Implementation epidemiology: The study of the frequency, distribution and determinants of effective prevention practice

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Abstract
There is a growing literature demonstrating the limited extent to which quality evidence has led to injury prevention policy action. The innovation challenge now recognised throughout the world is not ‘what works’, but how to ‘make it work’ at the population level. The purpose of this paper is to introduce the concept of ‘implementation epidemiology’ as a methodology that enables the roles of injury prevention research and practice to be quantified within a single analytic process; and thus a methodology for facilitating the translation of injury research evidence to evidenced-based prevention practice. The contribution of ‘implementation epidemiology’ beyond the more traditionally defined scope of the discipline is to extend the definition of epidemiology from ‘the study of the distribution and determinants of health conditions’ to include the empirical measurement and quantification of determinants of implementation effectiveness. In order to consider injury research and practice within one methodological dimension, implementation epidemiology requires first a shift in the public health approach to injury prevention from the traditional proximal risk factor paradigm to a more ecological understanding of injury causation, and then a further shift in the notion of causation to incorporate within the eco-epidemiological models, not just the multilevel risk factors for injury, but also the determinants of widespread uptake of known countermeasures.

Keywords: models; policy; public health; implementation research

INTRODUCTION
The rapid development of new injury prevention knowledge is quickly outstripping society’s capacity to implement it (Peek-Asa & Casteel, 2010). The World Report on Child Injury notes that many of the 830 000 child deaths per year and much of the injury related disability could be prevented if the extensive list of strategies and programmes, that have been shown to be efficacious in research circumstances, were implemented at the population level (World Health Organization, 2008). Road traffic injury is one of the best researched and best understood causes of serious injury, death and disability. “Evidence based interventions are available, yet governments throughout the world are not adopting and implementing them” (Hyder et al., 2012). Over the next 20 years the global burden of road traffic injury is expected to climb in absolute numbers by 65%, moving from the ninth leading cause of world morbidity and death to the 5th leading cause (World Health Organization, 2009, 2012). The single biggest question facing contemporary injury prevention is, “If we know ‘what works’ in research environments, why can we not ‘make it work’ in practice?” (Moller, 2004).
The purpose of this paper is to introduce the concept of ‘implementation epidemiology’ as a methodology that enables the roles of injury prevention research and practice to be quantified within a single analytic process; and thus a methodology for facilitating the translation of injury research evidence to evidenced-based prevention practice. The benefits of our suggested approach are exemplified in the context of the challenges of injury prevention in Africa.

THE RESEARCH TO PRACTICE BLOCK

The literature discussing the nature and aetiology of, and solutions to, the research to practice block is confusing. This confusion stems largely from the fact that most discussants implicitly assume a particular world view then argue a position not on the facts of the case, but on the tautological strength of the unstated assumptions on which their arguments were premised. The confusion is evident even in the differing definitions of key terms used. “Ask ten people what translational research means and you’re likely to get ten different answers” (Butler, 2008). In particular, the nature of ‘an injury prevention programme’, the meaning of ‘research’, ‘practice’, ‘knowledge’, and of the various terms used to describe the process by which ‘knowledge’ is created and applied to support improvements in injury related harm, are all contested terms.

The National Institutes of Health (NIH) is a leader in the current debate, having established a specific programme and substantial funded activity in implementation science (National Institute of Health Research, 2013). The NIH approach is to classify translation and implementation into three main types. The first of these, “bench to bedside”, refers to the process of developing laboratory based knowledge into a clinical intervention. The second is the process of scaling up known efficacious interventions to provide effective programmes for defined populations. The final grouping is where diffusion of innovation is completed and new knowledge is normalised as usual practice. This approach has grown from its roots in the medical model, and contains the underlying assumptions of medical practice. It is an approach most understandable in terms of the development of new drugs and new treatments, and the optimal inclusion of these treatments through existing health service delivery systems.

Similar initiatives have been developing throughout Europe (Travis, 2007). In Britain, for example, the National Institutes of Health Research have established a number of Biomedical Research Centres to push innovative biomedical research into clinical practice that benefits patients within their National Health System (National Institute of Health Research, 2013). Industry and non-government organisations throughout Europe have developed a clear commitment to translation as part of the biomedical research agenda (Alliance for Biomedical Research in Europe, 2012).

Improvements in health arise not only from biomedical research, but also come from changes in social and physical environmental exposures. The success of epidemiology in establishing the relationship between tobacco smoking and disease and in supporting changes in smoking-related social policy is well acknowledged. In an effort to improve translation of new epidemiological findings into policy action the American College of Epidemiology has outlined its understanding of the research to practice process in terms of a model that broadens the clinical perspective (Davis, Peterson, Bandiera, Carter-Pokras & Brownson, 2012). The model is a five-step, linear, unidirectional process that begins with the identification of a high priority, single issue. A story is developed around this issue “using epidemiological or other data” to underpin a “strong, evolving and probably long-term multidisciplinary team approach” (Davis et al., 2012 ). Scientists then reach consensus with stakeholders about the importance of change and finally consider the political and social environments in the context of which changes need to be made. This model recognises that the strategies for implementation are “situational and iterative” (Davis et al., 2012 ).

For the last ten years leading injury prevention researchers have been acutely aware of the problems translating their research findings into policy action, perhaps more acutely than their counterparts in other areas of public health (Hyder, Bloom, Leach, Syed, Peters & Future Health Systems, 2007; Pless, 2004, 2007). This heightened awareness is because the factors involved in preventing injury are largely beyond the jurisdiction of the health sector. The public health approach to
injury prevention requires those interested in health outcomes to engage local governments, schools, transport industries, and workplaces with the principles of injury prevention research, and persuade these stakeholders of the value of complying with suggested improvements in practice. The accumulation of published injury prevention knowledge is becoming a frustration to those not able to see this knowledge being applied in practice. The metaphor of a research to practice block has obvious appeal, and is a term being increasingly used in the injury prevention literature (Bugeja, McClure, Ozanne-Smith & Ibrahim, 2011; Mallonee, Fowler & Istre, 2006; Pless, 2004).

The orthodox explanation of the lack of translation of injury research to practice is based on the description of injury prevention as a four-staged, linear, and rational progress from research-based problem recognition (stage one), through risk factor identification (stage two), then countermeasure development (stage three), and finally (after a shift into the public domain), scaling up and implementing at the population level (stage four) (Sleet, Hopkins & Olson, 2003).

The four-stage, public health model of programme implementation is demonstrated by the most recent state-of-the-art initiative, Road Safety in ten countries (RS-10) (Hyder et al., 2012). This programme is currently being undertaken by a collaboration including the World Health Organization, Johns Hopkins University, the World Bank, the Global Road Safety Partnership, the Association for International Travel, and the World Resources Institute. The RS-10 programme has identified four risk factors (speed, seat belts, helmets, and alcohol) responsible for a large part of the growing number of serious road traffic injuries in lower- and middle-income countries. It aims to address these using a standardised approach involving the implementation in two or more specified sites per country, of “effective, evidence-based, and nationally relevant interventions” (Hyder et al., 2012). The mechanism for ensuring these evidence-based interventions are implemented involves the following components at the national level: a high-level working group of stakeholders; a joint national work plan; a review of road safety legislation; engagement and training of police; and national awareness and safety campaigns by non-government organisations (NGOs) (Hyder et al., 2012).

While the above road safety example has been provided as an illustration of the orthodox view of injury prevention in terms of a staged public health approach, it also exemplifies the difficulties that arise in trying to implement in practice what research has previously shown to be efficacious. The RS-10 programme is about international agencies knowing what works in road safety, and transferring this knowledge to in-country collaborations using a sophisticated communication process. The mechanism for ensuring subsequent national change rests with the high level committee of stakeholders whom it is hoped, are persuaded by the results of the externally funded, small scale, RS-10 demonstration activity.

It can be seen from the RS-10 example, that between stage three and stage four in the public health model the process moves from the restricted research world into the public world in which the research outputs are implemented. The transfer of knowledge is assumed to be a unidirectional process from researchers to implementers, facilitated by good communication (Brussoni, Towner & Hayes, 2006; Poulos, Donaldson & Finch, 2010). Problems with lack of implementation are most commonly perceived simply as breakdowns in this communication, with lack of transfer being fixable simply by improving communications (Davis et al., 2012; Woolf, 2008). Suggested ways of achieving quality communication include the creation of communication opportunities (collaborative forums and interactive exchanges), use of diversified communication media (written, oral, public meetings, electronic and visual), and use of quality communication material and staff trained to communicate effectively (Davis et al., 2012; Mallonee, Fowler & Istre, 2006; Poulos et al., 2010; Woolf, 2008). Improved communication would be based on a more overt acknowledgement of the systems and processes involved in translating efficacious interventions into widespread use (Green, 2006; Pless, 2004, 2007; Poulos et al., 2010; Tran, Hyder, Kulanthayan, Singh & Umar, 2009), and a recognition of the importance of selecting the most appropriate countermeasures for the implementation context (Ogilvie, Craig, Griffin, MacIntyre & Wareham, 2009).
While the translation of research to practice was originally described as a linear process, it has more recently been recognised as an iterative process where the monitoring of changed practice feeds back into further research activity (Greenspan & Noonan, 2012). The Canadian Institute for Health coined the term Knowledge Transfer and Exchange (KTE) to describe the interactive process where research to policy action is best achieved by means of an interchange of knowledge between those who create and disseminate the knowledge and those who use the knowledge to improve health (Lomas, 2000a, 2000b, 2007). The main argument in this body of literature is that the breakdown in the transfer of knowledge from research to practice is a result of a simple disjunct between the type of evidence generally developed in research settings and the evidence required to make things work in real world contexts (Glasgow, Lichtenstein & Marcus, 2003; Hanson, Finch, Allegrante & Sleet, 2012). Bidirectional communication allows for practice-based evidence to support evidence-based practice to enable a better fit between the knowledge and the practice needs (Green, 2006; Hyder, 2007; Lavis, Oxman, Lewin & Fretheim, 2009). The translation process is as much one in which practitioners and policy makers ‘pull’ required information from a variety of sources, including scientific research, as it is one where researchers ‘push’ the results of their research onto a receptive audience (Bugeja, McClure, Ozanne-Smith & Ibrahim, 2011).

A more extreme version of the above explanation for research to practice block is that the problem arises not because of a simple disjunct between the type of evidence created and the type required, but that there is a complete disjunct between the world views of researchers and those of the communities who implement the knowledge. “It is not just that we do not understand each other, we are at cross purposes” (Hanson et al., 2012). Even at this extreme however, communication is provided as a solution. What we need is not a monologue from researchers to practitioners, but a dialogue; “researchers, practitioners, policy makers and community engaging in conversation in humility and an open mind” (Hanson et al., 2012). If the orthodox position can be likened to ‘shouting louder across the divide’, this approach could be described as ‘listening harder across the divide’.

Hanson and colleagues (2012) argue that the solution to the implementation block is to integrate the experience from the full range of people responsible for effective prevention activity (Hanson, Allegrante, Sleet & Finch, 2012). This involves a collaboration between the citizens for whom the prevention systems are designed and the policy makers, researchers and practitioners who are involved in the design and implementation phases (Greenspan et al., 2012; Hanson, Hanson, Vardon, McFarlane, Lloyd, Muller & Durrheim, 2005; Lawrence, 2010; Sleet, Mercer, Hopkins Cole, Shults, Elder & Nichols, 2011).

INJURY PREVENTION RESEARCH AND PRACTICE

Injury research is the activity undertaken for the purpose of generating new knowledge about the nature and extent of the injury problem, its causes and its solutions (McClure, Stevenson & McEvoy, 2004). Descriptive research answers the ‘what’, ‘where’, ‘when’, ‘who’, ‘how much’, and ‘how many’-type questions. This covers the nature, extent, and frequency of a defined entity.

Depending on the nature of the question to be answered, qualitative or quantitative research methods are used. Qualitative methods can be used to answer the ‘what/who’-type questions (Ameratunga, 2004; Turner & McClure, 2004). Qualitative methods can ascertain, for example, the acceptability of particular interventions to related groups, and the extent to which the interventions are affordable, accessible, and sustainable (Ameratunga, 2004). Quantitative methods are generally used to answer the ‘how much’, ‘how many’ and ‘why’-type questions.

Aetiological or causal research for the most part assumes a deterministic/probabilistic belief that things happen because of preceding events or circumstances, without which the consequent would not have occurred. These preceding events are called component causes and relate to the injured person, the nature of the energy exchange, or the environment in which this energy exchange occurred. Thus, aetiological research aims to identify the causes of an event or condition, and
estimate the types and magnitudes of the relationship between the cause and the outcome (McClure, Davis et al., 2010). Component causes may relate to individual or group level data, and may be products of other causes that preceded them. In a retrospective investigation, the actual causes of an event can be described. However, what injury research is really about is not the history of a specific event, but learning from observation to make generalisable statements that can be applied to other circumstances where the outcome has not yet occurred. Research is thus not so much about historical causes, but about relationships that may suggest causes, or potential causes for future events (McClure, Hughes et al., 2010).

Elements of a causal set that occur as conditions or attributes in non injury situations are termed ‘risk factors’ as these factors increase the probability of injury. Risk factors closely associated with the energy exchange process are called proximal risk factors and the contextual factors that support the existence of the proximal factors are referred to as distal determinants. ‘Protective factors’, those factors which decrease the risk (or probability) of a consequent injury outcome, such as seat belts to mitigate the risk of road traffic injury, are also considered as part of the causal set. Injury prevention practice is the process of reducing the prevalence of risk factors, and maximising protective factors to reduce the population level occurrence of consequent injuries (McClure, Hughes et al., 2010).

The traditional approach to the prevention of injury emphasises the importance of applying countermeasures which are proximally related to energy exchange (Haddon, 1970). This can be exemplified in the context of pedestrian injuries in sub-Saharan Africa (Mackenzie, Seedat, Swart & Mabunda, 2008). Following Haddon’s principle of spatially separating the energy source from the target host, an appropriate countermeasure to address the risk of pedestrian injury is to construct pedestrian pathways alongside major roads. Haddon’s strategies also suggest a range of other appropriate passive countermeasures such as pedestrian crossings, foot bridges, lighting and curbing at intersections and reducing total energy by decreasing speed limits through pedestrian zones (Ribbens, Everitt & Noah, 2008). When setting out to minimise pedestrian injury-related harm, it is important to consider multiple countermeasures that can be implemented using a range of strategies. This integrated package is what is traditionally considered to be ‘an injury prevention programme’ (Brussoni et al., 2006; Hyder et al., 2012).

An injury prevention programme in this classic sense is a circumscribed set of countermeasures delivered using a specific set of strategies to a target population. To be effective, the programme needs to engage policy makers, legislators and enforcement agencies, advocates, social marketers, behavioural change agents, and community members themselves (Howat, Cross & Sleet, 2004). The required intensity of a public health programme makes it hard to capture sufficient attention and resources to achieve success (McClure, Hughes et al., 2010).

The more important problem however is that injury prevention programmes are not simply scaled up manifestations of the research projects which demonstrated the efficacy of the relevant countermeasures (Bugeja et al., 2011; Hanson et al., 2012; Hawe, Shiell & Riley, 2009). Efficacy studies are contrived activities, in which consenting participants undertake managed processes organised at the individual level. Implementation of an intervention in an efficacy study is tightly controlled within the protocols and resources available to the research team. Population-level injury prevention programmes, on the other hand, are complex social policy interventions, delivered to non-consenting members of the public using existing social infrastructures. Thus interventions are not isolated activities, but situationally-dependent events within larger system dynamics (Bugeja et al., 2011; Hanson et al., 2012; Hawe et al., 2009).

Injury prevention at the societal level needs to consider all causes in context and target the whole of society, not particular aspects of it, in the intervention process (McClure, 2012). If injury prevention is to change societal processes that increase the injury-related health and well-being of its citizens, then it cannot be “projectised” into simple interventions “delivered” to circumscribed community groups, it must instead be an activity undertaken by those responsible for the entire social system (McClure, Davis et al., 2010). Such a social policy approach will ensure that in all areas in which injury occurs,
human wellbeing is recognised as an essential performance requirement – and all those responsible for a given attribute of an individual or environment will hold themselves accountable for the extent to which this attribute puts human wellbeing at risk (McClure, 2012).

IMPLEMENTATION EPIDEMIOLOGY

Implementation epidemiology can be defined as the study of the frequency, distribution and determinants of effective prevention practice. It follows from the above account of injury prevention practice that injury prevention research needs to be able to describe and quantify not just the biomedical pathways that are included within injury causal models, but also the political, social, and environmental risk factors relevant to the injury prevention process, together with the barriers and facilitators to intervention success. Implementation epidemiology allows for the contemporary notions of complex interactions between stakeholders with different premises and motivations, while at the same time combining this variety of drivers into a single scientific model of cause and effect. The innovative strength of implementation epidemiology is that it highlights opportunities to intervene upon the risk and prevention factors for intervention success, rather than simply (as epidemiology usually does) describing the risk factors for injury and leaving all considerations regarding the implementation process outside of the researchers’ scope.

