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Mob Justice in South Africa: A comparison of blunt trauma secondary to community and non-community assaults

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ABSTRACT

Background: The phenomenon of extrajudicial "mob justice" and community assault (CA) has been documented in news reports and anecdotes from a number of low- and middle-income countries, but there is little literature on its burden on trauma systems. This study reviews a single center's management of CA victims and compares the spectrum of injuries seen following mob assault with those sustained via other forms of interpersonal violence (IPV).

Methods: Clinical data, injury details, and mortality among injured patients (age≥18) hospitalized in a South African tertiary referral center from 2012-2018 were abstracted. Patients with penetrating injury or missing ISS were excluded. CA was determined at time of admission by either self-designation or by patients' escorts. Univariate analyses compared the presentation and outcomes for CAs and non-CAs.

Results: Overall, CA constituted 5% of total trauma admissions and 8% of IPV-related admissions during the study period. Of 1,323 incidents of blunt injury following IPV, 239 (18%) were CAs. One in two CA victims (n=119, 50%) were struck by an identifiable weapon. Patients injured in CA were more frequently male (97% vs 85%), presented with ISS>15 (28% vs 21%), and had a shock index>0.9 (25% vs 19%) compared to non-CA (all $p<0.001$). Rates of operative intervention, ICU admission, and mortality did not differ (all $p>0.05$). CAs were more likely to be complicated by acute kidney injury (9% vs 1%, $p<0.001$) but less likely to involve neurologic complications (3% vs 10%. $P<0.001$) compared to non-CAs. Acute kidney injury in CA showed a pattern of significant musculocutaneous injury with rhabdomyolysis.

Conclusion: CA contributes considerably to the high rates of IPV in a single South African center. Victims of such assaults sustain more severe injury with unique mechanisms and subsequent complications. This evidence supports the need to strengthen local governance and improve law enforcement efforts to prevent such violence.

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Introduction

"Mob justice," or community assault (CA), has been observed in diverse cultural and historical settings. It takes hold when the population deems local governance and law enforcement as ineffective and untrustworthy. The phenomenon has emerged in many modern post-conflict states [1,2] such as the post-Civil War United States, post-World War II eastern Europe, and Northern Ireland [3]. Historical and modern examples illustrate how this situation can become intractable and continue long past the period of conflict. Extreme social disparities in income, wealth, and employment [4], as well as inadequate policing resources and a general lack of investigative capacity [5] exacerbate the breakdown in trust between communities and police officials [6].

Low- and middle-income countries (LMICs) are more likely than high-income countries (HICs) to grapple with CAs, but the phenomenon's impact on healthcare systems is largely unmeasured [7]. Crowds or groups of vigilantes may humiliate, beat, or even summarily execute CA victims. The number of assailants and context of mob violence likely have implications for the injuries incurred and delays in access to care. A handful of studies in LMICs have looked at the injury patterns and outcomes of CA, but few

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report granular data on injury mechanisms, such as weapons used, or complications. As the surgical community calls for more attention to the surgical and trauma disease burden affecting LMICs [8], further investigation into CA is necessary due to the additional strain it places on health systems with already stretched resources.

Despite the ubiquity of CAs in the form of mob violence in South Africa, there is little literature on the topic [9–11]. Examples from a number of LMICS would suggest that, while South Africa's mob justice problem has unique origins and features, it is not singular [2,5,6,12]. In 1994, South Africa became a democratic country following the end of a harsh, protracted apartheid regime [9]. Over multiple decades, institutionalized racial segregation and state-sanctioned violence eroded trust between communities and law enforcement; and the relationship was characterized by extreme antagonism. Despite efforts to police society more inclusively, high levels of inequality as well as crime and interpersonal violence (IPV) persist. Public skepticism of officials' ability to provide adequate security has seen mob violence and extra-judicial punishment become common in South Africa as justice is tackled at a personal or community level. Using data from a South African trauma center, we aimed to describe the share of CA in the overall burden of IPV. To further characterize its impact, we compared mortality and outcomes for patients injured in CA versus other blunt IPV. Finally, we sought to inform clinicians and public health advocates.

Methods

Setting

Pietermaritzburg Metropolitan Trauma Service (PMTS), Pietermaritzburg, South Africa is the largest academic trauma center in western KwaZulu Natal (KZN) and serves a total catchment population of over three million people. The majority of the population reside in rural areas [13]. Throughout KZN, ambulances are often in short supply, making delays in the transport of trauma victims from the scene common [14]. Over half of trauma cases admitted to PMTS are penetrating trauma, stemming from a high incidence of firearm-related IPV and criminal activities throughout the province. All trauma patients are evaluated by the trauma team. As a tertiary referral center, PMTS is the destination center for most trauma patients but does transfer neurosurgical emergencies to a quaternary referral center.

