Epidemiology of assault and self-harm injuries treated in a large Romanian Emergency Department

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Abstract

Objectives—Intentional injury, including interpersonal violence and self-harm, is one of the world's leading causes of preventable injury. In Europe alone, nearly 1.5 million individuals receive medical treatment each year for a violence-related injury. We examined violent injuries treated in the largest Emergency Department (ED) in Tîrgu Mures County, Romania, with a catchment area of approximately 580 000 residents to describe the epidemiology of assault and self-harm injuries.

Methods—Data were collected as part of the European Injury Database project, from a sample of patients who presented with a violence-related injury and received care from the ED of the Mures County Emergency Hospital, Romania. The data were collected for 9 months by two trained emergency physicians. Information about individual demographics; mechanism, nature, place, and activity of injury; injury types, and body regions affected; and discharge state were compared for assault and self-harm injuries.

Results—Of the 380 patients treated for violence-related injuries, 88.7% were for assault and 11.3% were for self-harm. For both types of injuries, the majority of patients were between the ages of 15 and 44. Assaults frequently occurred in the home, on streets and highways, or in public places; and men (80.4%) were far more likely than women (19.6%) to be treated for this type of

injury; a slightly higher proportion of men (55.8%) than women (44.2%) were treated for self-harm, most of which occurred in homes.

Discussion—Of all injuries treated in the Tîrgu Mures ED, one out of five was violence related. One out of 10 patients that suffered an injury as a consequence of a violent event and treated in the ED required admission to a hospital for further medical care, leading to a significant health care burden. These data suggest that prevention strategies should focus on young adults, and particularly men. Interventions that focus on detection and treatment of psychological illness, reduction of alcohol use and associated aggression, and family and intimate partner violence are suggested as priorities.

Keywords

Introduction

Violence is a leading cause of preventable injury world-wide [1–5]. Intentional injuries caused approximately 1.6 million deaths worldwide in 2004, suicide accounting for 51%, and interpersonal violence for 37% [3]. The individual and family burden of violent deaths and injuries are high, including physical and psychological trauma, extended rehabilitation and recovery periods, and financial loss. The societal burden from violence could be even higher, as violent acts erode communities, incur a high cost for direct and indirect medical treatment, and can destabilize political infrastructures [2].

In Europe, violence-related injuries kill approximately 237 000 people annually [6]. The annual average number of fatal violence-related injuries between 2003 and 2005 was 67 500, which accounted for 27% of all injury fatalities in Europe. In low-to-middle-income countries like Romania, injury death rates are 3.6 times higher than in high-income countries [5,6], whereas mortality rates are 2.5 times greater for suicide and 13.8 times for interpersonal violence when compared with high-income countries [7,8]. According to the WHO European Health for All Databases (HFA-DB), the standardized death rate from suicide and self-inflicted injury for all ages was higher in Romania (10.63 per 100 000) compared with the European Union (10.12 per 100 000) during 2008 [9]. For homicide and intentional injuries for people aged 0–64, standardized death rates were two times higher in Romania (2.19 per 100 000) than in the European Union (0.98 per 100 000). Accurate surveillance data are a critical component of a successful public health prevention campaign, but Romania lacks data to describe medically treated violent injuries as it does not have a standard surveillance system to describe the incidence, nature, and characteristics of those injuries.

This study presents the results from a pilot initiative of the European Injury Database (IDB) [10] to begin collecting emergency department (ED) data on traumatic injuries. This analysis focuses on violence-related injuries with the objective of describing their nature and circumstances, defined as 'A deliberate incident with the intent to cause harm, injury or death, in which physical or other force was used (or threatened to be used) against oneself or another person and which led to injury' [11].

Materials and methods

Data and study design

This is a retrospective study of patients treated for violence-related injuries admitted to the ED of the Mures County Emergency Hospital in Tîrgu Mures, a large city in the central area of Romania, with a population of nearly 150 000 inhabitants [12]. The ED admits patients from three sources: SMURD (Mobile Emergency Service for Resuscitation and Extrication), the County Ambulance Service, and arrivals by private means. The hospital's catchment area is Mures County (with approximately 580 000 inhabitants), as the hospital is the major triage unit for injury cases in the county, regardless of the patient's age. Data were collected through the IDB [11] Pilot Project, the core element of a Comprehensive Information System on Injuries in the EU. IDB organization follows the principle of subsidiary data input: data collection according to the common IDB standard in the member States takes place under the responsibility of a National Data Administrator. Data for this pilot project were coordinated nationally by the Center for Health Policy and Public Health, Babes-Bolyai University, Cluj-Napoca, Romania, with the aim of pilot testing the collection of injury data in Romania using the IDB.

