African Safety Promotion
A Journal of Injury and Violence Prevention

JOURNAL AIMS AND SCOPE
The African Safety Promotion: A Journal of Injury and Violence Prevention (ASP) is a forum for discussion and critical debate among researchers, academics, policy-makers and practitioners active in the field of injury prevention and safety promotion within the African context. ASP seeks to promote research and dialogue around a central public health issue that affects Africa, namely injury and violence.

SUBJECT COVERAGE
A variety of injury, violence and safety promotion topics are addressed, such as:
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• Injury surveillance studies
• Epidemiological research
• Health systems research
• Risks and resilience studies associated with violence and injuries in low- to middle-income contexts
• Best practices for injury prevention and containment, and safety and peace promotion

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ISSN: 1728-774X

Publisher: Published on behalf of the UNISA Institute for Social and Health Sciences, and the SAMRC-UNISA Masculinity and Health Research Unit.

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Editorial

A New Chapter

African Safety Promotion: A Journal of Injury and Violence Prevention (ASP) was launched in 2002 and is now in its 18th year of publication. The journal has sought to promote research and dialogue on violence and injury on the continent and has provided a multidisciplinary forum for critical discussion and debate among scholars, practitioners, activists, students and policy-makers. It is in the spirit of building on this legacy that we have some exciting changes to announce.

Firstly, ASP will henceforth be known as Social and Health Sciences (SaHS). SaHS will remain an accredited South African post-secondary-education journal and continue to be administered by the University of South Africa’s Institute for Social and Health Sciences. As with ASP, all articles featured in SaHS will be subject to independent peer review. The journal will be published bi-annually and will feature original full-length articles, theoretical papers and perspectives, literature reviews and short communications, including conference reports.

Secondly, the scope of ASP will be refreshed in SaHS. This does not mean that SaHS will have an entirely new set of aims. The journal continues to welcome theoretical, empirical, applied and policy submissions on a range of diverse topics, including violence in its multiple forms; the epidemiological, structural and social determinants of health; health economics; research into community and health systems; injury, health and safety promotion; community and policy engagement; and knowledge production in the social and health sciences. While based in Africa, SaHS invites submissions from the broader Global South, as well as the Global North.

Lastly, we wish to welcome new members to the SaHS Editorial Board, whom we will be introducing over the coming months. The editorial structure of the journal has also seen a number of changes, which will be announced. We look forward to working with and alongside these esteemed colleagues.

Ashley van Niekerk and Nick Malherbe
Co-editors: Social and Health Sciences (SaHS)
Suicidal Behaviour in South Africa and Bangladesh: A Review of Empirical Work

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ABSTRACT

Suicidal behaviour is as significant a public-health concern in the global South as it is worldwide. In this article we offer a review of studies on suicidal behaviour in two countries in the global South – one in Asia (Bangladesh) and one in Africa (South Africa). A total of 20 South African and 16 Bangladeshi articles published between 2008 and 2018 were selected using PubMed and Google Scholar databases. Only empirical, research-based articles with an explicit focus on the prevalence and causes of suicide in both countries were screened and selected for this review. The review confirms that in both countries suicidal behaviour tends to be higher among certain younger age groups and people of low socio-economic status. In South Africa, non-fatal suicide attempts are more evident among females, whereas fatal suicidal

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behaviour is more common among males. In Bangladesh, both fatal and non-fatal suicidal behaviour are more evident among females than males. Mental-health-related problems are prominently reflected as strong factors associated with suicidal behaviour in South African literature, while social factors such as marital disharmony, violence, and family problems pervade the Bangladeshi literature. From studying the extant literature, we propose that while large-scale surveys and observatories are needed, it is equally necessary for researchers to conduct more in-depth qualitative research, specifically taking into account gender, to have a richer and more nuanced appreciation of the psychosocial issues and socio-cultural contexts of suicidal behaviour. Comparative, transnational research between the two countries is also recommended. The development of national and subnational databases and surveillance systems, the extension of mental-health support, reduction of gender and economic inequalities, and promotion of social cohesiveness are some of the critical intervention strategies necessary to prevent suicidal behaviour in both South Africa and Bangladesh.

Keywords: Suicidal behaviour; factors; prevalence; South Africa; Bangladesh

INTRODUCTION

Suicidal behaviour is as major a contributor to the burden of disease in the global South as it is beyond the South (Naidoo, Naidoo, & Naidoo, 2015; World Health Organization [WHO], n.d.). It is considered a serious public-health concern with far-reaching social, emotional and economic consequences. Globally, it is estimated that close to 800 000 people die by suicide every year (WHO, 2014, 2017, 2018a; Naghavi, 2019). The World Health Organization (n.d.; 2018b) estimates that around 80% of suicides are committed in low and middle-income countries. Suicide was the 17th leading cause of death in 2015 (WHO, n.d.). Available indicators suggest that for each adult who dies by suicide, between ten and thirty people attempt suicide (WHO, 2014; Michel, & Gysin-Maillart, 2015; Bachmann, 2018).

Suicidal behaviour occurs throughout the lifespan. Although apparently rare, suicide occurs even among children under 15 years old, worldwide (Kõlves, & De Leo, 2014), but in all countries suicide is rare among children below 12 (Williams, & Mark, 2001; Kelleher, & Chambers, 2003). By contrast, suicide is reported to be the second leading cause of death in those between 15 and 29 years old (WHO, 2014; WHO, 2017). Globally, males are more likely to commit suicide than females (Curtin, Warner, & Hedegaard, 2016; Demir, 2018). However, women make more suicide attempts than men (Vijayakumar, 2015; Player et al., 2015; Rivers, 2014; Schrijvers, Bollen, & Sabbe, 2012).
Despite the global estimates, the exact rate of suicide may vary, as many countries do not have any standardised methods of collecting information on suicide. The quality of data also varies from country to country (Bagley, Shahnaz, & Simkhada, 2017). Unlike data on completed suicide, no country in the world provides statistical data on attempted suicide or other suicidal behaviour (Bachmann, 2018). Therefore, relating the national trends of completed suicide to those of attempted suicide is difficult (Bertolote, & Fleischmann, 2005). Suicide rates tend to be underreported owing also to weak surveillance systems, poor case-recording, lack of resources, stigmatisation, misattribution or misclassification, the criminalisation of suicide, inaccurate ascertainment, and socio-cultural or religious sanctions. Despite all these complexities, most countries show either a steady or an escalating trend in the rate of suicide (WHO, 2013; Chen, Wu, Yousuf, & Yip, 2012; Schlebusch, & Burrows, 2009).

Compared to Europe and North American countries, less comprehensive data on suicide is available for Asian countries. Data-related weaknesses notwithstanding, suicide is of grave concern in Asia due to its vast population and the relatively high suicide figures (from available data) compared to Western countries (Yip, 2008). Studies indicate that more than half of the global suicides (around 60%) take place in Asia (Chen et al., 2012; Maniam, 2012; Värnik, 2012; Vijayakumar, 2015). Notably, according to the 2016 Global Burden of Disease Study, a handful of Asian countries, namely China, Japan and India, together account for about 44.2% of the global suicide mortality (Naghavi, 2019; Beautrais, 2006; Värnik, 2012). Roughly 60 million people are affected by suicide or attempted suicide in Asia every year (Beautrais, 2006; Vijayakumar, 2015). Despite the severity and pervasiveness of suicide in the region, suicide receives relatively less attention in Asia than in European and North American countries. Therefore, the problem of suicide in Asia may be even more serious than the numbers show (Hendin, 2008; Wu, Chen, & Yip, 2012).

Similar to Asia, data on suicide in African countries is poor. Therefore, the full extent of the burden of suicidal behaviour, incidences and patterns of suicidal behaviour remain unknown in Africa. Official figures are available for only 15% of Africa’s population and less than 10% of African countries (Mars, Burrows, Hjelmeland, & Gunnell, 2014). Estimations of suicide in most African countries, with a few exceptions (Okpaku, Ukoli, & Nzerue, 2010), are constrained by the lack of systematic data-collection (Mars et al., 2104; Burrows, Hjelmeland, & Gunnell, 2014; Wasserman, & Wasserman, 2009). Hence, suicidal behaviour among Africans are not well understood (Mars et al., 2014; Schlebusch, 2004, 2012).

According to the WHO (2016), the average suicide mortality rate in Africa is 7.4 per 100 000 of the population, compared to the global average of 10.6/100 000. Despite the lower average global rate, a few African countries show a higher trend than the global rate. Lesotho has the highest average suicide mortality.
rate (21.2/100 000 population). Some other countries with higher than average suicide rates include Equatorial Guinea (16.4), Cote d'Ivoire (14.5), Swaziland (13.3), Cameroon (12.2), South Africa (11.6), Cape Verde (11.3), and Zimbabwe (10.7). The lowest rate is evident in Sao Tome and Principe, with 2.3 per 100 000 of the population.

DEFINITION OF KEY TERMS

There are inconsistent uses and descriptions of ‘suicidal behaviour’ (Schlebusch, 2005; Klonsky, May, & Saffer, 2016). In this article, ‘suicidal behaviour’ refers to a series of components (emotions, cognitions and actions) cohering around the desire to kill oneself (Bantjes, & Kagee, 2013; Shahnaz, Bagley, Simkhada, & Kadri, 2017). ‘Suicidal behaviour’ therefore includes not only acts of completed suicide, but also feelings, ideas, thoughts, and attempts at suicide (Schrijvers, Bollen, & Sabbe, 2012; WHO, 2014). The term ‘suicidal completions’ refers to acts of persons that led to their death (Bantjes, & Kagee, 2013). ‘Suicide attempts’ refers to acts of persons who attempt suicide but unexpectedly survive (Sheindman, 2004). ‘Suicidal ideation’ refers to a preoccupation with suicide (Santos, Marcon, Espinosa, Baptista, & Paulo, 2017).

Suicidal behaviour can also be categorised as fatal and non-fatal: acts that result in death are fatal, whereas those that do not result in death are non-fatal. Non-fatal suicides may also be referred to as attempted suicide, parasuicide and deliberate self-harm (Burrows, & Schlebusch, 2008). It must be noted that suicidal intention (whether explicit or implicit) is often difficult to establish, as it is surrounded by uncertainty or even concealment (Mars et al., 2014; WHO, 2014).

BRIEF OVERVIEW OF THE PROBLEM OF SUICIDAL BEHAVIOUR IN SOUTH AFRICA

South Africa, a middle-income economy marked by sharp socio-economic inequality and marked poverty across race, gender and urban-rural divides, had a population of nearly 58 million people in 2018 (Statistics South Africa, 2018). Around 35% of people live in rural areas and 65% in urban areas (Hearn, Shefer, Ratele, & Boonzaier, 2018). Under apartheid laws, the people of South Africa were officially categorised into four racial groups: African or Black, Coloured, White, and Indian or Asian. Despite the dismantling of apartheid in 1994, these categories continue to be used as defining characteristics in politics, social life and research.
Suicidal behaviour is a significant public-health problem in South Africa (Khuzwayo, Taylor, & Connolly, 2018). It must be noted that because of apartheid policies – prior to 1994 and the advent of democracy for all races – suicide statistics were not accurately and consistently reported for all racial and ethnic groups, due to the perverse and discriminatory politics of the country (Botha, 2012; Kazi, & Naidoo, 2016). Reliable figures on suicidal behaviour have remained elusive, even after 1994 (Bantjes, & Kagge, 2013). Nevertheless, suicide is estimated to be one of the three leading causes of unnatural death (Kazi, & Naidoo, 2016; Schlebusch, 2012) and to account for 10% of unnatural deaths (Schlebusch, 2012; Mars et al., 2014).

Research suggests that suicide rates in the country range from 11.5/100 000 to 25/100 000 of the population, and that the estimated fatal (completed suicide) to non-fatal (suicide attempts, plans and ideation) ratio is 1:20. Fatal suicidal behaviour occurs predominantly in males, with an estimated female to male ratio of 1:5. Non-fatal suicidal behaviour is more evident in females, with an estimated female to male ratio of 3:1 (Schlebusch, 2012).

A limited number of large sources of reliable, quality data on suicidal behaviour are available in South Africa. Some examples of large data-sets are those of the South African Stress and Health (SASH) study, the Durban Parasuicide Study (DPS) and the National Injury Mortality Surveillance System (NIMSS). All of these are, however, characterised by numerous obvious problems. None of them is up to date. The SASH was a large-scale, population-based, nationally representative study of mental disorders among adults. However, the suicide data collected was restricted to suicide attempts, plans and ideation. The data is now 14 years old. The DPS was limited to the Durban area. Introduced in 1999 with the aim of collecting regular, accurate and comprehensive data on injury-related deaths, including completed suicidal behaviour (Medical Research Council & University of South Africa’s Safety and Peace Promotion Research Unit, 2013a, b), the NIMSS is ongoing and has the potential of providing quality, timely data on suicide. The surveillance system is, however, plagued by numerous problems. These include the fact that it does not provide information/data on all of the country, and only collects data on completed suicides. There are no reports after 2011. Despite these limitations of coverage, a number of studies have used NIMSS and SASH data.

**BRIEF OVERVIEW OF THE PROBLEM OF SUICIDAL BEHAVIOUR IN BANGLADESH**

Bangladesh is one of the most densely populated countries in the world, with a population of approximately 165 million (Bangladesh Bureau of Statistics [BBS], 2015). Despite the severity of suicide and it being a criminal offense, there is no surveillance or nationwide monitoring mechanism and no countrywide survey.
or comprehensive database specifically recording suicidal behaviour (Bagley et al., 2017; Khan, Ratele, Arendse, Zahidul, & Dery, 2020; Salam et al., 2017; Shahnaz et al., 2017; Shah, Sajib, & Arafat, 2017; Reza et al., 2017). There is also a paucity of empirical research on suicidal behaviour (Shahnaz et al., 2017; Arafat, 2016; Mashreky, Rahman, & Rahman, 2013). Police records, the media, courts hospitals, forensic settings and studies on selected populations are the major sources of information available in Bangladesh (Reza et al., 2017; Chowdhury et al., 2018; Shah et al., 2018). The Bangladesh Health and Injury Survey (BHIS) (2005) and the survey conducted for the Saving of Lives from Drowning (SoLiD) project are the two widest-ranging sources for suicidal-behaviour-related data. Three publications that have documented the findings of these two surveys are included as part of this review.

It should also be kept in mind that suicide figures are likely to be underestimated in Bangladesh, because suicide is a criminal offence (Shahnaz et al., 2017; Choudhury, Rahman, Hossain, Tabassum, & Islam, 2013). Moreover, as a Muslim-dominated state, suicide is religiously and culturally stigmatising (Mashreky et al., 2013; Begum et al., 2017). Therefore, it is difficult to obtain accurate information on suicidal behaviour in Bangladesh.

