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Emergency care capabilities in the Kingdom of Swaziland, Africa

Les capacités des services d'urgence au Royaume du Swaziland, Afrique

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A B S T R A C T

Introduction: Emergency care is available in many forms in Swaziland, and to our knowledge there has never been a systematic study of emergency centres (ECs) in the country. The purpose of this study was to describe the characteristics, resources and capacity of emergency centres in the Kingdom.

Methods: The National Emergency Department Inventory (NEDI)-International survey instrument (www.emnet-nedi.org) was used to survey all Swaziland ECs accessible to the general public 24/7. EC staff were asked about calendar year 2014. Data were entered directly into Lime Survey, a free, web-based, open-source survey application. Responses were analysed using descriptive statistics, including proportions and medians with interquartile ranges (IQR).

Results: Sixteen of 17 ECs participated (94% response rate). Participating ECs were either in hospitals (69%) or health centres (31%). ECs had a median of 53,399 visits per year (IQR 15,000–97,895). Fourteen (88%) ECs had a contiguous layout, and the other two (12%) were non-contiguous. Overall, eight (53%) had access to cardiac monitors and 11 (69%) had a 24/7 clinical laboratory available. Only 1 (6%) EC had a dedicated CT scanner, while 2 (13%) others had limited access through their hospital. The typical EC length-of-stay was between 1 and 6 h (44%). The most commonly available specialists were general surgeons, with 9 (56%) ECs having them available for in-person consultation. No ECs had a plastic surgeon or psychiatrist available. Overall, 75% of ECs reported running at overcapacity.

Discussion: Swaziland ECs were predominantly contiguous and running at overcapacity, with high patient volumes and limited resources. The limited access to technology and specialists are major challenges. We believe that these data support greater resource allocation by the Swaziland government to the emergency care sector.

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A B S T R A C T

Introduction: Les soins d’urgence sont disponibles sous de nombreuses formes au Swaziland, et à notre connaissance, aucune étude systématique des services d’urgence (SU) n’a jamais été réalisée dans le pays. L’objectif de cette étude était de décrire les caractéristiques, ressources et capacités des services d’urgences dans le Royaume.


Résultats: Seize des 17 SU ont participé (taux de réponse de 94%). Les SU participants se trouvaient soit dans des hôpitaux, soit dans des centres médicaux (31%). Les SU totalisaient une médiane de 53 399
visites par an (IQ compris entre 15 000 et 97 895). Quatorze (88%) SU étaient attenants à une structure de soins, les deux autres (12%) ne l'étaient pas. Au total, huit (53%) avaient accès à des moniteurs cardiaques et 11 (69%) disposaient d’un laboratoire clinique disponible 24 h/24, 7 j/7. Un seul (6%) SU disposait d’un CAT scan, et deux autres (13%) n’y avaient qu’un accès limité par l’intermédiaire de l’hôpital auquel ils étaient rattachés. La durée moyenne de séjour au SU variait entre une et six heures (44%). Les spécialistes les plus fréquemment disponibles étaient les chirurgiens généralistes, neuf (56%) SU les ayant à disposition pour des consultations individuelles. Aucun SU ne disposait de chirurgie esthétique ou de psychiatre. Globalement, 75% des SU indiquaient fonctionner en surcapacité.

Discussion: Les SU au Swaziland étaient essentiellement attenants à une structure de soins et fonctionnaient en surcapacité, avec un volume élevé de patients et des ressources limitées. L’accès limité à la technologie et aux spécialistes constituait des défis majeurs. Nous considérons que ces données viennent appuyer une allocation plus importante de ressources par le gouvernement swazi au secteur des soins d’urgence.

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African relevance

• Emergency care is delivered differently across Sub-Saharan African hospitals.
• Analysing current emergency care practices in a country is needed prior to improvement efforts.
• Emergency care related practices in Swaziland are largely unknown.

Introduction

The Kingdom of Swaziland is a landlocked country in southern Africa with a surface area of approximately 17,000 km². The population is approximately 1.3 million people; 53% of the population being female [1]. According to the World Bank, Swaziland, with its gross domestic product of US$3350 per capita in 2014, is in the lower middle-income category of countries for this indicator [1]. The health status in Swaziland is below expectations, with life expectancy at birth estimated at only 53 years [2]. The number one cause of death in the country is HIV (27% prevalence, which is highest in the world) followed by lower respiratory infections, tuberculosis, stroke, and diarrheal illness [2,3].