Settings and population

A sample of 380 patients who presented with a violence-related injury and received care from the ED of the Mures County Emergency Hospital in Tîrgu Mures, between 14 March and 24 November 2009, were included in the analysis. The sample population and the time frame were constrained by the pilot project requirements which depended on the time the contract was signed and the total number of injuries that were needed to pilot test the instrument. During the pilot study period, the IDB collected information on a sample of 1800 patients who suffered a trauma event, out of which, 1420 (78.8%) had suffered an injury and 380 (21.1%) had suffered a violent incident. Data for the IDB were provided mainly by the patient or in some cases by family members, caregivers, police officers, or ambulance nurses if the patient suffered memory loss or diminished consciousness. A total of 2517 injuries were treated in the ED during the study period, of which 591 (23%) were violence related, of which 380 (66.5%) injuries were coded in the IDB study.

Data collection process

The data were collected by two emergency physicians during their working shifts, which covered 24 h a day for 15 days of each month and 12 h a day for the remaining 15 days of each month. The physicians were trained in data collection and coding procedures by the coordinators of the project in Romania. Data were collected by hand by the physicians during or just after the patient visit, often simultaneously with information collected for the medical record. Variables collected were defined by the Injury Database Project, and after collection, the information was entered into computer databases compatible with the IDB. The study forms contained open-ended questions followed by close-ended questions for specific modules.

Study variables

The unit of our analysis was the injured individual. Data included 18 elements and a narrative in the core data set and five specific modules with a total of 11 data elements [11], focusing on demographic variables, variables related to the circumstances of the injury event, outcome and specific modules (admission, intentional self-harm, sport, transport, and violence). Our study concentrated on the intentional self-harm and the violence modules. Intentional self-harm was defined as 'deliberate use of physical or other force or agent against oneself, with the intent to cause harm, injury or death' [9]. In this module, we collected data elements as proximal risk factor, previous intentional self-harm. Intentional injuries included in the violence module were defined as 'an act of fatal or nonfatal violence in which physical or other force was used with the intent to cause harm, injury, or death to another person' [9]. Data elements collected were victim-perpetrator relationship, sex, and age group of perpetrator, context of assault.

Statistical analysis

Descriptive statistics to compare patients that have suffered a violence-related injury were calculated and compared using χ^2-tests for categorical variables and t-tests for continuous variables. Data analyses were run using the SPSS (SPSS Inc., Chicago, Illinois, USA) statistical software.

Results

Characteristics of assault and self-harm injuries

Among the 380 violence-related injury patients, 88.7% were treated for an assault and 11.3% were treated for self-harm, and 295 (77.6%) were men and 85 (22.4%) were women (Table 1). Men (80.4%) were far more likely than women (19.6%) to be treated for injuries sustained as the victim of an assault. The sex distribution of self-harm showed an almost equal distribution between the two sexes: 55.8% were men, 44.2% were women. The sex distribution of assaults and self-harm injuries was statistically different (*P*<0.001).

The highest proportion of assault injuries was among adults aged 25–44 (48.2%), followed by young adults aged 15–24 (24.2%) and adults aged 45–64 (20.8%). Children up to the age of 14 comprised 2.7% of assaults and the elderly comprised 4.5%. The age distribution for self-harm injuries was similar to the distribution for assaults, although no self-harm injuries occurred among children and a slightly higher proportion occurred among the elderly.

The mechanism of injury differed significantly between assaults and self-harm injuries (Table 2). 'Struck by or against an object' was the primary mechanism for 92.8% of assaults, but was not a mechanism found among self-inflicted injuries. Cutting and piercing was the injury mechanism for 5.1% of assaults and 26.2% of self-harm injuries. Poisoning was the leading mechanism of self-harm injuries (59.5%), but was not a mechanism for any assault injuries. Suffocation (9.5%) and falls (4.8%) were common causes of self-harm, but not for assault injuries.

