

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.elsevier.com/locate/burns](http://www.elsevier.com/locate/burns)

## Rethinking burns for low & middle-income countries: Differing patterns of burn epidemiology, care seeking behavior, and outcomes across four countries

Dattesh R. Davé<sup>a,\*</sup>, Neeraja Nagarjan<sup>b</sup>, Joseph K. Canner<sup>c</sup>,  
Adam L. Kushner<sup>d,e</sup>, Barclay T. Stewart<sup>f</sup>,  
On behalf of the SOSAS4 Research Group

<sup>a</sup> Department of Surgery, University of California San Diego, San Diego, CA, USA

<sup>b</sup> Department of General Surgery, Brigham and Women's Boston Hospital and Medical Center, Boston, MA, USA

<sup>c</sup> Surgery Center for Outcomes Research, Johns Hopkins University School of Medicine, Baltimore, MD, USA

<sup>d</sup> Surgeons OverSeas, New York, NY, USA

<sup>e</sup> Center for Humanitarian Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

<sup>f</sup> Department of Surgery, University of Washington, Seattle, WA, USA

### ARTICLE INFO

#### Article history:

Accepted 18 January 2018

Available online xxx

#### Keywords:

Burn

Epidemiology

Population survey

Barriers

Low & middle-income countries

Global surgery

### ABSTRACT

**Purpose:** Low-and middle-income (LMIC) countries account for 90% of all reported burns, nevertheless there is a paucity of providers to treat burns. Current studies on burns in LMICs have not evaluated the gap between care seeking and receiving. This study explores this gap across socioeconomically similar populations in a multi-country population based assessment to inform burn care strategies.

**Methods:** The Surgeons OverSeas Assessment of Surgical Need (SOSAS) instrument is a cross sectional national, cluster random sampling survey administered in Nepal, Rwanda, Sierra Leone, and Uganda from 2011 to 2014. The survey identifies burn etiology, demographics, timing, disability, and barriers to receiving care.

**Results:** Among 13,763 individuals surveyed, 896 burns were identified. Rwanda had the highest proportion of individuals seeking and receiving care (91.6% vs 88.5%) while Sierra Leone reported the fewest (79.3% vs 70.3%). Rwanda reported the largest disability while Nepal reported the highest proportion with no disability (47.5% vs 76.2%). Lack of money, healthcare providers, and rural living reduce the odds of receiving care by 68% and 85% respectively.

**Conclusions:** Despite similar country socioeconomic characteristics there was significant variability in burn demographics, timing, and disability. Nevertheless, being geographically and economically disadvantaged predict lack of access to burn care.

© 2018 Elsevier Ltd and ISBI. All rights reserved.

\* Corresponding author at: University of California, San Diego, Department of Surgery, 200 W. Arbor Drive 3880, San Diego, CA, 92103, USA.  
E-mail address: [drdave@ucsd.edu](mailto:drdave@ucsd.edu) (D.R. Davé).

<https://doi.org/10.1016/j.burns.2018.01.015>

0305-4179/© 2018 Elsevier Ltd and ISBI. All rights reserved.

## 1. Introduction

Globally, burns are responsible for an estimated 11 million injuries each year and rank fourth in injury-related health burden behind road traffic accidents, falls, and violence [1]. The incidence of significant burn injury in low- and middle-income countries (LMICs) is nearly ten-times greater than that in high-income countries (HICs) (1.3 per 100,000 people compared to 0.14 per 100,000 people); further, LMICs harbor 90% of all burns globally [1,2]. Despite this large burden of disease, health systems in LMICs are not well equipped to prevent, treat or rehabilitate burn injuries [3].

