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ORIGINAL ARTICLE

Case mix of patients managed in the resuscitation area of a district-level public hospital in Cape Town

Eventail des patients traités dans le service de réanimation d'un hôpital public de district au Cap, en Afrique du Sud

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ABSTRACT

Introduction: At the core of the district health system is the emergency centre, for many the entry point into the healthcare system. Limited data is available on the patient population served by district-level emergency centres in South Africa. The objective of this study is to describe the case mix of adult patients managed in the resuscitation unit of a district-level hospital in the Western Cape.
Methods: A six-month prospective observational study was conducted in the resuscitation unit of Khayelitsha Hospital. Data were collected by clinicians in the unit by means of a Smartphone application on their own devices. Variables collected included patient demographics, patient acuity, patient comorbidities, diagnosis made in the unit, interventions received, length of stay, and disposition. Summary statistics were used to describe all variables.
Results: A total of 2324 patient admissions were analysed. The mean age was 36.9 years with a male predominance (n = 1367, 58.8%). Most patients were triaged into high-acuity categories (n = 1626, 70%). HIV infection was the most common comorbidity (n = 530, 22.8%). Acute medical (n = 1181, 50.8%) and trauma-related patients (n = 928, 39.9%) dominated the cohort. The median length of stay was 195 min and 502 (21.6%) patients were transferred to higher levels of care. There were 74 (3.2%) deaths.
Conclusion: This study yields novel epidemiological data of emergency care in a district-level emergency centre. It highlights the burden of trauma and acute medical emergencies at the district level and can be used as a foundation for further research to provide targeted and effective healthcare to all citizens.

ABSTRACT

Introduction: Le service des urgences se trouve au coeur du système de santé de district, constituant pour nombre de personnes le niveau d'entrée dans le système de santé. Des données limitées sont disponibles sur la population de patients desservie par les services des urgences de district en Afrique du Sud. L'objectif de cette étude est de décrire l'éventail des patients adultes pris en charge au sein du service de réanimation d'un hôpital de district dans la province du Cap occidental.
Méthodes: Une étude d'observation prospective de six mois a été réalisée au sein du service de réanimation de l'hôpital de Khayelitsha. Des données ont été recueillies par les médecins du service à l'aide d'une application pour mobiles utilisée sur leurs propres smartphone. Les variables recueillies étaient les informations démographiques sur les patients, la gravité de l'état des patients, les comorbidités des patients, le diagnostic établi dans le service, les interventions réalisées, la durée de séjour et la disposition. Des statistiques sommaires ont été utilisées pour décrire toutes les variables.
Résultats: Au total, 2324 admissions de patients ont été analysées. L'âge moyen était de 39,6 ans, avec une prédominance d'hommes (n = 1367, 58,8%). La plupart des patients étaient triés dans des catégories

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de fort degré de gravité (n = 1626, 70%). L'infection par le VIH constituait la comorbidité la plus fréquente (n = 530, 22,8%). Les patients souffrant de troubles médicaux graves (n = 1181, 50,8%) et victimes de traumatismes (n = 928, 39,9%) dominaient la cohorte. La durée moyenne de séjour était de 195 min et 502 (21,6%) patients ont été transférés vers un niveau de soins supérieur. 74 (3,2%) décès ont été enregistrés. *Conclusion:* Cette étude produit de nouvelles données épidémiologiques sur les soins d'urgence dans un services des urgence de district. Elle souligne l'importance des traumatisme et des urgences médicales graves au niveau du district et peut être utilisée comme base pour une étude supplémentaire afin de fournir des soins ciblés et efficaces à tous les citoyens.

African relevance

- This article provides novel epidemiological data of emergency care of a previously poorly described community.
- It highlights the burden of trauma and acute medical emergencies experienced at district level, where specialists are not always available.
- It can be used as a foundation for further research to provide targeted and effective healthcare to all citizens.