Overall, the majority of violent injuries occurred in the home, followed by streets or highways, and public places like pubs. Assault injuries occurred in a more diverse number of settings than self-harm injuries ($P<0.001$). More than 88% of self-harm injuries occurred in the home or a residential institution, followed by a much smaller proportion occurring on streets/highways ($n=2$) or pubs ($n=2$). Streets/highways were the most common location for assaults (35.9%), followed by the home (30.3%) and pubs (18.4). Work areas (5.6%) and other recreational areas (3.9%) were also common locations for assault. Women were more likely to get injured in the home; 72.9% of women got injured in the home whereas only 24.7% of men got injured in the home. Moreover, 37.6% ($n=111$) of men got injured on streets and highways and 19.7% ($n=58$) were injured in pubs.

Characteristics of patients treated for assault injuries

Strangers were the most frequent perpetrators of assaults (40.4%), followed by acquaintances or friends (35.4%) (Table 3). Family members perpetrated 15.4% of assaults, with almost half of these being a spouse or partner.

Children (0–14 years of age) were equally likely to be assaulted by parents (25%), acquaintances or friends (25%), or strangers (25%), in most of the cases in an unspecified context (75%) or during an altercation (25%).

Perpetrators of assaults against adolescents were most frequently acquaintances and friends (49.3%) than strangers (36.6%). The majority of adults (25–64 years) and elderly (65+ years) victims were assaulted by strangers or acquaintances/friends. Among the elderly, however, other relatives were also frequent perpetrators (30.8%). In these three age groups, altercations were the main context for over half of the cases, followed by other/ unspecified contexts. Illegal acquisition of money or property was an important context among adults (11%). The context of assault did not differ by age group.

Assaults against children and young adolescents were divided between the home and pubs. Although more than a third of all assaults occurred in the home, nearly two-thirds of assaults against the elderly occurred in the home. For those aged 15 through to 64, roads and highways were a common location for assaults, as were pubs.

Injury outcomes

Half of the assault victims were attacked by an adult perpetrator (50.5%), followed by perpetrators of unknown age (32.6%) and an adolescent (14.7%). This distribution was similar among adolescents, adults, and the elderly, but differed from children, whose assaults were most frequently committed by adults (50%) was followed by other children (37.5%) and adolescents (12.5%).

The overpowering majority of assault victims were attacked by men (97.2%). Man-to-man assaults were even more frequent (99.2%), with only two cases (0.8%) involving a man assaulted by a woman. The predominance of women assaulted by a man perpetrator was 88.5%, whereas 11.5% of them were assaulted by another woman. Children had the highest proportion of woman perpetrators (12.5%), and elderly victims were exclusively assaulted by men.

Alcohol was present in 21.4% of the assaulted, and 16.3% of the self-harm patients. Sedative medication accounted for almost 7% of underlying substance in the self-harm group. Assaults and self-harm injuries led to significantly different diagnoses: poisoning was the leading type of injury among self-harm patients (59.5%), but didn't occur among assault patients (Tables 4 and 5). Soft tissue injuries (contusion, bruise, abrasion, open wound) were the second most frequent injuries in the self-harm group (30.2%), and the leading injury type among assault patients (81.3%). Bone and joint injuries (fracture, luxation, dislocation, distortion, and sprain) were the primary diagnosis for 15.5% of assault injuries.

The body region affected by the injury also differed significantly between the two groups: head injuries were dominant among assault victims (65.6%), followed by the trunk (20.8%) and upper extremities (6.8%). Multiple body parts were the predominant localization of injuries in the self-harm group (27.9%), upper extremities accounted for 20.9% and head injuries for 18.6%. Upper extremities were the predominant localization of injuries in the self-harm group, 20.9%.

Nearly two-thirds of assault patients were discharged from the ED; 43.0% after treatment and 22% after assessment with no needed treatment. Nearly a quarter (24.6%) of assault patients were transferred to another hospital, to facilitate the needed treatment; only 8.9% admitted to Tîrgu Mures Hospital. From this group, more than half (59.3%) were admitted between 4 and 7 days. None of the assault patients died in the ED. The discharge status distribution among assault and self-harm patients was significantly different. Nearly 10% of self-harm patients died during transfer to or in the ED, and more than three-quarters were either admitted to the hospital (25.6%) or transferred to another hospital (51.2%). The primary disposition for transferred patients was a Psychiatry Unit. Only 10% of self-harm patients were discharged from the ED. Of those admitted to Tîrgu Mures Hospital, half had a length of stay between 4 and 7 days, and 30% spent more than 15 days in hospital.