Data source

The PMTS trauma registry for December 2012 to December 2018 was reviewed. The registry is prospectively maintained using a hybrid electronic medical record (HEMR). It complies with accepted standards of ongoing quality review and staff training [13].

Dual ethical reviews were obtained prior to this study. The Mayo Clinic Institutional Review Board reviewed and deemed the study exempt. The Biomedical Research Committee of the University (BREC) of KwaZulu-Natal granted permission for use of data from the HEMR (BCA221/13).

Patients

All registered patients age ≥18 whose mechanism of injury was assault, gun shot, or stabbing were eligible for inclusion. For our primary aim we included all patients regardless of missing variables or mechanism of injury in order to describe the share of CA cases in the overall burden of IPV. Thereafter, we described only patients with complete data (patients with calculated injury severity scores (ISS)). And blunt injury secondary to IPV. Blunt injury is the most common CA pattern, making it distinct from the relatively high rates of IPV in South Africa from knife and gun violence [11]. Since IPV involving penetrating injury has different injury patterns, severity, and mortality risk [7], we compared patients who experienced purely blunt injuries.

Exposure

Exposure status was defined by whether the assault was a community assault (CA). The registry defines CA as an assault with at least three assailants with reported motive or narrative consistent with CA. Most often, paramedics provide such a narrative since the mob is often present at the scene; in contrast to assaults where assailants typically flee the scene. Thus, CA was determined at time of admission by either self-designation or by patients' escorts.

Data and outcomes

Demographics, injury details, and clinical data were abstracted. Our primary aim was to describe the epidemiology of CA, including the types of injuries, weapons utilized, and share of overall IPV. The primary clinical outcome of interest was in-hospital mortality. Secondary clinical outcomes included need for ICU admission, need for operative intervention, and in-hospital complications.

Statistical analysis

Continuous variables with normal distribution were summarized with mean and standard deviation, while non-parametric continuous variables were summarized with medians and interquartile ranges (IQRs). Categorical variables were summarized with frequency counts and percentages. Patient characteristics, in-hospital mortality, ICU and operative requirements, and in-hospital complications were compared between CAs and non-CAs using χ^2 or Fisher's exact test for categorical variables and by Student *t*-test or Wilcoxon rank-sum test for continuous variables. Reported p-values are from 2-sided tests, with significance set at $P < .05$, and Bonferroni corrections utilized for multiple comparisons. All statistical analyses were performed using STATA 15.1 (College Station, Texas).

Results

Community assault's burden

Overall IPV was reported in 5818 (65%) of 9105 trauma admissions over the study period. CAs were reported in 477 patients, accounting for 5% of all trauma and 8% of IPV-related admissions seen at the trauma center over 5 years, Fig. 1. The majority of CAs involved purely blunt force injury (n=439, 92%), but 38 (8%) patients had either concomitant stab wounds (n=36) or gunshot wounds (n=2).

Comparison of blunt injury sustained in community assaults to non-community assaults

ISS was missing for 200 (46%) of 439 CA patients and 735 (40%) of 1819 non-CA patients who sustained purely blunt injury (p=0.049). Missing ISS score occurred more frequently in the earlier years of the registry 2012-2014, with >99% of missing ISS occurring before 2016 (trend <0.0001). Ultimately, there were 1323 patients with blunt injury and complete ISS data following IPV. We analyzed the injury characteristics and outcomes of these patients.

The majority of victims of blunt force assaults were male (n=1151, 87%) and black (n=1293, 99%). IPV involved identifiable