In the 1970s Haddon and his colleagues identified energy as the agent that caused injury in road crashes and advocated for use of seat belts as a countermeasure to prevent the transfer of energy from the car to the driver at the time of crash (Haddon, 1970). The remarkable ineffectiveness of seat belt programmes in the United States (approximately 64% population use by 1995) (Houston et al., 2005), compared with countries like Australia (greater than 95% population use by 1995) (ARUP Transportation Planning, 1995), is a clear demonstration of the fact that availability of efficacious interventions is not sufficient, in itself, to ensure programme success.

Using implementation epidemiology the differences between the United States and Australia that explained the differences in community seat belt wearing rates over the last half century, could have been identified and addressed. Between-country differences in seat belt wearing rates relate to the underlying contexts, policy development processes, policy implementation processes, resulting policy action and community response. Until we describe and understand the roles of these social structures with respect to each of the interventions bundled into programmes like RS-10, we will not be able to ensure effective implementation of what we know works in road safety.

The underlying contexts of seat belt wearing rates in a community relate to the economic, social, political and cultural norms of the country. Seat belt policy development is influenced by the specific features of the community groups, expertise, champions, and the way the media operates. Policy implementation depends on political will, competing priorities, available resources, and nature of the public support. Any policy action following the passing of seat belt legislature requires police capacity to enforce, available procedures for enforcing officers to follow, adequate availability of seat belts, opportunity for fitment, and supporting media engagement. Community response requires awareness, acceptance, and individual-level capacity on the part of road users to comply.

ILLUSTRATION CASE STUDY: IMPLICATIONS AND OPPORTUNITIES FOR AFRICA

Throughout Africa, traffic related injury is recognised as a public health problem of major importance. The road traffic death rate in South Africa is estimated at 43 per 100 000, which is twice the world average (Suffla, Van Niekerk, Bowman, Matzopoulos & Seedat, 2008). The death rate across Africa is 32.2 per 100 000, (World Health Organization, 2009) and in contrast to the trend observed in high-income countries/regions, there is a substantial rise in road traffic death numbers and rates since the 1970s (World Health Organization, 2004).
Across the continent, there is an emerging political will to support implementation of definitive solutions to address the problem of traffic related injury. The need for a multisectoral response involving partnerships with all levels of government, NGOs, community groupings, and citizenry, is well recognised. The need to develop coordinated policies that integrate effective strategies with activities to strengthen underlying macroeconomic and social structures is an accepted practice (Suffla et al., 2008). Evidence-based polices exist, and can be implemented. Policies of different types are currently being implemented in different places across the continent. To a greater or lesser extent these will be successful. Future activity will be contingent on knowledge obtained from the present.

Now is the time to measure, and compare between jurisdictions, the extent to which this range of policies and processes have been implemented, and the extent to which they have been effective. Assessment of the effectiveness of community driven components, local contexts and the relationship between area-level and individual-level exposures cannot be accommodated using classic epidemiological designs such as randomised controlled trials (Davey, 2012; McClure, Davis et al., 2010; Rychetnik, Frommer, Hawe & Shiell, 2002; Sanson-Fisher, Bonevski, W & D’Este, 2007). Implementation epidemiology, in describing the frequency, distribution and determinants of effective injury prevention practice, is the way evaluation can be achieved. Responsibility for undertaking this evaluation lies collectively with the citizens, policy makers, researchers and practitioners engaged in the design and implementation of the prevention activity (Greenspan et al., 2012; Hanson, Hanson, Vardon, McFarlane, Lloyd, Muller & Durrheim, 2005; Lawrence, 2010; Sleet, Mercer, Hopkins Cole, Shults, Elder & Nichols, 2011).

Implementation epidemiology can enable the description throughout the continent of all factors related to causation of road traffic injury, at all levels of the web of causation. Particular attention can be focused on the underlying determinants, and structural factors that maintain the situations and precipitant events that increase or decrease the risk of road traffic injury. Outcome factors, when measured, will provide the evidence for the effectiveness of implementation of policies and changed practices. The resulting information will elucidate the causal pathways of change. In order to achieve this a whole of Africa collaborative effort is needed that documents the transition processes currently underway, to provide the evidence, to feed back into those same transition processes, suggestions for improving their effectiveness. Implementation epidemiology can be used now to measure and compare between jurisdictions the extent to which these range of current policies and processes have been implemented, and the extent to which they have been effective.

CONCLUSIONS

There are several establishment steps in the implementation epidemiological approach. First, we need to change our understanding of what an injury prevention programme is to include a more ecological understanding of injury prevention practice. This requires the inclusion of underlying risk factors as well as proximal risk factors in the epidemiological model of injury causation. Second, we need to extend the research process throughout the entire research to practice continuum so research is made integral to all efforts of implementation. This is achieved by including within the eco-epidemiological model of causation, the interventions themselves, and the factors that are barriers and facilitators to intervention success. Finally, we need to ensure the questions that are being asked by researchers are the questions for which the implementers need answers if they are to achieve their goals. The structure in which the implementation is to be conducted needs to be as important a consideration in determining research design as the abstract knowledge provided by discipline-based researchers.

Implementation epidemiology is a methodology that enables the roles of injury prevention research and practice to be quantified within a single analytic process and thus, a means of facilitating the translation of injury research evidence to evidenced-based prevention practice.
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The severity of violence against women by intimate partners and associations with perpetrator alcohol and drug use in the Vhembe district, South Africa

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Abstract
Substance use is cited as a major contributing factor to intimate partner violence in South Africa. The aim of the study was to assess the association between the frequency and severity of several types of intimate partner violence against women, who have been granted a protection order, and the use of alcohol and illicit drug use by perpetrators. Using systematic sampling, 268 women (18 years and older), who had consecutively received a protection order in the Vhembe district in South Africa, were assessed by a research assistant. The results indicate that these women reported perpetrators 34% of whom did not have a drinking problem and no drug use in the past three months, 31.3% with problem drinking only, 4.1% drug use only, and 30.6% with problem drinking and drug use in the past three months. Multivariate logistic regression found that having a partner with problem drinking only (OR = 4.14, CI = 2.02–8.51) and having a partner with problem drinking and drug use (OR = 2.77, CI = 1.36–5.65) were associated with greater physical intimate partner violence. Having a partner with problem drinking and drug use (OR = 2.80, CI = 1.35–5.79) was associated with an increased psychological intimate partner abuse. Problem drinking and drug use among male partners is a strong determinant of physical intimate partner violence among battered women in South Africa. Intimate partner violence prevention measures should address reduction of problem drinking and drug use among men.

Keywords: physical violence, psychological abuse, stalking, intimate partner, problem drinking, drug use, South Africa

BACKGROUND
Both alcohol misuse and intimate partner violence (IPV) are significant public health problems in South Africa. The use of alcohol in South Africa is among the highest in Africa, with a total adult per capita consumption of 9.5 litres of pure alcohol per year (WHO, 2011). High hazardous or harmful alcohol use has been found among alcohol users (Rehm et al., 2003; Schneider et al., 2007), with a per capita consumption of 34.9 litres pure alcohol per year (men 39.6l, women 23.8l) among people that drink alcohol (WHO, 2011). In South Africa interpersonal violence is the second highest contributor to the burden of disease after HIV/AIDS (Norman et al., 2007). IPV accounts for 62.4% of the total interpersonal violence burden on females (Joyner & Mash, 2012). More women are killed by their current or ex-intimate male partner in South Africa than in any other country with a rate of 8.8 per 100 000 women (Abrahams, Jewkes, Martin, Mathews, Vetten & Lombard, 2009). In a nationally representative study of 1 229 married and cohabiting women, a prevalence of 31% intimate partner

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violence was found (Gass, Stein, Williams & Seedat, 2010), and a study on physical violence among South African men found that 27.5% reported perpetration of violence in their current or most recent partnership (Gupta et al., 2008).

Various studies found that male problems with alcohol and/or illicit drug use can be associated with an increased risk of intimate partner violence. Ugandan women whose partners often got drunk were six times more likely to report physical partner violence compared to those whose partners never drank alcohol (Tumwesigye, Kyomuhendo, Greenfield & Wanyenze, 2012). In a cross-sectional survey in Nigeria a history of alcohol consumption by a partner was significantly associated with reports of physical violence (Balogun, Owoaje & Fawole, 2012). In a survey among men in South Africa perpetration of violence was correlated with a greater likelihood of problematic substance use (Dunkle et al., 2006); in a survey in Bangladesh, alcohol and drug use were predictive of intimate partner violence perpetration (Sambisa, Angeles, Lance, Naved & Curtis, 2010); and in a survey among US couples, male alcohol-related problems were associated with increased risk of moderate and severe male intimate partner violence (Cunradi, Caetano & Schafer, 2002). In longitudinal studies conducted by Reingle, Staras, Jennings, Branchini and Maldonado-Molina (2012), it was found that adolescent marijuana use, particularly consistent use throughout adolescence, was associated with perpetration or both perpetration of and victimisation by intimate partner violence in early adulthood. Fals-Stewart, Golden and Schumacher (2003) found that of the psychoactive substances examined, the use of alcohol and cocaine was associated with significant increases in the daily likelihood of male-to-female physical aggression. Among men in a batterers’ intervention programme, Moore and Stuart (2004) found that relative to non-substance users, substance users scored significantly higher on all measures of violence perpetration. Several studies also seemed to show that drug use, as reported by the perpetrators, was a stronger predictor of intimate partner violence than were alcohol problems in perpetrators (Feingold, Kerr & Capaldi, 2008; Mattson, O’Farrell, Lofgreen, Cunningham & Murphy 2012; Stuart, Temple, Follansbee, Bucossi, Hellmuth & Moore, 2008). In a study among women presenting for protective orders or to file assault charges, physical violence was higher for women with perpetrators who used drugs only compared with perpetrators who used alcohol only, and stalking was higher for perpetrators who used alcohol and drugs compared with perpetrators who did not use alcohol or drugs (Willison et al., 2000).

The South African Domestic Violence Act of 1998 includes

(a) physical abuse;
(b) sexual abuse;
(c) emotional, verbal and psychological abuse;
(d) economic abuse;
(e) intimidation;
(f) harassment;
(g) stalking;
(h) damage to property;
(i) entry into the complainant’s residence without consent, where the parties do not share the same residence; or
(j) any other controlling or abusive behaviour towards a complainant, where such conduct harms, or may cause imminent harm to, the safety, health or well-being of the complainant. (Republic of South Africa, 1998)

Abused women seek assistance to end the violence in a variety of ways including a court order of protection. Protection orders, both temporary and permanent, are public documentation that abuse has occurred and, if the protection order is violated, the assailant is subject to criminal prosecution (Republic of South Africa, 1998). In 2009/2010, nationally, 291,546 persons applied for a protection order in South Africa; more than half (58.2%) were granted a protection order and 21.2% withdrew the protection order (Gender Links, 2010). In an analysis of 600 applications for protection orders from three magisterial jurisdictions in the Western Cape, it was found that 78% of applications were brought by women.
against men. Female applicants applied for protection from female respondents in 5.7% of the applications, 2.3% of the applications were made by males against males, and the number of men seeking protection orders against women was 13.8% (mostly applications for “counter protection orders”) (Artz & Smythe, 2005). Further, an analysis of a sample of protection order applications in the Western Cape revealed that the most frequent abuses reported were emotional/verbal/psychological, followed by physical abuse, intimidation, economic coercion, harassment, damage to property, sexual, stalking, entry without consent and other (Artz, 2004).

The highest prevalence of domestic violence in South Africa has been reported in the Vhembe district in the Limpopo Province, with 2553 cases in the first quarter of 2012 (Limpopo Provincial Department of Social Development, 2012). Various other studies have described the nature and extent of intimate partner violence in the Vhembe district (Akinsola & Ramakuela, 2009; Madu, Ndom & Ramashia, 2010; Madzimbalale & Khoza, 2010; Managa, Pengpid & Peltzer, 2007). Previous studies found a high frequency of intimate partner violence among women with protection orders: with the violence perpetrated reported as physical violence (96.3%), sexual violence (26.5%) and stalking (54.0%) (Logan, Walker & Shannon, 2008).

Of the women and men who apply for an interim protection order in the Western Cape (depending on the different population groups) 62–73% reported physical violence, 89.5–100% verbal abuse, 57.1–61.5% psychological/emotional abuse, 21.4%–38.2% economic abuse and 7.1–11.4% sexual abuse (Vogt, 2007). Using data from the Severity of Violence Against Women Scale (SAVAWS), several studies have found high mean scores of the different forms of intimate partner violence among women with protection orders (Gist et al., 2001; McFarlane, Willson, Lemmey & Malecha, 2000; McFarlane et al., 2004).

The aim of the study was to assess the association between the frequency and severity of several types of intimate partner violence against women, who have been granted a protection order, and the use of alcohol and illicit drug use by in a sample of women who have been granted a protection order in the Vhembe district in South Africa.

**METHODS**

**Study design and setting**

A cross-sectional, descriptive and analytical study was conducted focusing on the women who have been granted a protection order in two magisterial courts in Vhembe district. Vhembe is one of the five districts in the Limpopo province of South Africa. It is the northern most district of the country and comprises four local municipalities, one of which is the Thulamela municipality, which has a population of 618 462, where the two courts that is the focus of this study are located (Statistics South Africa, 2012).

**Sample and procedure**

Study participants were recruited at the courts after they have obtained a civil protective order, also called a domestic violence order. This took place in a seven month period, between May 2011 and November 2012. Two court jurisdictions (one semi-urban and one urban) in Vhembe district, South Africa, were utilised for recruitment. Domestic violence officers, working in the magistrate’s court, informed potential participants about the study and referred them to a female research assistant at the court. Written informed consent was obtained from all the participants in the study, who met the following inclusion criteria: (1) female, (2) 18 years of age and older, (3) obtained a protection order against a male partner, and (4) willingness to give informed consent.

Following an informed consent procedure, the female research assistant verbally administered a questionnaire. Instruments were available in English, Tsonga and Venda and were administered in a private room without the partner or other individuals present. The researchers adhered strictly to the research principles with regard to research on violence.
against women (World Health Organization, 1999) such as the safety of respondents and the researcher, and protecting confidentiality to ensure the women’s safety and data quality. Participants were assured that their responses would be confidential and anonymous and that refusal would not jeopardise the treatment they receive at the court. Referral information regarding counselling or legal assistance was supplied in writing to any participant requesting it. All instruments were translated into Tsonga and Venda using standard backward and forward methods. The female research assistants (social science graduates) had been extensively trained prior to conducting any interviews, specifically on interview protocols and potential issues that could arise when dealing with situations involving intimate partner violence. Using systematic sampling, in all 268 women consecutively receiving a protection order were assessed by a female research assistant. Recruitment from the courtroom population yielded a high participation rate. Of the 302 women approached at the courts, 268 (88.7%) agreed to participate. The study protocol was approved by the Human Sciences Research Council Ethics Committee (REC 3/18/11/09), Department of Justice and Constitutional Development, and the Limpopo Department of Health and Social Development.

Measures

The SAVAWS is a 46-item instrument designed to measure threats of physical violence (19 items) and physical assault (27 items) (Marshall, 1992). It contains 46 acts categorised as follows:

(a) threats of violence, which includes symbolic violence (e.g. threw or broke an object), mild violence (e.g. made threatening gestures), moderate violence (e.g. threatened to destroy property) and serious violence (e.g. threatened with a weapon);
(b) actual violence which describes mild violence (e.g. pushed or shoved), minor violence (e.g. twisted arm), moderate violence (e.g. hit with an object) and serious violence (e.g. beat up); and
(c) sexual violence dimension (e.g. physically forced to have sex).

For each item, the woman responds using a 4-point scale to indicate how often the behaviour occurred (1 = never, 2 = once, 3 = 2–3 times, 4 = 4 or more times). The possible range of scores was 19 to 76 for the threats of abuse or psychological abuse and 27 to 108 for physical violence (Wiist & McFarlane, 1998a, 1998b). For this study, women were asked if the SAVAWS items had occurred within the last 90 days. The Cronbach’s alpha reliability coefficient of the SAVAWS for this study was 0.97.

The Stalking Victimization Survey (SVS), a 17-item yes/no questionnaire, was used to document the frequency and type of stalking engaged in by the perpetrator. The initial stalking survey instrument consisted of 7 items (e.g. being followed or spied on, sent unsolicited letters or written correspondence or finding the perpetrator standing outside one’s home, school, or workplace) developed by Tjaden and Thoennes (2000). Ten items were added from the Sheridan (1998) HARASS (Harassment in Abusive Relationships: A Self-report Scale) instrument to form the overall 17-item instrument used here. Examples of items added include threats by the abuser to harm the children or to commit suicide if the woman left the relationship, leaving threatening notes on the woman’s car, and threatening her family (Malecha, McFarlane, Gist, Watson, Batten, Hall & Smith, 2003; Sheridan, 1998). For this study, women were asked if the SVS items had occurred within the last 90 days. The possible score range was 0 to 17. The Cronbach’s alpha reliability coefficient of the SVS for this study was 0.89.

Alcohol use was assessed with the Alcohol Use Disorder Identification Test– Consumption (AUDIT-C) questionnaire, a measure of consumption of alcohol (i.e. the frequency of drinking, the quantity consumed at a typical occasion). The Cronbach’s alpha reliability coefficient of the AUDIT-C for this study was 0.82.