Data from the Bangladesh Health and Injury Survey (BHIS) in 2005, the first community-based survey exploring the epidemiology of injury-related information, including fatal suicide, in 12 districts, shows that suicide is the fourth leading cause of injury-related death in Bangladesh. More than 10 000 people die due to suicide every year in Bangladesh. The average rate of suicide in Bangladesh is 7.3 per 100 000 of the population per year (Mashreky et al., 2013). The rate of suicide was found to be 17-fold higher in the rural population than in the urban population (Mashreky et al., 2013).

The SoLiD Baseline Census in 2013, which covered approximately 1.2 million people from the rural areas of 5 districts, found an average rate of death by suicide of 14 per 100 000 of the population per year. This survey estimates that about 168 suicides occur in the country every day (Alonge et al., 2017; Salam et al., 2017).

It should be noted that the Bangladesh Health and Injury Survey (BHIS) of 2005 is now 14 years old and only data on fatal/completed suicide was collected. Although the SoLiD Baseline Census 2013 included both fatal and non-fatal suicidal behaviour, this survey only represents rural areas.
RATIONALE OF THE STUDY

Given the relative lack of synthesised work on suicide in both Asia and Africa, the present article presents a review and comparative analysis of recent empirical literature available on suicidal behaviour in one country in Asia and one in Africa, namely Bangladesh and South Africa. As an African case, there is a comparatively large number of empirical studies on suicidal behaviour available on South Africa. The opposite is true for Bangladesh, where suicide research is relatively new and limited. Scant research has been conducted before 2008. In contrast to South African studies, suicide research initiatives in Bangladesh still tend to focus on the basic information such as prevalence and risk factors, with very limited variability. The review is thus intended to present an overview of the empirical research available in both contexts, as well as to highlight gaps and possible directions for future work on suicide in South Africa and Bangladesh.

SCOPE OF THE STUDY

While we would want to go farther, it must be noted that the scope of the study was limited to two basic indicators – the prevalence of and factors associated with suicidal behaviour – due to the fact that whilst the South African literature is broader, including issues such as masculinity, the Bangladeshi literature focuses predominantly on these two issues. In order to create a comparative framework, only South African studies focusing on these two issues were therefore included in the review. By ‘prevalence’ we mean the rates of suicide among the population in general, as well as among certain groups of the population (e.g., different age groups, genders, races/ethnicities, and groups of differing socio-economic status). By ‘factors associated with suicide’ we mean the causes (such as individual, social and contextual aspects) shown to be related to suicidal behaviour. The time-span for this review is 10 years (2008 to 2018), mainly because the field of suicide studies is relatively new in Bangladesh. In order to create a comparative review, studies from South Africa prior to 2008 were not considered.

OBJECTIVES OF THE STUDY

The review had five key objectives: i) to explore the prevalence of suicidal behaviour in both countries, ii) to identify the key factors associated with suicidal behaviour in both countries, iii) to present a preliminary comparison of the prevalence of and factors associated with suicidal behaviour in the two countries, iv) to identify implications for future research, and iv) to suggest prevention interventions.
METHODOLOGY

An electronic search for journal articles was conducted via PubMed and Google Scholar. The three key inclusion criteria were that articles (i) had to have been published from 2008 to 2018; (ii) had to be based on empirical research (as opposed to theoretical pieces, letters, editorials, reviews, content analyses, records, etc.); and (iii), had to be published in English. The following search terms were used to locate the articles: “suicide/suicidal behaviour in Bangladesh”, “suicide/suicidal behaviour in South Africa”, risk factors/causes of suicide/suicidal behaviour in Bangladesh/South Africa”, “prevalence/overview”+“correlates of suicide/suicidal behaviour Bangladesh/South Africa”, “epidemiology of suicide/suicidal behaviour in Bangladesh/South Africa”, “mental disorder”+“suicide/suicidal behaviour in Bangladesh/South Africa”, “male/female suicide/suicidal behaviour in Bangladesh/South Africa”. Both qualitative and quantitative studies were included in the review.

After an initial inspection of the abstracts and titles, a total of 40 full-text articles were downloaded on South Africa and 30 on Bangladesh. The full-text articles were then read and assessed against the eligibility criteria (prevalence and factors) of the review. In this process, ineligible articles, duplicates, editorial notes, content analyses, reviews and highly clinical and technical papers were removed. Book chapters, conference proceedings and dissertations were also not considered for inclusion. Ultimately, the review was based on 38 articles, made up of 20 articles from South Africa and 18 from Bangladesh. Key information of the reviewed articles is presented in Annexures A (South Africa) and B (Bangladesh).

PREVALENCE OF SUICIDAL BEHAVIOUR IN SOUTH AFRICA:
POPULATION-RELATED VARIABLES

Employing the NIMSS data, Bantjes and Kagee (2013) estimated that between 2002 and 2008 the average annual prevalence of suicide in South Africa was approximately 13.25 per 100 000 of the population, accounting for approximately 9.6% of all unnatural deaths. The NIMMS data also suggest that suicidal data represent a gendered practice as 80% completed suicides in South Africa were by males. Completed suicide is estimated to be 4 times more prevalent in men than women (Bantjes, & Kagee, 2013).

The first South Africa-wide research on non-fatal suicidal behaviour (the SASH) was conducted between January 2002 and June 2004 on a sample of 4351 adults (18 years and above). It was estimated that the
lifetime prevalence rates of suicide ideation, plans and attempts were 9.1%, 3.8% and 2.9% respectively (Joe, Stein, Seedat, Herman, & Williams, 2008a; Joe, Stein, Seedat, Herman, & Williams, 2008b).

The prevalence of suicidal behaviour has been found to be higher among certain groups of the population, including women, adolescents and young adults, black and Coloured people, and people of low-socioeconomic status.

Engelbrecht, Blumenthal, Morris, & Saayman (2017) analysed records at the Pretoria Medico-Legal Laboratory and found that of the people who had died by suicide 76.4% were men and 23.6% were women. Victims fell in the age range between 14 and 88 years, with the highest number of victims falling within the age groups of 21 to 30 years, and 31 to 40 years. In terms of racial categorisation, 447 (46.7%) were black, 477 (49.8%) were white, and 33 (3.5%) victims were Coloured or Asian.

In the SASH project, Joe et al., (2008a; 2008b) found that women tend to attempt suicide twice as often as men (3.8% vs. 1.8%). In terms of racial categorisation, Coloured South Africans had the highest lifetime prevalence of suicide attempts (7.1%), followed by Indians (2.5%), blacks (2.4%), and whites (2.4%). The risk of attempted suicide was found to be higher in the age group 18 to 34.

A study conducted among Grade 10 students in 16 rural schools in the KwaZulu-Natal province revealed that 222 students (12.6%) had made plans to attempt suicide during the previous 12 months and 261 (14.8%) had actually attempted suicide (Khuzwayo et al., 2018). The researchers found that female students are at higher risk of both planning suicide and suicide attempts (Khuzwayo et al., 2018).

Among secondary rural and urban school adolescents (aged between 12 and 18) in the Free State province, the lifetime prevalence of suicide plans was 18.3% for females and 7.7% for males (Mashego, & Madu, 2009). The lifetime prevalence of suicide attempts and attempts in the past two weeks were 14.8% for females and 4.2% for males. Another study among adolescents between 10 and 18 years in the Western Cape and Mpumalanga provinces reported much lower rates of suicide attempts (2.2% for boys and 4.1% for girls), suicide planning (3.0% for boys and 6.3% for girls), and suicidal ideation (5.6% for boys and 8.5% for girls) (Cluver, Orkin, Boyes, & Sherr, 2015).

A study among students at the Universities of Pretoria (UP), Cape Town (UCT) and the Free State (UFS) found a high prevalence of suicidal ideation (32.3%) and suicide attempts (6.9%) among the students (Van Niekerk, Scribante, & Raubenheimer, 2012).
Some studies have shown that younger (ages 18 to 34), female, and less educated South Africans are at higher risk of suicide attempts (Joe et al., 2008a; 2008b). These studies suggest an intersection of population variables. However, study among male and female tuberculosis patients found that suicidal ideation was more prevalent among women and suicide attempts more prevalent among men (Peltzer, & Louw, 2013).

FACTORS ASSOCIATED WITH SUICIDAL BEHAVIOUR IN SOUTH AFRICA

Fifteen studies included in this review focused on the various factors associated with suicidal behaviour in South Africa. Physical and psychological illnesses, social and interpersonal factors, and gambling have been found to be associated with an increased risk of suicidal behaviour. Research highlights that suicidal behaviour is higher among patients suffering from both physical and psychological illness. Some studies report a dual effect of psychological and physical illness. One study in rural Mpumalanga by Rodriguez, Cook, Peltzer and Jones (2017) found higher rates of suicidal ideation among pregnant women who were HIV-positive, compared to pregnant women who were HIV-negative. Approximately 39% of the HIV-positive women experienced suicidal ideation. Peltzer and Louw (2013) reported that being a TB re-treatment patient, psychological distress, PTSD symptoms, harmful alcohol use, chronic illness, and having a sexually transmitted infection (STI) were associated with suicide ideation and attempts.

Fourteen percent (14%) of Xhosa men and women (115 men and 22 women) diagnosed with schizophrenia and schizoaffective disorder from hospitals and community treatment centres in the Cape Town Metropolitan area reported attempting suicide (Lückhoff, Koen, Jordaan, & Niehaus, 2014). The most common psychiatric symptoms reported during the most serious suicide attempts were psychosis, followed by depression. Cannabis use, substance abuse or dependency and lifetime bizarre behaviour were also risk factors for suicidal behaviour (Lückhoff et al., 2014). One study found that respondents with at least one DSM–IV disorder were four times more likely to attempt suicide and respondents with three or more disorders were eight times more likely to attempt suicide and to develop suicidal ideation than those with no psychiatric disorder (Joe et al., 2008a). A study by Khasakhala et al. (2011) found that 61% of the respondents who considered killing themselves at some point in their lifetime reported having a prior DSM-IV disorder. They also found a strong association between the onset of mental disorders and suicidal planning (64%) and attempts (70.3%).

Vawda (2014) found higher levels of depression, perceived stress and hopelessness, peers’ suicidal ideation and anger to be strongly associated with various suicidal behaviours among the Grade 8 students in a school
in Durban. In their study on suicide attempts in Durban hospitals, Naidoo et al. (2015) found that a large number of the participants (63.8%) were suffering from varying levels of depression, indicating that depression is an important co-morbidity risk factor in suicidal behaviour. Most of the participants in their study were female, single, of a younger age group, unemployed, and of a low education and low-income level. Bantjes, Kagee and Saal (2017) found that common mental disorders were significantly associated with suicidal ideation among HIV patients. For example, individuals with depressive mental disorders were approximately 5.5 times more likely to report suicidal ideation.

Social and interpersonal factors have also been identified as important facilitators of suicidal behaviour. For example, Shilubane et al. (2014) found a strong correlation between behavioural (forced sexual intercourse, bullying and physical violence by the partner) and psychosocial (lack of social support and negative feelings about the family) factors and suicidal ideation among 591 school-going (Grades 8 to 11) adolescents (male and female) in four districts of the Limpopo province. This study also explored a small positive correlation between suicidal ideation and having experienced financial problems. Importantly, depression was found to be a mediating factor between psychosocial and behavioural risk factors and suicidal ideation. Rodriguez and colleagues (2017) found that suicidal ideation was strongly associated with intimate partner violence and stigma among women who were HIV-positive. Cluver et al. (2015) discovered that childhood adversities such as parental death, abuse and violence increased suicide attempts threefold and suicide planning fivefold. Moreover, food insecurity was also noted to be associated with increased suicide attempts and planning.

The high rates of completed/fatal suicides among men have been explained in relation to social-cultural norms. A qualitative study based on the case analyses of 52 fatal suicides (75% men vs 25% women) in a village in Bushbuckridge, Mpumalanga province, found that investment in dominant masculine positions was the major antecedent to male suicide. Men tend to take their own lives as a means of escape when they find that their masculinity is in crisis. These crises were evident in the form of sexual and financial failure, illness and insanity, and stigmatisation (Niehaus, 2012). A study with a racially mixed group of 13 young university students from the Western Cape found that the failure to attain and practice traditional masculine hegemonic masculinity produced feelings of disconnectedness, displacement and marginalisation in men. Feeling invisible, thwarted belonging, and feelings of shame give rise to self-destructive behaviour and self-injurious acts (Bantjes, Kagee, & Meissner, 2017). Meissner and colleagues (2016) reported that suicide is a goal-directed behaviour that provides men with a means of control, asserting power, communicating and making themselves visible; it is a way of demonstrating masculinity by compromising personal well-being. In contrast to men, women may engage in suicidal behaviour in response to being
dominated by men. Subordination in the family, disturbed conjugal lives, as well as the experience of mistreatment and violence by men are some the factors related to masculine domination that lead to women’s suicidal behaviour (Niehaus, 2012).

Stein, Pretorius, Stein and Sinclair (2016), in turn, explored the association between suicidality and pathological gambling (PG), with a sample of 92 treatment-seeking gamblers who called the South African National Responsible Gambling Programme’s (NRGP) gambling helpline. It was found that a history of a comorbid psychiatric disorder, depression and a family history of psychiatric disorders are associated with the risk of suicide among pathological gamblers. At the same time, increased severity of gambling also correlated significantly with the severity of suicidality.

PREVALENCE OF SUICIDAL BEHAVIOUR IN BANGLADESH:
POPULATION-RELATED VARIABLES

The prevalence of suicidal behaviour in Bangladesh has been found to be higher among women, adolescents and young adults, and members of lower socio-economic groups. The prevalence of suicide has also been found to be higher among people living in rural areas. Using information on completed suicide cases in some rural areas of the Hobiganj district, Ara, Uddin & Kabir (2016) found that 35% percent of people who died by suicide were male and 65% percent were female. The BHIS found that the rate of suicide per 100 000 of the population was 6.5 for men and 8.2 for women (Mashreky et al., 2013). A study conducted at a hospital in the Dinajpur district found that 70% of 20 suicide cases analysed were committed by women (Choudhury, Rahman, Hossain, Tabassum, & Islam, 2013). In a community-based survey among pregnant women in a rural sub-district of eastern Bangladesh, Gausia, Fisher, Ali and Oosthuizen (2009) reported that 14% of the women experienced suicidal ideation. However, the SoLiD Baseline Census reported only a slightly higher tendency of suicidal behaviour in women, compared to men (Alonge et al., 2017; Salam et al., 2017).

