

REVIEW ARTICLE

The Burden of Trauma in Kosova: A Post Card Report from Prishtina

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ABSTRACT

Introduction: Kosova, an independent country since 2008 in Southern Europe, has experienced increased urbanization and development. Despite this young country's advances, its health-care infrastructure has progressed at a much slower rate and limitations are particularly notable in trauma care. This combination has made trauma a major public health issue in Kosova. The University Clinic Center of Kosova (UCCK) in Prishtina is the only tertiary center that serves the entire country.

Materials and methods: A retrospective review of data collected from a combination of local sources, as there is no one agency or department that has all the data. These sources include: (1) the emergency department (ED) of UCCK (data from 2007-2012), admissions hospital data from UCCK (2004-2009), and motor vehicle collisions (MVC) data provided by the Prishtina police department (2008-2012). However, the main source of patients data analyzed in this study was provided from the ED. Throughout this study rate calculations are based on the population of Prishtina (198,330 inhabitants as reported in the last national census).

Results: Twenty-four thousand one hundred and ninety-nine trauma patients were treated at UCCK ED between 2007 and 2012, of which 93.5% were blunt trauma and 6.3% penetrating trauma. There were 285 fatalities with a mortality rate varying between 16.6 and 37.3 for 100,000 inhabitants. UCCK in-patient data from 2004 to 2009 reported 193 fatalities due to MVC, with a mortality rate between 10.08 and 23.1 per 100,000 inhabitants. Prishtina police reported 214 MVC-related deaths on the streets of Prishtina, with a mortality injury rate between 16.13 and 27.22

per 100,000 inhabitants from 2008 to 2012. However, combined mortality data for 2009 yields an MVC mortality rate of 61 per 100,000 inhabitants, the highest in the world.

Conclusion: Trauma burden remains a substantial public problem in Kosova, and needs to be addressed acutely. Furthermore, there is urgent need for a nationwide trauma registry, in order for policymakers to be able to recognize the gravity of the situation and to design and implement appropriate interventions and allocate already limited funding.

Keywords: Burden of trauma, Kosova, Developing countries, Blunt trauma, Lack of trauma system.

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RESUMEN

Introducción: Kosovo, un país independiente desde 2008 en el sur de Europa, ha experimentado un aumento de la urbanización y el desarrollo. A pesar de los avances de este joven país, su infraestructura de salud ha progresado a un ritmo mucho más lento y las limitaciones son particularmente notables en la atención del trauma. Esta combinación ha hecho un traumatismo en un importante problema de salud pública en Kosova. El Centro Universitario Clínico de Kosova (UCCK) en Prishtina es el único centro terciario que sirve a todo el país.

Materiales y métodos: Se realizó una revisión retrospectiva de los datos obtenida de una combinación de fuentes locales, ya que no hay una agencia o departamento que cuenta con todos los datos. Estas fuentes incluir: (1) el servicio de urgencias (ED) de UCCK (datos de 2007-2012); Datos de los ingresos hospitalarios de UCCK (2004 a 2009); y colisiones de vehículos de motor (MVC) datos proporcionados por la Departamento de policía de Prishtina (2008 a 2012). Sin embargo, la principal Se proporcionó fuente de datos de los pacientes analizados en este estudio de el servicio de urgencias. A lo largo de este estudio cálculos de velocidad se basan en la población de Prishtina (198 330 habitantes como se informa en el último censo nacional).

Resultados: Veinte y cuatro mil ciento noventa y nueve con traumatismos los pacientes fueron tratados en UCCK ED entre 2007 y 2012, de que el 93,5% fueron traumatismos cerrados y el 6,3% un traumatismo penetrante. Hubo 285 muertes con una tasa de mortalidad que varía entre 16,6 y 37,3 por 100.000 habitantes. UCCK en datos de pacientes 2004-2009 informó de 193 muertes por accidente de tráfico (MVC), con una tasa

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de mortalidad entre 10,08 y 23,1 por 100.000 habitantes. La policía informó de 214 muertes Prishtina MVC relacionados en las calles de Prishtina, con una tasa de lesiones de mortalidad entre 16,13 y 27,22 por 100.000 habitantes desde 2008 hasta 2012. Sin embargo, datos de mortalidad combinada para el año 2009 arroja una tasa de mortalidad de MVC 61 por cada 100.000 habitantes, la más alta del mundo.

Conclusión: Carga Trauma sigue siendo un público importante problema en Kosovo, y debe ser abordado de forma aguda. Además, no hay necesidad urgente de un trauma a nivel nacional registro, a fin de que las autoridades a ser capaz de reconocer la la gravedad de la situación y para diseñar e implementar apropiada intervenciones y asignar fondos ya limitado.