Perpetrator substance use was assessed via two questions about substance use, taken from the Dander Assessment Scale (Campbell, 1986). The two questions asked, were as follows:
(a) Thinking about this same intimate partner in the past three months, has he used illegal drugs in the past three months? By drugs, I mean “dagga” (cannabis) or street drugs such as amphetamines, “Tik” (the slang name given to the stimulant drug, methamphetamine), cocaine or “crack”.

(b) Thinking about this same intimate partner in the past three months, is he an alcoholic or problem drinker?

Each question was answered with “yes” or “no” (Willson et al., 2000).

Sociodemographic items assessed included, age, marital status, living with partner, education, children, employment status and subjective economic household situation (rated from 1 = Not enough money for basic things like food and clothes to 4 = Some money for extra things such as going away for holidays and luxury goods).

Data management and analysis

The data were entered using the Statistical Package for the Social Sciences (IBM-SPSS) for Windows software application programme version 19.0. Data from the questionnaires were entered manually and verified. The verification process included double data entry of all questionnaires and its fields, doing programmed range checks by computer to identify outlying values, checking for missing values, and checking for inconsistencies in the data.

Data were analysed using IBM-SPSS. Frequencies, means, and standard deviations were calculated to describe the sample. Data were checked for normality distribution and outliers. The interaction between predictor variables was also examined and it was found that none of the variables had a Variance Inflation Factor (VIF) value above 2.5. For the purpose of this analysis, the scores of three types of intimate partner violence (physical violence, psychological abuse and stalking) were dichotomised into low and high by using the median as a cut off. Adjusted odds ratios and 95% confidence intervals were calculated from multiple logistic regression models to examine independent associations between demographic and partnership characteristics, and perpetrator substance use variables and types of severity of intimate partner violence victimisation.

RESULTS

Sample characteristics

The average age of the participants was 28.8 years of age (SD = 8.0). All were from the African black population group. The majority of women (76.3%) had at least one child residing with them, and on average the women had two children (SD = 1.3). The women had received an average of 9.8 years of education (SD = 3.1). Most (58.8%) of the women had a low household income. In terms of participants’ relationships with their abusive partners, 29.2% were married, 13.9% cohabiting and 37.5% were living with their perpetrator at the time of the assessment. Almost a third (58.2%) of the women reported stalking by the intimate partner, and all reported some form of psychological abuse, physical violence and danger (see Table 1).

Table 1: Sample characteristics (N = 268)

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (range 18–62)</td>
<td>28.8</td>
<td>8.0</td>
</tr>
<tr>
<td>Formal education in years (range 0–17)</td>
<td>9.8</td>
<td>3.1</td>
</tr>
<tr>
<td>Children at home</td>
<td>196</td>
<td>76.3</td>
</tr>
<tr>
<td>Currently employed</td>
<td>68</td>
<td>26.8</td>
</tr>
</tbody>
</table>
Economic household situation

<table>
<thead>
<tr>
<th>Description</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not enough money for basic things like food and clothes.</td>
<td>157</td>
<td>58.8</td>
</tr>
<tr>
<td>Have money for food and clothes, but short on many other things (89, 33.3%)</td>
<td>110</td>
<td>41.2</td>
</tr>
<tr>
<td>We have most of the important things, but few luxury goods (20, 7.5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some money for extra things such as going away for holidays and luxury goods (1, 0.4%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Marital status

<table>
<thead>
<tr>
<th>Description</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married (78, 29.2%)/Cohabitating (37, 13.9%)</td>
<td>115</td>
<td>56.9</td>
</tr>
<tr>
<td>Single (136, 50.9%)/Divorced/separated (16, 6.0%)</td>
<td>152</td>
<td>43.1</td>
</tr>
</tbody>
</table>

Currently living with perpetrator 98 37.5

Current (past month) alcohol use 9 3.4

Intimate partner violence

<table>
<thead>
<tr>
<th>Psychological abuse</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (scores 9–21)</td>
<td>82</td>
<td>33.3</td>
</tr>
<tr>
<td>Medium (22–33)</td>
<td>91</td>
<td>37.0</td>
</tr>
<tr>
<td>High (34–66)</td>
<td>73</td>
<td>29.7</td>
</tr>
</tbody>
</table>

Physical violence

| Low (scores 11–29)                          | 83  | 33.6|
| Medium (30–62)                              | 88  | 35.6|
| High (63–74)                                | 76  | 30.8|

Stalking

| Low (scores = 0)                             | 105 | 40.2|
| Medium (1–5)                                 | 86  | 33.0|
| High (6–18)                                  | 70  | 26.8|

Perpetrator’s alcohol and drug use

For this analysis, four groups were formed: not having a drinking problem and no drug use in the past three months (34%), problem drinkers only (31.3%), drug users only (4.1%), and problem drinkers and drug users (30.6%) in the past three months. Regarding the severity of physical violence and severity of psychological abuse, the categories of perpetrator “problem drinker and drug user” (59.3% and 43.3%, respectively) and “problem drinker only” (58.6% and 39.1%, respectively) had the highest physical violence score among women, while perpetrators categorised as “not having a drinking problem and no drug user” (42.1% and 35.7%, respectively) and “drug user only” (50.3% and 36.5%, respectively) had the lowest physical violence score. In terms of stalking severity, both non-substance users and substance users had similarly high mean scores ranging from 2.1 to 4.4 (see Table 2).
Table 2: Means and standard deviations for physical violence, psychological abuse and stalking by perpetrator’s alcohol and drug use

<table>
<thead>
<tr>
<th>Perpetrator substance use</th>
<th>Physical violence</th>
<th>Psychological abuse</th>
<th>Stalking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M (SD)</td>
<td>N</td>
</tr>
<tr>
<td>No problem drinker and no drug user</td>
<td>82</td>
<td>42.1 (18.8)</td>
<td>83</td>
</tr>
<tr>
<td>Problem drinker only</td>
<td>79</td>
<td>58.6 (20.5)</td>
<td>77</td>
</tr>
<tr>
<td>Drug user only</td>
<td>11</td>
<td>50.3 (18.1)</td>
<td>11</td>
</tr>
<tr>
<td>Problem drinker and drug user</td>
<td>75</td>
<td>59.3 (20.2)</td>
<td>75</td>
</tr>
</tbody>
</table>

Perpetrator’s alcohol and drug use and severity of intimate partner violence

Multivariate logistic regression found that having a problem drinking only partner (OR = 4.14, CI = 2.02–8.51) and having a partner that was a problem drinker and drug user (OR = 2.77, CI = 1.36–5.65) were associated with physical intimate partner violence. Having a partner that was a problem drinker and drug user (OR = 2.80, CI = 1.35–5.79) was associated with psychological intimate partner abuse. Alcohol or drug use by the intimate male partner was not found to be associated with stalking. In addition, findings show an link between a low economic household situation and physical violence (see Table 3).

Table 3: Associations between substance use and different types of intimate partner violence

<table>
<thead>
<tr>
<th></th>
<th>Physical violence</th>
<th>Psychological abuse</th>
<th>Stalking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AOR (95% CI)a</td>
<td>AOR (95% CI)b</td>
<td>AOR (95% CI)c</td>
</tr>
<tr>
<td>No problem drinker and no drug user</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Problem drinker only</td>
<td>4.14 (2.02–8.51)**</td>
<td>1.22 (0.61–2.44)</td>
<td>0.73 (0.35–1.51)</td>
</tr>
<tr>
<td>Problem drinker and drug user</td>
<td>2.77 (1.36–5.65)**</td>
<td>2.80 (1.35–5.79)**</td>
<td>0.83 (0.40–1.73)</td>
</tr>
<tr>
<td>Age (base = 18–29 years)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>30 years or more</td>
<td>1.72 (0.88–3.36)</td>
<td>0.93 (0.48–1.78)</td>
<td>0.27 (0.13–0.55)**</td>
</tr>
<tr>
<td>Education</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Grade &lt; 9</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Grades 9–11</td>
<td>0.83 (0.38–1.78)</td>
<td>1.32 (0.62–2.79)</td>
<td>2.41 (1.11–5.22)*</td>
</tr>
<tr>
<td>Grade 12 or more</td>
<td>0.93 (0.41–2.12)</td>
<td>0.78 (0.35–1.73)</td>
<td>0.59 (0.26–1.35)</td>
</tr>
<tr>
<td>Economic household situation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Low</td>
<td>2.29 (1.13–4.61)*</td>
<td>1.10 (0.57–2.14)</td>
<td>0.37 (0.18–0.75)</td>
</tr>
<tr>
<td>Marital status</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Single/divorced/separated</td>
<td>0.66 (0.28–1.56)</td>
<td>2.29 (1.03–5.09)*</td>
<td>4.74 (1.85–12.11)**</td>
</tr>
<tr>
<td>Currently living with the perpetrator (base = not living with perpetrator)</td>
<td>1.33 (0.56–3.19)</td>
<td>1.37 (0.61–3.08)</td>
<td>0.33 (0.13–0.84)*</td>
</tr>
</tbody>
</table>

***P < .001; **P < .01; *P < .05; AOR = Adjusted Odds Ratio; CI = Confidence Interval
  
a Hosmer & Lemeshow Chi-square = 7.87, P = 0.446; Nagelkerke R² : 0.19
b Hosmer & Lemeshow Chi-square = 5.51, P = 0.702; Nagelkerke R² : 0.13
c Hosmer & Lemeshow Chi-square = 3.81, P = 0.874; Nagelkerke R² : 0.27
DISCUSSION

Among this sample of 268 abused women who had been granted protective orders, substance use was significantly associated with the severity of the violence perpetrated against them. Specifically, women reported greater instances of physical intimate partner violence when the perpetrators grappled with problem drinking only or with problem drinking and drug use; and psychological abuse was reported by women where the perpetrators grappled with problem drinking and drug use. These findings are in agreement with previous studies Balogun et al., 2012; Cunradi et al., 2002; Dunkle et al., 2006; Feingold et al., 2008; Mattson et al., 2012; Sambisa et al., 2010; Stuart et al., 2008; Tumwesigye et al., 2012; Willson et al., 2000). It is possible that the association of problem drinking, together with illicit drug use, and the severity of physical and psychological abuse is connected to perpetrator illegal behaviour (Willson et al., 2000). For example, Berk, Berk, Loseke and Rauma (1983) found an association between the number of previous arrests of the male partner for alcohol abuse and the severity of the woman’s abuse. Therefore, criminal behaviour (here illicit drug use) and greater severity of abuse may be indicative of a more violent perpetrator (Willson et al., 2000). Furthermore, unlike other studies, this study did not find an association between stalking and reported perpetrator use of alcohol and/or drugs compared with nonusers. (Willson et al., 2000).

- The findings of a higher risk of severe physical intimate partner violence among those with a lower income or socioeconomic status are consistent with several studies on this topic (Jewkes 2002; Tumwesigye et al., 2012). Similar to the findings by Willson et al. (2000), this study found that problem drinking and the use of illicit drugs occurred in almost the exact same proportions among these perpetrators, as did no use versus combined substance use. According to Willson et al. (2000), these findings seem not to refer to a consistent profile of perpetrator substance use and intimate partner violence. This may indicate that male abusers as a group may not substantially differ from the general population of men (Gondolf, 1998; Willson et al., 2000). More research is needed to explore this.

- Problem drinking and problem drinking combined with illicit drug use have been found to be the strongest predictors for the severity of physical intimate partner violence and severity of psychological intimate partner abuse among those factors investigated (and with potentially confounding influences controlled). The World Health Organization (WHO) has identified harmful alcohol and illicit drug use as determinants of intimate partner violence and recommends that reducing overall alcohol consumption in a population may help to reduce the harmful use of alcohol and with it the perpetration and experience of intimate partner violence (WHO/LSHTM, 2010).

STUDY LIMITATIONS

The results of this study cannot be generalised to all female survivors of intimate partner violence in South Africa since the current study was based on a sample recruited at the courts where the women were granted protective orders to safeguard them against intimate partner violence. The study relied on self-reports which may under- or over-report due to lack of adequate recall or lack of voluntary disclosure (McFarlane et al., 2005). Studies done by Mechanic, Weaver and Resick (2008) have found that the assessment of injury as a form of violence experienced by women added an important dimension of intimate partner violence, which should be added in future research. Furthermore, the temporal sequencing of the substance use and the occurrence of violence needs to be researched (Willson et al., 2000).

CONCLUSION

Problem drinking and drug use among male partners is a strong determinant of the severity of physical intimate partner violence among battered women in South Africa. Intimate partner violence prevention measures should also address the reduction of problem drinking and drug use among men. This study also emphasises the need to identify substance use disorders among IPV perpetrators identified in health, social service, or criminal justice settings.
ACKNOWLEDGEMENTS

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Community violence in Dar es Salaam, Tanzania: 
A mixed methods study

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Abstract
Most homicide deaths in Dar es Salaam, Tanzania (DSM) are a result of violence arising from within the community. This type of violence is commonly called, by perpetrators and victims, “mob justice”. Unilateral non-state collective violence can take four forms: lynching, vigilantism, rioting, and terrorism. The purpose of this paper is to report what leads to death by such violence in DSM. A cross-sectional mixed methods study design was used. Surveillance data were collected on all 206 victims of “mob justice” in DSM for the year 2005. Fifteen in-depth interviews were conducted with the relatives of deceased victims, a policeman, a journalist, community members, and youths who survived these types of community violence. A focus group discussion was conducted with eight youths at risk of such violence. The deceased were young adult males and differed significantly from assault victims as to age, occupation, weapon causing death, and injury site. Ninety percent were identified as: unemployed, thieves, unknowns, or street vendors. The immediate history of the deceased usually involved theft. The stated desire of community members was to live in peace; they acknowledged that murder is unlawful. Often the victims had been warned; if transgressions continued, male community members punished the individual, which led to death. Family reactions varied from relief, to confusion, and loss. Community level violence in DSM is defensive; the goal is to protect the community. It is focused on individuals, not groups; incidents can be classified along the continuum of lynching and vigilantism in which lynching is a spontaneous reaction to deviance and vigilantism is an organised activity. Decreasing the number of deviant social acts should theoretically decrease cases of lynching and vigilantism. The most humane way to decrease petty theft is through appropriate employment.

Keywords: homicide; Africa; Tanzania; vigilantism; lynching; community; mob

INTRODUCTION
“Mob violence” as a response to danger and distress is recorded all over the world. Non-state unilateral collective violence can take the form of lynching, vigilantism, rioting and terrorism (Senechal de la Roche, 1996). Apart from some scientific literature on the topic from a few countries such as South Africa, Tanzania, Nigeria, and Ghana, other countries in the WHO African Region have not systematically investigated violence occurring from within the community (Kobusingye, Bowman, Burrows, Matzopoulos & Butchart, 2010). However, “mob justice” has been reported from many African nations by diverse sources including the United Nations, United States State Department, non-governmental organisations such as Human Rights Watch, and media outlets including British Broadcasting Company, and numerous African newspapers.

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In South Africa, community-level violence, especially during apartheid, has been reported in conjunction with industrial disputes, political demonstrations, consumer boycotts, and funerals of residents killed by the police (Bruce & Komane, 1999; Harris, 2001). Alleged witches, both male and female, have also been targets in many African countries including Burundi (Human Rights Watch, 2010), Cameroon (Tembang, Nyiribugara & Vlam, 2007), Ghana (Adinkrah, 2005), Kenya and Nigeria (Winslow, n.d.), South Africa (Harris, 2001), Uganda (Mugunga, 2005) and Tanzania (Neki et al., 1986). In all these settings, with the possible exception of South Africa, the overwhelming majority of victims were accused of theft.

In Ghana, reporting on cases of “vigilante homicide” between the years 1990–2000, Adinkrah found that victims were predominantly poor, unemployed or menially employed males (2005). They were usually killed in streets, public bus stops and alleys, by men using weapons at hand, including fists, clubs, sticks, stones, bricks, machetes and sometimes fire. The most force was meted out to pickpockets and armed robbers. In all instances, the intent was to apprehend and punish an alleged malefactor. These killings were reported to invariably be the outcome of spontaneous actions taken by “available” bystanders. In most incidents, once a public alarm was raised, a “mob” gathered rapidly. No evidence of prior planning, coordination, or internal organisation of the event was evident in any of the cases examined (Adinkrah, 2005).

It is not known what proportions of Africa’s homicides result from community-level violence, but they may vary widely between nations. In East Africa such violence is a well-known phenomenon. In Uganda, the police registered 146 mob killings between January and November 2004 (Mugunga, 2005). Ng’walali and Kitinya (2006) mining mortuary registers found that 1,249 people were killed by “mob justice” in Dar es Salaam, Tanzania between 2000 and 2004.

Violence in this context is a collective community action arising against individuals or small groups. “Mob justice” occurs when a group physically punishes people without trial, without legal procedures, and often without evidence (Mugunga, 2005). As described by an Assistant Commissioner of Police in Tanzania (TZ), “Mob justice is the unlawful act of people punishing suspected offenders collectively without taking them before proper authorities (criminal justice administration). In other words, it is a situation whereby people take the law in their hands by arresting, prosecuting and punishing at the same time” (Lanka, 2011). When injury mortality surveillance was conducted in 2005 and 2010, it was found that about half of all homicide deaths in DSM were a result of community perpetrated violence (Mgalilwa, 2011; Outwater et al., 2008).

Such a high proportion of homicides resulting from these types of communal violence is unusual. The purpose of this paper is to contribute to decreasing community violence by improving understanding of the events immediately surrounding such deaths in DSM.