The BHIS reported that among the 10-to-19 and 20-to-29-year age groups the rates of suicide were found to be 11.3 and 11.7 per 100 000 of the population respectively (Mashreky et al., 2013). Similarly, the SoLiD Baseline Census found that the risk of both fatal and nonfatal suicidal behaviour was higher among adolescents (15 to 17 years) and young adults (18 to 24 years). Suicide was reported to be the leading cause of injury deaths in adolescents aged 15 to 17 years (33%) and young individuals aged 18 to 24 years (26%) (Alonge et al., 2017; Salam et al., 2017). Choudhury and colleagues (2013) observed that it was higher in the age group 20 to 35 years (60.0%). A cross-sectional study of 71 cases of completed suicide in the
Jhenaidah district revealed that 42.3% of the victims belonged to the age group 18 to 27 years (Kamruzzaman, & Hakim, 2016). Ara, Uddin and Kabir (2016), in turn, found that out of 40 completed suicide cases, the highest prevalence was evident in the age group between 20 and 29 years (30%). Referring to a sample of 56 patients from the Suicide Prevention Clinic situated at a medical university in Dhaka city, Shah, Sajib and Arafat (2018) noted that most of the patients were below 25 years, and the majority were students. Death by suicide was found to be significantly higher in rural than urban areas, and the highest rate of suicide was found among rural females – 15.5/100,000 of the population per year (Mashreky et al., 2013). About 9% of rural women and 26% of urban women with suicidal ideation reported attempting suicide (Naved, & Akhtar, 2008).

With regard to suicide attempts, a cross-sectional study carried out at a private hospital in Dhaka with 44 patients admitted after a suicide attempt found that 43.2% survivors were from the age group up to 20, followed by 31.8% from the age group between 21 and 30, and the majority were females (Qusar et al., 2009). Another study conducted with 38 survivors of suicide attempts at Dhaka Medical College Hospital reported that most of the individuals were females (55.3%), and that most fell into the age group between 20 and 45 years (Halim, Nargis, & Hasan, 2016).

The BHIS reported that most suicide victims were poor and illiterate (Mashreky et al., 2013). Another study found that people belonging to the lower class were more likely to commit or attempt suicide (45.7%), followed by 37.1% belonging to the lower middle class, 14.3% from the middle class and 2.9% from the upper class (Feroz et al., 2012). Choudhury and colleagues (2013) identified that out of 20 cases of completed suicide, 55% were people belonging to a low socio-economic group.

As in South Africa, an intersection of population variables are evident in some studies in Bangladesh. For example, younger women (15 to 19 years) were found to be more likely to demonstrate suicidal ideation than older women (Naved, & Akhtar, 2008). Married, less educated people from a lower socio-economic background were found to be prone to suicide (Kamruzzaman, & Hakim, 2016). Another study found that early adult, female, unmarried students were more vulnerable to suicide (Shah et al., 2018). One study noted that younger individuals, females, less educated people, students, substance users, people who are living in nuclear families, and those with a family history of suicide, are more exposed to suicidal ideation (Mali, Akter, & Arafat, 2018).
FACTORS ASSOCIATED WITH SUICIDAL BEHAVIOUR IN BANGLADESH

During the review period of 2008 to 2018, twelve studies analysed the factors associated with suicidal behaviour in Bangladesh. Mental-health problems, psychological distress, and various social, familial and relationship issues have been found to be associated with suicidal behaviour.

Similar to South Africa, mental-health problems have been found to be associated with suicide in Bangladesh. Four studies explored the strong association of mental-health problems with suicidal behaviour. Shah, Sajib and Arafat (2018) categorised the risk factors that are associated with suicidal behaviour under various domains, such as psychiatric, psychological, social, biological, special, and medical. Among the domains, psychiatric factors constituted major risks (30.93%), followed by psychological (29.90) and social (28.87%) factors. Depression was found to be the most common factor in the decision to commit suicide, followed by personality, obsessive-compulsive disorder, anxiety disorders, bipolar depression, and substance-use disorder. In a study among 121 patients receiving psychiatric services at a tertiary teaching hospital, Arafat, Akter and Mali (2018) found that suicidal ideation among the patients was predominantly associated with depression (26.62%), feelings of hopelessness (22.31%) and hallucination (5.79%). In a population-based study in a rural area of the Chandpur district in which 625 individuals took part, Wahlin, Palmer, Sternäng, Hamadani and Kabir (2015) found that suicidal thoughts were very prevalent in the 60+ population living in rural Bangladesh who had depressive symptoms. Qusar et al. (2009) found that the majority of people who attempted suicide (77.3%) were suffering from various psychiatric disorders before the attempts. Gausia et al. (2009) revealed that antenatal depression is a major cause of suicidal ideation. Depression was mostly triggered by problems with family members/husbands and financial constraints.

Social and relationship problems are strongly associated with suicidal behaviour in Bangladesh. Ara et al. (2016) reported that incidences happened because of relational problems (unhappy affairs, family/marital problems) and instrumental problems (financial and unemployment problems, failure in life). Among the risks, love affairs constituted the most important predictor (14.25%). Two other major predictors explored in the study were marital discord (11.17%) and familial disharmony (10.89%) (Ara et al., 2016). Kamruzzaman and Hakim (2016) found conjugal conflict (31%), family problems (16.9%), economic crisis (14.1%) and biological crisis (11.3%) to be some of the major determinants of suicide. Akter, Mali and Arafat (2018) found that the major risk factors of self-harm were familial discord (28.2%), followed by marital disharmony (10.3%), mental disorders (12.8%) and premarital relationship issues (17.9%), among
others. Similarly, Halim et al. (2016) identified the major risks associated with suicide attempts to be family-related troubles (55.3%), followed by poverty 28.9%, wife-battering (10.5%), and so on.

Halim, Khondker, Wahab, Nargis and Khan (2010) examined all the cases reported to two sub-district hospitals in the Naogaon district from March to June 2003, and determined that 71.8% of suicide attempts were due to emotional stress, followed by family violence, disturbed family, social deprivation, stressful events, and health problems. Reza et al. (2013), in a case-controlled study of both males and females in the rural areas of the Chuadanga district, found that the causes of suicidal behaviour included emotional factors such as personal problems and economic hardship, chronic disease, physical problems, familial psychiatric history such as a suicide attempt by any relative, familial suicidal predisposition, marital disharmony, familial conflict, individual factors such as sleeping disturbances, a history of criminal behaviour, and uncertainty about life. Naved and Akhtar (2008) found that domestic violence perpetrated by a husband (physical, sexual and emotional) is a significant precipitating factor for suicidal behaviour. Rural women who are severely physically abused by their husbands are four times more likely, and urban women twice more likely to report suicidal ideation. Gausia et al. (2009) found that physical violence by husbands either during or before a current pregnancy, an unhelpful or unsupportive mother-in-law, and a family preference for a male child, are some of the causes for suicidal ideation among women. A high number (25.4%) of married females reported that conflict with their husbands was a major cause for attempting suicide. Suicide attempts were more evident among adolescent females who married at an early age (Halim et al., 2010). A lack of education has been found to be associated with more suicidal ideation among young women (Naved, & Akhtar, 2008). Therefore, education might act as a protective factor in this population group.

DISCUSSION

This review identified the prevalence of, and factors associated with various kinds of suicidal behaviour in Bangladesh and South Africa. Although the countries are on two different continents and are characterised by cultural and social differences, there appear to be similarities in the prevalence of, and the factors associated with suicidal behaviour. However, there also appear to be clear differences between the two countries. Below we highlight both the similarities and the differences revealed by the review.

Firstly, there are some similarities in terms of the research approaches that have been used in both countries. Both the counties favour a quantitative research approach. Only a few studies in South Africa (e.g. Niehaus, 2012; Bantjes, Kagee, & Meissner, 2017; Meissner, Bantjes, & Kagee, 2016) adopted an exclusively qualitative approach. No exclusively qualitative study was found for Bangladesh. While a few researchers
mentioned using both qualitative and quantitative approaches in their studies (e.g. Gausia et al., 2009; Halim, Nargis, & Hasan, 2016; Ara et al., 2016), the qualitative findings were given minimal attention.

Another key similarity between the two countries is a lack of exclusive surveys on suicidal behaviour. Although one exclusive survey was conducted on non-fatal suicidal behaviour (SASH) in South Africa, no study has so far been conducted exclusively on suicidal behaviour in Bangladesh.

With regard to suicide prevalence, in both the countries suicidal behaviour is most common among the younger age groups. In South Africa, specific studies noted that the age groups between 18 and 34 years (Joe et al., 2008a; 2008b), between 21 and 30 years (Engelbrecht et al., 2017), and between 16 and 17 years (Khuzwayo et al., 2018) are at higher risk of various suicidal behaviours. On the other hand, in Bangladesh, a few studies noted that the age groups between 10 and 19 years, between 20 and 29 years (Mashreky et al., 2013; Alonge et al., 2017; Salam et al., 2017; Feroz et al., 2012; Ara et al., 2016), between 20 and 35 years (Choudhury et al., 2013), and between 18 and 25 years (Mali et al., 2018) are at higher risk of suicidal behaviour. These findings are consistent with various studies conducted elsewhere. For example, in the US, suicide is the third leading cause of death among teenagers and young adults (Gould, & Kramer, 2001; Cash, & Bridge, 2010). The high rates of suicidal behaviour among the youth have led both Australia and New Zealand to pay increasing public and policy attention to the issue of youth suicide (Beautrais, 2000).

The second important similarity is that females tend to show higher non-fatal suicidal behaviour in both countries. This finding is consistent with other studies conducted elsewhere. For example, Bae, Ye, Chen, Rivers and Singh (2005) in the USA and Kaess et al. (2011) in Germany traced higher rates of non-fatal suicidal behaviour in females. Studies in South Africa confirm that men tend to die more by suicide, whereas studies in Bangladesh confirm that women tend to die more by suicide. The trend of female suicide deaths in all age groups in Bangladesh is contrary to the global trend, since the rates of suicide in most countries are higher among males than females (Mashreky et al., 2013; Alonge et al., 2013; Naghavi, 2019). This Bangladeshi trend of female suicide is comparable with that in some countries/regions extending from the southern parts of India to China, along with a few Pacific islands (Vijayakumar, 2015; Naghavi, 2019). Notably, China is among the very few countries in the world where females commit more suicides than males (Vijayakumar, 2015). This can perhaps be explained by rigid marriage customs and marital relationships, harassment in the workplace, family conflicts, an authoritarian family structure, birth-control policy, and rural-urban inequality, which may promote female suicidal behaviour (Lee, 2014). The South African higher trend of male suicide, on the other hand, is consistent with the global general trend of male suicide (WHO, 2014; Schrijvers et al., 2012; Naghavi, 2019).
Another similarity between the two countries are the rates of non-fatal suicidal behaviour. For example, in the case of South Africa, the prevalence of suicidal ideation is reported to be as high as 39.0% (Rodriguez et al., 2016). In the case of Bangladesh, ideation prevalence rates are reported to be as high as 45% (Wahlin et al., 2015). There are also some similarities between the incidences of completed suicides. For example, according to NIMSS data, the annual prevalence of suicide in South Africa is 13.25 per 100 000 of the population (Bantjes & Kagee, 2013). According to the BHIS, the annual prevalence of suicide in Bangladesh is 7.3 per 100 000 of the population, but when the rural female suicide prevalence is counted, it goes up to 15.5 per 100 000 of the population (Mashreky et al., 2013), a figure that is quite comparable with the South African context.

In the South African context, psychiatric and psychological factors are found to be strongly associated with suicidal behaviour. A number of studies confirm a range of psychological and psychiatric factors, such as psychiatric disorders and mood disorders, to be associated with suicidal behaviour. Four studies in Bangladesh have also traced psychological or psychiatric factors as important predictors of suicidal behaviour. The relationship between suicidal behaviour and various psychiatric and psychological factors has been well documented in various research works in Asia and Africa and in the global context. For example, the reviews of Mars et al., (2014) on the African continent, Masango et al. (2008) on a global perspective, Vijayakumar (2005) on Asia, and Ahmed et al. (2017), specifically on the South-East Asian perspective, explored psychiatric and psychological factors as significant predictors of suicidal behaviour.

On the other hand, various social factors, such as marital disharmony, marital violence, and family and relationship problems, were found to be more pronounced in Bangladeshi literature than in South African literature. In these cases, women and girls are the most likely victims of suicidal behaviour. Several studies elsewhere have found marital violence/familial discord to be a significant cause of suicidal behaviour. A few recent examples include the studies conducted by Gulliver and Fanslow (2013) in New Zealand, and Dufort, Stenbacka and Gumpert (2015) in Sweden. The review article of Colucci and Montesinos (2013) found that immigrant and ethnic minority women from Africa, South Asia and the Caribbean region living in America and Europe are exposed to violence against women and suicide.

In examining the locations in which the research has been conducted, it is clear that the Bangladeshi studies have been conducted predominantly in rural areas, while in South Africa there is a mix of focus on urban and rural areas. In South Africa, educational-institution and hospital-based studies are also more common. In Bangladesh, there are a few hospital-based studies, but no educational-institution-based study.
The review has also highlighted some unique, but under-researched issues, particularly in the case of South Africa. For example, Niehaus (2012), Meissner et al. (2016) and Bantjes et al., (2017) have explored the implications of hegemonic masculinity, the crisis in gender relations, and renegotiations of masculinity in suicidal behaviour in the South African context. The relationship between gambling and suicidal behaviour is also a unique research focus in South Africa. In particular, considering the fact that men globally commit more suicide than women, a specific research focus is needed on the implications of masculinity in suicidal behaviour in Bangladesh.

**CONCLUSION: FUTURE RESEARCH, PREVENTION AND INTERVENTIONS**

Based on the review we present the following four submissions, provocations, and potential lines of questioning, for future research and policy.

Firstly, it is well understood that more empirical research is required both in South Africa and Bangladesh, as the dynamics of suicidal behaviour are manifold and intersect with various dimensions of social identity (including the economy, gender, rural and urban divide, region, age, culture and religion). For both countries, but particularly for Bangladesh, it is imperative not only to diversify the research focus, but also to expand the methodological approaches. Research on suicidal behaviour should not be limited to a positivist epistemology and quantitative methods. While the dominance of quantitative approaches in suicide research in other parts of the world is undisputed (Scourfield, Fincham, Langer, & Shiner, 2012; Fincham, Langer, Scourfield, & Shiner, 2011), qualitative approaches would help to improve our understanding and interpretation of suicidal behaviour in Bangladesh and South Africa, just as it would in other world contexts (Hjelmeland, & Knizek, 2010). In-depth interviews, and ethnographic and auto-ethnographic and life histories can assist in producing meaningful and rich data about economic, cultural, psychological, political and situational factors that contribute to suicidal behaviour (Bantjes, & Kagee, 2013; Mars et al., 2014).

Secondly, researchers from both the countries should explore new areas/aspects of suicidal behaviour. In the context of Bangladesh, where suicide research is relatively new, potential gaps include suicidal behaviour in urban areas, among persons with chronic or stigmatised diseases (e.g., HIV or other sexually transmitted diseases), among young people (specifically students), among different cultural or ethnic groups, and among men. Currently, more than 30% of people live in urban areas in Bangladesh, with urbanisation occurring at a rapid rate (BBS, 2017). Suicide rates are generally higher in urban than rural...
areas in most countries of the world (Hirsch, & Cukrowicz, 2014; Ping, 2005). Therefore, exploring the correlates and contexts of suicidal behaviour in urban areas can be a significant topic for research in Bangladesh. The studies included in the review suggest that women commit more suicide than men in Bangladesh, but research on men’s suicidal behaviour should not be overlooked. For example, some research in South Africa has postulated a link between men and masculinity and suicidal behaviour (see Bantjes et al., 2017; Meissner et al., 2016; Niehaus, 2012). This could also be investigated in the Bangladeshi context.

