Understanding delays in injury care: determinants across four low- and middle-income countries

Leila Ghalichi[1*], Kathryn Chu[2], Justine Davies[1]
1. Department of Applied Health Sciences, University of Birmingham, Birmingham, UK
2. Centre for Global Surgery, Department of Surgical Sciences, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa

Correspondence to: Leila Ghalichi

*Department of Applied Health Sciences, University of Birmingham, Birmingham, UK.

Email: l.ghalichi@bham.ac.uk

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Background: Timely access to care is a key pillar of health system quality. Reducing delays before admission to definitive care improves outcomes for patients with time-sensitive conditions, including trauma. Despite growing interest in reducing time to definitive care in many low- and middle-income countries (LMICs) and the disproportionately high burden of injuries in these countries, empirical evidence from these settings remains limited. In this study, we present the associated factors of delays experienced by injured patients admitted to hospitals, as part of the Equi-Injury study, which aims to understand access to quality injury care in LMICs.

Methods: We recruited moderately to severely injured patients who were admitted for at least 12 hours to 19 healthcare facilities across Ghana, Pakistan, Rwanda, and South Africa. Data were collected on demographics, socioeconomics, injury characteristics, the patient journey from injury to definitive care (including transport taken and number of prior facilities visited), and time from injury to admission. Patients were considered delayed if they arrived at a definitive care facility (the facility capable of providing appropriate treatment for their injury severity) more than 2 hours after the injury occurred. Injury severity was assessed using the Kampala Trauma Score. The association between delays and these variables was evaluated in a multivariable model.

Results: A total of 8,331 injured patients provided data on time to admission. The mean age was 32.5 years (SD: 18.1), and 1,947 (23%) were female. Among 6,690 patients with injury severity data, 305 (5%) were classified as severely injured. Overall, 2,813 patients (34%, 95% CI: 33%-35%) experienced delays greater than 2 hours. In the multivariable model, experiencing delays was strongly associated with visiting another facility before definitive care [adjusted odds ratio (AOR) 12.5, 95% CI: 10.6-14.7). Being transported to the hospital by an ambulance was also associated with more delays (AOR 1.2, 95%CI 1.1-1.4). While severe cases experienced fewer delays, older age, lower education level, lower wealth status, being admitted to a rural catchment area, and a tertiary hospital were all associated with more delays.

Conclusion: Delays in reaching definitive care are common among injured patients in LMICs and are inequitably distributed, posing a significant barrier to achieving equitable and effective trauma care. The need to visit a prior facility and ambulance transport are addressable factors that are both strongly associated with more delays. Our findings highlight the urgent need to improve patient trajectory after injuries through prioritising timely access to injury care as a critical component of health system strengthening.

Keywords: Injury, LMICs, health equity, delay.