VIEWPOINT

Trauma in the Developing World: The Jamaican Experience

JM Plummer, D Ferron-Boothe, N Meeks-Aitken, AH McDonald

ABSTRACT

Trauma remains a challenging burden on the often under-funded healthcare systems of developing countries. Ten-year data from the Jamaica Trauma Registry show that trauma accounts for 20% of surgical admissions, with close to 50% being intentional and with a 5% mortality. There is a good opportunity for various preventive programmes to be instituted to reduce the burden of this disease.

Keywords: Financial burden, penetrating trauma

Los Traumas en el Mundo en Desarrollo: La Experiencia Jamaicana

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RESUMEN

Los traumas siguen siendo un pesado desafío para los sistemas sanitarios – a menudo pobremente financiados – de los países en desarrollo. Datos de diez años tomados del Registro de Traumas de Jamaica, muestran que los traumas representan el 20% de los ingresos quirúrgicos. Cerca del 50% de los traumas tuvo carácter intencional, y hubo un 5% de mortalidad. Existe una buena oportunidad de instituir varios programas de prevención con el propósito de reducir la incidencia de esta enfermedad.

Palabras claves: Carga financiera, trauma penetrante

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INTRODUCTION

Trauma is a major cause of morbidity and mortality in both the developed and developing world. It is perhaps the disease which has the most negative impact on healthcare systems and societies today, yet up to 90% is preventable. Injuries are the leading cause of death under the age of 40 years in the United States of America (USA) and the fourth leading cause of death for all Americans (1). It results in greater loss of potential years of life than cancer and cardiovascular diseases combined. In the developing world, injuries in males in the age group 15−44 years result in 55 million disability-adjusted life years lost. Presently, injuries account for one in seven health life years lost worldwide, and the World Health Organization predicts that this will increase to one in five by 2020, with low and middle income countries accounting for the majority of the increase (2).

Jamaica, with a murder rate of 36 per 100 000, has one of the highest in the world, while the death rate from motor vehicle accidents is 18 per 100 000, compared to 10 and 10.2 for the Caribbean region and Britain, respectively (3). The estimated cost of hospital care for the treatment of injuries in 2006 was USD 33.4 million, or 20% of the health budget (4). The total cost of injuries to the Jamaican society has been put at USD 1 billion per annum. This is approximately 7.2% of Jamaica's gross domestic product (5). Thus, a 50% reduction in the incidence of injuries will save the country seven times the total health budget. This is especially important given that for the 2010 national budget, 4% was projected to be spent on health – a fall from 7% in 1998 and 4.7% in 2000 (6).

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Jamaica Injury Surveillance Survey

The importance of trauma and its impact on the health dollar has led to the development of two projects, the Jamaica Injury Surveillance Survey (JISS) and the Trauma Registry at the University Hospital of the West Indies (UHWI). The JISS collects data on all injuries presenting to the Accident and Emergency Departments at the government hospitals across the island and is administered by the Ministry of Health. Information is collected on demographics, mechanism of injury, location and circumstances which caused the injury, victim:perpetrator relationship and disposition of the patient. For the period 2000–2009, information from JISS revealed that 11% of all accident and emergency visits were due to injuries. Road traffic accidents accounted for 17%, unintentional injuries accounted for 45% and intentional injuries accounted for 38% of injuries. Patients less than 19 years of age accounted for 57% of unintentional injuries and 62% of these unintentional injuries took place in the home. Relationship between the victim and the perpetrator in intentional injuries found 47% being injured by an acquaintance. Thirty per cent of injuries in women were inflicted by an intimate partner (4). The high rates of fatal road traffic accidents and the injuries affecting children have been highlighted as major areas of concern by the Pan American Health Organization (6).