Thirdly, although the South African literature is comparatively richer, some of the important areas that have been touched upon by the researchers in Bangladesh could inform future South African research. These include suicidal behaviour among elderly people, in rural areas, and among women facing intimate-partner violence.

And fourthly, researchers in both South Africa and Bangladesh should conduct comparative research on key aspects affecting both countries. Comparative research will not only help to expand the current knowledge base, but is also likely to create more opportunities for experience-sharing and the adoption of appropriate policy interventions.

In the light of the lessons learnt from undertaking this review, in this final section some possible intervention strategies are proposed.

Firstly, in the South African literature, and also to some extent in the Bangladeshi literature, mental-health-related problems were identified as a key cause of suicidal behaviour. Hence, it is suggested that the focus on mental healthcare be intensified in both contexts. Hospitals, community clinics and other community-based organisations need to be much better equipped with the necessary skills and resources to support persons living with mental illnesses.

Secondly, the imperative to develop and maintain a systematic, up-to-date, quality national database on suicidal behaviour is obvious. It would help the concerned stakeholders to measure the risks and adopt appropriate action plans and prevention programmes. Quality and timely national public surveillance systems tied to emergency, on-call counselling support services to people who are suicidal or to people who seek assistance on behalf of their loved ones, family members, colleagues, or friends, are important intervention resources. Few organisations in South Africa are extending emergency support, and those support services must be extended on a national scale. In Bangladesh, where mental-health support
mechanisms are even weaker, the government should be persuaded to develop a national surveillance system.

Thirdly, the review shows that the factors related to suicidal behaviour are multiple and that suicide does not simply stem from psychological or psychiatric factors. Therefore, attention should also be paid to the economic, political, cultural and gender contexts in which suicidal behaviour occurs. Efforts must be made to develop a healthy social and family environment by, for instance, preventing and reducing structural violence, gender-based violence, economic inequality, poverty, and gender inequality. Government and concerned stakeholders have to be made to appreciate that suicidal behaviour is not merely an individual problem, but a social one. This implies working with health and community activists to form a broad coalition for suicide prevention.

Finally, to develop meaningful prevention programmes, intervention strategies must maintain strong interaction with research data, theoretical insights, and recommendations. Such data, insights and recommendations should guide the development and implementation of suicide prevention and treatment interventions.

COMPETING INTERESTS

The authors declare that there are no competing interests.

REFERENCES


https://dx.doi.org/10.5455/jbh.20160904090206

https://doi.org/10.1016/j.ajp.2018.04.020

doi:10.3390/ijerph15071425

https://doi.org/10.1080/13811110590904034


https://doi.org/10.1177/0081246313482627


Colucci, E., & Montesinos, A. (2013). Violence against women and suicide in the context of
African Safety Promotion
A JOURNAL OF INJURY AND VIOLENCE PREVENTION, Vol. 18, No. 1, September 2020


based on the National Injury Mortality Surveillance System (NIMSS).

Johannesburg/Cape Town.


African Safety Promotion
A JOURNAL OF INJURY AND VIOLENCE PREVENTION, Vol. 18, No. 1, September 2020


## ANNEXURE A: TWENTY (20) STUDIES ON SUICIDAL BEHAVIOUR IN SOUTH AFRICA (PREVALENCE & FACTORS)

<table>
<thead>
<tr>
<th>Researcher(s)</th>
<th>Major Theme/Focus</th>
<th>Sample</th>
<th>Research Approach/Methods/Tools</th>
<th>Key Findings</th>
<th>Field</th>
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<tbody>
<tr>
<td>Bantjes &amp; Kagee (2013)</td>
<td>*Prevalence of suicide</td>
<td>NIMSS 2002-2008 sample</td>
<td>*Analysis of NIMSS data</td>
<td>*Overall prevalence of suicide is 13.25 per 100000 population *Suicide accounts for 9.6% unnatural deaths *Males commit more suicides than females (80% vs. 20%) *Age-group (15-29 years) commit more suicide (35.9%)*Mortuaries</td>
<td>*Mortuaries</td>
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<tr>
<td>Joe et al. (2008a) &amp; Joe et al. (2008b)</td>
<td>*Prevalence and causes of suicide ideation, planning and attempts (nonfatal)</td>
<td>*4351 adults (15–44) * Both male and female *All races</td>
<td>*Quantitative *Survey</td>
<td>*Lifetime prevalence rates of suicide ideation, plans and attempts are 9.1%, 3.8% and 2.9% respectively *Coloured race with the highest prevalence of suicidal attempts (7.1%) &amp; ideation (33.4) *Younger, female, and less educated persons are at higher risk for suicide attempts *Risk for attempted suicide is highest in the age group 18–34 *Females tend to attempt 2 times more than males *DSM–IV disorders were significant risk factors for a lifetime suicide attempt</td>
<td></td>
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<tr>
<td>Bantjes, Kagee &amp; Saal (2016)</td>
<td>Prevalence and causes of suicidal ideation and behaviour (plan &amp; attempt)</td>
<td>*500 persons seeking HIV testing *Female 258 *Male 242 *Coloured 363 *Black 131 *White 4 *Other 2</td>
<td>*Quantitative *Structured clinical interview</td>
<td>*Two-week prevalence of suicidal ideation is 24.27%, higher than the national sample *Lifetime prevalence of attempt 5.2%, higher than the national sample *Depressive mental disorder is strongly associated with suicidal ideation</td>
<td></td>
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<tr>
<td>Rodriguez, Cook, Peltzer &amp; Jones (2016)</td>
<td>Prevalence and causes of suicidal ideation</td>
<td>*673 pregnant women HIV infection (18 years older)</td>
<td>*Quantitative *Edinburgh Postnatal Depression Scale 10 (EPDS-10) *Conflict Tactics Scale 18 *Disclosure scale *AIDS-Related Stigma Scale</td>
<td>*38.8% women endorsed suicidal ideation *Physical violence and stigma strongly associated with suicidal ideation</td>
<td>*12 community/rural health centers at Gert Sibande and Nkangala districts in Mpumalanga province</td>
</tr>
<tr>
<td>Peltzer &amp; Louw (2013)</td>
<td>Prevalence and causes of suicidal ideation and suicidal attempt</td>
<td>*4900 tuberculosis patients</td>
<td>*Quantitative *Cross-sectional survey</td>
<td>*326 (9.0%) TB patients had suicidal ideation and 131 (3.1%) had a history of a suicidal attempt *Females patients tend to have suicidal ideation, males an attempt</td>
<td>*42 primary care clinics in three districts of three provinces *Siyanda in Northern Cape Province, Nelson</td>
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<tr>
<td>Researcher(s)</td>
<td>Major Theme/Focus</td>
<td>Sample</td>
<td>Research Approach/ Methods/Tools</td>
<td>Key Findings</td>
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<tr>
<td>Lückhoff, Koen, Jordaan &amp; Niehaus, (2014)</td>
<td>Prevalence and causes of suicidal behaviour</td>
<td>*974 Xhosa schizophrenia or schizoaffective disorder sample population (784 males and 190 females)</td>
<td>*Kessler psychological distress scale</td>
<td>* Being a TB retreatment patient, psychological distress, PTSD symptoms, harmful alcohol use, chronic illness, STI are associated with suicidal behaviour</td>
<td>Mandela Metro in the Eastern Cape Province, and eThekwini in KwaZulu-Natal Province</td>
</tr>
<tr>
<td>Engelbrecht et al. (2017)</td>
<td>Prevalence of completed suicide</td>
<td>* 957 cases of suicide victims</td>
<td>*Quantitative *Questionnaire</td>
<td>* 137 (115 males and 22 females) participants had a history of previous suicide attempts. The majority of the participants (84.7%) (n = 116) with suicidal behaviour are single. *Cannabis use or abuse or dependency and lifetime bizarre behaviour are the risk factors for suicidal behaviour</td>
<td>* Hospitals and community treatment centers in Cape Town Metropole</td>
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<tr>
<td>Khuzwayo, Taylor &amp; Connolly (2018)</td>
<td>Prevalence and causes of suicidal plan and attempt</td>
<td>*1759 ten (10) grade students</td>
<td>*Quantitative *Questionnaire</td>
<td>*222 learners (12.6% of the 1 759) made plans to attempt suicide during the previous 12 months, 261 (14.8%) attempted suicide, and 218 attempts had resulted in the learner being treated by a doctor or nurse (12.4%). *Suicidal plan and attempted suicide are higher with females than males *Age group between 16-17 are at higher risk of suicidal plan and attempt *Being threatened with a weapon on the school (for male), being hurt by a dating partner (for female) is the significant causal factor for suicidal attempt</td>
<td>Pretoria Medico-Legal Laboratory</td>
</tr>
<tr>
<td>Vawda (2014)</td>
<td>Prevalence and causes of suicidal plan, ideation and attempt</td>
<td>*222 eight (8) grade students</td>
<td>*Quantitative *Questionnaire *Psychometric assessment scales</td>
<td>*22.5% students reported suicidal ideation, 5.9% suicidal plans and 5.4% suicidal attempts. *Only 2.8% of the attempters sought help or taken to doctors *Peers’ or friends’ suicidal ideation, acute stress and mood disorders are significantly associated with suicidal behaviour *63.4% students are exposed to the suicide of a friend</td>
<td>16 rural schools in uMgungundlovu District, KwaZulu-Natal Province</td>
</tr>
<tr>
<td>Mashego &amp; Madu (2009)</td>
<td>Prevalence of suicidal plan, ideation and attempt</td>
<td>*86 male students *56 female students (Aged 12 to 19 years)</td>
<td>*Quantitative *Questionnaire</td>
<td>*Female students reported higher rates of suicidal plan, ideation and attempt *Extreme prevalence of suicidal ideation for female students is 12.8% and for males is 10.7%</td>
<td>Urban and rural schools at Welkom &amp; Bethlehem areas in Free State Province</td>
</tr>
<tr>
<td>Van Niekerk, Scribante &amp; Raubenheimer, (2012)</td>
<td>Prevalence of suicidal behaviour</td>
<td>*299 female &amp; 512 male medical students</td>
<td>*Quantitative *Questionnaire</td>
<td>*High prevalence of social ideation and suicidal attempt among the students</td>
<td>*University of Pretoria (UP), the University of</td>
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<td>Cluver, Orkin, Boyes &amp; Sherr (2015)</td>
<td>Prevalence and prospective predictors of child suicidality</td>
<td>* 3515 adolescents aged 10 to 18 years * 1926 (56%) females &amp; 1475 (44%) males</td>
<td>*Quantitative *Questionnaire (one-year repeated interview)</td>
<td>*Suicidal ideation (32.3%) and suicidal attempt (6.9%)</td>
<td>Cape Town (UCT) and the University of the Free State (UFS)</td>
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<td>Khasakhala et al. (2011)</td>
<td>Causes of suicidal behaviour</td>
<td>*4351 South African adults (SASH respondents)</td>
<td>*Quantitative *Composite International Diagnostic Interview (CIDI)</td>
<td>*Past-month suicide attempt was 2.2% for males 4.1% for females *Past-month suicide planning was 3.0% for males and 6.3% for females *Past-month suicide ideation was 5.6% for males &amp; 8.5% for females</td>
<td>*Rural and urban areas of Mpumalanga and the Western Cape</td>
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<td>Naidoo et al. (2015)</td>
<td>Causes of suicidal behaviour</td>
<td>*688 adults (both male &amp; female) who have attempted suicide</td>
<td>*Quantitative *Questionnaire</td>
<td>*Severe childhood adversities are strongly associated with suicidality</td>
<td>*Both rural and urban areas * Households &amp; hostels</td>
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<tr>
<td>Stein, Pretorius, Stein &amp; Sinclair (2016)</td>
<td>Cases of suicides</td>
<td>32 males &amp; 58 females</td>
<td>*Quantitative *Several measurement scales</td>
<td>*Past-month suicide attempt was 2.2% for males 4.1% for females</td>
<td>*South African Gambling Helpline Cape</td>
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<td>Shilubane et al. (2014)</td>
<td>Causes of suicidal behaviour</td>
<td>*591 8-11 grade school going adolescents (male &amp; female) * 291 boys (49.7%) boys *295 girls (50.3%) with girls (5 gender status was missing)</td>
<td>*Quantitative *Questionnaire</td>
<td>*Suicidality with pathological gamblers are associated with clinical factors and a family history of psychiatric disorder</td>
<td>*9 secondary schools at Mopani, Vhembe, Capricorn and Sekhukhune districts in Limpopo province</td>
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<td>Niehaus (2012)</td>
<td>Cases of suicides (Masculinity and suicide)</td>
<td>*52 fatal cases *39 male (75%) *13 female (25%)</td>
<td>*Qualitative *Ethnographic interview with friends, neighbours and colleagues</td>
<td>*Suicide is a rational act for men *A way to demonstrating hegemonic masculinity</td>
<td>*A village in Bushbuckridge, Mpumalanga Province</td>
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<td>Bantjes, Kagee &amp; Meissner (2017)</td>
<td>Cases of suicides (Masculinity and suicide)</td>
<td>13 young university male students</td>
<td>*Qualitative *Semi-structured interview</td>
<td>*Failure to attain and practice traditional hegemonic masculinity is the major cause for suicide</td>
<td>*A university at Western Cape</td>
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<td>Meissner, Bantjes &amp; Kagee (2016)</td>
<td>Prevalence of suicides (Masculinity and suicide)</td>
<td>13 young university male students</td>
<td>*Qualitative *Semi-structured interview</td>
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| Mashreky, Rahman & Rahman (2013)    | Prevalence of suicide                           | *819429 population            | *Analysis of the suicidal data of Bangladesh Health and Injury Survey (BHIS) 2005              | * More than 10,000 people die by suicide every year in Bangladesh  
* Suicide rate is 7.3 per 100,000 population, but highest with the rural female population  
* Suicide is the leading cause of death by injury in the age group of 10–19 years  
* The rate of rural suicide is 17-fold higher in the rural area than the urban area |
|                                    |                                                 |                                |                                                                                                 | Survey conducted in 12 districts and Dhaka metropolitan city                                                                                                                                             |
| Salam et al. (2017) & Alonge et al. (2017) | Prevalence of suicidal behaviour (fatal and non-fatal) (SoLiD Baseline Census focus) | 1169593 population            | *Analysis of the fatal and nonfatal suicidal data of a baseline census conducted as part of the Saving of Lives from Drowning (SoLiD) Project | *Average rate of suicidal death is 14 per 100000 population per year  
* Estimated rates of fatal and non-fatal suicide are 3.29 and 9.86 per 100000 population per year  
* Young, females have a higher tendency of suicidal behaviour |
|                                    |                                                 |                                |                                                                                                 | Seven rural subdistricts under five districts                                                                                                                                                    |
| Naved & Akhter (2008)              | Prevalence and cause of suicidal behaviour (Domestic violence & suicidal ideation based study) | 2702 women (15-49 years)      | *Quantitative *Survey Questionnaire                                                             | Younger women express more suicidal ideation  
* Prevalence of suicidal ideation is (11%–14%)  
* Severe physical and emotional violence by husbands provoke suicidal ideation |
|                                    |                                                 |                                |                                                                                                 | One rural and one urban area (locations are not mentioned)                                                                                                                                             |
| Gausia, Fisher, Ali & Oosthuizen (2009) | Prevalence and causes of suicide ideation | *361 pregnant women (17-41 years pregnant women) | *Quantitative (Edinburgh postnatal Depression scale) *Qualitative in-depth interview | *14% women having a state of suicidal ideation  
* High prevalence of antenatal depression among rural women (33% at 34-35 weeks)  
* Women’s suicidal ideation derive from problems with family members, particularly their husbands, and from financial hardship  
* Preference for a male child also contributes to self-harming thoughts |
|                                    |                                                 |                                |                                                                                                 | Rural area of Matlab sub-district of Chandpur district                                                                                                                                                |
| Feroz et al. (2012)                | Prevalence of suicidal attempts and deaths      | *12422 individuals (12-70 years male & female) | *Quantitative *Survey                                                                            | * Prevalence of suicidal attempt is 281.8 per 100000 population  
* Incidence of suicidal deaths is 128.8 per 100000 population |
<p>|                                    |                                                 |                                |                                                                                                 | Rural areas of Sadar sub-district at Chuadanga district                                                                                                                                             |
| Kamruzzaman &amp; Hakim, (2016)        | Prevalence and causes of suicide                | *71 suicidal death cases      | *Quantitative *Survey                                                                            | *54.9% victims are females and 45.1% males |
|                                    |                                                 |                                |                                                                                                 | Rural and urban areas of Jhenaidah district                                                                                                                                                    |</p>
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| Ara, Uddin & Kabir (2016)           | Prevalence and causes of suicide               | *40 completed suicidal cases                 | *Quantitative *Qualitative *Survey questionnaire *Case study *FGD | *Most victims are the from 18-27 age group  
* Conjugal conflict (31%) is the most noteworthy predictor of suicide | Rural areas of Madhabpur sub-district of Hobijanj district |
| Shah, Sajib & Arafat (2018)         | Prevalence and causes of suicide               | 56 patients with suicidal issues            | *Quantitative *Clinic record                       | *Most of the respondents are below 25 years (73.02%)  
* 69.60% were females  
* 53.60% are students  
* Psychiatric factors (31%)  
* Psychological factors (30%)  
* Sociological factors (29%) | Suicide Prevention Centre (SPC) in the Department of psychiatry at BSMMU, Dhaka |
| Halim, Khondker, Wahab, Nargis & Khan (2010) | Causes of suicidal attempt                   | Reported attempted cases                    | *Quantitative interview *Hospital records         | 71.8% of suicidal attempt is due to emotional stress  
* Conflict with husband is a prime factor (25.4%) of the suicidal attempt of married females  
* Emotional stress, disturbed family, social deprivation, health-related problems are associated with suicide | Rural areas of Naogaon district |
| Reza et al. (2013)                  | Causes of suicide and suicidal attempts       | *230 cases of committed suicide and attempted suicide within last two years * close family members | *Quantitative case control study                  | * Married female especially the younger from a unitary family with low income group are more vulnerable to suicide and parasuicide  
* Emotional factors, chronic diseases, familial suicidal predisposition, individual factor and mental state, premorbid personality, and psychiatric syndrome are strongly associated with suicidal behaviour | Rural areas of Chuadanga district |
| Wahlin, Palmer, Sterniing, Hamadani & Kabir (2015) | Prevalence of depressive symptoms among elderly & their association with suicidal thoughts | 625 elderly persons (60+)                   | *Quantitative Interview *Clinical examinations by physicians and cognitive tests by psychologists | *Prevalence rates of depressive status and suicidal thoughts are very high (45%) in the 60+ population living in rural Bangladesh  
* Prevalence of depressive status | Rural areas of Chandpur district |
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<td>Qusar et al. (2009)</td>
<td>Prevalence and causes of suicide attempt</td>
<td>44 cases of suicide attempt</td>
<td>*Quantitative clinical interview</td>
<td>*43.2% respondents are from age-group of up to 20 followed by 31.8% from age-group 21-30 years *Most of the attempters are female *77.3% suicide attempters had psychiatric disorders</td>
<td>A private hospital in Dhaka city</td>
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<td>Akter, Mali &amp; Arafat (2018)</td>
<td>Demography and causes</td>
<td>39 patients with self-harm</td>
<td>*Quantitative interview</td>
<td>*Family discord (28.2%) is the major cause of self-harm, followed by marital disharmony (10.3%) *Most of the self-harm patients were female (74%)</td>
<td>Department of Psychiatry at BSMMU, Dhaka</td>
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<td>Mali, Akter &amp; Arafat (2018)</td>
<td>Demographic prevalence</td>
<td>120 psychiatric patients</td>
<td>*Descriptive cross-sectional study</td>
<td>*Suicidal ideation is more among younger (18-25) age group (49.2%) *Female, less-educated, people living in the nuclear family and rural areas are more exposed to suicidal ideation</td>
<td>Department of Psychiatry at BSMMU, Dhaka</td>
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<tr>
<td>Arafat, Akter &amp; Mali (2018)</td>
<td>Causes of suicidal ideation</td>
<td>121 patients with suicidal ideation</td>
<td>*Quantitative interview</td>
<td>*Depression and hopelessness are the most critical cause of suicidal ideation *A significant proportion of the respondents are unsure of the reason</td>
<td>Department of Psychiatry at BSMMU, Dhaka</td>
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<td>Choudhury et al. (2013)</td>
<td>Prevalence of suicide</td>
<td>20 cases of suicidal deaths</td>
<td>*Quantitative case analysis</td>
<td>*70% suicidal cases are females *Highest number of victims are from age group between 20-29 years</td>
<td>Department of Forensic Medicine at Dinajpur Medical College</td>
</tr>
<tr>
<td>Halim, Nargis &amp; Hassan (2016)</td>
<td>Prevalence and causes of attempted suicide</td>
<td>38 cases of suicide attempt</td>
<td>*Quantitative *Qualitative</td>
<td>*55.3% are females and 44.7% are males *73.7% attempters aged between 20-45 years *Family related problems, poverty, psychological problems, health related problems and relationship troubles were the major cause of attempt</td>
<td>Dhaka medical college and some rural areas</td>
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Pedestrian risk perception of marked and unmarked crosswalks in Kumasi, Ghana