**METHODS**

A cross-sectional mixed methods study design was used. Data were collected in 2005 and 2006.

**Setting**

In 2005, a Tanzanian’s purchasing power parity based on the gross national income was US$1050 per year per capita, the 22nd lowest in the world (World Bank, 2005). DSM is TZ’s most prominent region and encompasses rural and urban areas, including a port city on the Indian Ocean. Administratively, DSM is divided into 3 districts and 73 wards (with populations between 4,500 and 90,000). It is a fast growing city with poor infrastructure and a rapidly deteriorating natural resource base, to which people, especially youth, are migrating from all over the country. In 2005 the population was estimated to be 2.84 million.

Some of the highest crime rates in Africa have been reported from TZ where 63% of respondents reported having been victimised in the previous year (Naude, Prinsloo & Ladikos, 2006). In DSM in 2000, the most prevalent crime was...
burglary: 43% of respondents said their home had been burgled in the past five years. Simple theft was experienced by 32% of respondents; and 20% had experienced livestock theft in the past five years (Robertshaw, Louw & Mtani, 2001).

More than crime victims in other African countries, Tanzanians perceived such crimes as very serious (Naude, Prinsloo & Ladikos, 2006). Theft was considered a very serious event for 75% of Tanzanian respondents; burglary was perceived as very serious by 84%; and robbery by 85%.

Subjects

The subjects of this paper are those homicide victims who died as a result of community violence in DSM in 2005. The respondents were relatives, a policeman, a journalist, community members, youth who survived such violence, and friends of the deceased.

This type of violence was not originally a code in the homicide surveillance. However, during field-testing and in the first weeks of data collection it was observed that many homicide deaths were distinctive in that they were covered by few clothes, sandy as if rolled in dirt, with multiple wounds from various types of weapons. “Cause of death” entered into the ledger by the mortuary manager or attendants was variously reported as: “kipigo” (beating), “moto” (fire) “mob justice” or “mob killing” which, after further discussion with members of the research team and mortuary attendants, could all be clearly categorised as mob deaths. The new code was operationalised as being: the result of a medium to large group (roughly, two dozen or more people), using multiple weapons, acting on a continuum from spontaneous to planned action, in concert to kill an individual or a small group (Outwater et al., 2008).

Data Collection

Data were collected at Muhimbili National Hospital (MNH) mortuary, to where all questionable deaths in the DSM region were brought.

Quantitative data on homicides were collected with a surveillance questionnaire (SQ). The variables were: sex, year of birth, date of death, place of residence, place and site of death, occupation, role of human intent in the occurrence of the injury, activity at time of death, cause of death/weapon used, events leading up to the death, and relationship of perpetrator to the deceased. SQ data were collected by three nurses with differing levels of education. Two were master’s graduates and one was a diploma graduate. All had previous training and experience collecting research data.

Qualitative data were collected in three ways: through the SQ, in-depth interviews (IDI) and a focus group discussion (FGD). The last question in the SQ was: Is there anything else you would like us to know? Some SQ respondents were also willing to be interviewed in-depth. The research question was: What led up to the death of the deceased? Each respondent was given TZS. 2000 ($1.75), as a gesture of sympathy. Key informants were selected at first conveniently because (1) they were willing to discuss the phenomenon at length, and then purposively if (2) they were knowledgeable, and (3) represented different points of view. One key informant was a youth who came to the mortuary accompanying the bodies for burial of two of his friends who had been killed while attempting to steal a cell phone (Outwater, Campbell & Mgaya, 2011). After two IDIs he suggested he bring his associates for a discussion. This FGD took place in a public botanic garden; afterwards each participant was given TZS. 5000 ($4.40) for their time and transport costs; the interviewers and interviewees ate dinner together at a nearby local restaurant, a culturally appropriate way to assure that the interviewees could arrive home without feeling a need to steal that day.

IDI and FGD data were collected by the first author and audio-taped after informed written consent was given by all respondents.
Data Analysis

Quantitative data were entered in to Epi-Info 3.3.2. Data on sex, age, cause of death, district and ward of injury were available on all cases. When case data were missing, the denominator was correspondingly decreased. Frequency distributions, means, standard deviations, proportions, rates, t-tests, and probability tests (Chi2 and Fisher’s Exact) were calculated as appropriate for each variable. Rates were calculated with a denominator based on the mid-year population of DSM in 2002 (United Republic of Tanzania, 2003) and adding the officially estimated population growth rate of 4.3% per year for years 2003, 2004, and 2005.

Qualitative data were transcribed and entered into NVivo 9 computer software package (QSR, 2011). Translation from Swahili to English was conducted within the programme, and both languages were preserved within each transcript paragraph by paragraph. SQ, IDI and FGD data were coded separately. Coding was in vivo, tailored to the understanding of the particular data being analysed. When codes were gathered into tree nodes, each fragment included both languages. Memos were written throughout, including around each node. Nodes and memos were explored in NVivo through (1) graphs of source interviews and nodes, (2) cluster analysis of word and coding similarities, and (3) models of the nodal interactions. NVivo tree maps and models assisted further analysis. Then IDI, FGD, and SQ codes were compared.

Ethical approval for this research was granted by Muhimbili University of Health and Allied Sciences, Tanzanian National Institute for Medical Research, and Tanzanian Commission for Science and Technology, as well as by Johns Hopkins University.

RESULTS

Quantitative data were collected on all 367 homicide deaths in DSM through the SQ. Qualitative data were collected on the SQs for 63% (129) of all deaths categorised as “mob deaths”. This paper also draws upon 15 IDIs. Interviews were conducted with adult male relatives of ten of these victims. Two IDIs were centred on one event: a youth about to be set on fire. IDIs were conducted with the television reporter who caught the incident in an unexpected encounter, and the policeman who rescued the youth from underneath plastic bags, a tyre and kindling. Other interviews were conducted with a youth survivor of community violence, a government official and a female community member. There were four key informants: a female community member, a petty thief, the policeman and a victim’s uncle. Lastly, a FGD was conducted with eight petty thieves.

Quantitative

Of 367 homicides, 205 males and 1 female died from what the community called mob justice and sheria mkononi (the law in/of/by the hand); these victims comprised 56% of all homicide deaths and 65% of adult male homicides, for a rate of 21.2 per 100 000 adult male population. Their mean age was 27.5 years (Std. Deviation 5.98) and their age range 17 to 50 years. No non-Tanzanians were killed in this manner.

Homicide from community violence was distributed evenly through DSM’s three districts. However, the mortality rate from such violence ranged from zero in thirty wards, to 34.3 per 100 000 population (69.2 per 100 000 among males) in Jangwani ward. Two wards – Mbagala and Tabata – accounted for 19% of such community perpetrated homicides. In 73% of the incidents, the deceased died in the ward in which he had lived.

City streets and other large public spaces were the site of 154 (75%) community homicides. Thirty such deaths (15%) occurred in residences other than the victims’ mostly as a result of failed burglaries. The remaining incidents (10%) occurred in farms/countryside (12), businesses (7), and unknown places (2).

All victims of community perpetrated violence died after being injured with multiple weapons. The primary causes of death for 65 (32%) victims were determined to be due to blunt objects; sharp weapons were the leading cause of 49 (24%) victims; bodily force including fists and feet, caused 37 (18%); fire caused 41 (20%) and gunshot 5 (2%); while for 8 (4%) the primary cause of death was undetermined.
The reasons behind community perpetrated violence were theft and robbery in 149 (72%) cases and burglary in 30 (15%) cases. Three (1%) incidents were against alleged murderers. One woman with epilepsy was killed, suspected of witchcraft. The reasons behind the 22 (11%) remaining deaths were probable misidentification in 9 (4%) cases, quarrels in 2 (1%) cases, and unknown reasons in the rest.

The occupation recorded for 152 (74%) victims of community violence were unemployed (32), thief (62), or unknown (58). Another 32 (16%) were classified as self-employed without an employee including street vendors/petty businessmen (25), and skilled labourers (7). The remaining victims (10%) were farmers (4), a student (1) and employees: house servant (1), drivers (2), and day labourers (13).

As shown in Table 1, victims of community mob death had a narrower age range, and were younger than those who died of assault. Those who died of at the hands of community members were more likely to be unemployed, alleged thieves, or unknown than those who died of assault. The weapons used by community members to kill victims were more likely to be blunt objects such as cement blocks, and fire; the weapons used to kill assault victims were more likely to be guns and asphyxia. Most victims of community violence died in streets or public places whilst victims of assault were more likely to die at a place of business or at home.

**Table 1: DSM, 2005. Characteristics of adult male homicide victims, by type of death**

<table>
<thead>
<tr>
<th>Type of Death</th>
<th>Assault n (%)</th>
<th>Mob Death n (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victim Characteristics</td>
<td>108 (33.6)</td>
<td>205 (63.9)</td>
<td></td>
</tr>
<tr>
<td>95% CL 29.3–40.1%</td>
<td>95% CL 59.9–70.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td>&lt;0.0001&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Range</td>
<td>15–78</td>
<td>17–50</td>
<td></td>
</tr>
<tr>
<td>M (Mdn)</td>
<td>34.5 (30)</td>
<td>27.5 (26)</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>13.13</td>
<td>5.98</td>
<td></td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
<td>&lt;0.0001&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Farmer</td>
<td>3 (3)</td>
<td>4 (2)</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>3 (3)</td>
<td>1 (0.5)</td>
<td></td>
</tr>
<tr>
<td>Self-employed with employee</td>
<td>4 (4)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Self-employed without employee</td>
<td>25 (23)</td>
<td>32 (16)</td>
<td></td>
</tr>
<tr>
<td>Employee</td>
<td>39 (36)</td>
<td>16 (8)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>10 (9)</td>
<td>32 (16)</td>
<td></td>
</tr>
<tr>
<td>Alleged Thief</td>
<td>15 (14)</td>
<td>62 (30)</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>9 (8)</td>
<td>58 (28)</td>
<td></td>
</tr>
<tr>
<td><strong>Primary cause of death</strong></td>
<td></td>
<td></td>
<td>&lt;0.0001&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Bodily Force</td>
<td>13 (12)</td>
<td>37 (18)</td>
<td></td>
</tr>
<tr>
<td>Asphyxia</td>
<td>10 (9)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Blunt object</td>
<td>19 (18)</td>
<td>65 (32)</td>
<td></td>
</tr>
<tr>
<td>Sharp object</td>
<td>31 (29)</td>
<td>49 (24)</td>
<td></td>
</tr>
<tr>
<td>Fire</td>
<td>3 (3)</td>
<td>41 (20)</td>
<td></td>
</tr>
<tr>
<td>Gun</td>
<td>29 (27)</td>
<td>5 (2)</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>3 (3)</td>
<td>8 (4)</td>
<td></td>
</tr>
<tr>
<td><strong>Injury Site</strong></td>
<td></td>
<td></td>
<td>&lt;0.0001&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Home</td>
<td>11 (10)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Other residential</td>
<td>8 (7)</td>
<td>30 (15)</td>
<td></td>
</tr>
<tr>
<td>Place of business</td>
<td>36 (33)</td>
<td>7 (3)</td>
<td></td>
</tr>
<tr>
<td>Street /public place</td>
<td>30 (28)</td>
<td>154 (75)</td>
<td></td>
</tr>
<tr>
<td>Farm/countryside</td>
<td>5 (5)</td>
<td>12 (6)</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>18 (17)</td>
<td>2 (1)</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> t-statistic; <sup>b</sup> Chi-square
Qualitative

From the three qualitative data sets, sixteen nodes emerged. The nodes were grouped into three categories: (1) Immediate History of the Deceased, (2) Community Response, and (3) Family Reaction to the Death. From the SQ texts 12 codes were identified, all of which were shared with the IDI and FGD codes: mistaken identity, false accusation, theft, unlawful punishment, warnings, increasing tiredness of continued thieving, consensus, anger and, description of community mob violence, perpetrators as good citizens, victims’ families’ confusion and loss. Three codes emerged out of the IDI and FGD which were not found in the SQ texts: communities’ desire to live in peace, patience, and fear of revenge. More detailed understanding around the node “We have tired” from the IDIs led to refinement of the coding of the SQs to both community and family – the same phrase had different meanings in different contexts. One node in the SQs was not found in the IDIs and FGD: familial tiredness of the behaviour of the deceased. This latter result may be due to interviewer bias; all those statements were recorded by the least educated interviewer, who had complained multiple times of being tired of having her purses stolen by thieves.

Immediate History of the Deceased

Mistaken Identity

Mistaken identity occurred when a man was running near the scene of a robbery, wearing a similar T-shirt to a suspected thief, or passing the site of a recent robbery late at night. Such an occurrence was described by the brother of a 39-year-old male (Case 85–2005).

He was working, cultivating the farm of a person – the employer stayed in town. On the day of the event he went to drink pombe [local brew]. He passed through a way where days before, they had already been robbed. When the people saw him, they said, “Indeed it is our thief.” Behold! he wasn’t a thief. They began to beat him until he died.

A policeman concurred, “He was not a thief. Those who beat him were taken [arrested]. They are inside [jail].”

Presumed Intent/False Accusation

People often assumed that a dusty, thin, malnourished and tired looking youth was a thief. Community action was sometimes instigated by guards who called out when they perceived somebody was intending to burglarise the place they were assigned to protect (e.g. ID5403AO). Likewise, cases were reported in which the primary perpetrator cried out with a false accusation against the victim. Several respondents asserted that perpetrators often responded without knowing the exact reason for which they were punishing the person.

Theft

The precipitating factor of most deaths was the theft of items such as cell phones, purses, or domestic animals such as chickens, cows, and pigs. Of the 129 victims reported through the SQ, 101 (78%) of the proxy respondents stated (without prompting), that the deceased was an experienced thief: “Ali kuwa mwizi uzoefu”. Likewise, of the 13 IDIs, nine discussed thieving, as did the focus group members. For many of those who were killed, thieving had become regularised as a primary source of income. People believed that if thieves were allowed to continue, the behaviour would escalate; several respondents stated that burglars and armed robbers develop from successful petty thieves.

Community Response

Desire for peace

Almost all respondents, including at risk youth, agreed that “People want to live in peace (Watu wanataka amani).” Peace is something that is created by people, by the group; “However, if people are thieving things from you everyday this is not a peaceful life.” (ID5317AO).
Unlawful and not helpful

Some people were against murder in principle.

By my feelings murderers are not correct at all. Here, in Tanzanian law, there is no section like this in which it is needed to kill. ... Because if I am a law breaker, you have rights to send me to the agency of power. If you do research, I am clear that is how law breakers, the government will take me a step, and punishment which is deserved is matched by the mistake which I have made. Power; the law is there. They [the police] can do this work ... They have learned that work, they work with diligence .... (ID5607AOii).

The most frequently stated reasons for not accepting mob justice were the possibilities of mistaken identity and false accusations. The television journalist asked the perpetrators, on the evening news, “Are you sure the person being punished is he who committed the deed?” (ID5310AO).

Warnings and punishments

Thieves were warned by family, police, and community members. Family members warned them verbally about the severe consequences of continued petty thieving. Some families had taken recalcitrant youth to the police themselves. The police warned them through unofficial fines, beatings, and less often, jail. From the community, warnings could occur verbally or physically such as when a thief was caught, maimed, but not killed.

Many reported the victim’s long history of stealing and warnings. An uncle described his nephew (Case 240), a 31-year-old who was beaten and burned.

He appeared to be ill, without a lot of strength ... They brought him to work carrying sand, but he complained he couldn’t do it. Three times he was beaten by citizens; even he was admitted to MNH and healed. Once to cure him of heroin and once to recover from broken knees and burns. His little finger had been chopped off ... He was taken to the police many times, they were used to him, but they’d just let him go.

Youth respondents showed evidence of warnings delivered through razor cuts, fingers broken askew, knee cappings and limb amputations. Messages were congruent: when the community has no more to give, and the thief continued stealing and did not move away, he would be killed. The youth stated that they knew that the consequences of their actions were jail, being beaten and being killed (FDN05SU, ID6503AO). One thief explained that two of his fingernails were painted brightly, “So my fellows can recognise me if I am burned”.

Fear of Revenge

People were fearful that somebody taken to the police station as punishment could return for revenge. An uncle explained:

It is very perplexing. Today a person has caught a thief. He takes him to the police. After two or three weeks, the thief again comes among the citizenry. Or you have sent him to the police because it is one o’clock in the night, and he has already returned the next day. This person sometimes stays at the home two houses down. Indeed now he is searching for you, searching for a strategy to destroy you. He says, “Because you sent me [to the police], now my project is to return. Meaning, now you will regret.” (ID5725AO).

Patience has its limits

A female community member explained:

The person sets the standards himself by what he is doing. People are just watching him. We have patience, but patience has its limits ... . We know who has taken our things, we have warned him. We are patient but one day we will take him to the field without caring for his wife or his children and burn him. (ID5317AO).
They have tired of him (Wamemchoka)

The afflicted community members become weary of repeated thefts. The word commonly used was wamemchoka – with the infix “m” meaning a specific person.

The uncle of a youth whose body was 90% burned explained the feelings of the community of which he was a member, using the present tense:

They know him absolutely – that that one is a thief and on that street they are absolutely tired of him ... Now there on the street ... they have tired of him because of those deeds ... Therefore ... (ID5O14AO).