With this heavy burden of disease, the Swaziland government has created public health strategies to improve mortality rates within the country. For example, as a response to having one of the highest percentages of road traffic accidents in the world, the Ministry of Health established the Emergency Preparedness and Risk Management Department (EPR) in 2008 to create a public pre-hospital care service to respond to emergencies and facilitate inter-department transfers [4]. It remains unclear what impact this has had on the mortality rates, but the EPR has brought attention to emergency care within the country. Although emergency medicine as a specialty is still non-existent, emergency care is available in many forms. Until the current study, there has never been, to our knowledge, a systematic study of emergency centres (ECs) in Swaziland.

The objective of this study was to describe the characteristics, resources and capacity of ECs in the Kingdom of Swaziland. Such information would provide a valuable benchmark for future efforts to improve the accessibility and quality of emergency care.

Methods

Ethical approval in Swaziland was obtained from the Swaziland Scientific and Ethics Committee of the Ministry of Health. The Partners Healthcare Institutional Review Board (IRB) also reviewed the study and determined it to be exempt.

This cross-sectional study utilised a series of surveys developed by the Emergency Medicine Network (EMNet) in Boston, Massachusetts (www.emnet-nedi.org) to assess emergency centre (EC) characteristics and capabilities in the international setting [5]. For the purpose of this study, we defined an EC as any emergency care facility that was open 24 h/day, 7 days/week and provided evaluation and management of critically ill and injured patients at the earliest stages of medical crisis. This included casualty units, medical and surgery units that received emergencies throughout the day. Specialty facilities (e.g. Swaziland’s Psychiatric and TB hospital) were excluded given care was only provided to a specific population. A list of all emergency facilities in the country was provided by the Ministry of Health. Seventeen ECs were determined to meet these inclusion criteria. The matron (Senior Nursing Officer) of each EC or senior clinical officer (Medical Doctor) were identified from each EC to participate in survey. Research staff met with these individuals and administered a paper survey in-person. All questions were asked in reference to the calendar year 2014.

Data collected from individual paper surveys was entered by the principal investigator directly into Lime Survey (https://www.limesurvey.com); a free, web-based, open-source survey application for online data collection. Responses were exported into an Excel spreadsheet (Microsoft Corp, Redmond, WA) and descriptive analyses were performed using Stata 14.1 (Stata Corp, College Station, TX). Data are presented as proportions and medians with interquartile ranges (IQR).

Results

Sixteen of 17 Swaziland ECs completed the survey (94% response rate). Despite multiple phone calls and in-person visits, the one missing EC did not complete the survey. The participating ECs were located in either hospitals (69%) or health centres (31%). Fourteen (88%) ECs were contiguous (i.e., one unified area to see emergencies) and 2 (12%) were non-contiguous (Fig. 1). Among contiguous ECs, 11 (79%) treated emergencies in the hospital’s outpatient department (OPD) and 3 (21%) in other dedicated emergency units. Overall, ECs had a median volume of 53,399 visits per year (IQ 15,000 to 97,895), with the highest patient volume being 206,265 per year. No hospital saw adults only or children only. A physician was available in-person 24/7 in 88% of ECs and a nurse in 94% of ECs. The median number of hospital beds was 51 (IQR 35–210) and EC beds 4 (IQR 3–12). Overall, 75% of ECs perceived being overcapacity.

EC length-of-stay varied; 38% of ECs had an average length-of-stay of less than 1 h, 44% with 1–6 h, and 19% with >6 h. Most (68%) ECs had <20% of visits come in by ambulance and most (63%) reported that <80% of hospital admissions came through the EC.

Available resources were limited (Fig. 1). Three hospitals reported having CT scanners, but only one hospital reported a dedicated scanner for the EC. No hospital had a respiratory isolation
In-person consultants were available in Swaziland ECs, and included surgeons, obstetricians, anaesthesiologist, cardiologists, neurosurgeons, neurologist and orthopaedic surgeons. By contrast, plastic surgeons and psychiatrists were not available in any EC and general surgeons were available in only 56% of ECs. Most specialists were not available 24/7 (Fig. 2).