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ABSTRACT

Pedestrians constitute the majority of all urban road crashes in Ghana, yet there is inadequate supply of pedestrian facilities, and road-user behaviours have been cited as a major contributing factor to the high crash rates. This study seeks to investigate how pedestrians perceive risk at different crosswalks. The study adopted a mixed-method approach, where secondary crash data for 30 selected crosswalks was correlated with corresponding primary data that consisted of pedestrian surveys. The crash data from 2011 through 2014 was obtained from the database of the Building and Road Research Institute of the Council for Scientific and Industrial Research (CSIR-BRRI) in Kumasi, and supplemented with a survey of 900 pedestrians. The results revealed that pedestrians perceived marked crosswalks to be safer than unmarked crosswalks, but this is contrary to the crash records. Also, most of the crashes were registered for crosswalks located across multilane highways. In light of these results, it is recommended that the safety features of crosswalks be re-examined, while restricting indiscriminate crossing by channelling pedestrians to designated protected crossing points, installing traffic control devices and other speed-calming devices at identified high-risk crosswalks, and signalising crosswalks that are located on multilane roads. It is also recommended to intensify road safety campaigns and public education on safe road-crossing practices, while enforcing traffic safety laws to influence road-user behaviours.

Keywords: risk perception, pedestrian safety, crosswalks, mid-block, zebra crossing, stated preferences

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INTRODUCTION

Road-traffic injuries are a leading cause of death throughout the world, causing over 1.35 million fatalities annually (World Health Organization, 2018), with some 90% of these deaths occurring in low- and middle-income countries, which account for only 50% of motor vehicles in the world (World Bank, 2017). African countries particularly record a disproportionate number of the fatalities relative to their lower levels of motorisation, with nearly 44% of the deaths involving pedestrians and cyclists (World Health Organization, 2018). Traffic injury has been a public health problem, and also a development issue with economic consequences, because the younger, working-age population is disproportionately affected (World Bank, 2017). Considering the unacceptably high rates of road-traffic fatalities and their negative economic impacts, especially in low- and middle-income countries, the United Nations, in a 2010 resolution, declared the period from 2011 to 2020 as the Decade of Action for road safety, and singled out “changing road user behaviour” as a critical component of the holistic safe systems approach to achieving their road safety goals (World Health Organization, 2015). The focus on road-user behaviour underscores the significant role that human factors play in road safety.

In Ghana, like many African countries, urban commuters depend largely on public transport due to relatively low levels of private auto ownership (Kumar, Kwakye, & Girma, 2004; Salifu, 2004b; Kumar & Barrett, 2008). The proliferation of informal public transport and unplanned pick-up/drop-off points scattered throughout the cities mean that many urban dwellers must walk and, in many cases, cross several streets, roads, and even motorways as part of their daily travel. This generates large volumes of pedestrians that are exposed to vehicular traffic. The result is a high number of pedestrian crashes, which account for some 46% of all traffic fatalities in Ghana (Afukaar, Antwi, & Ofosu-Amaah, 2003). A 2010 safety study in Ghana found that pedestrians are involved in about 60% of all urban road crashes in Ghana and that 70% of pedestrian fatalities occurred at roadway crossings (Damsere-Derry, Ebel, Mock, Afukaar, & Donkor, 2010). Ackaah and Adonteng (2011) found that children (aged 15 years and below) and the elderly (above 55 years) are over-represented in pedestrian fatalities in Ghana, with inadequate provision of pedestrian facilities in road designs, excessive vehicular speeds and night-time conspicuity being identified as primary contributing factors to these deaths. Failure to comply with posted speed limits has led to the construction of many speed humps in settlement areas, as part of efforts to reduce pedestrian fatalities in the country. Additionally, numerous state-sponsored road safety campaigns and educational programmes have been carried out over the years to improve road-user behaviours in Ghana. For instance, a road-crossing education programme has recently been organised by the National Road Safety Authority, in collaboration with other stakeholders, to educate school children on safe road-crossing practices (Vivo Energy Ghana,
Nevertheless, the high rate of pedestrian casualties that still prevail in Ghanaian cities calls for continued research for a better understanding of the problem. Previous traffic safety studies in Ghana have addressed various aspects of the problem (Salifu, 1993; Afukaar et al., 2003; Damsere-Derry et al., 2010; Obeng, 2013; Ojo, Adetona, Agyemang, & Afukaar, 2019). However, none of these studies has compared pedestrian safety at marked and unmarked crosswalks.

Pedestrian risk-taking behaviour at a crosswalk may be influenced by their perception of the safety of the facility. A pedestrian that perceives the crosswalk as a safe pedestrian right-of-way may be willing to take more risk, while a pedestrian who perceives the crossing to be dangerous may be more cautious when crossing. This means that a false perception of the safety of pedestrian crossing facilities can have fatal consequences. The objective of this study, therefore, was to investigate how pedestrians perceive the safety of different crosswalks in Kumasi, Ghana. A mixed-method approach was adopted in the study, where crash data for some selected crosswalks was correlated with pedestrian surveys carried out at those same crosswalks. This approach can help to understand how pedestrian perceptions of risk can contribute to crash occurrences and injury severity at crosswalks. Ultimately, the findings of the study can be used to inform decision-making in the design and provision of pedestrian crosswalks in a way that meets the expectations of pedestrians, to derive the optimum safety benefits. Furthermore, the findings will help in targeted road-user education and safety campaigns, to influence road-user attitudes towards pedestrian safety.

**PREVIOUS WORKS**

Human factors account for over 90% of road-traffic crashes (Treat, Tumbas, McDonald, Shinar, Hume, & Meyer, 1977; Singh, 2015; United States Department of Transportation, 2017) – hence, changing road-user behaviours and risk perceptions is paramount to mitigating crashes. Changing pedestrian behaviour could be a critical factor in reducing pedestrian fatalities. Lund and Rundmo (2009) argued that it is possible to change the attitudes of people by influencing their risk perceptions, because attitudes, risk perception and behaviour are all related to each other. They defined risk perception as “the subjective assessment of the probability of experiencing a negative event” such that the traffic risk perception of a pedestrian relates to being struck and injured (or killed) by a vehicle. While studying driver behaviour in Iran, Habibi, Haghi and Maracy (2014) observed that a driver’s risk-taking behaviour can be a significant factor that influenced crash occurrence. By extension, it can be argued that a pedestrian’s risk-taking behaviour could be an important contributing factor in crashes involving at-fault pedestrians. Risk perception may be influenced by a variety of factors, including sub-regional characteristics like safety culture. For instance, Lund and Rundmo (2009) observed that culture contributes to major differences between Ghanaian and Norwegian...
road users in the perception of risks like traffic safety risks. This implies that road safety countermeasures need to be designed to account for location-specific dynamics, such as cultural differences, general perceptions of risk, and other regional factors that may be drivers of risky road-user behaviours. Indeed, it is well documented that understanding localised and cultural influences is essential to a Safe System approach to reducing the occurrence and severity of road crashes (e.g., Adanu, Penmetsa, Wood, & Jones, 2019)

Pedestrian injury has been a global safety concern for many years (Di Stasi, Megías, Cándido, & Maldonado, 2015), and the 40% pedestrian fatality rate in Africa (Odero, Khayesi, & Heda, 2003; Chen, 2010) is exceptionally high when compared with the 15% rate on US roads (National Highway Traffic Safety Administration, 2015). The pedestrian safety problem in Africa is more of an urban, and invariably a developmental, problem (Damsere-Derry et al., 2010; World Bank, 2017). Like in other parts of the world, pedestrian safety in Africa, and indeed road safety in general, has a socioeconomic dimension that must be understood as part of efforts to reduce traffic fatalities. Chimba, Kutela, Ogletree, Horne, and Tugwell (2014) observed that poverty and its associated dependency on walking and public transit has caused African American and Latino populations in America to be overly exposed to the risk factors and thus disproportionally represented in pedestrian crashes compared to their Caucasian counterparts. A similar phenomenon is observed in many parts of Africa, where endemic poverty forces many people to walk in mostly unregulated mixed traffic conditions. In fact, the relationship between exposure to road crashes and poverty in Africa has been described as a matter of social justice (Azestop, 2010). The large presence of pedestrians in the midst of rising vehicular activities in cities raise the exposure rates – hence the high pedestrian safety risks (Zegeer & Bushell, 2012). Also, unsafe pedestrian behaviours such as the improper crossing of roadways, inattentiveness and failure to obey traffic signs and regulations can significantly increase the crash risk for pedestrians, and the mere addition of a crosswalk may not be enough to influence pedestrian crossing behaviour (Zegeer, Stewart, Huang, & Lagerwey, 2002).