Discussion

This is the first Romanian study to examine intentional injuries requiring emergency medical treatment among adults. A previous analysis of nonfatal childhood injuries found that nearly a quarter of all pediatric ED visits were for intentional injuries [13]. Of all the injuries treated at the Tîrgu Mures ED, one out of five was violence related, placing a heavy burden on the health care system, and on individuals, families, and communities. Violence prevention is often focused on high-risk populations, which from these data include young adults and men. Education programs, restricting availability of alcohol, training health professionals to deal with interpersonal violence, development of support, and guidance groups, and prevention-oriented policies are recommended as successful or promising interventions [14–16].

Findings suggest that men are far more likely to be both victims and perpetrators of assaults, which is supported by the literature [17–19]. Victims of assaults were frequently young adults, injured in altercations through the mechanism of being struck by or against an object, in bars, and with alcohol involved. These trends indicate that, especially for men, public

fighting is a common cause of violent injury requiring emergency care, alcohol consumption playing an important role in increasing aggression [20].

Although 40.4% of the patients were assaulted by a stranger, more than a half of the perpetrators were someone known to the victim (parent, spouse, relative, or friend). Domestic violence is considered to have long-term negative effects [21] such as severe brain injury, and also psychological and cognitive problems [22,23]. This indicates the importance of preventive measures for family and domestic violence in a combination of governmental and nongovernmental policy, discourse, and practice [24].

The sex distribution for self-harm injuries was much more sex-equal than for assaults. Poisoning played a major role as a mechanism of injury among self-harm patients, mostly by women. A previous study of childhood ED visits found that poisoning was a frequent cause of both intentional and unintentional injury [13]. The low number of reported self-harm injuries due to poisonings can be explained by the fact that these are only the cases addressed by the ED, while patients can receive treatment in other nonemergency medical departments for such a condition. In Romania, and especially in rural areas, there is a significant stigmatization against seeking treatment for mental health issues which might prohibit early treatment and prevention of self-harm injuries. Early detection and treatment of psychological conditions may be a promising strategy.

The presence of alcohol as a facilitating factor in both assault and self-harm indicates that alcohol prevention programs may be an important component of violence prevention. Other countries have found a similar relationship between alcohol and violence [25,26]. In response to the high correlation of alcohol use with traumatic injury, the United States Level I Trauma centers are now required to offer ED-based brief alcohol intervention programs [27,28]. Educational programs and prevention strategies need to be developed. Limitation of drinking hours would be an effective strategy, which showed its efficacy in other countries [29].

Violence and its consequences lead to severe injuries and put a heavy burden on health care. One out of 10 patients who suffered an injury as a consequence of a violent event and was treated in the ED required admission to a hospital for further medical care. Furthermore, one out of four patients who inflicted self-harm was admitted to a hospital. Almost 10% of the self-harm patients died before arrival or in the ED, which puts this group at particularly high risk of severe injury and poor outcome. The average time of 4–7 days of hospitalization of the patients denotes serious injury and high medical care costs. In addition to the direct medical costs, these patients, primarily young adults, experience time away from productive work and family. It is also likely that long-term physical and psychological recovery could exceed the period of direct medical intervention.

The absence of several types of events in our sample group as child abuse, sexual violence, and gang-related incidents suggests the possibility of underreporting. This calls for action in terms of educational programs for the health care providers on the identification of child maltreatment, simultaneously with creation of well trained and coordinated sexual violence intervention teams.

There were no weapons reported as means of violence-related injuries. The cause might be that personal firearms and specific common weapons such as knives are subject to very strict regulations in Romania, and are not broadly available.

Violence-related injuries are frequent, with certain characteristics among definite groups, which need individual medical and social intervention strategies, in context of multidisciplinary efforts: an active and nationally implemented surveillance system based on hospital EDs. This would provide a reliable picture of these injuries and could guide the intervention development; a partnership of the EDs, local administrative authorities, police departments for data and report sharing and development of comprehensive prevention programs is needed.