Palabras claves: La carga de traumatismos, Kosova, Países en desarrollo, El trauma directo, Falta de un sistema de trauma.

INTRODUCTION

According to the World Health Organization’s (WHO) report on the global burden of disease, trauma has become an international epidemic. Approximately, 5 million people worldwide die from injuries yearly, accounting for 9% of the world’s deaths. Low and middle-income countries (LMICs) carry more than 90% of the burden of injuries in terms of disability and mortality.¹

Similar to many LMICs, since the end of the war in 1999, Kosova has been experiencing increased urbanization and development. Despite this young country’s advances, its healthcare infrastructure has progressed at a much slower rate and limitations are particularly notable in terms of trauma care. This combination has resulted in a major public health issue, primarily affecting the economically productive population. The University Clinic Center of Kosova (UCCCK), located in the nation’s capital of Prishtina, serves as the only tertiary center in the entire country of 2 million inhabitants and receives all major trauma cases either directly from the streets or referred from regional hospitals.

When trying to analyze the root causes of the trauma epidemic at the national level, the lack of data and accurate studies in countries like Kosova result in a challenge to quantify the real burden of trauma and to design and implement appropriate interventions and effectively allocate already limited funding.

This study uses the limited data available to analyze the burden of trauma at UCCCK and the great impact that traffic injuries have in Kosova, as well as to highlight the need for a comprehensive trauma system in the country.

MATERIALS AND METHODS

This analysis is based upon a retrospective review of data collected by the Prishtina-based, UCCCK, emergency department (ED) from 2007 to 2012 and in-patient area from 2004 to 2009. Additionally, this study includes records related to motor vehicle collisions provided by the Prishtina police department from 2008 to 2012. The data sets from the three sources analyzed are mutually exclusive, ensuring that the same death was not reported by multiple sources. Throughout this study, rate calculations are based on the population of Prishtina (198,330 inhabitants as reported in the last national census). Mortality rates are expressed as ranges, highlighting the lowest and highest values for each study period and data set.

RESULTS

According to UCCCK ED records, 24,199 injured patients were seen between 2007 and 2012. Of these reported injuries, 93.5% were blunt trauma and 6.3% penetrating trauma. Two hundred and eighty-five patients died in the ED from their injuries (Table 1). This would yield an ED mortality rate that varies between 16.6 and 37.3 per 100,000 inhabitants, with an average mortality rate of 24. Injury rates during the same period oscillated between 1,466.74 and 2,484.74 per 100,000 inhabitants, with a mean rate of 2,036.

When analyzing the causes of all traumas evaluated at the ED during the reported period, road traffic injuries accounted for 82% of all visits (19,869), 76.4% of all surgical and orthopedic emergencies and for 7.2% of the total number of emergency visits. Motor vehicle collisions (MVCs) were responsible for 68% of all trauma fatalities (195), with a fatality rate ranging from 8 to 28.7 per 100,000 inhabitants and an average fatality rate of 16.4. Additionally, UCCCK in-patient data from 2004 to 2009 reported 193 fatalities due to traffic injuries, with a mortality rate between 10.08 and 23.1 per 100,000 inhabitants and a mean mortality rate of 16.2.

Kosova police data from 2008 to 2012 reported 91,823 MVCs nationwide, of which 40,076 occurred in Prishtina. Over 4.91% of the injured patients were vulnerable users of the roads, such as pedestrians, cyclists, and motorcycle drivers (Table 2). Of all the on-scene deaths (762) in Kosova related to MVCs, 214 deaths occurred on the streets of Prishtina, with a mortality injury rate between 16.13 and 27.22 per 100,000 inhabitants and an average mortality injury rate of 21.6. The same police data also reported that

Table 1: UCCCK emergency department deaths (2007-2012)

MVC	GSW	Falls	Stab wounds	Electrocution	Burning	Suicide
68.4%	10.5%	10.2%	6.7%	3.5%	0.3%	0.3%

MVC: Motor vehicle collisions; GSW: Gunshot wounds

60.9% of MVCs occurred within the city limits, whereas 39.1% occurred on highways and regional roads (Table 3).

In this study, 2009 serves as a reference given that it is the only year from which we have MVCs mortality data from all three sources (Prishtina Police, UCCK ED, UCCK in-patient data) is available. When combining the information from these sources, the mortality rate due to MVCs in Prishtina is 61 per 100,000 inhabitants.