Trauma Registry

The Trauma Registry at the UHWI was started in 1998 and it documents detailed information on all trauma admissions using the software programme Trauma™! developed by Cales and Associates and now managed by Digital Innovation Inc. Analysis of data from 11 733 trauma admissions during the 10-year period January 1, 2001 to December 31, 2010, reveals that 20% of all admissions to the surgical wards are injury related (Fig. 1). The epidemiological data are similar to that of the JISS. The peak incidence is in the second and third decades with a male to female ratio of 2.5:1. Unintentional injuries accounted for 57% of injury-related admissions, of which falls and motor vehicle accidents (MVA) were the major contributors in this category (Fig. 2). The

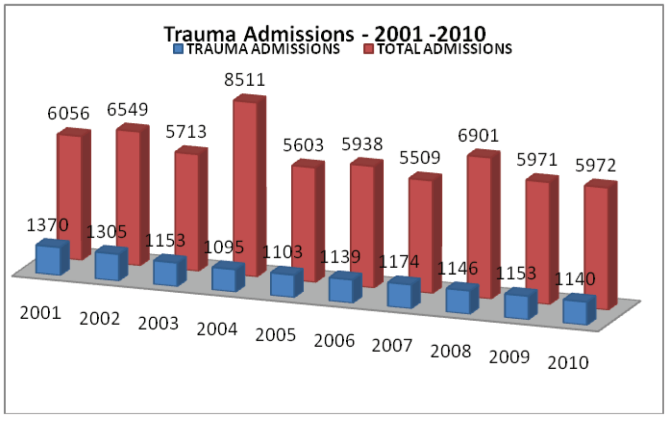

Fig. 1: Distribution of trauma admissions relative to all admissions by year during the period 2001–2010.

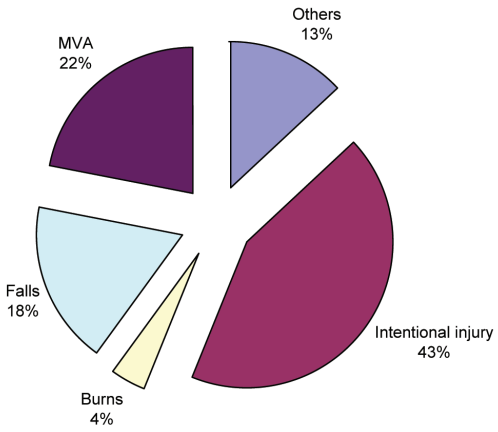

Fig. 2: Causes of injuries needing admission to the University Hospital of the West Indies during the period 2001–2010.
MVA = Motor vehicle accidents.

majority of intentional injuries were as a result of penetrating trauma occurring in the home or on a nearby street. Knives, machetes and firearms were the weapons of choice (Fig. 3). Overall, the mortality for the period was 5% and as expected, MVA and assaults by firearms accounted for the majority of deaths (Fig. 4). These data show that injuries are a major public health problem and place a heavy burden on the health services as well as the Jamaican economy. There is therefore need for a coordinated multidisciplinary approach to effect a significant decrease in the incidence of injuries.

Interventions and recommendations

An efficient system of trauma care involves intervention on at least three levels. Primary prevention focusses on pre-event action and is facilitated by legislations and education. Secondary prevention aims to minimize injuries sustained in the event and include the use of helmets and seat belts for example. Tertiary prevention focusses on care and rehabilitation of the affected individuals for the optimization of outcome. At the centre of this system is the continuum of care, which includes injury prevention, pre-hospital care, acute care facilities and post-hospital care. Inclusive in this improved quality of care is better pre-hospital care and speedy transfer of the injured to the nearest appropriate facility where timely interventions can be effected, given that the greatest number of deaths occurs in the pre-hospital phase of care. As members of the healthcare team, we need to – for appropriate legislations and funding for the establishment of a trauma system and effective preventative measures. There is the need to develop a comprehensive trauma system with many different components that are integrated and coordinated to provide cost-effective services for injury prevention and patient care, and not just an emphasis at the tertiary level