This study had several limitations. Due to staffing limitations, data on all violence-related injuries was not collected. However, the sample included approximately 66.5% of all violence-related injuries, and the timing of the data collection should not lead to a selection bias. Thus, although not population-based, the sample is representative for all violence-related injuries. The IDB does not collect detail about all injury mechanisms, although it does provide some details on assault and self-harm through the individual data modules. In addition, the IDB does not measure severity of injuries with injury severity scores, but gives a simple indication of severity and of burden of injuries by stating the status of treatment and follow-up after attendance at the ED. Details about the circumstances of injury were broad, and information about comorbid conditions (such as alcoholism or substance abuse) was not collected. Furthermore, the information is provided by the patient or the family members, with frequent underreporting and underestimation.

Despite these limitations, these are the first Romanian data to describe the characteristics of assault and self-harm injuries. These injuries clearly represent a burden to society and to the health care system and should be a priority for prevention.

Acknowledgments

References

1. Krug, EG.; Dahlberg, LL.; Mercy, JA.; Zwi, AB.; Lozano, R. World report on violence and health. Geneva: World Health Organization; 2002.

2. Krug E, Sharma G, Lozano R. The global burden of injuries. Am J public Health. 2000; 90:523–526. [PubMed: 10754963]

3. World Health Organization. Global health risks Mortality and burden of disease attributable to selected major risks. Geneva: World Health Organization; 2009.

4. Hawton, K.; Van Heeringen, K. [Accessed 1 October 2010] Suicide. The Lancet. 2009. (online). Available at: http://www.thelancet.com

5. Peek-Asa, C.; Hyder, AA. Chapter 10.4: injury prevention and control: the public health approach. In: Detels, R.; Beaglehole, R.; Lansang, MA.; Gulliford, M., editors. Oxford Textbook of Public Health. Oxford, UK: Oxford University Press; 2009.

6. Sethi, D.; Racioppi, F.; Baumgarten, I.; Vida, P. Injuries and violence in Europe Why they matter and what can be done. Copenhagen: World Health Organization Regional Office for Europe; 2005.

7. Sethi D, Racioppi F, Baumgarten I, Bertolini R. Reducing inequalities from injury in Europe. Lancet. 2006; 9554:2243–2250. [PubMed: 17189036]

8. World Bank. Country classification: classification of economies. Washington, DC: World Bank; 2002.

9. WHO. [Accessed 9 December 2010] Europe. 2010. Available at: http://www.euro.who.int/en/what-we-do/data-and-evidence/databases/european-health-for-all-database-hfa-db2

10. Kisser R, Latarjet J, Bauer R, Rogmans W. Injury data needs and opportunities in Europe. Int J Inj Control Saf Promot. 2009; 16:103–112.

11. Consumer Safety Institute. The Injury Database (IDB) Coding Manual. 2005; 3:232. Available at https://webgate.ec.europa.eu/idb/documents/Coding_manual_V1.1_2005.pdf.

12. National Institutes of Health. Romanian Statistical Year book. Romania: National Institutes of Statistics; 2007.

13. Oprescu F, Peek-Asa C, Young T, Figan I, Nour D. Emergency department visits for nonfatal childhood injuries in Romania. Eur J Emerg Med (England). 2008; 15:268–275.

14. Wood, S.; Bellis, MA.; Nurse, J.; Sirotkin, M. Youth violence: a review of evidence for prevention UK focal point for violence and injury prevention Centre for Public, Health Faculty of Health and Applied Social Sciences. Liverpool, UK: Liverpool John Moores University; 2010. p. 2-22.

15. Wood, S.; Bellis, MA.; Basher, D.; Nurse, J.; Elton, P. Sexual violence: a review of evidence for prevention UK focal point for violence and injury prevention Centre for Public, Health Faculty of Health and Applied Social Sciences. Liverpool, UK: Liverpool John Moores University; 2010. p. 2-18.

16. Wood, S.; Bellis, MA.; Watts, C. Intimate partner violence: a review of evidence for prevention UK focal point for violence and injury prevention Centre for Public, Health Faculty of Health and Applied Social Sciences. Liverpool, UK: Liverpool John Moores University; 2010. p. 2-16.

17. Reilly J, Muldoon OT, Byrne C. Young men as victims and perpetrators of violence in Northern Ireland: a qualitative analysis. J Soc Issues. 2004; 60:469–484.

