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ORIGINAL RESEARCH

Epidemiology of patients presenting to the emergency centre of Princess Marina Hospital in Gaborone, Botswana

L'épidémiologie des patients se présentant au service des urgences de l'hôpital Princess Marina à Gaborone, au Botswana

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Introduction: Emergency medicine is a newly recognized specialty in Botswana and the country launched an emergency medicine residency in January 2011. Data regarding the practice of emergency medicine in Botswana are limited. This study reviewed 1 year of patient presentations to the emergency centre of Princess Marina Hospital, the country's main referral hospital located in the capital city, Gaborone.
Methods: Epidemiologic data of all patients presenting to the emergency centre between May 2010 and April 2011 were extracted into a database. The diagnoses of a random sample of patient presentations were coded using the categories outlined by the Clinical Classifications Software (CCS) for ICD-10. For ease of analysis, several CCS categories were grouped together for subsequent analysis.
Results: 24,905 patient encounters were recorded during the study period. A large proportion of patients were aged between 25 and 50 years old. 20% of patients presented with a traumatic injury. The most common diagnoses across all ages included trauma, pregnancy complications, gastrointestinal disorders, and pneumonia.
Conclusion: These results can inform the development of emergency medicine education and acute care systems in Botswana.

Introduction: La médecine d'urgence est une spécialité qui n'a été reconnue que récemment au Botswana; le pays a inauguré une résidence en médecine d'urgence en janvier 2011. Les données relatives à la pratique de la médecine d'urgence au Botswana sont limitées. Cette étude s'intéresse aux patients qui se sont présentés au service des urgences de l'hôpital Princess Marina, le principal centre hospitalier du pays situé à Gaborone, la capitale, sur une année.
Méthodes: Les données épidémiologiques de tous les patients qui se sont présentés au service des urgences entre mai 2010 et avril 2011 ont été intégrées à une base de données. Les diagnostics d'un échantillon aléatoire de patients se présentant dans le service ont été codés au moyen des catégories du logiciel de classification des maladies pour la CIM-10. Afin de faciliter l'analyse, plusieurs logiciels de classification des maladies ont été regroupés en vue d'une analyse ultérieure.
Résultats: 24 905 interactions avec des patients ont été enregistrées au cours de la période concernée par l'étude. Une large proportion de patients se présentant aux urgences était âgée de 25 à 50 ans. Vingt pour cent d'entre eux souffraient d'un traumatisme. Les diagnostics les plus courants, tous âges confondus, étaient les traumatismes, les complications associées à la grossesse, les troubles gastro-intestinaux et les pneumonies.
Conclusion: Ces résultats peuvent étayer le développement de l'enseignement de la médecine d'urgence et les systèmes de prise en charge active au Botswana.

African relevance

- This study describes the burden of disease presenting to an African emergency centre.
- Understanding these data will help to direct the development of emergency care.
- Acute care epidemiology studies can inform regional referral systems in Africa.
- Trauma is a significant cause of emergency centre visits in Africa.

Introduction

In Botswana, epidemiologic data on emergency centre (EC) clinical presentations have rarely been recorded or published. Health reports from Botswana's Central Statistics Office report outpatient visits in the aggregate, combining EC and outpatient

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department visits. Regionally, relatively little information has been published on the general epidemiology of EC presentations in Sub-Saharan Africa.[1–4] This paper aims to provide descriptive statistics of EC presentations at the Princess Marina Hospital (PMH) in Gaborone, one of two tertiary referral centres in Botswana and the main teaching hospital for the University of Botswana. This study is intended to benefit policy makers, healthcare providers, and public health officials in Botswana to promote and define the specialty of emergency medicine (EM) and to allocate resources more effectively to address the country's acute care needs. It is also intended for a global audience interested in the development and management of emergency care in lower and middle income countries (LMICs).

To put EC statistics in perspective, it is useful to consider the demographics of Botswana, its health care system, and the history of EM in Southern Africa. Botswana is populated by approximately 2 million people, 61% of whom live in urban areas, and it is designated as a "middle income" country according to the World Bank.[5,6] It is bordered by South Africa, Zimbabwe, Zambia, and Namibia. Botswana has the world's second highest HIV prevalence at 24.8% of adults aged 15–49 years old.[5] The majority of the country's infectious disease burden is HIV-related, although the country also has high mortality and morbidity from trauma, non-communicable diseases, and other non-HIV-related communicable diseases.