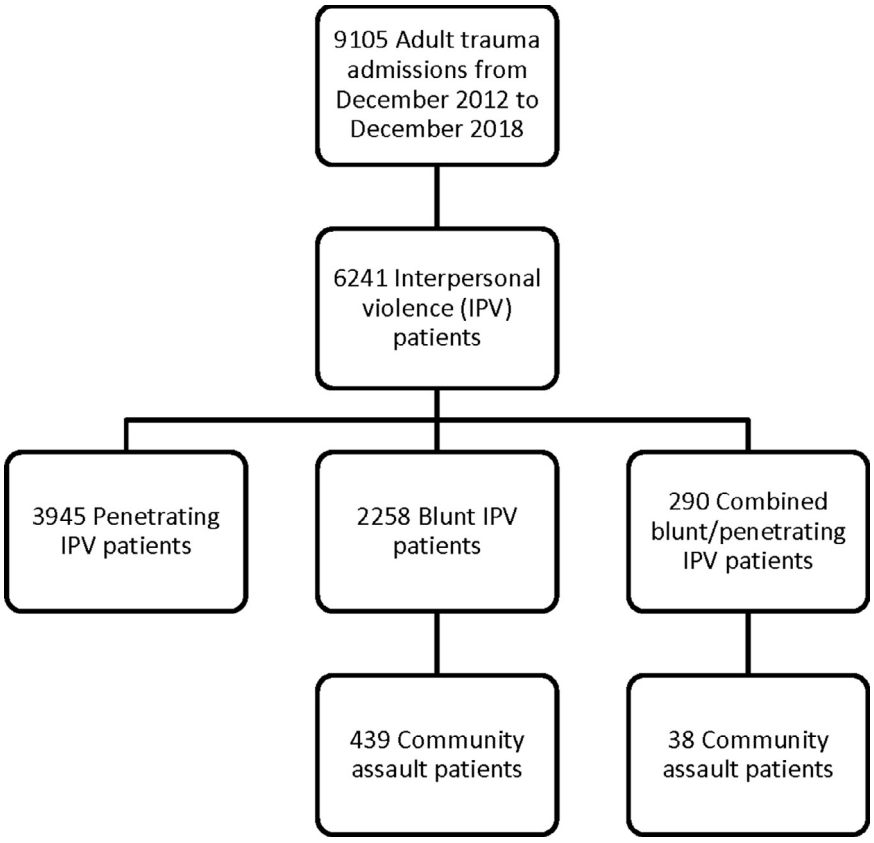


Fig. 1. Community assaults in the context of care for trauma and interpersonal violence patients.

weapons in 662 (50%) patients. Multiple weapons were utilized in 39 (3%) cases of IPV. Of all cases of blunt IPV, 239 (18%) were CAs.

Patients injured in CA were more frequently young and male and did not differ by race, Table 1. Although identifiable weapons were equally likely to be used in CA versus non-CA IPV (50% vs 50%, p=0.93), weapons used differed, Fig. 2. CA victims were more likely to have been struck using sjamboks (p<0.001, Bonferroni-adjusted significance $P=0.007$, Fig. 3) and stones (p=0.039, Bonferroni-adjusted significance $P=0.007$). The median number of body regions injured was greater for CA victims (2 [IQR: 2, 3]) compared to non-CA victims (1 [IQR: 1, 2], p<0.001). Additionally, the pattern of injuries differed among CA victims who were more likely to sustain chest/thorax (37% vs 16%), abdominal (24% vs 11%), extremity (45% vs 20%), and external (40% vs 8%)

Table 1
Demographics and injury details for blunt community versus non-community assaults.

Factor	Level	non-CA	CA	p-value
N		1084	239	
Age, median [IQR]		29 [24, 37]	25 [22, 30]	<0.001♯
Sex, n (%)	Male	920 (85%)	231 (97%)	<0.001✗
	Female	164 (15%)	8 (3%)	
Race, n (%)	African	1059 (99%)	234 (99%)	0.83Δ
	Asian	3 (<1%)	0 (0%)	
	Coloured	5 (<1%)	1 (<1%)	
	White	1 (<1%)	0 (0%)	
Identifiable weapon use, n (%)		543 (50%)	119 (50%)	0.93✗
ISS, median [IQR]		9 [4, 13]	9 [4, 16]	0.005♯
Head and neck injury, n (%)		3 [2, 3]	2 [1, 3]	<0.001♯
Facial injury, n (%)		2 [1, 3]	2 [1, 2]	0.026♯
Thoracic injury, n (%)		2 [1, 2]	2 [1, 2]	0.79♯
Abdominal injury, n (%)		1 [1, 3]	1 [1, 2]	0.63♯
Extremity injury, n (%)		2 [1, 2]	2 [1, 3]	0.014♯
External injury, n (%)		2 [2, 2]	2 [2, 3]	0.003♯
ISS>15, n (%)		223 (21%)	66 (28%)	0.017✗
GCS≤8, n (%)		53 (5%)	5 (2%)	0.056Δ
Shock index>0.9, n (%)		207 (19%)	60 (25%)	0.036✗
RTS, mean (SD)		7.61 (0.63)	7.70 (0.41)	0.044μ

μ Student's t-test.
♯ Wilcoxon rank sum test.
✗ Chi-square test.
Δ Fisher's exact test.