Various risky road-user behaviours that contribute to high traffic crash rates and pedestrian casualties in Ghana have been identified. Drivers’ reluctance to yield at zebra crossings and alcohol impairment, especially among truck drivers and private car drivers, have been identified as significant risky behaviours (National Road Safety Commission, 2012). Pedestrian non-compliance at zebra crossings, wearing headphones, talking on a cellphone, eating, drinking, smoking or talking while crossing the street, and jaywalking, night-time walking, street hawking and pedestrian alcohol impairment have also been identified as risky pedestrian behaviours that significantly affect pedestrian crash rates and severity (Damsere et al., 2010; Ojo et al., 2019). Herrero-Fernández, Macía-Guerrero, Silvano-Chaparro, Merino, & Jenchura (2016)
argued that “risky pedestrian behaviour is associated with risk perception and acceptable risk” and this varies across population groups. The profiles of pedestrian crash victims are found to differ by age and gender (Campbell, Zegeer, Huang, & Cynecki, 2004; Obeng, 2013). In a household survey carried out in Dar es Salaam, Tanzania, it was observed that both males and females have a strong perception that traffic injuries are the result of driver recklessness and drunk driving (Astrom, 2006). By assigning the causal responsibility of crashes to drivers, it is quite possible for pedestrians to be more cognisant of driver behaviours while crossing the road. Indeed, Tom and Granié (2011) found that there are differences in the gaze patterns of the genders before and during crossing. The study observed that while women focused on other pedestrians, men focused on the vehicles.

A number of safety research works have focused on pedestrian behaviours and preferences in relation to roadway features. For instance, Berhanu (2004) documented the positive effects of a range of pedestrian facilities on crash frequency and severity in Addis Ababa, while Anciaes and Jones (2018) estimated pedestrian preferences for different types of crossing facilities in three English cities. Sisiopiku and Akin (2003) also carried out an observational study of pedestrian behaviours at different types of urban crosswalks, where they found that unsignalised midblock crosswalks were the preferred crossing points, and that pedestrians showed high levels of compliance at such crossings. An examination of historic crash data provides information on crash frequency, severity, and other direct crash characteristics that are recorded at the scene of the crash. This information does not, however, include indirect factors like road-user perceptions that contributed to the crash, hence limiting a full understanding of the nature of safety problems (Kononov, Allery, & Znamenacek, 2007). Meanwhile, pedestrians often have to make trade-offs between safety and convenience before crossing the road and this largely depends on their risk perceptions (Sharples & Fletcher, 2001; Rankavat & Tiwari, 2016). Often, pedestrians looking for more direct and quickest routes, are willing to take the extra risk of crossing at unapproved locations, instead of walking a little further to a designated crossing point (Demiroz, Onelcin, & Alver, 2015). Proximity of the crossing to the pedestrian’s origin and destination, the presence of functioning traffic control, vegetation and concrete barriers were found to have positive effects on pedestrian safety, by restraining pedestrians and channelling them to cross at designated crossing points (Sisiopiku & Akin, 2003). A wide range of methods have been used to study pedestrian road-crossing behaviour, including: experiments (Granié, Brenac, Montel, Millot, & Coquelet, 2014), GIS analysis (Lassarre et al., 2012), pedestrian tracking, self-completed questionnaires (Bernhoft & Carstensen, 2008), video surveys (Sisiopiku & Akin, 2003) and personal interviews (Guo et al., 2014). In this study, a mixed approach was adopted to understand the relationship between pedestrian risk perceptions of crosswalks and the historical crash records of those crosswalks.
METHOD

STUDY AREA

The study was carried out in Kumasi, the second largest city in Ghana. The city is centrally located between the southern and northern regions of the country, so it is an important centre for commercial and industrial activities. The roads are mostly two-lane roads with a few multilane arterials with raised medians. Marked crosswalks are dotted across the metropolitan area, serving as designated crossing points, but many of the markings are faded almost beyond recognition, and some of these can virtually be considered as unmarked. Three speed categories are broadly used in Ghana: 100 km/h on expressways, 80 km/h on intercity highways and 50 km/h in settlements, so many of the roads in Kumasi fall under the 50 km/h speed limit. Figures 1 and 2 provide illustrative examples of typical crosswalks in the study area. Figure 1 shows a 4-lane divided urban facility with a marked zebra crossing, and this is the major form of crosswalk marking in the city. The raised medians serve as refuge for pedestrians to wait and find acceptable gaps in the opposing traffic stream. Figure 2 shows the picture of a faded crosswalk, and these are also common in the city.

As shown in Figure 3 below, a few of the crosswalks are signalised, and some are also fitted with traffic-calming measures like speed ramps, as shown in Figure 4. However, the crosswalks in this study do not have any controls.
THE KUMASI CRASH DATA

A mixed-method approach was adopted in the study, where secondary crash data for 30 crosswalks were correlated with primary data obtained from pedestrian surveys that were carried out at the selected crosswalks.

The pedestrian crash data was obtained from the National Road Traffic Crash Database at the Building and Road Research Institute of the Council for Scientific and Industrial Research (CSIR-BRRI) in Kumasi, for the period 2011 to 2014. The crash data from the CSIR-BRRI is compiled from police reports, and the database is subject to some level of under-reporting resulting from non-reporting (where the crash is not reported to the police and so not included in the official statistics) and under-recording (not all the data can be retrieved from the police). The level of under-reporting of road-traffic crashes has been studied in Ghana (Salifu & Ackaah, 2011), but has not been accounted for in this study, as this study focuses more on factors contributing to pedestrian crashes, rather than overall national statistics. Thirty pedestrian crash locations were selected across the city for this study, based on exposure and utilisation, as represented by high pedestrian and vehicular traffic volumes. The sites included eight residential, three industrial and nineteen mixed land uses. Fourteen of the sites were unmarked, sixteen were marked, and a total of 2,359 pedestrian crashes were recorded for all 30 sites over the four-year period. Most of the land development in Ghanaian cities does not conform to any strict zoning laws, so most of the study sites were rather classified as mixed land use, consisting of a mix of commercial and residential units.
PEDESTRIAN SURVEY AND FIELD MEASUREMENTS

Thirty (30) pedestrians were interviewed at each of the 30 selected crossing points, to obtain their views on safety through a structured questionnaire interview that was administered by trained enumerators. The pedestrians were asked to rate their perceived safety when crossing the road, using a five-point scale ranging from very unsafe to unsafe, neutral, safe and very safe. The crosswalk type was indicated as marked or unmarked, and the gender, age, trip purpose and frequency were all recorded for each response. Respondents were randomly selected after crossing the roads and were given the questionnaires or assisted in filling them in after reading the informed consent. Any pedestrian that crossed the road was selected for the interview, as long as the interviewer was free to proceed. When pedestrians crossed as a group, only one respondent was selected from the group to avoid group bias, because they still interacted while filling out the forms. No efforts were made to limit the investigation to any particular demographic group like age, gender, income, etc. Instead, pedestrians were sampled based on their willingness to be interviewed, provided they confirmed that they were 18 years or older. Respondents below the age of 18 were only interviewed if they were accompanied by an adult. A total of 900 pedestrians were interviewed. For a population of over 100,000 and research designed to provide a precision level of at least ±5% on the estimates at a 95% confidence level and 0.5 degree of variability, a minimum sample of 400 is adequate (MaCorr Research Solutions, 2013). Other field measurements included the weather and geometric characteristics at the interview locations, to identify other factors that may correlate with high crash frequencies. The roadway data included lane width, median width and type, number of lanes and shoulder width. The weather and environmental data included the time of day and weather. Vehicle spot speeds were also recorded using radar guns, to verify vehicle speed-limit compliance for the crosswalk locations.

Descriptive statistics of the historic crash data and the field survey were carried out to understand the features of the data. Pearson correlation was conducted to understand the relationship between crash factors and the severity of pedestrian injuries. Additionally, Chi-Square tests were conducted to understand the associations between pedestrians’ safety perceptions of the crosswalks, and the pedestrians’ demographics, travel characteristics, and crosswalk characteristics.
RESULTS

ANALYSIS OF CRASH DATA

Detailed records of individual crash observations could not be obtained for the study, so aggregate crash records for each of the sites were pooled together in Table 1. As shown in the table, nearly 34% of the traffic crashes on the study roads involved pedestrians. This is a lower proportion than the 60% pedestrian crashes reported in Damsere-Derry et al. (2010), and the 46% pedestrian casualties reported by Afukaar, Antwi, & Ofosu-Amaah (2003). About a third of these crashes resulted in fatalities and 54% led to serious injuries. Fifty-eight percent (58%) of the casualties were males and 42% were females. The age group from 16 years to 45 years were involved in 69% of the crashes, and the single age group mostly affected was the group of 16 to 30 years, accounting for 42% of the crashes.

Table 1: Descriptive Crash Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian crashes</td>
<td>0.34</td>
</tr>
<tr>
<td>Pedestrian victim gender: Males/Females</td>
<td>0.58/0.42</td>
</tr>
<tr>
<td>Pedestrian victim age: 1-15/16-30/31-45/46-60/60 or more</td>
<td>0.16/0.42/0.27/0.09/0.06</td>
</tr>
<tr>
<td>Pedestrian action: No action/Crossing road/Walking along road/Walking along edge/On footpath/Other</td>
<td>0.11/0.57/0.11/0.02/0.03/0.16</td>
</tr>
<tr>
<td>Injury severity: Fatal/Serious/Slight</td>
<td>0.27/0.54/0.19</td>
</tr>
<tr>
<td>Median type: Unmarked/Marked/Raised</td>
<td>0.03/0.23/0.75</td>
</tr>
<tr>
<td>Crosswalk location: Residential/Mixed land use/Industrial</td>
<td>0.267/0.633/0.1</td>
</tr>
<tr>
<td>Crosswalk marking: Marked/Unmarked</td>
<td>0.53/0.47</td>
</tr>
<tr>
<td>Average length of crosswalks (m)</td>
<td>7.52</td>
</tr>
<tr>
<td>Average width of crosswalks (m)</td>
<td>4.99</td>
</tr>
<tr>
<td>Crosswalks located on divided highways</td>
<td>0.833</td>
</tr>
<tr>
<td>Average shoulder width (m)</td>
<td>2.15</td>
</tr>
<tr>
<td>Lighting conditions: Day: clear / Night – no light /</td>
<td>0.65/0.21/0.03/0.10</td>
</tr>
</tbody>
</table>
About 57% of all pedestrian crashes occurred while the pedestrian was crossing the road, either at an approved crosswalk or jaywalking. This compares with 60% reported in Damsere-Derry et al. (2010). For all crashes that occurred at crosswalks, 53% occurred at marked crosswalks and 47% occurred at unmarked crosswalks. Also, 70% of crashes occurred on roads that have raised medians, and 65% of the crashes occurred in broad day light. Forty-seven percent (47%) of these were caused by cars and 21% by minibuses, which are informal public transport vehicles, locally known as “trotro”. The analysis of the data in Table 1 shows that 6% more crashes occurred on the marked crosswalks than on the unmarked crosswalks. The difference is even higher for fatal crashes, as shown in Figure 5, because about 60% of the fatal midblock crashes occurred at marked crosswalks.

![Figure 5: Crash Severity by Midblock Crosswalk Type](image-url)

**Table 1: Characteristics of Midblock Crosswalk Crashes**

<table>
<thead>
<tr>
<th>Category</th>
<th>Marked</th>
<th>Unmarked</th>
<th>Unmarked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Night – light off / Night – light on</td>
<td>0.267</td>
<td>0.700</td>
<td>0.003</td>
</tr>
<tr>
<td>Median type: Marked/Raised/Unmarked</td>
<td>0.833</td>
<td>0.067</td>
<td>0.100</td>
</tr>
<tr>
<td>Intersection type: Midblock/Signalised/Unsignalised</td>
<td>0.067</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Speed ramps present/Posted speed present</td>
<td>0.13/0.16/0.13/0.10/0.15/0.17/0.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crashes by day of week: Sun/Mon/Tue/Wed/Thu/Fri/Sat</td>
<td>931</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle involved in crash: Car/Bus/HGV/Minibus/Pickup/Motorcycle/Tractor</td>
<td>0.47/0.04/0.07/0.21/0.04/0.15/0.02</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Further, 60% of the non-hospitalised crashes (i.e. less severe crashes) also occurred at marked crosswalks, an indication that marked crosswalks are much more dangerous than unmarked crosswalks, as these locations experienced most of the crashes. Considering median types, more crashes occurred on roads with raised medians, as shown in Table 1. Those roads are arterials that pass through mixed land-use areas, with heavy pedestrian activities. Also from Table 1, it is clear that industrial and residential land-use areas recorded lower numbers of pedestrian crashes, but crashes occurring in residential areas were more likely to be fatal. About 80% of all pedestrian crashes occurred at midblock crosswalks, indicating that intersections were relatively safer for pedestrians. However, crashes that occurred at unsignalised intersections were more likely to be fatal.

ANALYSIS OF FIELD STUDIES

Table 2 gives a description of the interview statistics and further descriptions are given in Figures 6 to 8. There were 394 males among the respondents and 506 females. With regard to age, 124 of the respondents were under 18 years, 179 were 18-25 years, 332 were 26-35 years, 242 were 35-59 years and 22 were 65 years or older. A total of 46% of respondents considered the crosswalks to be unsafe, while 19% thought they were very unsafe. So, together, 65% of the respondents had a perception of unsafe crosswalks. About 13 of the responses were neutral.

**Table 2: Descriptive Statistics for Pedestrian Interviews**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety perception: Safe/Neutral/Unsafe</td>
<td>0.22/0.13/0.65</td>
</tr>
<tr>
<td>Unsafe: Males/Females</td>
<td>0.66/0.64</td>
</tr>
<tr>
<td>Safe: Males/Females</td>
<td>0.22/0.21</td>
</tr>
<tr>
<td>Neutral: Males/Females</td>
<td>0.12/0.15</td>
</tr>
<tr>
<td>Unsafe: Under 18/18-25/26-35/36-59/60 or more</td>
<td>0.50/0.65/0.70/0.67/0.55</td>
</tr>
<tr>
<td>Safe: Under 18/18-25/26-35/36-59/60 or more</td>
<td>0.33/0.22/0.20/0.17/0.23</td>
</tr>
<tr>
<td>Neutral: Under 18/18-25/26-35/36-59/60 or more</td>
<td>0.28/0.13/0.10/0.14/0.23</td>
</tr>
</tbody>
</table>
The neutral option was given in the interview to have a leeway for respondents who just could not form any opinion on their safety perception, in order to lessen the number of erroneous responses. There were 17 marked crosswalks and 13 unmarked crosswalks that were studied, and Figure 6 shows their average utilisation.