DISCUSSION

The vast majority of trauma cases seen at UCCK are the result of MVCs, becoming the leading cause of morbidity and mortality. Secondary causes of injury at UCCK are penetrating trauma and work related injuries, respectively. The UCCK's situation is not an isolated one; road traffic injuries have become a public health issue worldwide. World health organization data shows that the global road traffic injury mortality rate for LMIC was 20.2 per 100,000 inhabitants and the road traffic injury mortality rate for LMIC in the European region was 17.4.¹ When comparing the UCCK ED highest mortality rate for the analyzed years (28.7 per 100,000 inhabitants) to both global and regional rates, one notes a considerable difference. This higher rate will increase further to 61 per 100,000 inhabitants when incorporating on-scene fatalities and in-patient fatalities. If we compare this rate from Prishtina with international rates; Prishtina would have one of the leading rates in the world, even above El Salvador and Dominican Republic (41.7 and 41.0 per 100,000 respectively¹) the highest ranked countries by the WHO's World Report on Road Traffic Injury Prevention 2004. It is important to note that it is not accurate to extrapolate Prishtina's rate to a national rate for Kosova; however, this exercise gives us a clear idea of the magnitude of the problem in the context of limited national data.

Table 2: Type of traffic accidents (2008-2012)

Type	Number	Percentage
Car vs car	37,980	94.7
Car vs pedestrian	1528	3.81
Car vs bicycle	165	0.41
Car vs motorcycle	276	0.68
Car vs animal	127	0.31
Total	40,076	100

Source: Prishtina police department

Table 3: Location of the traffic accidents in the capital of Kosova (2008-2012)

Location	Percentage
City limits	60.9
Highways	28.2
Regional roads	10.8

Source: Prishtina police department

Furthermore, there is a distinct possibility that Prishtina's population may be higher than reported in the census.

World health organization studies cite that 90% of all traffic injury fatalities occur in LMIC,¹⁻³ associating this with rapid urbanization in the absence of adequate trauma systems [(injury prevention programs, environmental management system (EMS), trauma centers and rehabilitation units)]. In the next 20 years, WHO predicts an 80% increase in the fatality rates of countries like Kosova, while anticipating a 30% rate decline in high-income countries (HICs).¹

International data also indicate that road traffic injuries have become an epidemic affecting young and economical productive population, with 59% of all road traffic deaths worldwide involving people 19 to 44 years old, 3/4 of whom are male.³ The Kosova data used in this study lacks this demographic information, however, previous studies have reported that 99.03% of drivers involved in road traffic collisions in Prishtina were between 15 and 45 years old and 97.18% were male.^{4,5} MVCs account for over 38 million disability-adjusted life years (DALYs) lost, or 2.6% of the global burden of disease. LMIC account for 91.8% of the DALYs lost to road traffic injuries worldwide,¹ with an economical cost between 1 to 2% of their gross national product, estimated at over US\$ 100 billion per year.¹⁻³ Lack of data prevents the calculation of the number of DALYs lost in Kosova, although WHO data suggests that for every road traffic fatality there are 20 nonfatal injuries.^{2,3} Moreover, the WHO predicts that in the next 20 years DALYs lost will increase to 71.2 million, equivalent to 5.1% of the global burden of disease, mainly affecting LMIC.¹ The WHO indicates that only 24 of LIC and 46 of MIC have some sort of trauma data bank;^{2,3} Kosova is not the exception. In order to develop a sustainable trauma system that includes injury prevention programs, an EMS system, trauma centers, centers for trauma education and rehabilitation units; Kosova urgently needs to implement a 'National Trauma Data Bank'. More complete and specific trauma data will allow decision and policy makers to better allocate resources and to develop programs to target specific issues. However, before such monumental task is undertaken, there is a need for a structured and comprehensive study of trauma services that are provided in Kosova. Furthermore, the current data shows the imperative need to develop road safety measures and injury prevention programs for vulnerable road users.

Further, studies should be carried out in order to evaluate EMS performance, hospital organization and infrastructure, human resources and standard of care at the national level using the basic criteria of the American College of Surgeons/Committee on Trauma (ACS/COT), or other organizations.

There are a number of limitations to our study. First, it is a retrospective study with three different sources of data.

The data collections set varies according to the agency or institutions that collected. Additionally, the lack of information the authors have on the data collection methods used to obtain the information analyzed is another limitation. Another potential limitation to this study lies in the possibility that some of the fatalities reported in Prishtina could have been non-Prishtina residents. This could feasibly result in an inadvertent inflation of the mortality rate per inhabitant that without improved data collection systems cannot be excluded.

Furthermore, we lack any of the indicators of severity of these injuries, causes of death in the hospital, preventability of such death, and overall outcome (morbidity associated with these injuries) rather we discuss only death from trauma as crude indicator.

CONCLUSION

The burden of trauma in Kosova, in particular in the capital city Prishtina is extremely high. Although the available data at UCCK is limited, the information obtained provides a fairly clear picture of the incidence of trauma in Kosova's capital. The most pressing problem is the lack of adequate

data to be able to assess the real burden of trauma and the need for an organized trauma system in Kosova.

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