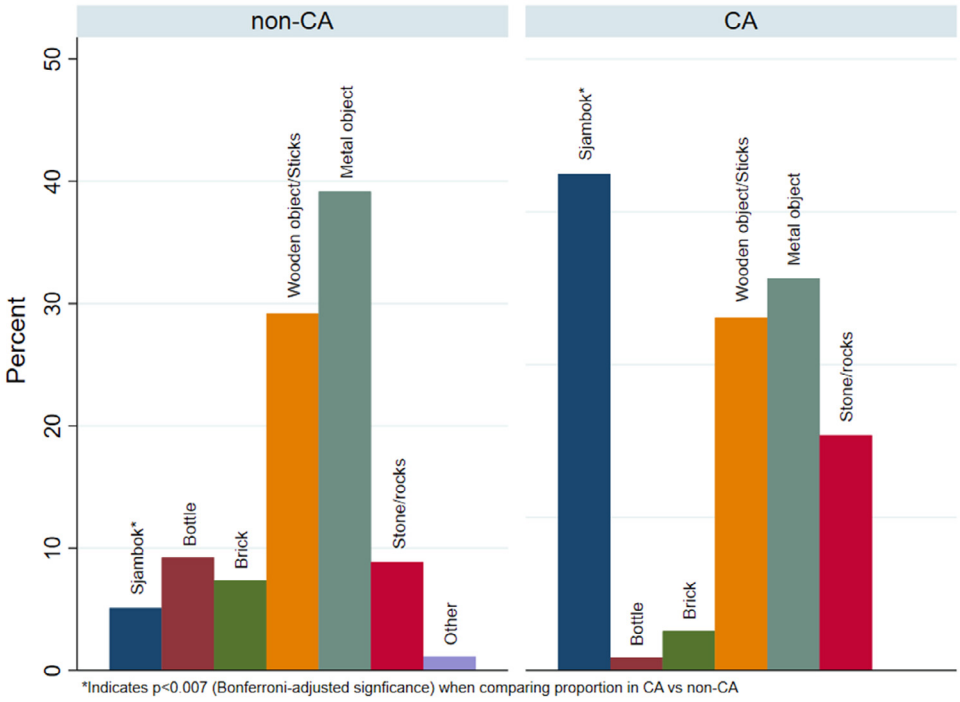


Fig. 2. Weapons utilized in community and non-community assaults.



Fig. 3. Sjambok and injuries sustained during its use.

injuries compared to non-CAs (all p<0.001, Bonferroni-adjusted significance $P = 0.008$). CA victims were less likely to experience head and neck injury (57% vs 76%, p<0.001, Bonferroni-adjusted significance, $P = 0.008$) and had less severe presentations when such injuries occurred (median AIS 2 vs 3, p<0.001, Bonferroni-adjusted significance, $P = 0.008$). Injuries sustained in CA appeared more severe as a larger proportion of CAs presented with ISS>15 (28% vs 21%) and had a shock index>0.9 (25% vs 19%) compared to non-CAs (both p<0.05).

Rates of operative intervention, ICU admission, and mortality did not differ, Table 2 (all p>0.05). CAs were more likely to be complicated by acute kidney injury (AKI) (9% vs 1%, p<0.001,

Table 2
Outcomes of community and non-community assaults.

Factor	Level	Non-CA	CA	p-value
N		1084	239	
Intubation, n (%)		40 (4%)	8 (3%)	0.80[χ]
Surgical intervention, n (%)		74 (7%)	18 (8%)	0.67[χ]
ICU admission		51 (5%)	16 (7%)	0.20[χ]
Referral to higher level of care, n (%)		171 (16%)	21 (9%)	0.005[χ]
Any in-hospital complication, n (%)		157 (15%)	36 (15%)	0.82[χ]
Complication type	Neurologic	105 (10%)	6 (3%)	<0.001[Δ]
	Cardiac	1 (<1%)	1 (<1%)	0.33[Δ]
	Pulmonary	19 (2%)	6 (3%)	0.43[Δ]
	Acute kidney injury	14 (1%)	21 (9%)	<0.001[Δ]
	Gastrointestinal	5 (<1%)	3 (1%)	0.16[Δ]
	Wound	26 (2%)	4 (2%)	0.63[Δ]
	Vascular	3 (<1%)	1 (<1%)	0.55[Δ]
	Iatrogenic	2 (<1%)	4 (2%)	0.012[Δ]
Mortality, n (%)		23 (2%)	5 (2%)	>0.99[Δ]

[χ] Chi-square test.
[Δ] Fisher's exact test.