Figure 6: Pedestrians and Vehicles per Crosswalk

The average number of pedestrians was similar for both marked and unmarked crosswalks, and so was the average traffic volume across the two categories of crosswalks, implying that the rate of utilisation was similar for both crosswalk categories. The pedestrian exposure rates were also similar for both facilities, as it can be observed from Figure 6 that there were 5.4 vehicles/pedestrian on the marked crosswalks and 6.1 vehicles/pedestrian on the unmarked crosswalks. That is to say that, on average, a pedestrian crossing any of the marked crosswalks would be exposed to 5.4 vehicles, while a pedestrian crossing an unmarked crosswalk would be exposed to 6.1 vehicles. So, both crosswalk types had similar usage and similar exposure rates. Still, most of the respondents had the perception that unmarked crosswalks were more unsafe than marked crosswalks. The data analysis show that about 58% of the respondents perceived marked crosswalks to be unsafe (Figure 7), while 91% perceived unmarked crosswalks to be unsafe.
Spot speeds measured at the study locations showed a wide range, with a minimum speed of 22 km/h and a maximum speed of 83 km/h. The mean spot speed was 52 km/h, which is around the posted speed limit of 50 km/h on the roads, but nearly 30% of the vehicles were speeding over 10 km/h above the posted speed limit, thus making the roads unsafe for pedestrians.

Figure 7: Safety Perception by Crosswalk Type

<table>
<thead>
<tr>
<th></th>
<th>Safe</th>
<th>Unsafe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marked</td>
<td>42%</td>
<td>58%</td>
</tr>
<tr>
<td>Unmarked</td>
<td>9%</td>
<td>91%</td>
</tr>
</tbody>
</table>

Figure 8: Spot Speed Measurements

STATISTICAL ANALYSIS

Table 3 shows Pearson correlations between the severity of pedestrian injuries and different crash factors. Due to the limited number of crosswalks selected for this study, most of the correlation coefficients were
not statistically significant. However, the signs (positive or negative) of the coefficients provide interesting findings.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Fatal injury</th>
<th>Serious injury</th>
<th>Minor injury</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fatality</td>
<td>Injury</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.213</td>
<td>0.201 (0.287)</td>
<td>0.003 (0.989)</td>
</tr>
<tr>
<td>Causal vehicle type</td>
<td>Car</td>
<td>(0.259)</td>
<td>-0.343</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HGV</td>
<td>0.558 (0.001)</td>
<td>(0.064)</td>
<td>-0.228 (0.226)</td>
</tr>
<tr>
<td></td>
<td>Tractor</td>
<td>0.225 (0.231)</td>
<td>(0.334)</td>
<td>-0.039 (0.838)</td>
</tr>
<tr>
<td></td>
<td>Bus</td>
<td>0.001 (0.995)</td>
<td>0.155 (0.413)</td>
<td>-0.188 (0.321)</td>
</tr>
<tr>
<td></td>
<td>Minibus</td>
<td>(0.302)</td>
<td>0.174 (0.358)</td>
<td>(0.9415)</td>
</tr>
<tr>
<td></td>
<td>Motorcycle</td>
<td>(0.454)</td>
<td>(0.618)</td>
<td>0.277 (0.138)</td>
</tr>
<tr>
<td></td>
<td>Pickup</td>
<td>(0.606)</td>
<td>(0.381)</td>
<td>0.312 (0.093)</td>
</tr>
<tr>
<td>Pedestrian action</td>
<td>No action</td>
<td>0.132 (0.487)</td>
<td>0.107 (0.574)</td>
<td>-0.281 (0.133)</td>
</tr>
<tr>
<td></td>
<td>Crossing road</td>
<td>0.219 (0.245)</td>
<td>0.112 (0.556)</td>
<td>-0.387 (0.035)</td>
</tr>
<tr>
<td></td>
<td>Walking on road</td>
<td>(0.198)</td>
<td>(0.817)</td>
<td>0.331 (0.074)</td>
</tr>
<tr>
<td></td>
<td>Walking along edge</td>
<td>(0.152)</td>
<td>0.114 (0.549)</td>
<td>0.171 (0.366)</td>
</tr>
<tr>
<td></td>
<td>On footpath</td>
<td>(0.777)</td>
<td>(0.950)</td>
<td>0.076 (0.690)</td>
</tr>
<tr>
<td>Lighting conditions</td>
<td></td>
<td></td>
<td>-0.135</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Daylight</td>
<td>0.111 (0.559)</td>
<td>(0.477)</td>
<td>0.034 (0.858)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-0.095</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Night – no lights</td>
<td>0.001 (0.996)</td>
<td>(0.618)</td>
<td>0.113 (0.552)</td>
</tr>
</tbody>
</table>
For instance, crashes involving Heavy Goods Vehicles (HGVs), tractors, and buses resulted in more fatalities than those involving cars, minibuses, and motorcycles. Crashes involving pedestrians who were crossing the roads and those in which the pedestrian performed no action (i.e., was stationary) were more likely to be fatal. Also, crashes that occurred during daylight and at night where there were no street lights were more associated with fatal injury. Increased length of the crosswalk had a negative correlation with fatalities while shoulder width was found to be positively correlated with fatal injury.

Table 4: Crosswalk Characteristics and Pedestrian Injury Severity

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Fatal injury</th>
<th>Serious injury</th>
<th>Minor injury</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crosswalk location</td>
<td>Industrial area</td>
<td>1 (2.2%)</td>
<td>10 (11.2%)</td>
<td>3 (10.0%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mixed land use</td>
<td>25 (55.6%)</td>
<td>61 (68.5%)</td>
<td>22 (73.3%)</td>
<td>0.029*</td>
</tr>
<tr>
<td></td>
<td>Residential</td>
<td>19 (42.2%)</td>
<td>18 (20.2%)</td>
<td>5 (16.7%)</td>
<td></td>
</tr>
<tr>
<td>Crosswalk type</td>
<td>Marked</td>
<td>28 (62.2%)</td>
<td>47 (52.8%)</td>
<td>18 (60.0%)</td>
<td>0.538</td>
</tr>
<tr>
<td></td>
<td>Unmarked</td>
<td>17 (37.8%)</td>
<td>42 (47.2%)</td>
<td>12 (40.0%)</td>
<td></td>
</tr>
<tr>
<td>Divided highway</td>
<td>Yes</td>
<td>40 (88.9%)</td>
<td>73 (82.0%)</td>
<td>27 (90.0%)</td>
<td>0.415</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>5 (11.1%)</td>
<td>16 (18.0%)</td>
<td>3 (10.0%)</td>
<td></td>
</tr>
</tbody>
</table>
### Table 4: Crosswalk Characteristics and Injury Severity

<table>
<thead>
<tr>
<th>Intersection type</th>
<th>Pedestrian safety perception</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-block</td>
<td>(84.4%)</td>
<td>0.866</td>
</tr>
<tr>
<td>Unsignalised (T-junction)</td>
<td>4 (8.9%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 (9.0%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (13.3%)</td>
<td></td>
</tr>
<tr>
<td>Signalised (T-junction)</td>
<td>3 (6.7%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 (11.2%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (10.0%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lighting</th>
<th>Pedestrian safety perception</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighted</td>
<td>(73.3%)</td>
<td>0.750</td>
</tr>
<tr>
<td></td>
<td>60 (67.4%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 (66.7%)</td>
<td></td>
</tr>
<tr>
<td>Not lighted</td>
<td>(26.7%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>29 (32.6%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 (33.3%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Median type</th>
<th>Pedestrian safety perception</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Marked</td>
<td>9 (20.0%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 (22.5%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 (13.3%)</td>
<td></td>
</tr>
<tr>
<td>Raised median</td>
<td>(77.8%)</td>
<td>0.740</td>
</tr>
<tr>
<td></td>
<td>67 (75.3%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26 (86.7%)</td>
<td></td>
</tr>
<tr>
<td>Unmarked</td>
<td>1 (2.2%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 (2.2%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 (0.0%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of lanes</th>
<th>Pedestrian safety perception</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>7 (15.6%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26 (29.2%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 (33.3%)</td>
<td></td>
</tr>
<tr>
<td>Two</td>
<td>(77.8%)</td>
<td>0.401</td>
</tr>
<tr>
<td></td>
<td>58 (65.2%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19 (63.3%)</td>
<td></td>
</tr>
<tr>
<td>Three</td>
<td>3 (6.7%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 (5.6%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 (3.3%)</td>
<td></td>
</tr>
</tbody>
</table>

Tables 4 presents the results of the Chi-Square analysis of the associations between crosswalk characteristics and the severity of crashes. The results show that the only variable that has a significant relationship with injury severity is crosswalk location [$\chi^2(4, N = 164) = 10.81, p < 0.05$]. No significant association was found for injury outcomes and crosswalk type, highway type, intersection type, lighting conditions, median type, and the number of lanes. The results of the Chi-Square test for pedestrian safety perceptions and pedestrian demographics and travel characteristics, and safety perceptions and crosswalk characteristics are presented in Tables 5 and 6, respectively.

### Table 5: Pedestrian Safety Perceptions of The Selected Crosswalks

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Pedestrian safety perception</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of responder</td>
<td>&lt; 18</td>
<td>Safe (21.2%)</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neutral (17.5%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unsafe (10.6%)</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p-value 0.004*</td>
<td></td>
</tr>
<tr>
<td>Age Group</td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>-----------</td>
<td>------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>18-25</td>
<td>34 (28.3%)</td>
<td>23 (19.2%)</td>
<td>117 (19.9%)</td>
</tr>
<tr>
<td>26-35</td>
<td>66 (34.2%)</td>
<td>37 (20.2%)</td>
<td>233 (39.7%)</td>
</tr>
<tr>
<td>36-59</td>
<td>42 (21.8%)</td>
<td>34 (20.2%)</td>
<td>117 (27.8%)</td>
</tr>
<tr>
<td>&gt;59</td>
<td>5 (2.6%)</td>
<td>5 (2.6%)</td>
<td>12 (2.0%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender of responder</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>83 (43.0%)</td>
<td>110 (57.0%)</td>
<td>253</td>
<td>0.558</td>
</tr>
<tr>
<td>Male</td>
<td>62 (51.7%)</td>
<td>334 (56.9%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other mode of travel</th>
<th>None</th>
<th>Bicycle</th>
<th>Bus</th>
<th>Total</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop off by friend's car</td>
<td>0 (0.0%)</td>
<td>2 (1.7%)</td>
<td>4 (0.7%)</td>
<td>0.038*</td>
<td></td>
</tr>
<tr>
<td>Own Car</td>
<td>3 (1.6%)</td>
<td>4 (3.3%)</td>
<td>6 (1.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxi</td>
<td>10 (5.2%)</td>
<td>5 (4.2%)</td>
<td>61 (10.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trotro</td>
<td>119 (61.7%)</td>
<td>73 (60.8%)</td>
<td>368</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trip distance</th>
<th>Less than a mile</th>
<th>1 mile-2 miles</th>
<th>2 miles-5 miles</th>
<th>Total</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>92 (47.7%)</td>
<td>67 (34.7%)</td>
<td>34 (17.6%)</td>
<td>254</td>
<td>0.115</td>
</tr>
<tr>
<td></td>
<td>(35.0%)</td>
<td>(45.8%)</td>
<td>(19.2%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use of crosswalk in a week</th>
<th>Once</th>
<th>Twice</th>
<th>3 times</th>
<th>4 times</th>
<th>Total</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21 (10.9%)</td>
<td>13 (6.7%)</td>
<td>14 (7.3%)</td>
<td>19 (9.8%)</td>
<td>70 (11.9%)</td>
<td>0.871</td>
</tr>
<tr>
<td></td>
<td>(10.0%)</td>
<td>(9.2%)</td>
<td>(5.0%)</td>
<td>(15.0%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

African Safety Promotion
A JOURNAL OF INJURY AND VIOLENCE PREVENTION, Vol. 18, No. 1, September 2020
From Table 5, a significant association is observed between perception of crosswalk safety and:

- the respondent’s age \( \chi^2(10, N = 900) = 25.90, p < 0.05 \),
- respondents who used other modes of transport to complete the trip \( \chi^2(12, N = 164) = 21.93, p < 0.05 \), and
- the purpose of the respondent’s trip \( \chi^2(8, N = 900) = 35.67, p < 0.05 \).

These findings show that younger and older pedestrians perceive the safety of the crosswalks differently. Similarly, those who complete their entire trip on foot and those who use the crosswalks to cross to the other side in order to use other transport modes, perceive the safety of the crosswalks differently. Also, it was found that the purpose of the pedestrian’s trip had a significant effect on how they perceived the safety of the crosswalks they use. The safety perception of crosswalks did not significantly differ based on respondent gender, trip distance, and number of times they use the particular crosswalk in a week. While the reasons behind these observed associations are not obvious, it is possible that the risk perceptions of pedestrians who use the crosswalks more frequently and have done so for a longer period of time, were influenced by their experiences. For instance, pedestrians who have used the crosswalks for a longer time and have not witnessed any negative outcomes are more likely to rate those crosswalks as safe, irrespective of the crosswalk characteristics and conditions. With respect to crosswalk characteristics, there is significant relationship between respondents’ safety perception and:

- the number of pedestrian crashes previously recorded at the crosswalk \( \chi^2(4, N = 900) = 34.30, p < 0.05 \),
• the crosswalk type \( \chi^2(2, N = 900) = 134.94, p < 0.05 \),
• the crosswalk location \( \chi^2(4, N = 900) = 18.98, p < 0.05 \), and
• the intersection type \( \chi^2(4, N = 900) = 31.50, p < 0.05 \).

No significant association was found between the respondents’ perception of safety and crosswalk lighting conditions, the median type, and whether the highway is divided or not.

**DISCUSSION**

The results from the crash data and field surveys are discussed here to draw similarities and differences where they exist. The pedestrian survey data showed that marked and unmarked crosswalks had similar rates of utilisation and exposure, and the perception among pedestrians was that unmarked crosswalks were more dangerous than marked crosswalks. However, this perception is contrary to the crash data, which shows that not only did more crashes occur on marked crosswalks, but more fatal crashes occurred at the marked crosswalks, making marked crosswalks more dangerous than unmarked crosswalks. In fact, 53% of the crashes were recorded on marked crosswalks, compared to 47% on unmarked crosswalks. This is consistent with the existing literature which shows that most pedestrian crashes in Ghana, including the most fatal ones, occur at zebra crossings (Ojo et al. 2019). Another study published in the *American Medical Association Journal* concluded that marked crosswalks increase the risk of pedestrian collisions with vehicular traffic (Koepsell, Lon, Marsha, Anne, David, Jess, & Matthew, 2002). Meanwhile, Chu (2004) also confirmed the assertion that pedestrians have a false sense of security when crossing the road at unsignalised, marked crosswalks (Chu, 2004).

