


Impact of trauma systems on injury morbidity: important considerations for low-income and middle-income countries

Hendry Robert Sawe 

The impact of trauma care system implementation has largely and traditionally focused on demonstrating its potential to reduce injury-related mortality.¹ In their *EMJ* paper, Bath *et al* report the results of a systematic review of comparator study types published since 2000 that investigated the impact of organised trauma systems on morbidity, quality of life and economic outcomes.² The study screened 8181 articles and found only 7 addressing this important issue. The authors describe results from two studies that showed lack of benefit of trauma systems in morbidity from traumatic brain injuries. Three additional studies had conflicting results regarding the impact on quality of life after trauma system implementation, with two showing patients having significant increase in good recovery and lower limb salvage, while the third reported no change to minimal reduction in morbidity–mortality rates. Lastly, two studies evaluated health economic and cost-effectiveness outcomes. One demonstrated a positive cost–benefit analysis; however, the other found a substantial increase in years lived with disability, despite a reduction in years of life lost. All studies came from high-income countries. The authors conclude that there is a paucity of high-quality data assessing the impact of trauma system implementation on morbidity, quality of life and economic outcomes. They particularly caution the implementation of trauma system in low-income and middle-income countries (LMICs) because of the potential impact of creating more disabilities where the sociocultural and healthcare infrastructure may be unable to cope.

The findings of this systematic review stimulate important considerations for the development of safe and effective trauma systems in LMICs. Nearly 90% of the burden of death and disability from injuries occurs in LMICs.³ In most LMICs, there is no organised trauma care system,

with most places facing challenges in creating such systems related to geographical challenges, infrastructural resources and expertise. As an example, in Tanzania, despite recent significant government investments in Emergency Department infrastructure, the country still has no formal prehospital care system.⁴ Trauma patients are brought to the nearest hospital by good Samaritans or police. From there, they will be transferred to a hospital with more resources and may eventually move up through the pyramidal structure of hospitals with increasing capabilities until reaching the one designated trauma centre in the country.

While we know that implementation of a trauma system in an LMIC has the potential to save up to 2 million lives annually, such improvement will also likely generate millions more disabilities that require ongoing social and economic support.¹ In sub-Saharan Africa, 46% of the 1.2 billion people live in multidimensional poverty, with 82% of those in poverty living in rural hard-to-reach areas.⁵ The LMIC health systems are fragile, and many services are unavailable in areas where much of the population lives. Most LMIC healthcare systems lack capacity to ensure ongoing rehabilitation and nursing care for injuries that result in disabilities. The health systems challenges are further complicated by family and individual economic circumstances. In LMICs, most injured patients (indeed most patients) have no insurance and use out-of-pocket payment for healthcare. Hospitalisation for a traumatic injury will usually result in catastrophic health expenditure, with many patients unable to pay the full hospital bill and remaining in debt.⁶ Injuries affect the entire family; often the victims are young male adults who are family breadwinners, supporting their own families as well as older family members. The cost of care alone takes the families through a tough journey of making ends meet for themselves, while caring for the patient at the same time. A study in Rwanda found that 36% of patients injured in a road traffic accident

had moderate to severe disability at 2 years.⁷ Patients who are delayed or unable to resume their usual activities will therefore be driven further down into poverty, dragging dependent families along. The economic constraints further limit access to care and decrease the likelihood of full recovery.

In their review, Bath *et al* have identified a critical dilemma: Is it appropriate to implement a system that will save more lives but that may result in disabilities for some or even most of the injury victims? As an emergency physician in an LMIC, witnessing so many potentially avoidable trauma deaths, I would argue that we cannot reject the opportunity to maximise the number of lives saved, even at an expense of increased number of people living with disabilities. Yes, the health and economic systems in our country have many gaps which may compromise the appropriate and complete care of injury victims. However, the question is not whether to set up formal trauma systems, but rather how to improve the support systems for those who do survive. The WHO is working to strengthen the injury care process in LMICs, an effort that encompasses prehospital care, transport, initial emergency units care, definitive hospital care and long-term rehabilitation systems. The 2030 WHO rehabilitation initiative stresses the need for supporting health systems as a whole and integrating rehabilitation into all levels of the healthcare.⁸ There is a lot to be done in achieving this goal, but implementation of this initiative is the appropriate step in the right direction.

Bath *et al* are to be commended for highlighting the scarcity of evidence on the impact of trauma systems on outcomes other than mortality. However, even though some data suggest there is potential for more morbidity, there is much uncertainty here. Given that uncertainty, it is appropriate for LMICs to continue their efforts to save as many lives as possible through implementing trauma systems. Nevertheless, additional research can help us understand the best approach to implementing these systems in a way that addresses broader aspects of morbidity, quality of life and economic well-being.

Contributors HRS—conceptualisation, literature search and commentary writing.

Correspondence to Dr Hendry Robert Sawe, Emergency Medicine, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania, United Republic of; hendry_sawe@yahoo.com

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ORCID iD

Hendry Robert Sawe <http://orcid.org/0000-0002-0395-5385>

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