18. Steen K, Hunskaar S. Violence in an urban community from the perspective of an accident and emergency department: a two-year prospective study. Med Sci Monit. 2004; 10:CR75–CR79. [PubMed: 14737047]

19. Kruse M, Sorensen J, Bronnum-Hansen H, Helweq-Larsen K. Identifying victims of violence using register-based data. Scand J Public Health. 2010; 38:611–617. [PubMed: 20643696]

20. Wells S, Graham K. Aggression involving alcohol: relationship to drinking patterns and social context. Addiction. 2003; 98:33–42. [PubMed: 12492753]

21. Campbell J, Snow Jones A, Kub J, Schollenberger J, O'Campo P, Carlson Gielen A, Winne W. Intimate partner violence and physical health consequences. Arch Inter Med. 2002; 162:1157–1162.

22. Valera EM, Berebbaum H. Brain injury in battered women. J Consult Clin Psychol. 2003; 71:797–804. [PubMed: 12924684]

23. Popa MS. Violenta domestica si consecintele asupra santatii (domestic violence and its effects on health – published in Romanian). Management in Health. 2009; 13:12–13.

24. Johnson JE, Brunell L. The emergence of contrasting domestic violence regimes in post-communist Europe. Policy Press. 2006; 34:575–595.

25. Duke AA, Giancola PR, Morris DH, Holt JCD, Gunn RL. Alcohol dose and aggression: another reason why drinking more is a bad idea. J Stud Alcohol Drugs. 2011; 72:34–43. [PubMed: 21138709]

26. Norstrom T, Pape H. Alcohol, suppressed anger and violence. Addiction. 2010; 105:1580–1586. [PubMed: 20569229]

27. Gentilello LM. Alcohol and injury: American College of Surgeons Committee on Trauma Requirements for Trauma Center Intervention. J Trauma Inj Infect Crit Care. 2007; 62:S44–S45.

28. Madras BK, Comptom WM, Avula D, Stegbauer T, Stain JB, Westley Clark H. Screening, brief interventions, referral to treatment (SBIRT) for illicit drug and alcohol use at multiple healthcare sites: comparison at intake and 6 months later. Drug Alcohol Depend. 2009; 99:280–295. [PubMed: 18929451]

29. Middleton Cook J, Hahn RA, Kuzara JL, Elder R, Brewer R, Chattopadhyay S, et al. Effectiveness of policies maintaining or restricting days of alcohol sales on excessive alcohol consumption and related harms. Am J Prev Med. 2010; 39:575–589. [PubMed: 21084079]

Table 1

Violent events emergency department – 2009 sex and age distribution

| | Total $n = 380$ n (%) | Intent | | χ^2 | P-value |
		Assault $n = 337$ (88.7%) n (%)	Self-harm $n = 43$ (11.3%) n (%)		
Sex					
Men	295 (77.6)	271 (80.4)	24 (55.8)	13.291	< 0.001
Women	85 (22.4)	66 (19.6)	19 (44.2)		
Age categories (years)				6.364	0.272
0–4	1 (0.3)	1 (0.3)	0 (0.00)		
5–14	8 (2.1)	8 (2.4)	0 (0.00)		
15–24	92 (24.2)	79 (23.4)	13 (30.2)		
25–44	183 (48.2)	162 (48.1)	21 (48.8)		
45–64	79 (20.8)	74 (22.0)	5 (11.6)		
65 +	17 (4.5)	13 (3.9)	4 (9.3)		

Table 2

Assault and self-harm injuries – causes

| | Total n (column %) | Intent | | χ^2 | P-value |
		Assault n (column %)	Self-harm n (column %)		
Total					
Mechanism of injury					
Total[a]	375	333	42	278.574	< 0.001
Struck by or against	309 (82.4)	309 (92.8)	0 (0.00)		
Cut/pierce	28 (7.5)	17 (5.1)	11 (26.2)		
Fall	5 (1.3)	3 (0.9)	2 (4.8)		
Suffocation	7 (1.9)	3 (0.9)	4 (9.5)		
Poisoning	25 (6.7)	0 (0.00)	25 (59.5)		
Unspecified	1 (0.3)	1 (0.3)	0 (0.00)		
Place of occurrence					
Total	380	337	43	58.862	< 0.001
Home	135 (35.5)	102 (30.3)	33 (76.7)		
Residential	10 (2.6)	5 (1.5)	5 (11.6)		
Streets and highways	123 (32.4)	121 (35.9)	2 (4.7)		
Transport area: other	5 (1.3)	5 (1.5)	0 (0.00)		
Industrial or construction area	7 (1.8)	7 (2.1)	0 (0.00)		
Farm	5 (1.3)	5 (1.5)	0 (0.00)		
Recreational area	14 (3.7)	14 (4.2)	0 (0.00)		
Nonrecreational area	9 (2.4)	8 (2.4)	1 (2.3)		
Pub public place	64 (16.8)	62 (18.4)	2 (4.7)		
Countryside work area	4 (1.1)	4 (1.2)	0 (0.00)		
Other	4 (1.1)	4 (1.2)	0 (0.00)		

