showing age distribution of patients seen

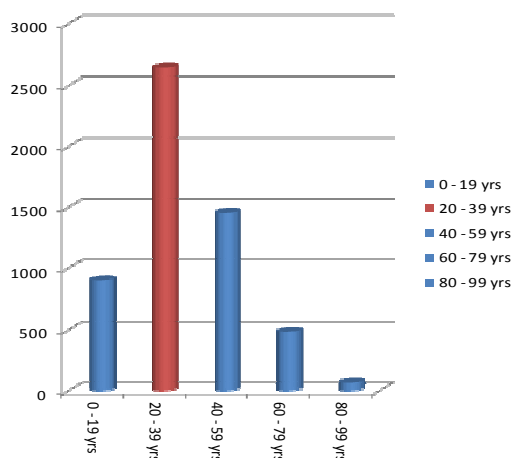


Table 2 and figure 2. Age distribution of patients seen in 2011.

Common conditions seen at the hospital accident and emergency department includes malaria, gastroenteritis, respiratory tract infection, acute appendicitis, head and extremities injuries. The accident and emergency department has a policy whereby emergencies are reviewed and admitted into the wards within 72 hours by various sub-specialties, but this is hardly the case as there are usually delays sometimes approaching two weeks or more. Pattern of admissions into accident and

emergency department varies worldwide with most studies showing surgical preponderance (Afuwape et al., 2007; Armona et al., 2001). Afuwape et al in Ibadan, Nigeria showed that 61% of admissions into accident and emergency department were surgical with trauma constituting 45.1% (Afuwape et al., 2007). 69% of emergency admissions amongst children aged 0-15 years attending a pediatric accident and emergency department in Nottingham, UK were surgical while 27%

were medical (Armona et al., 2001). With rising population and reduced funding, most tertiary hospitals in developing countries grapple to cope with the high patient admissions into their emergency departments. They lack adequate personnel and facilities to cater for such patients. The result is poor patient satisfaction and management outcome. The place of adequate funding and regular training of personnel cannot therefore be over emphasized if we are to approach the standard of care provided in developed countries.

METHODOLOGY

This was a retrospective descriptive study in which the case notes of all patients who presented to the accident and emergency department of Usmanu Danfodiyo university teaching hospital, Sokoto between 1st January and 31st December 2011 were retrieved and reviewed. Demographic characteristics, disease classification based on diagnosis, seasonal pattern of admission and mortality rate were studied. Bivariate analysis showed significant difference between medical and surgical admissions. Frequencies were presented as absolute values and percentages. All findings were analyzed using the windows SPSS statistics 17.0.

RESULTS

A total of 5,536 patients were seen. 3032 (54.8%) were males while 2,504 (45.2%) were females. The Male: Female ratio being 1.2: 1 (Table 1 and figure 1). The age of patients seen ranged from new born to 99 years. The median age group was 21 – 40 years (Table 2 and figure 2). There were more medical patients compared to surgical patients in ratio 7.5: 1. 4,816 (87%) medical cases were seen while 632(11%) surgical cases were seen (P value < 0.001). Table 3 and figure 3 showed disease - classification types of patients seen in 2011. The highest admissions occurred in the month of June, 893(16.1%) while the lowest admission was recorded in January, 200(3.6%). The commonest medical emergencies included malaria 1,509 (27.2%), Peptic ulcer disease (PUD) 955 (17.2%) and gastroenteritis 525 (9.5%), while the commonest surgical emergencies were acute appendicitis 127 (2.3%), Head injury 101 (1.8%) and extremity fractures 75 (1.4%), (Figures 4 and 5). Malaria was number one in overall ranking of diseases followed by PUD while acute appendicitis was number ten (table 4).

A total of 15 patients (0.3%) were brought in dead, while 92 patients (1.7%) died on admission in A and E department despite resuscitation and initial management by the various specialties. This gave an overall mortality of 107 patients (2%). Gastro-enteritis accounted for the highest individual mortality with 15 patients (0.30%), followed by Diabetic Keto-acidosis (DKA) 11 patients (0.19%) and Cerebro-vascular Disease (CVD) 10 patients

(0.18%) respectively. Typhoid ileal perforation was fourth with 8 patients (0.14%), and it is the highest individual surgical cause of death (tables 5, 6, 7, figures 6 and 7).

