Surgical care needs of low-resource populations: an estimate of the prevalence of surgically treatable conditions and avoidable deaths in 48 countries

Shailvi Gupta, Reinou S Groen, Patrick Kyamanywa, Emmanuel A Ameh, Mohamed Labib, Damian L Clarke, Peter Donkor, Miliard Derbew, Rachid Sani, Thaim B Kamara, Sunil Shrestha, Benedict C Nwomeh, Sherry M Wren, Raymond R Price, Adam L Kushner

Published **Online**
April 27, 2015

Poster 2

University of California San Francisco, East Bay, Surgeons OverSeas, Oakland, CA, USA (S Gupta MD); **Johns Hopkins School of Medicine, Department of Obstetrics and Gynecology, Surgeons OverSeas, Baltimore, MD, USA** (R S Groen MD); **College of Medicine and Health Sciences, University of Rwanda, Kigali, Rwanda** (P Kyamanywa); **Department of Surgery, National Hospital, Abuja, Nigeria** (E A Ameh MD); **Department of Surgery, University of Namibia, Namibia** (M Labib MD); **Department of Surgery, Nelson R Mandela School of Medicine, University of Kwa-Zulu Natal, Durban, South Africa** (D L Clarke MD); **Department of Surgery, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana** (P Donkor MD); **School of Medicine, College of Health Sciences, Addis Ababa University, Addis Ababa** (M Derbew MD); **Department of General and Digestive Surgery, National Hospital of Niamey, Niamey, Niger** (R Sani MD); **Department of Surgery, Connaught Hospital, College of Medicine and Allied Health Sciences, University of Sierra Leone, Freetown, Sierra Leone** (T B Kamara MD); **Department of Surgery, Nepal Medical College, Kathmandu, Nepal** (S Shrestha MBBS); **Surgeons OverSeas, Nationwide Children's Hospital, Ohio State University, OH, USA** (B C Nwomeh MD); **Stanford School of Medicine, Stanford, CA, USA** (S M Wren MD); **Intermountain Healthcare, Department of Surgery, Center for Global Surgery, University of Utah, Salt Lake City, UT, USA** (Prof R R Price MD); **and Surgeons OverSeas, Department of International Health, Johns Hopkins Bloomberg School of Public Health, Department of Surgery, Columbia University, Baltimore, MD, USA** (A L Kushner MD)

Correspondence to: Dr Shailvi Gupta, 1411 East 31st Street, Oakland, CA 94602, USA
Shailvi.gupta@gmail.com

Abstract

Background **Surgical care needs in low-resource countries are increasingly recognised as an important aspect of global health, yet data for the size of the problem are insufficient. The Surgeons OverSeas Assessment of Surgical Need (SOSAS) is a population-based cluster survey previously used in Nepal, Rwanda, and Sierra Leone.**

Methods **Using previously published SOSAS data from three resource-poor countries (Nepal, Rwanda, and Sierra Leone), a weighted average of overall prevalence of surgically treatable conditions was estimated and the number of deaths that could have been avoided by providing access to surgical care was calculated for the broader community of low-resource countries. Such conditions included, but were not limited to, injuries (road traffic incidents, falls, burns, and gunshot or stab wounds), masses (solid or soft, reducible), deformities (congenital or acquired), abdominal distention, and obstructed delivery. Population and health expenditure per capita data were obtained from the World Bank. Low-resource countries were defined as those with a per capita health expenditure of US$100 or less annually. The overall prevalence estimate from the previously published SOSAS data was extrapolated to each low-resource country. Using crude death rates for each country and the calculated proportion of avoidable deaths, a total number of deaths possibly averted in the previous year with access to appropriate surgical care was calculated.**

Findings **The overall prevalence of surgically treatable conditions was 11·16% (95% CI 11·15–11·17) and 25·6% (95% CI 25·4–25·7) of deaths were potentially avoidable by providing access to surgical care. Using these percentages for the 48 low-resource countries, an estimated 288·2 million people are living with a surgically treatable condition and 5·6 million deaths could be averted annually by the provision of surgical care. In the Nepal SOSAS study, the observed agreement between self-reported verbal responses and visual physical examination findings was 94·6%. Such high correlation helps to validate the SOSAS tool.**

Interpretation **Hundreds of millions of people with surgically treatable conditions live in low-resource countries, and about 25% of the mortality annually could be avoided with better access to surgical care. Strengthening surgical care must be considered when strengthening health systems and in setting future sustainable development goals.**

Funding **None.**

Contributors
SG, ALK, RSG, and BCN conceived and designed the study. SG, RSG, SS, TBK, PK, and ALK collected the data. SG, RSG, and ALK interpreted the data. SG and ALK wrote the Abstract. All authors approve the final version of the Abstract for publication.

Declaration of interests
We declare no competing interests.