Several hospital and population-based studies in LMICs have attempted to describe the burden of burn injury and risk factors potentially amenable to burn prevention [1-5]. However, multi-country population-based assessments of burn injury demographics, patterns of burn-related disability, and care seeking behavior are lacking from LMICs [6-8]. Such comparative studies are needed in order to identify the differences between countries and the unifying drivers of inadequate burn care, which could, in turn, inform both national and broader burn prevention and capacity improvement strategies. To address this gap, we analyzed burn data from the Surgeons OverSeas Assessment of Surgical Need (SOSAS), a cross-sectional survey of surgical need, barriers to surgical care, and disability across Rwanda, Sierra Leone, Nepal, and Uganda.

## 2. Methods

### 2.1. Settings

The four chosen countries were chosen due to long standing local partnerships and the survey's sponsoring organization — Surgeons OverSeas. Brief descriptions of each country are provided to give context to the data presented.

Nepal is a land-locked low-income country in South Asia. The population mainly lives in rural areas (81.8%), many of which are located at high-altitude and rely on combustible fuels for heat [9]. Approximately 11.2% of government expenditure is on healthcare [10]. Burn injury incurs an estimated 216 disability-adjusted life-years (DALYs) per 100,000 people annually [11].

Rwanda is an east sub-Saharan African country. Approximately 72% of the population lives in rural areas [9]. The government spends 9.9% of its budget on healthcare [10]. Burn injury incurs an estimated 195 DALYs per 100,000 people annually [11].

Sierra Leone is a coastal west sub-Saharan African country. Approximately 60% of the population lives in rural areas [9]. Only 10.8% of government expenditure is used for healthcare [12]. Burns incur an estimated 195 DALYs per 100,000 people annually [11].

Uganda is also an east sub-Saharan African country. Nearly 84% of the population live in rural areas [9]. Government expenditure on healthcare is 11.0% [12]. Burns incur an estimated 257 DALYS per 100,000 people annually [11].

A summary of demographic, economic, and health statistics is provided in Table 1 [9,10,12-18].

### 2.2. Study design and population

SOSAS is a cross-sectional, population-based survey which was performed countrywide in Rwanda, Sierra Leone, Nepal, and Uganda [7,8,19-21] in 2011, 2012, and 2014, respectively.

Detailed descriptions of the study populations, sample size estimates, and sampling methods have previously been described [7,8,19,21-24]. Briefly, the study used a cluster randomized sampling strategy. The country sample size was estimated to be 3745 from the formula,  $n = Z^2 p(1-p)/L^2$ , where  $L$  is the accepted range around the estimated prevalence of the disorder (1%),  $Z$  is the confidence interval factor of 1.96,  $p$  is (estimated) prevalence of the condition (7.3%). Estimated prevalence is derived from a pilot study in Sierra Leone [25]. The sample size was multiplied by “small design-factor” of 1.3, to account for the assumption that surgical conditions are not typically clustered [25]. Administrative areas proportional to the population of each country were selected at random for participation in the study. Within each administrative area, 30 households were randomly selected using random walk methodology [21-25]. Within each household, the head of household provided demographic information about the household and its inhabitants. Subsequently, two members of each household were selected at random for a full interview. A household member was defined as a person who ate from the same pot and slept in the same structure the night before [7,8,19-21].

**Table 1 – Demographic, economic, and health statics of the four countries from the World Health Organization, Institute of Health Metrics, and World Bank in 2014.**

Country	Nepal	Rwanda	Sierra Leone	Uganda
Population	28.17 million	11.34 million	6.315 million	37.78 million
% Rural population	81.8%	72.2%	60.4%	84.2%
GDP per capita (USD)	694.1	638.7	679.0	572.0
% Access to electricity	76.3%	18%	14.2%	18.2
% Access to non-solid fuel	20.5%	2%	2%	2.6%
Government expenditure on health	11.2%	9.9%	10.8%	11.0%
Doctors per 1000 people	.04	.6	.02	.08
Nurses & midwives per 1000 people	.3	.67	.18	.72
Disability adjusted life years of burns per 100,000 people	216.16	194.72	194.86	256.77

Download English Version:

<https://daneshyari.com/en/article/8694560>

Download Persian Version:

<https://daneshyari.com/article/8694560>

[Daneshyari.com](https://daneshyari.com)