DISCUSSIONS

Patients between the 3rd and 4th decades of life constitutes majority of admissions into the A and E department in this study. This is the most active and productive age group in most society. Similar pattern is observed in most published series (Laffoy et al., 1997; Akinpelu et al., 2006; Ekere et al., 2005). Laffoy et al., (1997) reported that 37%(198) of all new patients attending the A and E department in a Dublin hospital were between 25 and 44 years age group. Of these, 41.2% (159) were self- referred while 26.2% (39) were General Practitioner (GP) referred (Laffoy et al., 1997). Akinpelu in Ile Ife, Nigeria showed that 47.3% of patients presenting to the A and E department were in their third and fourth decades of life, with a mean age of 32 years, while Ekere in Port Harcourt got 20-49 years age group with mean age of 33+/-9.4 years (Akinpelu et al., 2006; Ekere et al., 2005). Ogunmola et al., (2013), in Ido-Ekiti, Nigeria on the other hand reported a mean age presentation of 52.04 years, with 70.4 % of deaths occurring among the young and middle aged adults (Ogunmola et al., 2013). Even though their figure was higher in the 6th decade, mortality was highest among the young and middle aged group (Ogunmola et al., 2013). Our study showed a high proportion of medical admissions (87%) compared to surgical admissions (11%). This is in contrast to most published series where surgical admissions predominate (Afuwape et al., 2007; Armona et al., 2001; Belaynew et al., 2014; Hofner et al., 2005; Hyder and Morrow, 2000; Traoré et al., 2002). Injuries from road traffic and vehicle crashes, public violence among men and domestic violence with women are common causes for presentation to A and E department in most countries (Belaynew et al., 2014; Hofner et al., 2005; Hyder and Morrow, 2000; Traoré et al., 2002). The high medical admissions in our study may be the result of the creation of a dedicated trauma centre in January 2009 to cater for the mounting cases of traumatic extremity injuries presenting to the hospital. This effectively took a large chunk of surgical workload off the A and E department. In the present study malaria was the chief cause for admission into the A and E department followed by peptic ulcer disease while acute appendicitis was the leading surgical emergency followed by head injury. We were able to show in an earlier study that acute appendicitis was the leading surgical abdominal emergency presenting to the accident and emergency department of the Usmanu Danfodiyo university teaching hospital, Sokoto (Agbo et al., 2012). Works by Chatteraj and Satpathy (2006), in New Delhi, India shows slight predominance of medical to surgical admissions (Chatteraj and Satpathy, 2006). They reported

Month	Medical	Surgical	Others
January	166	34	0
February	409	27	2
March	531	49	0
April	251	35	24
May	628	67	3
June	694	163	46
July	440	52	0
August	394	26	3
September	388	46	8
October	389	71	10
November	321	41	2
December	205	21	0
Total	4816(87%)	632(11%)	98(1.8%)

Composite bar chart showing disease-classification types of patients

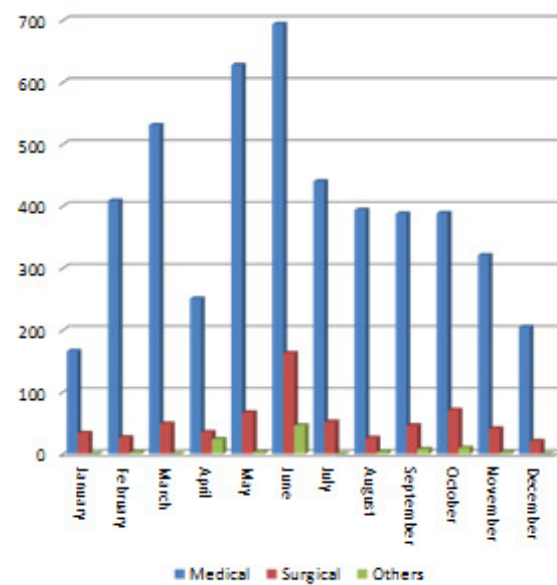


Table 3 and figure 3. Disease classification of cases seen in A & E in 2011.