Bonferroni-adjusted significance $P=0.006$) and but less likely to involve neurologic complications (3% vs 10%. p<0.001, Bonferroni-adjusted significance $P=0.006$) compared to non-CAs. AKI in CA showed a pattern of significant musculocutaneous injury with rhabdomyolysis.

Discussion

This study sought to examine the burden of mob violence at a South African trauma center and compare injuries sustained from CA to those sustained by other forms of blunt IPV. We found that CA accounted for a considerable share of IPV, and its victims sustained serious injuries inflicted by primarily blunt force. Perhaps due to the nature of such assaults, there were significant differences in the types of weapons used against victims. While CA did not confer added mortality risk, patient complications were unique, including high rates of AKI.

Violence remains an important public health issue for all societies, but it is a particular concern in sub-Saharan Africa where IPV rates have increased by 50% from 1990-2013 [15]. It is also estimated that over 90% of deaths due to IPV occur in LMICs [16]. A better understanding of this disease burden and how to avert the resulting death and disability is crucial. South Africa has one of the highest rates of IPV in sub Saharan Africa [17]. Within this burden, our study found that one in five victims of blunt assault were harmed by either a crowd or group of vigilantes. In one post-mortem study of homicides from South Africa, CAs represented 5% of autopsies [11]. A similar pathology study in Tanzania reported that 12.5% of forensic autopsies were CAs [18]. Other studies have not placed CAs in context of their overall trauma burden, making it difficult to compare this finding to other reports or geographic regions. Nevertheless, the epidemiology of CA in our study is similar to other reports of CA in South Africa, demonstrating a male predominance and slightly younger victims [10,11]. Notably, the mortality rate in our study is substantially lower than a report from Chalya et al. in 2014 [12]. Their study in Tanzania found that over half of the CA victims who arrived at the hospital alive died prior to discharge. It is unclear whether this reflects differences in the patterns of CA between the two settings, timing of care, or hospital resources.

Both crime prevention and prosecution are inadequate in South Africa's poorer settlements. In some of these settlements there has been a complete breakdown of the social contract between the police force and the community. The reasons for this are complex and include the legacy of apartheid which entrenched economic, racial and social disadvantage, as well as a mistrust of the police force [9,10]. However the democratic government has not been able to respond effectively to these challenges and in some areas has seemingly lost its ability to enforce law. In this environment, high rates of crime, including IPV, have prompted communities to resort to vigilante justice since they have little faith that perpetrators of IPV will be pursued by law enforcement.

The trauma observed among CA victims often reflects punishment meted out by a group of assailants. CA victims had more severe injuries than patients injured in other forms of IPV. This reflects the fact that multiple assailants assaulted the victim simultaneously. Forgus et al. found similar results when comparing a consecutive series of CA to a convenience sample of other victims of IPV from Khayelitsha township in Cape Town [10]. In autopsy studies of CA victims, blunt objects were most commonly recovered at crime scenes and included stones, wooden sticks, and bricks [11]. Our study found that victims identified weapons used against them fifty percent of the time. One such weapon favored by the assailants included the sjambok, a rod-like whip made out of either animal leather or plastic [19,20]. In this analysis, the sjambok was more commonly utilized in CA compared to non-CA, and it was the most common weapon identified among CA victims. The use of sjamboks for punishment in colonial and apartheid periods may explain its more frequent use in CA [21].

There was a lower incidence of head trauma among CA victims compared to non-CA victims. As a result, it is not surprising that non-CA victims were more likely to be referred since our practice transfers severe neurological trauma to a quaternary center. The only other study comparing CA victims to non-CA victims reported that CA victims were more likely to have a GCS<15 compared to non-CA victims but did not look further into severe neurologic trauma [10]. In this study, CA victims showed a decreased, though not statistically significant, risk of severely depressed GCS on admission. CA victims were less likely to experience neurologic complications and less likely to require neurosurgical intervention compared to non-CA victims. It has been suggested that this may be a direct result of the communities' knowledge of the mortality risk associated with head trauma. CA perpetrators, may be actively avoiding striking the head in order to avoid killing the victim. Alternatively, it could be that those spared neurotrauma are more likely to present and survive, as autopsy studies of CA in South Africa and Tanzania report a high rate of skull fractures and intracranial bleeding [11,12].