[a]Mechanism was unknown for five cases.

Table 3

Violent injuries among victims – characteristics

	Age (victim)						
	Child (0–14 years) n (column %)	Adolescent (15–24 years) n (column %)	Adult (25–64 years) n (column %)	Elderly (65 + years) n (column %)	Total n (column %)	χ^2	P-value
Relation victim/perpetrator						46 312	0.001
Spouse or partner	0 (0.00)	2 (2.8)	19 (8.4)	1 (7.7)	22 (6.9)		
Parent	2 (25.0)	0 (0.00)	4 (1.8)	0 (0.00)	6 (1.9)		
Other relative	1 (12.5)	3 (4.2)	19 (8.4)	4 (30.8)	27 (8.5)		
Unrelated care giver	0 (0.00)	0 (0.00)	1 (0.4)	0 (0.00)	1 (0.3)		
Acquaintance or friend	2 (25.0)	35 (49.3)	72 (31.7)	4 (30.8)	113 (35.4)		
Official or legal authority	0 (0.00)	2 (2.8)	4 (1.8)	0 (0.00)	6 (1.9)		
Stranger	2 (25.0)	26 (36.6)	98 (43.2)	3 (23.1)	129 (40.4)		
Other/unspecified relationship	1 (12.5)	3 (4.2)	10 (4.4)	1 (7.7)	15 (4.7)		
Total	8 (100.0)	71 (100.0)	227 (100.0)	13 (100.0)	319 (100.0)		
Context of assault						18 334	0.246
Altercation	2 (25.0)	46 (64.8)	118 (52.0)	8 (61.5)	174 (54.5)		
Illegal acquisition or attempted illegal acquisition of money or property	0 (0.00)	5 (7.0)	25 (11.0)	1 (7.7)	31 (9.7)		
Drug-related incident	0 (0.00)	1 (1.4)	0 (0.00)	0 (0.00)	1 (0.3)		
Sexual assault	0 (0.00)	1 (1.4)	0 (0.00)	0 (0.00)	1 (0.3)		
Gang-related incident	0 (0.00)	0 (0.00)	2 (0.9)	0 (0.00)	2 (0.6)		
Other/unspecified context of assault	6 (75.0)	18 (25.4)	82 (36.1)	4 (30.8)	110 (34.5)		
Total	8 (100.0)	71 (100.0)	227 (100.0)	13 (100.0)	319 (100.0)		
Place of injury						38.279	0.143
Home	3 (33.3)	20 (21.7)	101 (38.5)	11 (64.7)	135 (35.5)		
Residential	0 (0.0)	5 (5.4)	5 (1.9)	0 (0.00)	10 (2.6)		
Roads and highways	1 (11.1)	35 (38.0)	83 (31.7)	4 (23.5)	123 (32.4)		
Transport other	0 (0.0)	3 (3.3)	2 (0.8)	0 (0.00)	5 (1.3)		
Industrial	0 (0.0)	1 (1.1)	6 (2.3)	0 (0.00)	7 (1.8)		
Farm	0 (0.0)	1 (1.1)	3 (1.1)	1 (5.9)	5 (1.3)		
Recreational	1 (11.1)	2 (2.2)	11 (4.2)	0 (0.00)	14 (3.7)		