- Most common medical cases were:

1. Malaria - 31%
2. PUD – 20%
3. Gastroenteritis - 11%
4. Asthma – 6%
5. CHF – 5%
6. HTN – 4%
7. CVD – 4%

Figure 4
Pie Chart showing the proportion of common medical cases seen

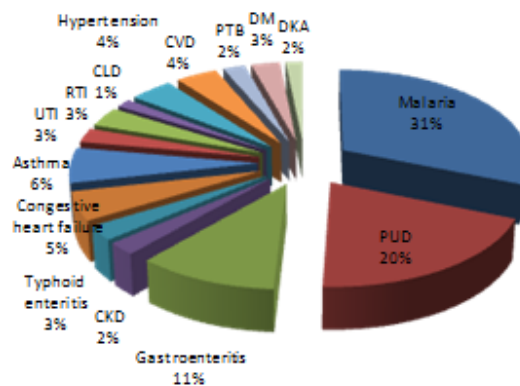


Figure 4. Overall proportion of common medical cases seen in 2011.

that general medicine accounted for 16.04% (286) of admissions into the A and E department, followed respectively by neurosurgery, 11.38% (210), gastroenterology, 10.43%(186) and general surgery, 8.1%(145) (Chattoraj and Satpathy, 2006). In Port Harcourt, Nigeria, Ekere et al., (2005) showed that 79.8% of emergency presentations to the A and E department were of non-traumatic origin and cardiovascular disease

was the highest cause of death at 25.2% (Ekere et al., 2005). Works by Akpa et al. (2013) in Port Harcourt also showed similar results with infectious and cardiovascular diseases being the leading emergencies presenting to the A and E department of the university of Port Harcourt teaching hospital. Akpa et al. (2013) showed that infectious diseases were mainly HIV/AIDS related and accounted for 21.8%(274) of all medical presentations

Table 4. Overall ranking of diseases seen in 2011.

Overall proportion of cases seen:

1. Malaria – (1,509)27.2%
2. PUD – (955)17.2%
3. Gastroenteritis – (525)9.5%
10. Acute appendicitis - (127)2.3%
15. Head injury – (101)1.8%
16. Acute intestinal obstruction – (79)1.4%
- 17.DKA- (78)1.4%
21. Typhoid perforation – (58)1.0%

Table 5. Proportion of deaths recorded in A & E in 2011.

Proportion of deaths recorded at A & E

- BID (Brought in dead) – 15 (0.3%)
- Died in A & E – 92 (1.7%):
- 63 were Medical cases (1.3% case fatality rate)
- 29 were Surgical cases (4.6% case fatality rate)

- Most common Surgical cases were:
1. Acute appendicitis – 20%
 2. Head injury – 16%
 3. Acute intestinal obstruction – 13%
 4. Extremity fractures-12%
 5. Urine retention-11%
 6. Typhoid perforation-9%
 7. Abd trauma-8%

Figure 5
Pie chart showing the proportion of common Surgical cases seen

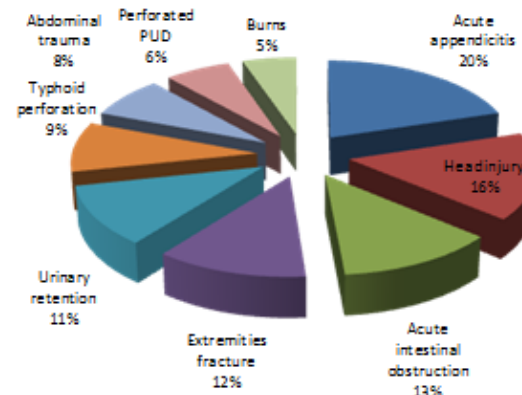


Figure 5. Overall proportion of common surgical cases seen in 2011.

while cardiovascular diseases which were mainly hypertensive heart disease and stroke accounted for 15.5%(195) of admissions (Akpa et al., 2013). However, they excluded surgical emergencies from their study (Akpa et al., 2013). Jones (2009) in the United Kingdom demonstrated that most diagnoses in A and E department follows an approximate linear trend over time with occasional excursions due to spike events (Jones, 2009). Pneumonia and upper extremity fractures topped the list of individual diagnoses in his study (Akpa et al., 2013). The highest admissions in the present study occurred in the month of June, 16.1% (893) while the

lowest admission was recorded in January, 3.6% (200). Our result is similar to that by Abiona et al., (2012) in Ibadan where patient's admission peaked in May and was lowest in November (Abiona et al., 2012). The festive period usually record low turnout because patients prefer spending time with loved ones. Overall mortality in our study was 2% (107) with gastroenteritis being the highest individual cause of death, 0.30% (15). Typhoid ileal perforation accounted for the highest surgical cause of death at 0.14 % (8). Easily preventable and treatable ailments such as malaria, gastroenteritis and typhoid fever are therefore still a problem in this part of the country.