Introduction

South Africa's health system faces a quadruple burden of disease: HIV/AIDS and tuberculosis; maternal and child morbidity and mortality; non-communicable diseases; and violence, injuries and trauma [1]. The health system consists of a large public (government funded) sector and a smaller private sector [2]. The public health sector has been decentralised and divided into health districts to ensure that citizens in every part of the country have access to a primary health care and district hospital services [3]. Primary-level health services are provided through local clinics and 24 h community health centres. Higher-level services are generally provided at hospitals categorised as district (level 1), regional, (level 2), or tertiary/central (level 3) hospitals [3]. The definition of and services offered at a district hospital often varies, but essentially consist of outpatient and inpatient services, a 24-h emergency service and an operating theatre [3]. District hospitals have less than 200 beds and provide basic diagnostic and therapeutic services [3]. Specialist services are not always available [3].

The district health system was identified in the National Development Plan 2030 as the vehicle of change for the re-engineering of health care at a primary level [4]. The Western Cape Department of Health subsequently aligned itself with the National Development Plan [5]. At the core of the district health system is the emergency centre, for many the entry level into the healthcare system.

Limited data is available of the patient population served by emergency centres on a district level in South Africa. Previous descriptive studies have been performed in the Western Cape, but focused on facilities at either a lower or higher level than district-level facilities [6–9]. Suitable data is necessary to allow adequate planning to ensure a health system that provides accessible, efficient and quality care to all citizens.

The aim of this study was to describe the case mix of adult patients managed in the resuscitation unit of Khayelitsha Hospital – a district level hospital in the Western Cape.

Methods

A prospective descriptive study was conducted from 1 November 2014 to 30 April 2015. The study was approved by the Stellenbosch University Health Research Ethics Committee (Ref: N14/08/102) and included a waiver of informed consent.

Khayelitsha Hospital is a 240-bed district-level hospital situated in the sprawling township of Khayelitsha, Cape Town. It serves a health district with a population of ±400,000, which is predominantly Black African (99%) with high levels of unemployment (38%) [10]. The geo-spatial legacy of apartheid and the tremendous burden of disease related to HIV, tuberculosis and interpersonal violence are major challenges that the hospital and its staff face on a day-to-day basis [11].

Khayelitsha Hospital provides surgical, medical, psychiatric, paediatric and obstetric inpatient services. It houses a large emergency centre, which is 30% larger than that of a standard district-level hospital emergency centre [12]. The emergency centre manages about 30,000 patients per annum with a 30% admission rate. The resuscitation unit consists of four beds and a paediatric cot. Each bed is equipped with its own monitor with blood pressure measurement, pulse oximetry, and capnography capabilities. A stocked emergency airway trolley, a defibrillator and ventilators are also available. The admission criteria to the resuscitation unit are either a high acuity score according to the South African Triage Scale (SATS) or at a senior practitioner's discretion [13].

All adult patients ($\geqslant$13 years) managed in the resuscitation unit of Khayelitsha Hospital during the study period were eligible for inclusion. Patients with missing information were only excluded on the section pertaining to that particular variable.

The data were collected by means of a Smartphone application (app). This tailor-made app was made possible through a philanthropic gesture of JourneyApps, a South African-born international company based in California and South Africa (http://journeyapps.com/). The app was first tested in a pilot study in the unit. All doctors (n = 18) working in the resuscitation unit used their own Smartphone devices to download the app and collect data. The data collection was an additional step to the regular note keeping on the patients. The app proved to be a powerful paperless prospective data capturing tool with a high data capture rate and enjoyed a positive response from the clinicians. Quality control of the data involved retrospective cross-checking of all entered data points using the resuscitation unit's nursing register, the electronic patient administration system and the electronic clinical record system of Khayelitsha Hospital. Variables collected include patient demographics (age and gender), patient acuity, patient comorbidities, diagnosis made while in the unit, interventions received, time spent in the unit, and disposition from the resuscitation unit. The data on each physician's Smartphone was password protected as the application required that a user provides a unique personal password prior to use. The only traceable data point linking the patient to the captured data is the unique hospital number that each patient was allocated during admission to the hospital. The data captured via the app was immediately coded and stored directly onto a password protected server. JourneyApps manage highly personalised data (e.g. banking details) and run a powerful encrypted platform to prevent unauthorised access.

Captured data were crosschecked weekly against the nursing register and the hospital's electronic administration system. Patients not initially captured were retrospectively captured by means of a chart review.