Consensus

Even as people state that mob justice is against the law, another statement representative of many was given by an elderly gentleman whose nephew had been killed. He insisted:

If you take by force, yes, you will die. It is not the community that is wrong. (ID5N20AOii).

If a thief was sent several times to the police, and returned again and again to the same activities, finally a decision could be made that he would be caught and killed, “just to finish the problem”.

We have already talked and we have evidence. Therefore you know if you join together with the police, the police are giving them more loss. Now they agree to do – to take the law into their hands. A place where there is an affair okay, they agree to do – meaning to hunt. If they already catch you they agree to kill you (ID5607AOii).

Violence perpetrated by a group of community members was viewed as a method of decreasing the number of bad people, “kupunguza watu wabaya”.

Anger

Hasira is translated as anger, but also vexation. Hasira jazba is described as intense, or an “ecstasy” of anger. It was reported that hasira jazba leads people to rush to judgment, increasing the chance of mistaken identity. Even if there is no evidence, if people are angry from an unrelated incident, it can lead to killing the next person perceived as a thief. A key informant explained, “If a person has been robbed recently, he may feel a lot of anger – The shout of 'mwizi [thief]' triggers the memory and he could think, ‘This must be the person who robbed me.’ Even if another thief is caught, the person will join in to punish the thief.” (ID5409AO). Due to the perpetrators’ anger, they will be harsher and instead of punishing somebody, they might kill him. Likewise if people are very angry, hasira jazba can lead to burning a person.

Description of Mob Death

Mob violence usually occurred in response to a victim’s cry for help, especially if the victim was perceived as vulnerable such as a woman or child or was a respected community member such as a home owner. At such a cry males rushed to the site of the alleged crime shouting, which attracted more people. Weapons used were those at hand: fists, feet, cement blocks, sticks, iron bars, machetes.

Burning occurred after the victim had been subdued, but was not necessarily dead (e.g. ID5403AO). It required the most resources and cooperation – kerosene, matches, sometimes a tire for fuel and plastic bags for kindling. Burning was often used for repeat offenders, whom the community feared could resurrect [kufufuka] and return for revenge.

Perpetrators

The perpetrators who wielded weapons were male community members who were described as normal people with families. No one person killed the deceased; many inflicted small punishments. Perpetrators were commonly called good citizens (raia mwema), even by those at risk of death by the community. Youth at risk were sometimes themselves
perpetrators. Several habitual thieves were killed by Sungusungu, a “people’s militia” organised at neighbourhood level to protect the community.

**Family Reactions to the Death**

*They have tired (Wamechoka) (of the event)*

The same phrase was often used in reference to the community and to the family. On the family level relief was expressed at the death of the wrongdoer in the SQs, but not in the IDIs. The families did not deny the youth was a member of their family, evidenced by their claiming and burying the body at large expense. But their relative had brought them shame as his behaviour was damaging community members directly. Seventeen SQ respondents when asked, “Is there anything else you would like us to know,” answered, “He was a big thief. We were tired. The problem is finished. Now we are resting.”

**Confusion**

Family members sometimes had difficulty reconciling themselves with how they understood the person, and his death. A relative of a 32-year-old male expressed his confusion:

... the deceased was a normal person, he was a person of people, he liked people. We ourselves when we heard about this event, we were confused by how which we understood him ... He was a person caring for his family. The relative spoke forcefully, He was a person who cares for his family, even though he has nothing. You have understood? – although he had nothing. Now more about the deceased, for its total, he was a good person (ID5607iii).

**Loss**

A sense of loss was expressed spontaneously by thirteen SQ respondents, especially for men who had been helping to support families. An uncle speaking of a 25-year old explained:

He was an important joint of the body at our home. Are you understanding well? And furthermore, we were expecting different contributions by our life. Truly we say that he has put a gap inside our family because there is strength which would cause to be needed right now. And later it would be needed more, because his parents, just now they are beginning to be old. Therefore it means later they would need him. It means that, like that, the uncle flicked his hand, already he has disappeared. Indeed it means there isn’t a person like him again. Therefore in our family is a hole. And even the work strength of the nation also, it has already vanished also (ID5725AO).

**DISCUSSION**

Quantitative data enabled the sorting of outliers from the norm and comparison between variables; violence committed by groups of community members accounts for more than half of all homicides, and victims are > 99% male youths. The victims numbered about four per week in DSM. These data confirm what has been recorded in many African countries – that victims of community mob violence are usually young adult males without regular employment killed publicly by citizens as petty thieves. Most were killed on the street near where they lived with multiple weapons including bodily force, blunt and sharp objects and sometimes fire. They were killed by community members, most of whom dealt small blows, few of which were deadly, but which had a cumulative effect leading to the victims’ demise.

Qualitative data added important context. Before being killed, thieves were warned by family, community members, and police sometimes severely, and several times; they were aware of the consequences of taking things by force. Some community members were against murder in principle, but the overwhelming desire was to live peacefully, without being
victimized by robbers and burglars even when unable to afford guards and fences, in a place with a police: population ratio of about one third of international standards (Van der Spuy & Röntsch, 2008). Partially because they feared revenge, they were patient with thieves, sometimes for years. If the youth did not change his behaviour, community members reported becoming tired and angry, and male members took action to protect the community from further predation. At the family level, the deaths caused confusion and loss, and sometimes relief.

Community violence is sometimes referred to as vigilantism (e.g. Adinkrah, 2005; Harris, 2001). Is community violence as manifested in DSM, vigilantism? Johnston (1996) in his foundational paper identified six characteristics of vigilantism, referring to cases of vigilante activity reported in the United Kingdom media during 1994–1996. These key elements were: (1) planning, premeditation and organisation, (2) private voluntary agency, (3) autonomous citizenship, (4) the use or threatened use of force, (5) reaction to crime and social deviance, and (6) personal and collective security. In DSM, sometimes planning and premeditation took place, as reported by several of the respondents. In other cases violence seemed to erupt spontaneously, when bystanders apprehended and punished criminals caught in the act.

The second element of vigilantism is that participation is a “private voluntary activity (that which is undertaken by individual citizens or groups of citizens on a non-contractual basis)” (Johnston, 1996, p. 4). This appears to be upheld by current data except for two deaths led by Sungusungu members who were paid a subsistence wage by the community as part of local government. The third element, autonomous citizenship, considers vigilantism a “voluntary activity engaged in by active citizens without the state’s authority or support” (Johnston, 1996, p. 4) was also upheld. However, although homicide in Tanzania is against the law, many people, including police and government officials, may individually sympathise with community practices. Indeed, the most common descriptor of the perpetrators is as “good citizens”.

The fourth element, the use or threatened use of force is present in DSM on a continuum ranging from verbal warnings to death. The fifth and sixth elements, that vigilantism is a reaction to crime and social deviance to protect personal and collective security are also met. Except for people falsely accused or arguing, virtually all community killings were a reaction to crime or deviance. Much community violence in Tanzania therefore met the definition for vigilantism. Only the element of organisation sometimes varied from the definition.

This is addressed by Senechal de la Roche (1996) who discusses non-state unilateral collective violence as social control, as “self-help” (p. 101) by a group towards deviants; it is commonly a “moralistic response to deviant behaviour” (p. 98). Collective violence is not irrational or pathological, but rather rational and comprehensible. Using the two variables of organisation and liability, collective violence can be divided into four major forms: lynching, vigilantism, rioting, and terrorism.

Lynching and vigilantism may be defined partly by their logic of individual liability: only the alleged wrongdoer is accountable; uninvolved members of the wrongdoer’s group or social category are not subject to punishment or other social control. Lynchers punish only the alleged offender, then disband. Vigilantes judge each offender individually. On the other hand, rioting and terrorism can be defined partly by the presence of collective liability, in which a group is held accountable for the offender’s conduct. Any member of a social category, including women, children and the elderly, may be vulnerable to attack by rioters or terrorists. Community violence in Dar es Salaam is based on individual liability.

It is proposed that these four types of violence can be further defined by degree of organisation. Lynching and rioting are distinguished by their relatively low levels of organisation, and vigilantism and terrorism by high levels. Lynching and rioting are temporal as well as informal. According to Senechal de la Roche’s definitions, the community violence in DSM covers the continuum between high and low/spontaneous organisation, between vigilantism and lynching. The community violence as described in DSM is in many ways similar to what has been reported from Ghana (Adinkrah, 2005). Using the above definitions, the community violence in Ghana with “no evidence of prior planning coordination or internal organisation” (p. 11) would be defined as lynching.
The specific form of violence that can be expected to occur depends on two additional variables: (1) the degree of social polarisation and (2) the continuity of the deviant behaviour. Collective (community) liability occurs where social polarisation is greater, whereas the individual liability expressed in lynching and vigilantism appears where it is lower. In DSM it was shown that most of the victims were killed in their neighbourhoods, where cultural differences and social distances between the victim and the perpetrators were small. In terms of continuity of the deviant behaviour, vigilantism occurred after multiple instances of deviant behaviour. Lynching was usually precipitated by a specific instance.

Senechal de la Roche further proposes that extra-legal beatings and executions inflicted by lynchers and vigilantes are usually reserved for poor and subordinate offenders. This proposition agrees very closely with the data of the current study, which shows that victims of community violence are demographically more vulnerable than even other homicide victims. The situation in DSM supports Senechal de la Roche’s propositions predicting and explaining the likelihood and severity of the manifestations of vigilantism and lynching.

Buur (2009) explores the imaginings of the “new South Africa” about “the Other: the rural hinterland and the peri-urban townships” (p. 27). Whose fears are being discussed is not clarified further. Burr reports that mobs transform from crowds that have gathered for some other reason such as a sporting event or a political meeting. These “crowds-turned-mobs” are described as a “violent challenge to established norms” (p. 28). According to Buur, in South African imaginings, those who generically carry the blame for mob violence are deviant male youths.

Data from DSM did not concur with the imagined mobs in South Africa reported by Buur (2009). By contrast, incidents of community violence in DSM were not formed from an a priori event; and were an effort to uphold well understood norms. In DSM the perpetrators were “good citizens”, and deviant youth were the main targets. However, the DSM victims of lynching and vigilantism did resemble the “defendants” reported from South Africa who were being subjected to the “justice” of vigilante courts in Port Elizabeth (Buur, 2003). Senechal de la Roche’s framework would categorise Burr’s “crowd-turned-mob” as rioting, which is violence arising suddenly without prior organisation and when perceived collective responsibility is high. This occurs when social systems are highly polarised. The framework predicts that these imaginings are of one group about another group who do not know each other well. It also predicts that interventions decreasing social polarisation and relational distance will decrease the likelihood of such events occurring.

It is not uncommon to rely on newspaper reports for research data (e.g. Adinkrah, 2005; Johnston, 1996; Outwater, Campbell & Mgaya, 2011). Print media is a valuable source of information because it is often detail rich. Newspapers have been shown to have a higher impact on public perception of violent crime than any other news source (Wright & Ross, 1997). The problem is that what news agencies chose to report does not usually accurately reflect actual patterns of homicide. Coverage is biased against the statistical norm, with most reports covering outlier events (Paulsen, 2002; Peelo, Francis, Soothill, Pearson & Ackerley, 2002). What is perceived to be true by the populace about violent crime does not correlate well with the quantitative data. In Tanzania, for example, it is common to believe that violence against woman is high. This is partially because of the media tendency to report outlier events. For example, in 2005 an average of 1.5 stories was created per femicide; by comparison, male deaths registered far less interest and only one of ten cases was reported in any newspaper. Likewise, only one-tenth of victims of lynching or vigilantism were reported and only as part of a larger story (Outwater, Campbell & Mgaya, 2011). This may also be true in other countries with similar patterns of violence.

The current study has described some important factors describing the victims and perpetrators of lynching and vigilantism. In DSM, considering Senechal de la Roche’s propositions, the positive aspects in the situation are that the relational and cultural distance between the perpetrators and the victims is not large; understanding about what are deviant acts and their expected outcomes are shared. A decrease in lynching and vigilantism should occur when functional independence, inequality, and deviant acts are decreased. In other words, when people depend upon one another in their
daily lives, when their equality (often measured as wealth) is more equal, and when the frequency of deviant acts such as theft do not occur, then lynching and vigilantism should decrease. Employment for male youth would increase functional interdependence and equality within the community as well as decrease the need to commit deviant acts such as public theft.

A hypothesis that arises from Senechal de la Roche’s propositions – that youth employment could decrease susceptibility to community violence – could be empirically tested with a case control study which compares employed and unemployed youth. Likewise, intervention research would be fruitful in which appropriate training and income generating activities are offered to at risk youths.

Serious limitations remain in the understanding of contextual risk and protective factors of the young men reported in this study, within their families, communities, and larger society. For example, the wards with the highest rates of lynching and vigilantism were congested with unemployed people and working families earning subsistence wages, amid poor infrastructure. But this describes many places in DSM – some of which do not have high levels of community violence. What are the differences? Are there wards with low levels of theft and low levels of community violence? How can youths be properly prepared for adulthood in the current economic system, when there are very few formal jobs?

Another limitation is a lack of quantitative clarity about the perceived community consensus. Buur (2009) suggests that mobs “are articulating the wishes ... interpreting and conveying the commands of the silent majority ...” (p. 29). But it is not quantitatively clear in South Africa or DSM what proportions of people within the community do/do not support lynching and vigilantism in the name of justice. Human groups tend to choose the direction preferred by the majority, but only a small group of informed individuals is needed to guide a large uninformed group. Dyer, Johansson, Helbing, Couzin and Krause (2009) found that groups of 200 people could be led to a target if only 10% of the group were informed. This is supported in the current study by the informants who insisted that many members of a crowd punishing a wrong doer do not know exactly what crime was committed. It is important to have a deeper understanding of this presumed community support surrounding lynching and vigilantism.

CONCLUSION

Most homicide deaths in DSM were perpetrated by male community members protecting their neighbourhoods against social deviants. The violence varied between high and low organisation and planning, encompassing the continuum of vigilantism and lynching. Lynching and vigilantism were used defensively as methods of social control in response primarily to petty theft. Community violence in DSM was focused on individuals (not groups). While there are still serious limitations in our understanding of the contextual risk and protective factors of young men who are petty thieves, it is clear from these data that un- and under-employment of male youths is an important driver of crime including theft, burglary, robbery, and homicide in Dar es Salaam. Theoretically, decreasing the number of deviant acts would decrease cases of lynching and vigilantism. The most humane way to decrease petty theft is through appropriate employment. Hurdles to implementation of this are long-term issues such as macro-economic conditions and policies, economic inequalities, the degradation of natural resources, and lack of education and jobs. Therefore ways to engage and facilitate youths along avenues that have already been created, such as the Tanzania government’s initiatives supporting small holder farmers, fishermen, and miners, and accompanying mixed methods research, are urgently needed.
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Investigating risk and protective factors to mainstream safety and peace at the University of South Africa

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Abstract
Given the high fatality rates resulting from both unintentional and intentional injuries in South Africa, the identification and prevention of risk factors resulting in injurious incidents as well as the promotion of protective factors is central to the country’s research agenda. While social science and public health enquiries apply these objectives to various South African contexts, few studies investigate manifest risk and protective factors within South African universities. Accordingly, this study aims to develop the first record of both risk and protective factors at the University of South Africa (Unisa) Muckleneuk Campus as a means to inform future theoretical and practical initiatives in the area. Data was collected with photo-documentaries, unobtrusive field observations, and a peace and safety checklist. The collated data was subjected to a thematic content analysis, allowing for the emergence of four distinct peace and safety promotion themes. These themes include crime, fire injury and electrocution, road and traffic injury, in addition to unintentional injuries. These four themes are discussed, and recommendations are provided, with the intention of informing injury prevention and safety promotion initiatives at the level of both theory and practice in South African tertiary education contexts. This study provides a platform upon which further work in the field can be produced to ensure the safety of students attending tertiary education institutions in South Africa.

Keywords: campus safety; crime; traffic; electrocution; injury; South Africa; Unisa

INTRODUCTION
South Africa is characterised by exceptionally high mortality rates resulting from both unintentional and intentional injuries (Seedat, Van Niekerk, Jewkes, Suffla & Ratele, 2009). While a number of South African-based studies have investigated both the risk and protective factors related to these injuries (see Jackson, 2010; Matzopoulos, van Niekerk, Marais & Donson, 2002), there have been few attempts to apply these research objectives to the context of South African tertiary education institutions (TEIs). Given that academic institutions are compelled, by law, to ensure safety in the learning environment (Republic of South Africa, 1996) and since South Africa ranked last in school safety compared with 38 other countries (Mullis, Martin, Kennedy & Foy, 2007), it is imperative to begin a process of engaging with safety issues on South African campuses.

One of the few studies investigating safety on South African campuses demonstrates that both students and staff feel unsafe at their respective TEIs (Mullis et al., 2007). More importantly, many of these students and staff personally experienced or were vicariously affected by incidences of crime and/or injury. The potential for injury occurring on campus has numerous implications. For example, students’ perceptions of school safety and high crime rates are influencing factors

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when students’ select and enrol at TEIs (Wiese, Van Heerden, Jordaan & North, 2009). Campus security and safety is ranked as the third most significant contributor to South African students’ choice of TEI (Wiese et al., 2009). In light of the high injury rate in South Africa, coupled with students’ perceptions and actual experiences of unsafe campus contexts, this paper aims to identify both risk and protective factors at the Muckleneuk campus of the University of South Africa (Unisa) located in the city of Tshwane (previously known as Pretoria).