PMH, a 525-bed facility in the capital city of Gaborone, sits at the apex of the public sector referral pyramid in Botswana. It offers the most complete range of specialty and subspecialty services available in the country. PMH also serves as the primary and secondary hospital for residents of Gaborone and its surrounding areas. Not surprisingly, the PMH emergency centre receives a broad spectrum of adult and paediatric patient presentations. Patients include those self-referred ("walk-in population"), referred from area clinics, and referred from hospitals in Botswana. Because pre-hospital emergency medical services consist of private ambulance companies and government ambulances generally used for inter-facility transfer, very few patients arrive to EC via ambulance directly from the field.

The specialty of EM is still in its infancy in southern Africa. South Africa has served as a regional leader in the field, having achieved specialty recognition in 2003 and initiating EM training in 2004. The Botswana Health Professions Council recognized the specialty of emergency medicine in 2009. In 2011, 2 years after inaugurating the country's first medical school, the University of Botswana launched an EM residency program, with a curriculum tailored to the country's resources and prevalent diseases.[7] Also in 2011, a national organization, the Botswana Society for Emergency Care, was founded to enhance collaboration, research, and capacity building within the country. With the continued development of EM as a specialty, significant improvement is expected to occur in emergency care, pre-hospital care, and disaster management and preparedness.

Methods

Since 2006, the EC medical record has been completed on a standardized triage form with a carbon copy. Nurses trained in triage procedures enter patient demographics and triage information on the upper third of the form, and doctors write their notes on the lower two-thirds. The original page stays with the patient's personal records when they leave the EC (after discharge or admission), while the carbon copy remains in the emergency centre. The content and format of the form has been updated several times in recent years to reflect evolving triage processes, most significantly in early 2010 when a modified version of the South African Triage Scale was implemented.[8] Health auxiliaries enter the selected data from the EC copy into a Microsoft Access database, including the patient's name, medical record number, age, sex, vital signs, triage category, referral source, presence of trauma, final diagnosis, and disposition.

For the purposes of this retrospective study, 1 year of data from 01 May 2010 to 30 April 2011 were selected for analysis. Extraction de-identified data prior to analysis by removing names and medical record numbers, storing it in an encrypted, password-protected Microsoft Excel file. Analysis categorized data by age groups: under 5, between 5 and <14, 14 to <25, 25 to <50, and over 50 years. For each group we randomly selected a sample of 10% of all presentations in each age range, and categorized diagnoses according to codes outlined by the Clinical Classifications Software (CCS) for ICD-10. Patients with multiple diagnoses listed were assigned multiple codes. CCS is a tool developed in the United States by the Agency for Healthcare Research and Quality (AHRQ) that codes diagnoses according to 285 unique categories.[9] To simplify reporting, some CCS codes were grouped together for subsequent analysis. Data analysis employed STATA version 12.0 and assessed statistical significance at the 95% confidence level.[10] We used chi-square goodness of fit test to compare the hypothesized population distribution, calculated from the total population, with the distribution in the diagnostic sample population.

Approval for the study was obtained from the University of Botswana, the Ministry of Health of Botswana, and the Princess Marina Hospital.

Results

Over the 1-year period studied, 24,905 unique patient presentations were recorded in the database. We randomly selected 2417 patients for diagnosis coding using the CCS system. Table 1 describes the age and sex distribution of the data sample. The largest proportion of patients was in the 25 to <50 year-old age group, and more women presented for care than men. Despite being a referral hospital, 30% of patients came directly to the PMH EC for care (self-referral) rather than going to a local clinic first.

Thirty-nine percent of patients were triaged as Yellow (3rd highest acuity), 36% were triaged as Orange (2nd highest acuity), and 5% were triaged as Red (highest acuity) (Table 2). Traumatic injury, as recorded by the triage officer in the presence of assault, fall, road traffic accident, or other injury, was recorded in 20% of patient presentations (Table 1).

Fig. 1 describes diagnosis groupings coded for all age groups, demonstrating a predominance of infections, trauma, OB/Gyn conditions, and non-communicable diseases. Table 3a describes the top diagnoses and Tables 3b through 3f breaks top diagnoses down by age category (Table 3b through 3f: data supplement). Diarrhoea and pneumonia were the most common diagnoses assigned to patients less than