Discussion

The Kingdom of Swaziland handles health emergencies in diverse healthcare settings. Although next to South Africa, where emergency medicine became a specialty in 2003, Swaziland still does not recognise emergency medicine as a specialty and emergency care is not standardised across hospitals. While 88% of ECs in Swaziland were contiguous, most (79%) overlapped with the hospital’s OPDs. The non-contiguous ECs saw emergencies in a combination of areas in the hospital (e.g. OPDs, casualty units, surgical units, maternity and paediatrics). We were surprised to see that emergencies within the country were mostly seen in hospital OPDs that also see non-emergent cases and provide public health interventions (e.g. immunizations and family planning). For example, this differs from the neighbouring country of South Africa where emergencies are seen in emergency centres that do not see primary care visits [6]. As a result, emergencies in Swaziland OPDs are not distinguished from primary care visits in annual reports. The median volume of 53,399 visits per year might be smaller for actual emergency visits, as commonly seen in the US or Europe. Some ECs reported high patient volumes (e.g. 200,000+ in one EC) and that cannot be entirely attributed to OPD primary care visits. For example, one EC with patient volumes in excess of 200,000 is a referral hospital and receives emergencies from distant clinics and health centres. Other reasons for high EC volumes could be the result of poor utilization of more traditional primary care clinics and lack of public education on when to present to the EC, but

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**Fig. 1.** Percentage of emergency centres with available resources.

**Fig. 2.** Percentage of emergency centres with specialists available 24/7.
reasons for this were not formally evaluated and require further study. However, if poor utilisation is the cause, investing time and resources into primary care clinics and educating the public could be critical in offloading crowded ECs. Hospital resources could then be reserved for true emergencies and hospitalised patients.

Emergencies were not only seen in hospitals, but in health centres as well. Hospitals are in the various regions of the country, while health centres are mostly in rural areas within 2 h of the hospitals. Hospital ECs are more equipped than health centres, but also share similar problems. Almost all hospitals have a surgeon on call who can deal with a wide range of surgical emergencies. More specialised surgeons, such as neurosurgeons and orthopaedists, are located in the major hospitals but still rare – e.g., 18% of ECs have neurosurgeons available 24/7 and 19% of ECs have orthopaedists available 24/7. With trauma secondary to road traffic accidents among top causes of death in the country, these consultants are crucial and their limited availability is of major concern. Plastic surgeons and psychiatrist are unavailable across all Swaziland ECs; the conditions these specialists treat may not seem as crucial as neurosurgeons, general surgeons, obstetricians or orthopaedic surgeons, but their absence from ECs may contribute to long-term disability and morbidity for many patients. This shortage of specialist availability is certainly not unique to Swaziland. Currently Swaziland deals with the lack of specialists by providing programs to refer stable patients to South Africa who require specialised care. However, this is not an option when faced with an unstable patient. Consequently, our study indicates the need to improve specialist availability for Swaziland ECs.

Health centres provide primary care needs for the public and like hospitals, they are open 24/7 for emergencies and have inpatient beds. They are necessary for the care of many individuals who have emergencies and may not be able to get to hospitals in a timely fashion because of transportation. Unfortunately, many of these health centres lack technological resources or specialist to treat most emergencies. Our national study revealed that none of the health centres had cardiac monitors or mechanical ventilators available for their departments. Critically ill trauma patients were being treated without these resources. Consultants were scarce, with none of the health centres having access to neurosurgeons, orthopaedists or plastic surgeons available for consultation. Complex patients are routinely transferred to the nearest referral hospital for definitive management. The observed lack of resources at most of these health centres seems likely to have an adverse impact on patient care. Indeed, some of these health centres are quite far from referral hospitals and waiting for transport (without proper equipment or resources to stabilise sick patients) is likely to have led to serious morbidity or mortality.

All ECs lacked adequate technological resources. Overall, 53% of ECs had available cardiac monitors and 19% had mechanical ventilators; 69% had a 24/7 laboratory with capability of performing a stat blood gas with potassium. Health care funds to provide for these essential EC items need to be a priority, especially in distant hospital for definitive management. The observed lack of resources to care for emergency medical care training amongst nurses and physicians, but plan to pursue such work in the years ahead.

Swaziland ECs are primarily contiguous with high visit volumes and few EC beds. Many ECs reported being overcapacity and lacking technological resources. We believe that these challenges in emergency care could be addressed with improved resource allocation to the emergency care sector in the country. Other options include importing specialists to the country and promoting emergency care training among all EC staff.

A major limitation of this study was the inability to separate primary care visits from emergency centres.

Dissemination of results

Results were presented to the Minister of Health in Swaziland and hospital Administrators.

Authors’ contributions

Authors ED, JE, AS, CC all designed the study. Authors EC and MM acquired the data. Authors JE, AS analysed the data. All authors drafted the manuscript. All authors edited and approved the final version of the manuscript for publication.

Conflicts of interest

The authors declare no conflict of interest.

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References