A CONCEPTUAL MODEL OF INJURY AND CRIME PREVENTION

In line with the public health model, this study treats violence and other causes of intentional and unintentional injuries as public health issues, and as such as both predictable and preventable. Furthermore, this study draws on an interdisciplinary ethos in order to identify risk factors and develop prevention strategies. The adoption of an interdisciplinary public health approach allows a wider range of potential injuries to be targeted in addition to offering multiple prevention possibilities, which a single paradigm might not be capable of (Dahlberg & Krug, 2002; Mercy, Rosenberg, Powell, Broome & Roper, 1993). Additionally, a multidisciplinary ethos recognises that injury and violence emerge from multiple and complex personal, social and economic factors (Ontario Public Health Association, 1999). Accordingly, this study is able to focus on multiple causative or protective factors — including engineering and environmental design, education, human behaviour, as well as enforcement and legislation (Yanchar, Warda & Fusell, 2012).

In combination with the public health model, this study also incorporates Felson and Cohen’s (1980) Routine Activities Theory (RAT) to further explain crime, criminal victimisation and other intentional injuries. Essentially RAT proposes that three elements occur simultaneously during a violent or criminal incident; namely, (i) a motivated offender; (ii) available and suitable targets; and (iii) the absence of capable, physical and/or passive guardians that limit an offender’s access to vulnerable targets (Felson & Cohen, 1980). Person(s) who are capable of protecting targets or preventing criminal incidents are referred to as physical guardians (e.g. security guards and police), while passive guardians aim to deter or mitigate the extent of criminal activities, and typically include surveillance or security systems (Wortley et al., 2008). This theory also describes crime patterns in relation to archetypal and foreseeable activities of the target that generates anticipatable opportunities for an offender to commit an unlawful offence (Felson & Cohen, 1980). Ideal opportunities are created for criminal conduct when targets engage in risky behaviour; for instance, being vulnerable at a notorious crime location (i.e. crime hot spot).

Using the aforementioned theoretical frameworks as a backdrop, this research aims to identify the most prominent injury risk factors and safety promotion features evident at a South African university, by utilising the Unisa Muckleneuk campus as an example. This, in turn, will provide insight into the kinds of prevention mechanisms that need to be called upon in these contexts.

SAFETY ON CAMPUS: AN INTERNATIONAL PERSPECTIVE

While literature focusing on South African TEI safety is scant, international studies are able to offer some insights into the issues surrounding both intentional and unintentional injury risks on campus. The recent surge of on-campus shootings in the United States of America (USA) has simultaneously resulted in an increased literature base concerning campus safety in the country. After the Columbine High School shootings in 1999, focus remained limited to the investigation of school violence (Miller, 2011). However, subsequent to the massacres at Virginia Polytechnic in 2007 and Northern Illinois University in 2008, college and university campus safety became a prominent topic of enquiry throughout the USA (Miller, 2011; Vicary & Farley, 2011).
Various studies have revealed that, owing to densely populated environments coupled with insufficient security measures, both college and university contexts in the USA have become prime locations for multiple-victim attacks, including mass shootings, sexual assault, stalking, hazing, racial- and gender-based violence, and homicide (Carr, 2005; Sulkowski, 2011). More recently, research has focused on different campus types to explicate the experience of victimisation and perceptions of crime on-campus. For example, Tomsich and colleagues’ (2011) study found lower rates of victimisation in urban universities than those reported in Jennings, Gover and Pudrznyska’s (2007) study on traditional universities. This was especially true for personal and property victimisation. Additionally, Jennings and colleagues (2011) found that males reported more personal victimisation, while females were more likely to report both personal and property victimisation. Both studies found that males view their campus environments as safe; contrastingly, females were more likely to perceive their campus as an unsafe environment.

Similarly, a study conducted at the University of Lagos demonstrated that intentional injury trends differ according to university areas and settings. Specifically, Ayenibiowo (2010) found that verbal, behavioural and physical attacks predominantly occur in lecture halls and open spaces, while sexual victimisation primarily occurs in hostels. In another study linking sexual violence to campus layout, Cubbage and Smith (2009) found that sexual assaults frequently occurred in open spaces at an Australian university. Nonetheless, 73% of their participants (n = 30) continued to walk through these open areas. There is some evidence to suggest that there is a relationship between crime rates and campus accessibility (Morta, Hermosa & Castro, 2009), since campus accessibility provides offenders with a convenient channel to commit crimes, owing to the number of potential targets and the proximity of major intersections and public transport routes (Morta et al., 2009).

Given the obvious need for increased security on-campus, two recent studies examined the relationship between the use of public versus private security guards, and general security measures on American campuses (Jennings et al., 2011; Maskaly, Donner, Lanterman & Jennings, 2011). Both studies found that public security was more successful in deterring crime and serious violence, and violence was also lower on campuses where security personnel employed use-of-force devices such as tasers or firearms. In addition, Maskaly and colleagues (2011) indicated that campuses without any security personnel reported higher incidences of criminal activities. Jennings and colleagues (2011) suggested that the use of weapon-detection devices also deterred criminal activities on some campuses. Finally, both studies established that the larger the campus, the more susceptible the campus, staff and students are to crime.

Similar to intentional injury patterns, unintentional injuries are also geographically specific. For example, Schwebel, Pitts and Stravrinos (2009) found that in the USA, on-campus traffic-related injuries arise from students’ increased exposure to traffic, as they frequently walk to and from campus as well as across campus grounds. Ibrahim, Kidwai and Karim (2005) investigated the behaviours of pedestrians and motorists at a pedestrian crossing on a Malaysian university campus. Overall findings indicate a gap between traffic-related knowledge and behaviours. Despite motorists’ knowledge of the pedestrian crossing, motorists were more likely to slow down rather than completely stop for pedestrians crossing the road. Furthermore, of the 337 pedestrians observed, only 16% used the demarcated crossing, while the other 84% crossed the road a short distance away. Ibrahim and colleagues (2005) concluded that pedestrians and motorists do not realise the importance of a pedestrian crossing, or perhaps the pedestrian crossing is inconveniently situated. Similarly, Ibrahim, Day, Hirshon and El-Setouhy (2011) revealed that 21.9% of pedestrians (n = 1,324) at an Egyptian university had suffered an injury, primarily because of their failure to look both directions before crossing the road.

Other forms of unintentional injuries are those arising from fire and electrocution hazards. Campus fires frequently occur in student housing because of cooking equipment being left unattended, arson, careless disposal of smoking materials, the condition of electrical appliances, and open flames (Campagnola, Hebner & Kern, 2004). Other causes include insufficient
fire sprinklers and absent or disabled smoke alarms. Lateef, Khamidi and Idrus (2010) established that potential fire hazards include numerous open, exposed, frayed or damaged electrical wires, and cables around campus arising from insufficient building maintenance.

Several international studies focused their investigations on the prevention of fire-related injuries. For example, Wong (2005) tested evacuees’ evacuation time and movement during a simulated fire emergency in a Chinese university building. The results suggest that longer and wider corridors have variable thermal temperatures and smoke density. These factors influence the incidence of burn injuries, as well as smoke inhalation by evacuees. Likewise, at the Hong Kong Polytechnic University, Wong and Cheung (2006) found evacuees’ injury risks are influenced by the flow rate of building occupants and the width of the exit door. Despite the often-quoted recommendations for fire prevention devices, studies have demonstrated that they are ineffective unless coupled with fire safety knowledge and awareness. For instance, Argueta and colleagues (2009) examined 480 international students’ residence dormitories in Australia. Only 83% of the dormitories included smoke detectors, 43% contained fire extinguishers and fire blankets, and 21% had sprinkler systems. However, more than half of the students could not operate the fire equipment, rendering the fire equipment effectively redundant (Argueta et al., 2009).

Poorly structured physical environments also contribute to unintentional injury rates. Balachandran and Baptista (2002) explored walkway safety in an American University, and they found that students feel unsafe walking between parking areas across campus because of absent and damaged walkways. At the Canadian Dalhousie University, students revealed that disruptions to pedestrian walkability arise from worn, broken and/or cracked walkways and construction areas. In line with such concerns, Olanrewaju, Khamidi and Idrus (2010) evaluated Malaysian University buildings in order to determine the level of injury risk. Of the thirty defects documented, the most notable and life threatening defects included elevator failure and faulty electrical systems. These studies demonstrate that it is crucial to investigate campus safety in order to ensure that safety promotion initiatives are focused on the relevant injury risks evident in a specific university. This is significant in the South African context, given the high and often fatal injury rates.

SAFETY ON-CAMPUS: A SOUTH AFRICAN PERSPECTIVE

Despite the palpable implications of campus safety that the international literature highlights, there is a dearth of research specific to South African TEIs (Tshabalala, 2001). Studies which have methodically investigated campus safety are outdated (e.g. Potgieter, 1993), focused on primary/secondary schools (e.g. Xaba, 2006), or were conducted solely for internal use within tertiary institutions (e.g. Korte, 2007). Even more concerning is the lack of safety awareness and promotion on South African campuses (Tshabalala, 2001). Given the rate of injury and violence in South Africa, along with this gap in scientific knowledge, violence and injury within South African TEIs becomes an important derivation for new research. Such research can then be utilised by policy-makers to minimise the occurrence of violence and injury, along with encouraging the implementation of safety mechanisms.

The majority of South African victims of fatal injuries are young adults between the ages of 20 and 29 (Donson, 2010). This is noteworthy since most South African university students fall within this age range. While this does not necessarily indicate that these injuries occur on campuses, no campus environment is immune from the major crime and injury trends that are pervasive in South Africa (Potgieter, 1993). For example, Tshabalala (2001) indicates that the main crimes affecting the University of KwaZulu-Natal are property theft (88%), vehicle theft (53%), robbery (40%), damage to property (38%), and physical assault (16%). Potgieter (1993) demonstrated that most instances of crime on South African campuses are generalisable to other universities. Consequently, Tshabalala’s (2001) results can be regarded as general estimates of crime figures on South African campuses.

In view of the overwhelming prevalence of sexual violence within South Africa (Sass, 2005), sexual victimisation is of particular concern at TEIs. MacKay and Magwaza (2008) explored the circumstances surrounding occurrences of rape.
crime and security within the University of KwaZulu-Natal student hostels. The most prominent risk factors were inadequate security measures and access controls. Students frequently opened access-controlled gates to non-residents and/or were often responsible for damaging access control systems and security barriers. The use of internal security divisions is a characteristic measure used to combat crime and violence within South African TEIs. However, Sass (2005) argues that a lack of trust between security personnel, students and staff members can undermine campus safety and the effectiveness of internal crime prevention. At the University of KwaZulu-Natal Tshabalala (2001) established that staff and students believe the Protective Services Unit (PSU) is ineffective because of a lack of cooperation and communication between university administrators and PSU, as well as an absence of the essential paramilitary training undertaken by PSU staff. Similarly, the Higher Education HIV/AIDS study of 21 TEIs’ security establishments revealed that all participating campus securities are inadequate because of broken security equipment, poor and unregulated access controls, and easily bribed security personnel (HEAIDS, 2010). Additionally, security personnel often perform multiple and conflicting roles such as crime prevention, traffic regulation, and access control to maintain order and stability on-campus (Steenkamp, 2002). This results in the diffusion of tasks and a limited focus on specific crime prevention activities.

While crime is an obvious and particular concern across South African TEIs, unintentional injuries are also important safety hazards that could result in fatalities (e.g. traffic-related mortalities). There is only one documented South African study concerning unintentional traffic injuries in TEIs, which explored Unisa students’ difficulties when crossing the roads in and around the Muckleneuk campus (Van Rensburg et al., 2002). Results illustrated that 40% of the participants experienced problems crossing two main roadways. Additional problems students experienced included vehicle speeding, an absence of safe pedestrian crossings, a lack of traffic controls, and carelessness of pedestrians. While none of the participants had been involved in a pedestrian accident, all had witnessed up to six pedestrian accidents caused by reduced pedestrian visibility to motorists (Van Rensburg et al., 2002). These are important considerations given Gainewe’s (2011) observation that there is a tendency for South Africans to ignore pedestrian road laws, resulting in a high number of pedestrian offences, injuries and fatalities.

Fire and electrocution incidents are also key risk factors in educational contexts. During 2009, 93 fires occurred at educational institutions nationwide in South Africa (Bozsik, 2010). Electrical fires constituted approximately 8% of these fires, where faulty extension cords, appliances and plugs were key causes. Additionally, open flames and smoking materials (such as cigarettes) also contributed to these fires (Bozsik, 2010). All TEIs use electrical equipment, but if electrical equipment is unsafe or in poor working condition it can cause electrical fires and personal injury (e.g. electrical shocks and burns). For example, the Potchefstroom College of Agriculture reported various critical fire hazards and/or electrocution risks within the student hostels and kitchen. These hazards included the lack of emergency exits, subserviced emergency fire equipment, and visible live wires from missing electrical covers (Jackson, 2010).

Despite the paucity of available literature concerning South African campus safety, the reviewed research demonstrates that campus safety is a valid concern that should be subject to ongoing research. It is also important for all TEIs to provide university members access to health and emergency facilities in the event of an emergency in accordance with the Occupational Health and Safety Act No. 85 of 1993 (1993) (e.g. Van Papendorp, Coetzee & Koorts, 2007). This study therefore attempts to unpack the different types of injury risks and protective factors on the Unisa Muckleneuk campus as a means to provide risk reduction and prevention strengthening recommendations.

METHOD

Unisa Muckleneuk campus structure

Unisa Muckleneuk campus is situated along the hills of Muckleneuk Ridge in Pretoria. Between 1972 and 2010 the university had undergone extensive renovations and developments. Currently, the university boasts six main buildings as well as an
observatory on 40 acres of land. The buildings and observatory are surrounded by landscaped gardens and parking areas and feature two ponds on the east and west side of the campus. The campus consists of three entrances for motor vehicles and pedestrians: Main Preller entrance, Good Hoop entrance and East entrance connected by two roads. Muckleneuk is a residential suburb located in close proximity to lower socioeconomic areas such as the city centre. Even though Unisa is a correspondence university, hundreds of students, educators and visitors come to the university each day.

Data collection
Students completing their master’s in Research Consultancy at Unisa were offered the opportunity to act as field researchers for the study. The selection of these researchers was based on the demonstration of appropriate research skills and knowledge. Prior to data collection, the students were subjected to a full day workshop, exposing them to the study objectives and methods as well as training them to utilise the tools toward data gathering.

During the first phase of data collection, field researchers captured photographic images of the Unisa Muckleneuk campus environment using a 27-flash exposure disposable camera. Fieldworkers were required to take approximately 24 on-campus photographs consisting of 12 peace and safety measures as well as 12 injury risk factors. The field researchers developed a list of narratives describing the photographic images and participated in focus group discussions to explain their findings and recommendations for improving campus safety. In total, 222 photographs were developed, although 16 were excluded from the analysis since they did not fall within the parameters of the research. The remaining 206 photographs consisted of 95 risk factor images and 111 safety factor images. These photographs were then utilised to develop a 95-item Safety and Peace checklist that consisted of a closed-ended response format (i.e. ‘Yes’, ‘No’ and ‘Not Applicable’) (see Appendix A).

The second phase of data collection involved unobtrusive observations by the lead author across the entire campus over a two-week period during 2010. The researcher recorded naturally occurring activities and everyday incidents on-campus while simultaneously ensuring that the observations were not biased by researcher intrusion (Takona, 2002). Field notes were transcribed in preparation for the data analysis. The field researcher employed the 95-item Safety and Peace checklist as a subsidiary form of unobtrusive observation.

Data analysis
Using ATLAS.ti, Version 4.2 (ATLAS.ti, 1999) qualitative information was coded via a data-driven process using the risk and protective factors as preliminary categories. Following Braun and Clarke’s (2006) guidelines for thematic analysis, the transcriptions, checklist observations, and photographic narratives were read, re-read and coded into salient themes following deep immersion in the data. These themes were then either collapsed into one another to form larger themes or structured hierarchically to form an overarching theme with sets of sub-themes. Themes were thereafter labelled and defined. The organising themes were further structured into a tabular format and categorised into broader global themes (Attride-Stirling, 2001). While this process is cyclical and requires multiple levels of re-reading and recoding, the results are presented linearly for the purpose of clarity.