The increase in AKI seen after CA probably has two etiologies. First, neglect of victims and the subsequent delay in seeking care contributes to dehydration [10,12,20,22]. Furthermore, there are news reports of mobs obstructing, intimidating, and even assaulting first responders at the scene of CAs [23–25]. In addition, the musculocutaneous damage inflicted by assailants can re-

Table 3
Haddon matrix applied to community assault prevention.

	Host (victim factors)	Vector (perpetrators)	Physical/social environmental factors
Before community assault	-Police identification of community's prime suspect in certain crimes in order to protect individual -Educate perpetrators of crimes regarding risks of community assault	-Educate public regarding justice system -Public health messaging campaigns, e.g. "you might not intend to be a murderer, but you could be"	-Increase the capacity of investigative and judicial system -Work directly with vigilante groups or neighborhood watches, encouraging them to cooperate with police investigations
During community assault	-Provide protection to criminals who come forward	-Separate perpetrators from victim	-Protection of first responders through close coordination with police force
After community assault	-Report and investigate community assaults	-Ensure victim's safety upon returning to community or assist in relocation	-Trauma centers identify communities from which they often see community assaults -Engage community leaders following such mob attacks

sult in rhabdomyolysis and subsequent deposition of pigment into the renal tubules, precipitating renal failure [26]. This combination is particularly potent in sjambok beatings. Our data is in keeping with other authors' observation of myoglobinuria and resulting AKI following sjambok CAs [19,20,27]. The initial management of these victims must include appropriate fluid resuscitation and early referral to a center capable of delivering advanced renal support.

Finally, the true impact of CA in South Africa and across LMICs is likely underestimated in this study and others. In South Africa, one forensic pathology service reported 424 cases of fatal CA out of 8634 homicides reviewed over 10 years [11], and other LMICs in Africa have reported similarly alarmingly rates of such violence. A five-year autopsy study in Tanzania found that over 1000 persons were killed by mobs in Dar es Salaam [18]. The aforementioned study by Chalya et al. reported that the 72% of mob justice victims died pre-hospital [12]. A survey of Kenya's newspapers found that almost 1500 mob killings were reported from 1996-2013 [28,29]. While our work helps clinicians determine what injury patterns and complications to expect for CA victims, there is an even greater need for public health advocacy to improve policing and public trust to discourage such extra-judicial violence.

Ways forward require community-based solutions. We have suggested some interventions in the form of a Haddon matrix in Table 3 [30]. Trauma centers can assist these efforts by identifying communities from which they often see CA victims in addition to their secondary prevention efforts to treat victims. As primary prevention, authors have suggested that some vigilante groups or neighborhood watches could cooperate with the police force, and in doing so, eschew violence as a means of enforcement [31,32]. Another strategy for pre-hospital prevention may be public health messaging, such as "you might not intend to be a murderer, but you could be," similar to "one punch can kill" campaigns in HICs [33].

This work has several limitations, associated with its retrospective nature. Without mortuary data the true burden of CA and IPV will be underestimated as many victims will die in the pre-hospital environment. This casts into doubt the observation of no difference in mortality between CAs and non-CAs, and has implications for the injury pattern described in this study. Although these results are generalizable to South Africa, they have limited generalizability in other LMICs. We have hopefully created a platform to begin discussion and understanding of this phenomenon, and its impacts on trauma care and therapeutics. Further research is necessary to understand the epidemiology of CA across LMICs.

Conclusion

Community-perpetrated assault or 'mob justice' contributes considerably to the high rates of IPV at a single South African center. Victims of such assaults sustain more severe injury with unique mechanisms and subsequent complications. This evidence supports the need to strengthen local governance and improve law enforcement efforts to prevent such violence. Trauma centers may help governments target communities where CAs most commonly occur and continue secondary prevention efforts to treat victims. More research is needed to better understand the scope and nature of this problem across LMICs.

Declaration of Competing Interest

All authors declare no conflicts of interest.

CRediT authorship contribution statement

Michael D Traynor Jr: Conceptualization, Data curation, Formal analysis, Methodology, Writing - original draft. **Grant L Laing:** Data curation. **John L Bruce:** Data curation. **Matthew C Hernandez:** Writing - review & editing. **Victor Y Kong:** Conceptualization, Writing - review & editing. **Mariela Rivera:** Writing - review & editing. **Martin D Zielinski:** Methodology, Writing - review & editing. **Damian L Clarke:** Conceptualization, Methodology, Writing - review & editing.

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