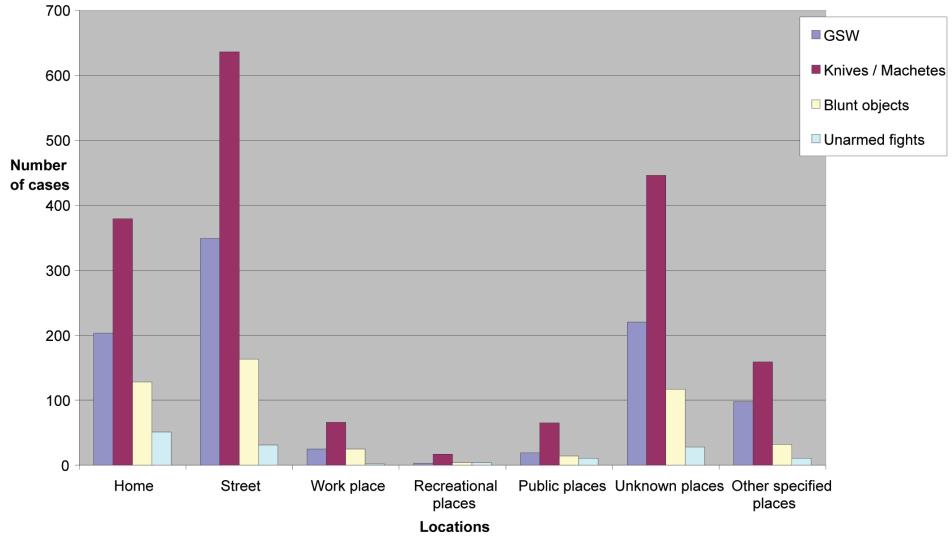

Fig. 3: Sites of occurrence of intentional injuries, Trauma Registry 2001–2010. GSW = Gunshot wound

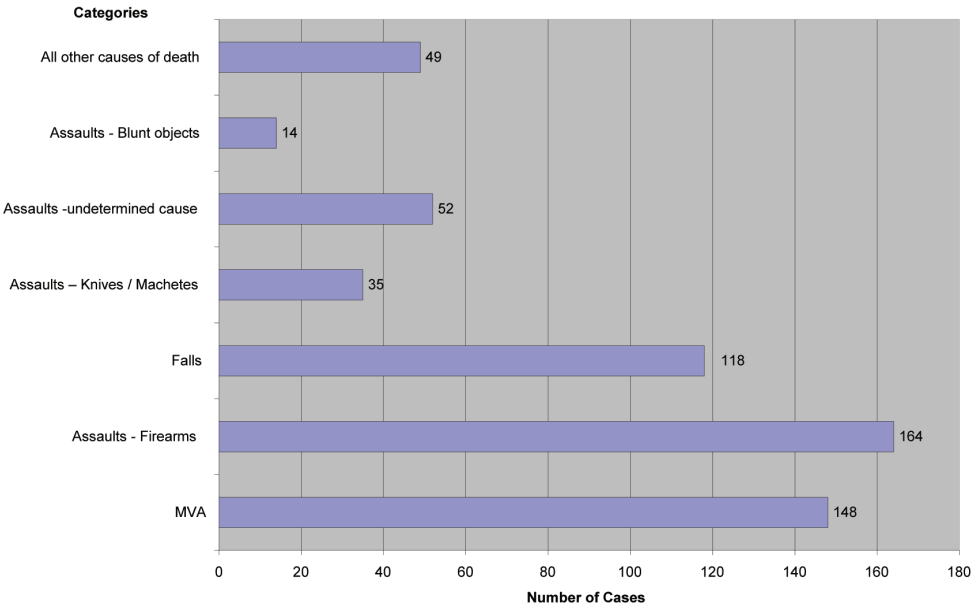

Fig. 4: Causes of trauma-related deaths, Trauma Registry 2001–2010. MVA = Motor vehicle accident

where, acceptingly, an improved quality of care at this level will also decrease the overall cost to society. This will reduce the incidence of injuries, decrease emergency room visits, decrease hospital admissions, and make more operating time available for elective cases. For these essential services to be more accessible and effective, they need to be deemed a public good. The urgency in changing the current *status quo* cannot be overstated. This is highlighted in a study using data from the UHWI Trauma Registry which showed a preventable death rate of 22% (7). This higher than expected death rate among trauma patients would suggest that we need to act now. When it comes to trauma, time is truly a life and death matter.

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