RESEARCH FINDINGS
Four global themes emerged from the data analysis: (1) Crime Safety and Risk; (2) Fire and Electrical Safety and Risk; (3) Road Traffic Safety and Risk and; (4) Unintentional Injury Safety and Risk. Findings are presented for each of the four global themes according to the corresponding organising themes that emerged during the analysis. Table 1 illustrates the thematic network analysis of all four themes, while Table 2 summarises each finding according to the global and organising themes.
<table>
<thead>
<tr>
<th>Global themes</th>
<th>Organising themes</th>
<th>Basic themes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High-risk areas</td>
<td>Open fields, Hijacking hotspot, Dimly lit areas</td>
</tr>
<tr>
<td><strong>(II) Fire and Electrical Risk and Safety</strong></td>
<td>Electrical</td>
<td>Electrical cables and wires, Electrical warning signs</td>
</tr>
<tr>
<td></td>
<td>Fire controls and smoking policy</td>
<td>Smoke detector devices, Fire alarms, Fire escape routes, Fire exit doors, Fire extinguishers, Fire hydrants, Emergency fire telephones, Fire evacuation signage, Fire door release, Obstructed fire doors, No smoking policies, Designated smoking areas</td>
</tr>
<tr>
<td><strong>(III) Road and Traffic Risk and Safety</strong></td>
<td>Parking</td>
<td>Safe parking areas, Risky/illegal parking, Drop-off/pick-up zones, Traffic congestion at drop-off/pick-up zones</td>
</tr>
<tr>
<td></td>
<td>Road measures</td>
<td>Road speed bumps, Road signs, Speeding vehicles</td>
</tr>
<tr>
<td></td>
<td>Pedestrian safety measures</td>
<td>Pedestrian crossings, Pedestrian crossing road signs, Pedestrian walkways</td>
</tr>
</tbody>
</table>
The findings of this study illustrate that intentional and unintentional injuries at the Muckleneuk campus are likely to arise from unsafe actions (e.g. motorists not yielding to pedestrians crossing the road) and unsafe conditions (e.g. no access controls at pedestrian campus entrances). For instance, despite the presence of a ‘hijacking hotspot’ warning sign outside one of the campus entrances, students and staff park in this area on a daily basis. Since it is difficult to modify behaviour, prominent environmental, legislative and engineering risks and hazards (identified in the thematic content analysis) should be minimised to reduce injuries and victimisation (Doughty & Greenwood, 1985).

Another notable trend relates to the linkages between themes. Accordingly, risk and safety factors cut across the four global themes and in some cases the emergent themes closely correspond with one another. For example, within the global theme Road and Traffic Risk and Safety, the campus tunnel provides pedestrians with a safe route to cross the road and it serves as a pedestrian safety measure. However, within the global theme Crime Risk and Safety, the campus tunnel creates a potential crime zone since there are insufficient security measures, and this renders it redundant as a pedestrian safety measure. If students and staff choose to use the tunnel they may be victimised by criminals; however, if they avoid the tunnel they may increase their chances of being injured in a traffic-related incident when crossing the road. Thus, some sub-themes overlap and safety promotion initiatives would need to consider these interconnected findings. Similarly, within the same global theme, it was occasionally noted that a safety promotion measure might also serve as a risk factor. For example, within the global theme Fire and Electrical Risk and Safety, the “fire alarm systems” are a fire safety measure that warns occupants of an emergency in the buildings. However, some of alarms are broken and have exposed wires, which may pose a fire and electrocution risk. Furthermore, because these findings are based solely on observational data, it is difficult to detect the proportion of fire alarms that are faulty. However, insufficient building and fire-equipment maintenance can create potentially deleterious effects and mitigate environmental safety promotion measures.

Although some of the prominent risks are evident in the organising themes, overall, the documented safety measures are consistent with other TEIs. The Unisa campus thus appears on a par with international standards of security, fire and health measures (Popa, Turcu, Gaitan, Turcu & Prodan, 2006). The current findings are also important because they add to the South African literature and provide contextual insights into global risk and safety promotion factors in tertiary educational environments.
### Table 2: Overview of Research Findings by Global and Organising Themes

#### I: CRIME SAFETY AND RISK

<table>
<thead>
<tr>
<th>Safety Factors:</th>
<th>Risk Factors:</th>
<th>In contrast to:</th>
<th>Similar to:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access Controls</strong></td>
<td>• Security gates</td>
<td>• No smart-card controlled campus entrances</td>
<td>HEAIDS (2010); MacKay and Magwaza (2008); Morta et al. (2009)</td>
</tr>
<tr>
<td></td>
<td>• Security barred windows</td>
<td></td>
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<tr>
<td></td>
<td>• Laser beams</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Security fences</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Security check points</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Smart-card controlled gates within buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Security guards</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prohibition and warning signs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Security gates</td>
<td>• Open small alley-gates</td>
<td></td>
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<tr>
<td></td>
<td>• Security barred windows</td>
<td>• Broken windows and missing ceiling panels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Laser beams</td>
<td>• Lack of discernible security access doors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Security fences</td>
<td>• No fencing enclosing open fields</td>
<td></td>
</tr>
</tbody>
</table>

#### Security Controls

<table>
<thead>
<tr>
<th>Safety Factors:</th>
<th>Risk Factors:</th>
<th>In contrast to:</th>
<th>Similar to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• CCTV cameras</td>
<td>• Absence of security guards in some areas</td>
<td>Sass (2005); Tshabalala (2001)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Adequate security lights</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Security guards</td>
<td>• Dimly lit or no lighting in parking areas and some stairwells</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Security locks</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The Crime Watch/Whistle blowers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### High-risk Areas

<table>
<thead>
<tr>
<th>Safety Factors:</th>
<th>Risk Factors:</th>
<th>In contrast to:</th>
<th>Similar to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Hijacking hotspot warning sign</td>
<td>• Open fields</td>
<td>Ayenibiowo (2010); Cubbage and Smith (2009); Steenkamp (2002)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Overgrown gardens</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Dimly lit parking areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Pedestrian tunnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Hijacking hotspot area</td>
<td></td>
<td></td>
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</tbody>
</table>

#### II: FIRE AND ELECTRICAL SAFETY AND RISK

<table>
<thead>
<tr>
<th>Safety Factors:</th>
<th>Risk Factors:</th>
<th>In contrast to:</th>
<th>Similar to:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fire Control</strong></td>
<td>• Fire extinguishers, hoses and hydrants</td>
<td>• Some faulty/damaged fire alarms and smoke detectors</td>
<td>Argueta et al. (2009); Bozsik (2010); Jackson (2010)</td>
</tr>
<tr>
<td></td>
<td>• Smoke detectors</td>
<td>• Lack of clearly marked fire exit door signs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fire alarms and intercoms</td>
<td>• Fire escapes being used as everyday stairwells</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fire escape routes and stairwells</td>
<td>• Obstructed fire exit doors and fire equipment by vehicles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Smoke stop and fire exit doors</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Emergency brigade telephones</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Retro-reflective fire evacuation signage</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Fire and emergency procedures signage</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Wheelchair-friendly fire escape routes and exits</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• No smoking policy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Trained fire safety personnel</td>
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<td></td>
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</tbody>
</table>

Wong (2005); Wong and Cheung (2006)
### Electrical Risks

- Electrical warning signs
- Exposed and open light fixtures, electrical circuits and faulty electrical systems
- Open high-voltage electrical cupboards

Jackson (2010)  
Campagnola et al. (2004); Lateef et al. (2010); Olanrewaju et al. (2010)

### III: ROAD TRAFFIC SAFETY AND RISK

<table>
<thead>
<tr>
<th>Safety Factor</th>
<th>Risk Factor</th>
<th>In contrast to</th>
<th>Similar to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic cones and caution tape to prevent illegal parking</td>
<td>Obscured or damaged parking bays</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic patrol personnel</td>
<td>Traffic congestion and driving difficulties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disabled parking areas</td>
<td>Obstruction of fire equipment and pedestrian crossings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safe parking areas</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Road Safety Measures

- Bright and visible road markings and road signs  
- Speed bumps

- Speeding vehicles  
- Motorists not completely stopping at stop streets  
- Misuse of speed bumps  
- Vehicles driving on the opposite side of road  
- Broken or missing metal buttons of speed bumps

Van Rensburg et al. (2002); Ibrahim et al. (2005); Schwebel et al. (2009)

Pedestrian measures

- Pedestrian crossings  
- Pedestrian tunnel  
- Pedestrian warning signs

- Motorists not yielding for pedestrians  
- Jaywalking  
- Pedestrians crossing at points other than indicated safe crossing zones  
- Insufficient existing pedestrian crossings

Ibrahim et al. (2005); Ibrahim et al. (2011)
IV: INJURY SAFETY AND RISK

<table>
<thead>
<tr>
<th>Safety Factor</th>
<th>Risk Factor</th>
<th>In contrast to</th>
<th>Similar to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walkways and stairs</td>
<td>• Pedestrian walkways, non-slip grips and railings, covered grid-like drainage system, access ramps for disabled individuals</td>
<td>• No suitable warning signs, fencing and/or railings surrounding ponds, damaged concrete walkway surrounding ponds, insufficient walkways at parking ramps and parking areas, some damaged walkways and building terrace tiling</td>
<td>Balachandran and Baptista (2002); Christian et al. (2010)</td>
</tr>
<tr>
<td>Emergency and Medical Facilities</td>
<td>• Health clinic, first aid facilities, health education, emergency vehicles, emergency policies and procedures, disabled facilities</td>
<td>• First Aid Room used as storage facility, clinic's front entrance is locked and back entrance is difficult to locate, no directional signs to clinic</td>
<td>Van Papendorp et al. (2007)</td>
</tr>
<tr>
<td>On campus Construction</td>
<td>• Hazard signs, visible netting</td>
<td>• Block pedestrian walkways, improperly disposed construction waste</td>
<td>Christian et al. (2010)</td>
</tr>
</tbody>
</table>

The abovementioned findings are not exhaustive, but they do demonstrate that the Unisa campus has numerous safety promotion features as well as notable risk factors related to crime, fire and electrocution, traffic-related injuries, and unintentional injuries. The implications of these risks and safety promotion factors are discussed with the intention of proposing recommendations for improving safety on-campus.

DISCUSSION

This study aimed to identify various safety promotion and risk factors within the Unisa Muckleneuk campus. Given the paucity of research relating to peace and safety on South African TEI campuses, this study is important in terms of its theoretical implications, and the practical recommendations that it provides.

Crime risk and safety

The following discussion will make reference to Felson and Cohen’s (1980) Routine Activities Theory (RAT) to make sense of any shortfalls in the university’s safety measures and how these shortfalls may increase the likelihood of criminal activity. In addition, the RAT is a useful framework for indicating the presence of guardians (passive and/or physical) currently in place on Unisa’s campus as well as possible risky behaviours and potential targets.

The most salient themes included threats to safety and the lack of safety measures to circumvent these risks. Despite the fact that notable access control measures are present on-campus, especially within the buildings, there is inadequate access control at some external areas on-campus. For example, all Muckleneuk pedestrian entrances remain open daily, and do not require smart cards to gain access. In consequence of inadequate access controls (passive guardians) any person, including a motivated offender, is able to access the campus. Once on campus, motivated criminals are able to victimise their targets and commit a crime (Felson & Cohen, 1980). The lower socioeconomic status of the area surrounding the Muckleneuk campus creates an additional threat for crimes such as theft, owing to the abundance of targets (e.g., students), access to valuable property (e.g., laptops) and the ease of trespassing. Smart cards would enable university officials (e.g., security personnel) to differentiate between authorised (e.g., students) and unauthorised persons (e.g., criminals).
Since smart cards are not required at pedestrian entrances, students may not carry or own personal smart cards and this decreases security personnel’s ability to restrict illegitimate access.

The RAT suggests that universities employ guardians (passive and physical) to deter offenders from committing a crime (Felson & Cohen, 1980). Unisa may have recognised that pedestrian entrances provide no immediate protection against trespassers and have increased other measures to reinforce such restrictions. To compensate for the lack of external access controls, security personnel (physical guardian) and CCTV cameras (passive guardian) monitor the pedestrian entrances, parking areas and campus grounds. Based on the notable proclivity for security guards to check bags, vehicles and refuse access to any suspicious people, it can be viewed as a fairly effective form of crime prevention. By doing so, offenders are unlikely to be able to enter or leave the campus with weapons or stolen property (Wortley et al., 2008). The inordinate amount of CCTV implies that Unisa recognises how large the campus grounds are and that the campus may thus be more likely to be targeted for criminal activity than a smaller university (Maskaly et al., 2011). The large campus also makes it impractical for security personnel to monitor the entire campus environment alone. CCTV gives security personnel the ability to monitor different locations simultaneously enabling better control over campus activities (Welsh & Farrington, 2008; Wortley et al., 2008). Furthermore, CCTV encourages and enhances security consciousness and vigilance regarding crime (Sass, 2005). For example, during the observational periods, very few people utilised the open fields. In contrast to similar studies (see Ayenibowo, 2010; Cubbage & Smith, 2009; HEAIDS, 2010; Jennings et al., 2011; MacKay & Magwaza, 2008; Tomsich et al., 2011), no criminal activities were documented throughout the observational period. Accordingly, it is arguable that the Unisa campus and authorised university members are safety conscious and that the existing on-campus security measures appear effective in deterring criminal activity.

**Fire and electrical risk and safety**

Traditional fire risk and safety research in TEIs mainly focuses on fire risks that occur in student housing facilities (e.g. Campagnola et al., 2004). Because Unisa is a distance-learning institute, there are no student housing facilities. Thus, previous research may not be directly applicable but can, nonetheless, provide valuable information regarding fire safety and prevention measures. For example, the community may possess the basic fire safety knowledge, but may not actually know how to use the fire equipment (Argueta et al., 2009). The current study did not examine students’ and staff members’ fire safety knowledge and/or their ability to use the fire equipment. However, the abundance of fire safety measures, and the trained fire safety personnel imply that Unisa recognises that there will be a significant loss to property and high rates of injury and/or fatality if a fire occurs, particularly since it is a large campus with a multitude of building occupants. Nevertheless, the abundance of fire escape routes along with measures to safely evacuate occupants and control the spread of fire indicates that Unisa acknowledges the magnitude of this risk. Although notable safety mechanisms are in place, damaged and/or exposed light fixtures and electrical wiring within campus buildings undermine these safety promotion strategies. This is a crucial concern since electrical fire injuries are pervasive in South Africa (Bozsik, 2010). It is possible that hazardous electrical wires and light fixtures may have occurred more frequently in 2010 as a result of reconstruction and renovation on-campus. However, construction and renovations are generally temporary and it is feasible that since the project was completed, some of the documented risks may have been addressed.

**Road and traffic risk and safety**

Pedestrian safety in and around the Unisa campus is particularly important given the recent and distinct increase in student numbers over the past few years. This factor seems to cause unnecessary competition between pedestrians and motorists for space owing to limited parking availability. During the observational period, numerous vehicles were illegally parked, creating obstructions near pedestrian crossings as well as reducing roadway visibility. The Unisa Muckleneuk campus utilises enforcement and engineering interventions to promote safe road practices and behaviours. However, a commonly observed risk factor involved unsafe pedestrian behaviour such as jaywalking. For example, even though there are numerous pedestrian crossings on-campus, the majority of pedestrians did not use these crossing areas. Potential reasons for this risky pedestrian behaviour may include a lack of awareness of the importance of pedestrian crossings and the tendency for pedestrians
to overestimate motorists’ driving abilities (Ibrahim et al., 2005). Pre-existing pedestrian crossings and walkways seem to be inconveniently located or insufficient considering the magnitude of the campus grounds. For example, the absence of pedestrian walkways on parking ramps and within parking areas forces pedestrians to walk in the roadways which can create additional injury risks. These factors are of concern given the high pedestrian injury and fatality rate in South Africa (Gainewe, 2011).

**Unintentional injury risk and safety**

Unintentional injury risks may have been amplified during the course of this study since the Muckleneuk campus was undergoing renovations during the time that observations were conducted. Although renovations are typically beneficial in the long term, they can increase transient injury risks. For example, the arrangement of the construction sites provided non-university members easy access to the campus premises. In addition, some of the construction areas obstructed walkways, and these construction materials could increase the risk of nearby falls. Similarly, there is some evidence of walkway damage which creates uneven surfaces and may have been exacerbated by the heavy machinery used during construction. Another concern is the inappropriate disposal of construction waste such as fluorescent light bulbs. The broken glass and associated chemical waste is hazardous to individuals on-campus. Additionally, two large unenclosed ponds may pose injury or drowning risks for students, staff or visitors, particularly if they are distracted, visually impaired or disabled. However, Unisa appears to recognise the potential risk of these injuries and the importance of health and safety on-campus. Accordingly, various emergency facilities (e.g. first aid areas and emergency personnel) are located throughout the campus and they can be used to treat minor injuries/illnesses, and serve as protective factors. A fully functioning health care clinic is also located on-campus, although its back entrance is inconspicuous and may prolong response times in an emergency.

**Gap between intervention/policy implementation and practice**

From the findings and discussion we can deduce that there is a disjunction between public health interventions and policies and the implementation of new safety promotion initiatives at the Unisa campus. Possible explanations for this disjuncture are high costs to maintain or implement interventions, the lack of involvement and responsibility of stakeholders, lack of resources, limited research and a lack of awareness concerning campus safety (Comstock, 2012). Moreover, the sheer size of the campus as well as the correspondence structure of the university makes seemingly basic interventions difficult to translate into reality. For example, restricting access though implementing smart card access gates may in turn restrict the global university community such as students visiting the campus from another country. These potential reasons aside, it is vital for stakeholders to develop effective interventions and policies towards the objective of campus safety (Finch, 2012). In lieu of this, potential solutions to existing on-campus safety-related issues are addressed below.