	Age (victim)						
	Child (0–14 years) n (column %)	Adolescent (15–24 years) n (column %)	Adult (25–64 years) n (column %)	Elderly (65 + years) n (column %)	Total n (column %)	χ^2	P-value
Nonrecreational area	0 (0.0)	1 (1.1)	8 (3.1)	0 (0.00)	9 (2.4)		
Countryside	0 (0.0)	2 (2.2)	2 (0.8)	0 (0.00)	4 (1.1)		
Public place: pub	4 (44.4)	21 (22.8)	38 (14.5)	1 (5.9)	64 (16.8)		
Other	0 (0.00)	1 (1.1)	3 (1.1)	0 (0.00)	4 (1.1)		
Total	9 (100.0)	92 (100.0)	262 (100.0)	17 (100.00)	380 (100.0)		

Table 4

Violent injury – diagnosis by intent

	Intent				
	Assault *n* (column %)	Self-harm *n* (column %)	Total *n* (column %)	χ^2	*P*-value
Type of Injury				213.840	<0.001
No injury diagnosed	2 (0.6)	2 (4.7)	4 (1.1)		
Soft tissue injuries	273 (81.3)	13 (30.2)	286 (75.5)		
Bone and joint injuries	52 (15.5)	1 (2.3)	53 (14.0)		
Brain injury	2 (0.6)	1 (2.3)	3 (0.8)		
Suffocation (asphyxia)	0 (0.0)	1 (2.3)	1 (0.3)		
Poisoning	0 (0.0)	23 (53.5)	23 (6.1)		
Other specified type of injury	7 (2.1)	2 (4.7)	9 (2.4)		
Total	336 (100.0)	43 (100.0)	379 (100.0)		
Body region[a]				227.765	<0.001
Missing	3 (0.9)	2 (4.7)	5 (1.3)		
Head	221 (65.6)	1 (2.3)	222 (58.2)		
Neck, throat	10 (3.0)	3 (7.0)	13 (3.4)		
Trunk	70 (20.8)	3 (7.0)	73 (19.2)		
Upper extremities	23 (6.8)	9 (20.9)	32 (8.4)		
Lower extremities	5 (1.5)	0 (0.0)	5 (1.3)		
Multiple body parts	5 (1.5)	2 (4.7)	7 (1.8)		
Poisonings[b]	0 (0.0)	23 (53.5)	23 (6.1)		
Total	337 (100.0)	43 (100.0)	380 (100.0)		
Positive for Alcohol Use[c]	72 (21.4)	7 (16.3)	79 (20.8)	32.261	<0.001

[a]Body region was missing for five cases.

[b]All body parts for poisonings where collapsed into one category due to miss-coding.

[c]Alcohol was determined from the narrative form from data collection.

Table 5

Victim-perpetrator status – age and sex distribution

	Victim age							Victim sex			
	Child (0–14 years) n (column %)	Adolescent (15–24 years) n (column %)	Adult (25–64 years) n (column %)	Elderly (65 + years) n (column %)	Total n (column %)	χ^2	P-value	Men n (column %)	Women n (column %)	χ^2	P-value
Perpetrator age						150 130	< 0.001			14 550	0.006
Child (0–14 years)	3 (37.5)	0 (0.0)	1 (0.4)	0 (0.0)	4 (1.3)			2 (0.8)	2 (3.3)		
Adolescent (15–24 years)	1 (12.5)	24 (33.8)	19 (8.4)	3 (23.1)	47 (14.7)			39 (15.1)	8 (13.1)		
Adult (25–64 years)	4 (50.0)	24 (33.8)	129 (56.8)	4 (30.8)	161 (50.5)			120 (46.5)	41 (67.2)		
Elderly (65 + years)	0 (0.0)	0 (0.0)	1 (0.4)	2 (15.4)	3 (0.9)			2 (0.8)	1 (1.6)		
Unknown	0 (0.0)	23 (32.4)	77 (33.9)	4 (30.8)	104 (32.6)			95 (36.8)	9 (14.8)		
Total	8 (100.0)	71 (100.0)	227 (100.0)	13 (100.0)	319 (100.0)			258 (100.0)	61 (100.0)		
Perpetrator sex						3085	0.379			20 423	< 0.001
Men	7 (87.5)	69 (97.2)	220 (97.3)	12 (100.0)	308 (97.2)			254 (99.2)	54 (88.5)		
Women	1 (12.5)	2 (2.8)	6 (2.7)	0 (0.0)	9 (2.8)			2 (0.8)	7 (11.5)		
Total	8 (100.0)	71 (100.0)	226 (100.0)	12 (100.0)	317 (100.0)			256 (100.0)	61 (100.0)		