Mortality pattern of medical cases

Disease	Frequency	Case fatality (%)
Malaria	4	0.26
PUD	5	0.52
Gastroenteritis	15	2.9
Heart failure	6	2.4
Asthma	7	2.3
Hypertension	5	2.5
CVD	10	5.1
DKA	11	14.1

Figure 6
Chart showing the pattern of mortality recorded at A & E

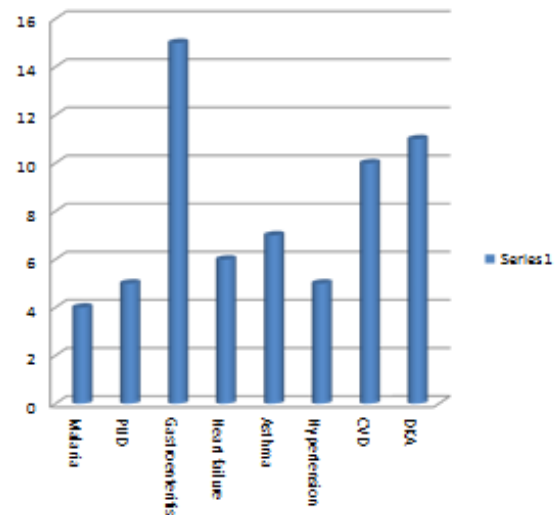


Table 6 and figure 6. Mortality pattern of medical cases seen.

Mortality pattern of surgical cases

Disease	Frequency	Case fatality (%)
Acute intestinal obstruction	5	3.9
Typhoid perforation	8	13.8
Abdominal trauma	4	8.3
Extremities fracture	3	4
Head injury	6	5.9
Perforated PUD	3	7.5

Figure 7
Chart showing the mortality pattern of Surgical cases

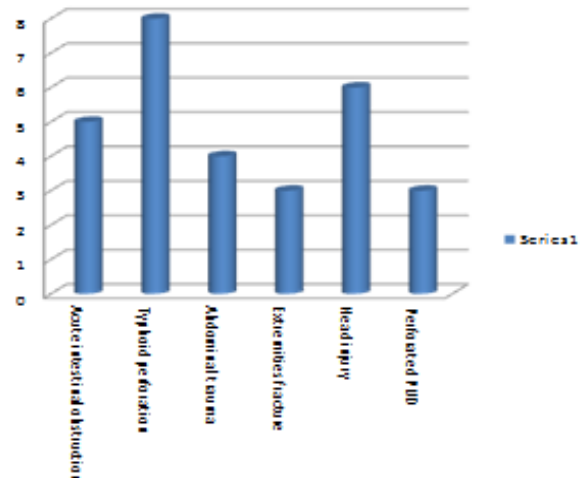


Table 7 and figure 7. Mortality pattern of surgical cases seen.

A more aggressive effort at prevention and early intervention is advocated for a better out come. In contrast to our study, Ekere et al., (2005) in Port Harcourt

were able to show that cardiovascular disease was the chief cause of death in the A and E department (Ekere et al., 2005). It is also interesting to note that typhoid ileal

perforation still retain its first position as the leading surgical cause of death, a position earlier reported by the authors (Agbo et al., 2012).

CONCLUSION

Medical emergencies constitute 87% (4,816) of admissions into the Accident and Emergency department of Usmanu Danfodiyo university teaching hospital with malaria alone being responsible for 27.2% (1,509) of all cases seen while surgical admissions constitute only 11% (632). Gastroenteritis was responsible for the highest individual cause of death, 0.30% (15), followed by Diabetic Keto-acidosis (DKA), 0.19% (11).

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