**RECOMMENDATIONS**

The public health approach values primary prevention since it is crucial to decreasing both crime and injury (Mercy et al., 1993). Given the cost of violence and injury to both human and social capital, a public health approach that focuses on primary interventions is likely to be more cost effective if it aims to prevent injuries rather than to address consequences of current or past injurious and violent situations. Furthermore, while interventions that focus on environmental modifications are the most time consuming, most difficult and expensive to implement, they are considered to be the most effective and sustainable (Peek-Asa & Zwerling, 2003). Recommendations are thus largely concentrated on primary prevention techniques. Nevertheless, the following recommendations can be used individually or in combination with current interventions and policies at Unisa. Even though this study is conducted in a distance learning institution, some of the recommendations could be implemented in TEIs with similar problems. The recommendations provided below are not exhaustive, but rather aim to propose prevention strategies that are of high priority.
Crime

It is possible to reduce crime risk factors across the campus through the implementation of additional engineering and environmental prevention initiatives (Xaba, 2006).

Educational interventions, while fairly easy to implement, may not necessarily target crime directly:

(a) An annual crime and injury statistics report could be disseminated along with the campus newsletter. The proposed report might highlight the types of on-campus crimes, the affected areas, as well as the required interventions (e.g. Korte, 2007).

Engineering interventions would work best in combination with other interventions:

(b) Low alley-gates should be replaced with higher gates that are locked at all times;
(c) Smart-card controlled gates could be introduced at all pedestrian campus entrances; and
(d) Additional CCTV should be installed where campus security patrols are infrequent and/or where cameras are absent.

Environmental interventions would be the most effective crime prevention intervention, albeit the most time and resource consuming:

(e) Automatic floodlights should be installed to increase safety at or along open fields, particularly for low light periods (e.g. dusk);
(f) Suitable boundary walls and/or fencing could be erected to enclose open fields and their surroundings areas;
(g) The overgrown fields and gardens should be maintained, and long grass should be cut regularly; and
(h) All first floor building windows should be installed with security bars.

Fire and electrical

Enforcement and environmental prevention initiatives can be utilised to decrease fire and electrocution risks within the Unisa buildings and campus grounds:

Enforcement interventions would include:

(a) A protocol which should be introduced for reporting and requesting electrical/fire maintenance work to be outsourced to qualified individuals; and
(b) An all-hazard emergency response plan which could be established in order to provide a detailed guide of emergency procedures and tactics.

Environmental interventions would be most effective to prevent fires:

(c) Additional and noticeable warning signs on the internal and external sides of the fire exit doors should be installed to prevent motorists from parking in front of the door and from using these doors for any other purpose except for an evacuation;
(d) Escape path floor lighting should be installed in all corridors in order to assist evacuees during emergencies where visibility is limited;
(e) All visible, damaged electrical wires or cables and broken light fixtures must be repaired and replaced; and
(f) Firebreaks in the open fields should be initiated to prevent open fires from spreading.

Road and traffic

It is critical for TEIs to promote initiatives that combine educational, engineering, and enforcement designs to reduce pedestrian injuries (Kwan & Mapstone, 2006) while simultaneously taking into account unsafe behaviour of pedestrians and motorists.
Environmental interventions would include:

(a) Additional safe parking areas must be constructed;
(b) Alternatively, a pedestrian drop-off and waiting area can be introduced if extra parking is not feasible;
(c) New, conveniently located pedestrian crossings should be constructed and faded crossing areas ought to be repainted;
(d) The pedestrian crossing at the apex of the campus entrance must be altered to increase motorists’ ability to view pedestrians; and
(e) Bespoke pedestrian crossings for visually and hearing impaired university members/visitors should be installed (Matshedisho, 2007).

**Unintentional injury**

Engineering and environmental prevention initiatives are also expected to reduce the likelihood of unintentional injuries occurring on-campus (Matzopoulos et al., 2002).

Engineering interventions most effective to prevent unintentional injury:

(a) Railings and fencing should enclose ponds;
(b) The foundations of the ponds and the surrounding walkways must be repaired;
(c) Grid-like drainage systems need to be covered or replaced with smaller grids;
(d) Existing walkways should be repaired where they are damaged, and additional walkways need to be constructed along parking ramps and within parking areas; and
(e) Tiled floors inside the campus buildings also need regular repair and maintenance.

Environmental interventions may have less impact in the prevention of injuries but are easier to implement than their engineering counterparts:

(a) All construction and hazardous waste should be disposed of in an appropriate and legal manner; and
(b) Caution signs should be erected to warn individuals about the ponds and steep walkway nearby the pond.

**LIMITATIONS**

Although this study attempts to be reasonably comprehensive, it is limited by its descriptive nature. Follow-up studies should consider performing face-to-face interviews or surveys with university members to gain an overall view of the existing perceptions of the peace and safety mechanisms on-campus. Alternatively, a quantitative needs assessment can be conducted so that prevention initiatives are informed by the most pertinent priorities. Further limitations relate to the research methodology. Firstly, since no observations were made after 17:00, no information is available regarding the status of staff and student safety at night. Secondly, the current findings may not apply longitudinally since the campus appears to be in a state of continual flux, and some of the observations include transient risks (e.g. construction and maintenance related risk factors). Thirdly, security personnel logs and campus clinic records were not examined, and this secondary data may have been beneficial in corroborating the present findings. Finally, although the observations were conducted as objectively as possible, it must be acknowledged that qualitative research involves subjective interpretations. Thus, the researchers’ perceptions of safety, risk and injury informed the analysis, selection, and write-up of the results.

**CONCLUSION**

This study attempts to address the scientific oversights in current South African literature concerning intentional and unintentional injuries on tertiary campuses. The key indicators of crime, traffic, fire, electrocution and unintentional injury
risks highlighted by this research are particular to the Unisa campus. However, this marks an entry point into further developments in the field whereby other studies based on alternative campuses with different methodological objectives can expand on these identifications, and the implications thereof. While Unisa campus has demonstrated relatively few (albeit significant) injury-related concerns, it is likely that campuses characterised by classroom contact time and increased student presence will potentially reveal more injury-related risks. This study should thus be treated as a platform upon which further work in the field should be produced in order to ensure the safety of students attending tertiary education institutions in South Africa.

REFERENCES


### APPENDIX A: Safety and Peace Checklist

<table>
<thead>
<tr>
<th>ITEM No.</th>
<th>SAFETY AND PEACE CHECKLIST</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
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<tbody>
<tr>
<td><strong>ON-CAMPUS TRAFFIC SAFETY &amp; RISKS</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1.</td>
<td>Are there multiple illegally parked vehicles?</td>
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<tr>
<td>2.</td>
<td>Are the on-campus roads generally safe for vehicle use?</td>
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<tr>
<td>3.</td>
<td>Are most of the pedestrian crossings well-marked &amp; generally used by pedestrians?</td>
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<td>4.</td>
<td>Are the majority of parking bays clearly demarcated?</td>
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<td>5.</td>
<td>Are there sufficient parking bays for vehicles on a daily basis?</td>
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<tr>
<td>6.</td>
<td>Are there often obstructions to traffic &amp; vehicles on-campus?</td>
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<td>7.</td>
<td>Are there many blind corners &amp; blind rises on-campus affecting vehicle navigation?</td>
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<td>8.</td>
<td>Are all roadways wide enough for two-way traffic?</td>
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<td>9.</td>
<td>Are traffic signs both clearly visible and suitable for motorists &amp; pedestrians?</td>
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<td>10.</td>
<td>Are all traffic laws and road markings generally adhered to by all road users?</td>
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<tr>
<td>11.</td>
<td>Are there sufficient and safe pedestrian crossings that are clearly marked?</td>
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<tr>
<td>12.</td>
<td>Do pedestrians frequently jaywalk?</td>
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<tr>
<td>13.</td>
<td>Are there sufficient speed bumps &amp; other traffic calming measures aimed at reducing vehicle speeds &amp; protecting vulnerable road users (i.e. pedestrians)?</td>
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<tr>
<td>14.</td>
<td>Are there sufficient booms to slow traffic and monitor vehicle access?</td>
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<td>15.</td>
<td>Are there adequate parking bays for disabled individuals that are not illegally occupied?</td>
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<tr>
<td><strong>ON-CAMPUS INJURY SAFETY &amp; RISKS</strong></td>
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<tr>
<td>16.</td>
<td>Are indoor floor surfaces level &amp; unobstructed?</td>
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<tr>
<td>17.</td>
<td>Are outdoor floor surfaces generally unobstructed and level?</td>
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<tr>
<td>18.</td>
<td>Are stairwells generally unobstructed?</td>
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<tr>
<td>19.</td>
<td>Are stairwell landings generally even and level once stairs have been descended or ascended?</td>
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<tr>
<td>20.</td>
<td>Is office/lecture room furniture typically well-maintained and safe for use?</td>
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<tr>
<td>21.</td>
<td>Does on-campus construction work pose an injury threat to construction workers?</td>
<td></td>
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<tr>
<td>22.</td>
<td>Does on-campus construction work pose an injury threat to Unisa students and staff?</td>
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<tr>
<td>23.</td>
<td>Are there suitable fencing/railings near potentially hazardous water features (i.e. ponds)?</td>
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<tr>
<td>24.</td>
<td>Do all escalator and elevator services work satisfactorily?</td>
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<tr>
<td>25.</td>
<td>If elevator/escalators are not properly functioning, do they pose an injury risk to Unisa students and staff?</td>
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<tr>
<td>26.</td>
<td>Are there visible and effective warning signs and barriers preventing injury where hazards are present (e.g. wet floors)?</td>
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<tr>
<td>27.</td>
<td>Are there effective barriers to prevent falls from heights?</td>
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<tr>
<td>28.</td>
<td>Are outdoor water mains/man-holes etc sufficiently covered to prevent accidental injury?</td>
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<td></td>
<td></td>
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<tr>
<td>29.</td>
<td>Are irrigation and electrical pipes properly fitted and covered to prevent accidental injury?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Are there areas where refuse has been discarded which may pose a risk to Unisa staff and student’s general safety (e.g. glass, fluorescent lighting)?</td>
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<td>31.</td>
<td>Are most warning signs pertaining to hazards functionally mounted &amp; visible?</td>
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<td>32.</td>
<td>Are stair handrails in good condition?</td>
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<td>33.</td>
<td>Are stairwells well-lit and sufficiently illuminated?</td>
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<td>34.</td>
<td>Are non-slip surfaces provided on stairs?</td>
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<td>35.</td>
<td>Are transparent glass doors marked so they are easily visible?</td>
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<td>36.</td>
<td>Are outdoor walkways for pedestrians well-maintained and reasonably illuminated?</td>
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<td>37.</td>
<td>Are Emergency Protocol Posters and associated information prominently displayed?</td>
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<td>38.</td>
<td>Are Emergency Protocol Posters displayed in languages other than English or Afrikaans?</td>
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<td>39.</td>
<td>Are there adequate facilities to prevent accidental injuries for disabled individuals (including visually and hearing impaired persons etc.)?</td>
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<td>40.</td>
<td>Is there satisfactory indoor signage for evacuation procedures?</td>
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<td>41.</td>
<td>Are the required exits clearly evident &amp; marked with illuminated signage?</td>
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<td>42.</td>
<td>Are pathways and signage to emergency exits easily accessible &amp; straightforward to follow?</td>
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<td>43.</td>
<td>Do the exit doors swing outward for emergency purposes?</td>
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<td>44.</td>
<td>Are illuminated exit signs &amp; emergency lights properly functioning?</td>
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<td>45.</td>
<td>Are emergency exits unobstructed &amp; ready for immediate use?</td>
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<td>46.</td>
<td>Are the emergency exits unlocked?</td>
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<tr>
<td>47.</td>
<td>Is there satisfactory outdoor signage for evacuation procedures?</td>
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<tr>
<td>48.</td>
<td>Are there designated individuals in specified areas to assist during emergencies?</td>
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<tr>
<td>49.</td>
<td>Is the on-campus medical facility easily accessible to all Unisa staff &amp; students?</td>
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<tr>
<td>50.</td>
<td>Is the on-campus medical facility readily available for any emergency or health-related issue?</td>
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<tr>
<td>51.</td>
<td>Are all indoor corridors both functionally &amp; sufficiently illuminated?</td>
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<tr>
<td>52.</td>
<td>Are there sufficient emergency phones available to both Unisa staff &amp; students?</td>
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**ON-CAMPUS CRIME SAFETY & RISKS**

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<tr>
<th></th>
<th>Question</th>
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<tbody>
<tr>
<td>53.</td>
<td>Are there adequate boundary walls on-campus?</td>
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<tr>
<td>54.</td>
<td>Is there sufficient security in isolated areas on-campus?</td>
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<tr>
<td>55.</td>
<td>Is there functional lighting in dark locations on campus (e.g. outdoor stairwells)?</td>
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<tr>
<td>56.</td>
<td>Are security guards on duty at open boundary gates?</td>
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<td>57.</td>
<td>Are there security/burglar bars on most accessible windows?</td>
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<tr>
<td>58.</td>
<td>Are there on-campus areas which are possible hijack risks to Unisa students and staff (i.e. high grass areas, open fields, dark, non-secure locations)?</td>
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<td>59.</td>
<td>Is there sufficient illumination in parking garages?</td>
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<td>60.</td>
<td>Are lights and CCTV functional in isolated areas?</td>
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<td>61.</td>
<td>Are access cards building specific?</td>
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<tr>
<td>62.</td>
<td>Can individuals easily gain admission to on-campus buildings without access cards?</td>
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<tr>
<td>63.</td>
<td>Is there sufficient security inside Unisa buildings?</td>
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<tr>
<td>64.</td>
<td>Are the bathrooms safe to use, especially for female staff &amp; students?</td>
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<tr>
<td>65.</td>
<td>Is there a dedicated and easily accessible helpline for all emergency purposes?</td>
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<tr>
<td>66.</td>
<td>Are there satisfactory and reasonable security measures to prevent unauthorised access to the Unisa campus?</td>
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<tr>
<td>67.</td>
<td>Are there sufficient surveillance mechanisms in place on-campus?</td>
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<td>68.</td>
<td>Are satisfactory security checks routinely performed on vehicles entering and exiting Unisa’s campus?</td>
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<tr>
<td>69.</td>
<td>Are there barricades to prevent unauthorised vehicle and pedestrian access?</td>
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<td>70.</td>
<td>Are there satisfactory locks on doors to prevent theft?</td>
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<tr>
<td>71.</td>
<td>Are there functional security check points?</td>
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<tr>
<td>72.</td>
<td>Are there decent warning signs alerting people to dangerous/high risk areas?</td>
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<tr>
<td>73.</td>
<td>Are there security alarms and laser beams installed for safety purposes?</td>
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<td>74.</td>
<td>Are there sufficient security mechanisms in place for on-campus ATMs?</td>
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<tr>
<td>75.</td>
<td>Is there 24-hour on-campus security?</td>
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<tr>
<td>76.</td>
<td>Do security personnel provide useful protection tips to Unisa students and staff?</td>
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**ON-CAMPUS FIRE/ELECTRICAL SAFETY & RISKS**

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<thead>
<tr>
<th></th>
<th>Question</th>
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<tbody>
<tr>
<td>77.</td>
<td>Are there exposed electrical cables and/or wires inside buildings?</td>
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<tr>
<td>78.</td>
<td>Do most electrical outlets &amp; switches have cover plates to prevent accidental contact?</td>
</tr>
<tr>
<td>79.</td>
<td>Are there electrical cords running over/under walls or through doorways etc?</td>
</tr>
<tr>
<td>80.</td>
<td>Is there unobstructed access to fire hose reels, extinguishers &amp; fire alarm call points (break glasses)?</td>
</tr>
<tr>
<td>81.</td>
<td>Are appropriate fire extinguishers in place &amp; wall mounted?</td>
</tr>
<tr>
<td>82.</td>
<td>Are key personnel trained to use fire extinguishers?</td>
</tr>
<tr>
<td>83.</td>
<td>Are there adequate electrical sockets to avoid overloading?</td>
</tr>
<tr>
<td>84.</td>
<td>Is the university smoking policy typically adhered to &amp; enforced?</td>
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<tr>
<td>85.</td>
<td>Have any emergency evacuation fire drills been carried out in the last six months?</td>
</tr>
<tr>
<td>86.</td>
<td>Do electrical cords look exposed, frayed or damaged?</td>
</tr>
<tr>
<td>87.</td>
<td>Are there multiple exits for large auditoriums?</td>
</tr>
<tr>
<td>88.</td>
<td>Are there functional smoke detectors in most Unisa buildings?</td>
</tr>
<tr>
<td>89.</td>
<td>Are there accessible and visible fire alarms?</td>
</tr>
<tr>
<td>90.</td>
<td>Are there adequate reflective lights and illuminated signage in the event of a fire?</td>
</tr>
<tr>
<td>91.</td>
<td>Are unused electrical sockets covered with plugs or safety covers?</td>
</tr>
<tr>
<td>92.</td>
<td>Are there exposed electrical cables and/or wires outside buildings &amp; around campus?</td>
</tr>
<tr>
<td>93.</td>
<td>Are high voltage electrical outlets sufficiently inaccessible to unauthorised persons?</td>
</tr>
<tr>
<td>94.</td>
<td>Do high voltage electrical outlets have sufficient warning signs to prevent accidental injuries?</td>
</tr>
<tr>
<td>95.</td>
<td>Are there multiple locations where electrical wiring is visible and may pose a potential electrocution risk to Unisa staff &amp; students?</td>
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