This study has shown that pedestrians in the age bracket from 16 to 30 years suffered the most casualties, and crosswalks located on roads with raised medians accounted for 70% of pedestrian crashes over the study period. These are multilane urban arterials with normally moderate to high traffic volumes and speeds. It would be expected that the raised medians could serve as refuge zones for pedestrians and promote safety, but the results showed otherwise. The study also supports earlier research findings that pedestrian crashes in Ghana can be attributed to excessive speed (Damsere-Derry et al. 2010). The results provide evidence for the reasoning that pedestrian crosswalks on divided roads should be signalised (Olszewski et al., 2015). The posted speed limits for these urban facilities is 50 km/h, but the measured spot speeds from all the study sites showed a wide range from 22 km/h to 83 km/h. It is important to note that Kumasi serves as transit point for most vehicles travelling between southern Ghana and northern Ghana, and the main arterial highway passes through the city. This necessitates high speeds and high traffic volumes on the divided...
multilane corridor that was included in the study. Incidentally, this highway corridor passes through heavily populated neighbourhoods with substantial commercial activities. Many studies from different countries have identified speed as one of the most significant factors that influence crash frequency and severity (Damsere-Derry, Afukaar, Donkor, & Mock, 2007; World Health Organization, 2018). In a study of vehicle speeds in Ghana, average speeds of 87 km/h were measured in built-up areas along the Accra-Kumasi highway (Damsere-Derry et al., 2007), and these speeds were found to be 57% higher than the posted speed limits. Meanwhile, research has shown that “reducing speed by a few km/h can greatly reduce the risk of and severity of crashes” (International Transport Forum, 2018). Roadway lighting conditions affect the visibility of both drivers and pedestrians (Beyer & Ker, 2009; Wanvik, 2009), and the existing research also shows that poor lighting conditions significantly increase the severity of crashes (Salifu, 2004a; Wang, Haque, Chin & Goh, 2013). However, the results of this study show that the majority of the pedestrian crashes occurred in broad daylight. The fact that most of the pedestrian crashes at the crosswalks happened in daylight perhaps contributed to the insignificant association between crosswalk lighting and safety perception.

CONCLUSIONS AND RECOMMENDATIONS

The objective of this study was to investigate how pedestrians in Kumasi perceive crosswalk safety. The findings of this study indicate a clear disconnect between pedestrian perception and the crash reality. While pedestrians considered unmarked crosswalks to be more dangerous, the crash records showed that marked crosswalks were more dangerous for pedestrians. While the majority of the fatal crashes occurred at marked crosswalks, most of the crashes that occurred at unmarked crosswalks were less severe, though one can conclude from this study that both marked and unmarked unsignalised crosswalks are unsafe crossing points for pedestrians.

The findings in this study provide a good background for the evidence-based implementation of pedestrian crash countermeasures at the selected crosswalks in the Kumasi metropolis, and lessons learned from this study may be extended to other locations with similar characteristics in Ghana. The need to re-examine the safety features of crosswalks and to redesign them to accommodate the high pedestrian volumes in the metropolis has the potential to reduce pedestrian crashes and fatalities. Restricting indiscriminate crossing by channelling pedestrians to designated protected crossing points may lead to improved safety outcomes. Where appropriate, traffic control devices and other speed-calming devices can be installed at identified high-risk crosswalks to regulate the flow of traffic at those locations. The signalisation of crosswalks that are located on multilane roads could potentially yield significant pedestrian safety benefits. It is also
important to intensify road safety campaigns and public education on safe road-crossing practices, while enforcing traffic safety laws to influence road-user behaviours, particularly considering that many of the pedestrians who were interviewed viewed some high-risk crosswalks to be safe.

ACKNOWLEDGMENTS

We wish to thank Norwich University for providing funds for the research and the Institutional Review Board of Norwich University for providing the ethics approval that was needed to carry out the studies. We also want to thank the Building and Road Research Institute of the Council for Scientific and Industrial Research of Ghana for providing data and technical input. Finally, the authors would like to thank the Alabama Transportation Institute and the Transportation and Human Development Collaboratory at the University of Alabama for technical support in conducting this research.

REFERENCES


Prevalence and Profile of Drugs and Alcohol in Fatally Injured Drivers in Pretoria, South Africa

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ABSTRACT

South Africa (SA) is faced with continuing challenges pertaining to drug and alcohol abuse. Currently, there is a paucity of information regarding the involvement of non-alcohol substances in road-traffic accidents, as drugged-driving cases are seldom identified or prosecuted. The aim of this study was to establish the prevalence and profile of drug and alcohol use among drivers involved in fatal road accidents in Pretoria, SA.

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A one-year prospective analytical study was conducted at the Pretoria Medico-Legal Laboratory. Biological samples were collected at autopsy and drug-screening was conducted using immunoassay techniques, followed by liquid chromatography-tandem mass spectrometry confirmation. Blood-alcohol concentrations were determined using headspace gas chromatography with flame ionization detection.

The presence of one or more drugs of abuse was confirmed in 8% of fatally injured drivers (N = 112). The majority of drivers who tested positive for drugs or alcohol were males and younger than 40 years of age. Amphetamine-type stimulants were detected in 4.5% of cases, followed by opioids (3.6%) and cannabis (2.7%). Alcohol was detected in 57.5% of cases, and in combination with a drug(s) in 4.5% of cases.

Drugs were detected in approximately one in twelve drivers who were fatally injured in motor-vehicle accidents in Pretoria. Current practices for detecting driving under the influence in SA need to be reviewed and further research is necessary to better establish the extent of drug- and alcohol-impaired driving, in order to develop appropriate prevention strategies.

Keywords: Alcohol, drivers, drugs, fatal, South Africa

INTRODUCTION

Driving while intoxicated is a major risk factor for all types of road-traffic injuries. It is well known that alcohol causes significant impairment of driving performance and is a leading contributor to road-traffic fatalities of both vehicle occupants and pedestrians (WHO, 2018a). However, in recent decades a growing body of evidence has also linked non-alcohol substances (illicit and/or licit drugs) to poor driving performance and increased crash involvement or crash culpability (Asbridge, Hayden, & Cartwright, 2012; Bogstrand, Gjerde, Normann, Rossow, & Ekeberg, 2012; Brady & Li, 2013; Dassanayake, Michie, Carter, & Jones, 2011; Li et al., 2012).

South Africa (SA) has one of the poorest road safety records in the world. According to the World Health Organization’s (WHO) 2018 Global Status Report on Road Safety (GSRRS), the road-traffic fatality rate for SA was estimated at 25.9 per 100,000 of the population, compared to the global average of 18.2 per 100,000 (WHO, 2018b). The Road Traffic Management Corporation documented 14,071 road traffic fatalities in SA in 2016, equating to approximately 38 deaths per day (RTMC, 2017). It has been reported that for every person killed in a road crash in SA, an average of three are seriously injured and nine others...
slightly injured (Arrive Alive, 2015). The financial burden of these road-traffic accidents is estimated at 3.4% of SA’s Gross Domestic Product and a cost of approximately 143 billion South African Rand to the state, communities and individuals annually (Labuschagne, 2016).

South Africa is faced with a major challenge pertaining to drug and alcohol abuse, with the largest illegal drug market in sub-Saharan Africa and substance-use patterns above the global norm (Geyer & Lombard, 2014; Peltzer, Ramlagan, Johnson, & Phaswana-Mafuya, 2010; the United Nations Office on Drugs and Crime/UNODC, 2002; WHO, 2018a). According to the WHO, the consumption of alcohol in SA is one of the highest in the world, with a total per capita alcohol intake (among those 15 years and older) of approximately 9.3 litres of pure alcohol per annum, in comparison to the global average of 6.4 litres (WHO, 2018a). With regard to drug use, there are limited reliable statistics available relating to the extent of drug abuse in SA, as no comprehensive population-based study has been conducted in recent years (Central Drug Authority/CDA, 2013). The available data suggests that cannabis is the most used illicit drug in SA and is used by an estimated 3.65% of the population (CDA, 2019). Other drugs frequently used include cocaine, amphetamine-type stimulants (ATS) and opioids (CDA, 2019). Methaqualone (Mandrax) continues to be widely used in SA, often in combination with cannabis (colloquially known as ‘white pipe’) and the street drug Nyaope or Whoonga (a low-grade mixture of heroin and cannabis) has also gained popularity in recent years (CDA, 2019; Harker et al., 2019).

Driving under the influence of drugs (DUID), also referred to as drugged driving, can be defined as being in control of a motor vehicle whilst under the influence of one or more psychoactive drugs (Holmes, Vanlaar, & Robertson, 2014). Several studies have reported that the intake of psychoactive drugs and/or a combination of two or more drugs may impair driving and increase the probability of a road-traffic accident (Drummer et al., 2004; Elvik, 2013; Gjerde, Strand, & Mørland, 2015). Frequently used drugs of abuse considered to elevate the risk of a road-traffic accident are drugs which act on the central nervous system, including cannabis; depressants such as opiates/opioids and benzodiazepines; and stimulants such as amphetamines, methamphetamines, 3,4-methylenedioxyamphetamine (MDMA) and cocaine (Drummer et al., 2004; Drummer et al., 2012; Elvik, 2013; Gjerde et al., 2015). The central nervous system effects associated with impaired driving for depressants include drowsiness, slow reaction times, poor coordination and difficulty concentrating (amongst others). In contrast, stimulants may increase alertness, but have also been reported to cause increased risk-taking behaviour such as speeding and disregarding road signs or signals (Couper & Logan, 2004). There is much controversy about the effects of cannabis use on driving. However, several studies have reported that perceptual functions are affected, and that cognitive and psychomotor impairment is increased when used in high doses or in combination with alcohol (Couper,
Results from published international drugged-driving studies have found drugs of abuse to be present in between 8.8% and 39.6% of fatally injured drivers (Ahlm, Björnstig, & Öström, 2009; Brady, & Li, 2014; Del Río, Gómez, Sancho, & Alvarez, 2002; Drummer et al., 2004; Drummer et al., 2003).

In SA, drugged driving is seldom actively investigated and/or identified and there is very limited published data relating to the involvement of drugs in road-traffic accidents. In order to reduce road-traffic accidents, appropriate legislation (among other measures) is necessary to prohibit driving under the influence (DUI) of intoxicating substances. In South African law, DUI is regulated by the National Road Traffic Act 93 of 1996 (NRTA), which sets the limits for breath and blood alcohol in drivers of vehicles. The legal limits are defined as 0.24 mg/1000 mL and 0.05 g/100 mL for breath and blood alcohol, respectively. Section 65, subsection 1 in Chapter XI of the NRTA states: “No person shall on a public road- (a) drive a vehicle; or (b) occupy the driver’s seat of a motor vehicle the engine of which is running, while under the influence of intoxicating liquor or a drug having a narcotic effect.” The specific wording of the Act raises substantial concern, as many impairing drugs of abuse are not classified as narcotic in nature (e.g. crystal methamphetamine or cannabis). The Act does not provide any further statutory restriction on drugged driving. While roadside breathalyser tests to detect alcohol are routinely performed, police and traffic officers are not specifically trained to recognise the effects of illicit or other drugs which may impair judgement and driving skills, or to perform roadside assessments with respect to the effects of such substances. Even when blood samples are collected for evidentiary testing in a laboratory, testing for substances other than alcohol is rarely performed.

Pretoria (falling within the City of Tshwane Metropolitan Region) is the administrative and executive capital of SA and is situated in Gauteng, the most populated province in the country (Lehohla, 2016). Gauteng has the highest incidence of road-traffic accidents in SA, with 2 700 fatalities recorded in 2016, of whom 24.3% were drivers (RTMC, 2017).

To the authors’ knowledge, the prevalence of drug use in any portion of Pretoria’s driving population has not previously been reported on. The aim of this study was thus to investigate the prevalence and profile of alcohol and common drugs of abuse in the body fluids of fatally injured drivers who were admitted to the Pretoria Medico-Legal Laboratory (PMLL) over a one-year period.
MATERIALS AND METHODS

STUDY POPULATION

A prospective study was conducted at the PMLL over a full one-year period (2015-2016). The PMLL serves the greater part of the City of Tshwane Metropolitan Municipality (ranked as the fifth largest municipality in SA), with a population of approximately 2.9 million, according to the 2011 census (Lehohla, 2012b). In South Africa, the Inquests Act (Act 58 of 1959) mandates that all alleged unnatural deaths undergo a post-mortem examination by a forensic medical practitioner. Therefore, all decedents involved in a fatal road accident and who were confirmed to be the driver of the vehicle at the time of the accident were included in the study. Drivers who survived for longer than 24 hours following the accident were excluded, due to the elimination of drugs and alcohol from the body over time. A total of 112 decedents admitted to the PMLL over the one-year period met the criteria above. Demographic data of the victims were collected, as well as the time and date of the accident and the vehicle type.

SAMPLE COLLECTION AND ANALYSES

Prior approval to carry out the study was obtained from the Research Ethics Committee of the Faculty of Health Sciences at the University of Pretoria (Protocol number 240/2015).

Blood samples were collected during autopsy by the attending forensic medical practitioner and sent to the Pretoria Forensic Chemistry Laboratory (FCL) for blood-alcohol-concentration (BAC) analysis (as per standard procedure at the PMLL). This is routine practice at the PMLL in cases where drivers are fatally injured in road-traffic accidents (due to the possible associated legal implications). Ethanol concentrations were determined using head space gas chromatography with flame ionization detection and a value equal to or above 0.01 g/100 mL was considered a positive result.

In addition to the above, further blood, urine (if available) and vitreous humour samples were collected for drug analysis and stored at 4°C. All biological samples were initially analysed using an immunoassay technique, followed by a confirmatory analysis using liquid chromatography-tandem mass spectrometry (LC-MS/MS). It is standard practice in forensic toxicology to confirm screening results using a second or confirmatory analytical technique such as liquid or gas chromatography coupled with mass spectrometry which offers high accuracy and sensitivity (Levine, 2020).
After the immunoassay analysis had been conducted, the remainder of the sample was stored at -20°C until confirmatory analysis. Qualitative analysis using LC-MS/MS was performed for nine drugs of abuse, including: morphine, oxycodone, hydrocodone, amphetamine, methamphetamine, 3,4-methylenedioxy-methamphetamine (MDMA), cannabis (11-nor-9-carboxy-delta-9-tetrahydrocannabinol), cocaine (benzoyleicgonine) and heroin (specifically the metabolite 6-monoacetylmorphine). The cut-off concentrations for these drugs were as follows: 25 ng/mL for morphine, oxycodone and hydrocodone; 50 ng/mL for amphetamine, methamphetamine, MDMA and benzoylcegonine; and 10 ng/mL for 11-nor-9-carboxy-delta-9-tetrahydrocannabinol and 6-monoacetylmorphine.

The elimination half-lives and detection windows differ for various drugs and certain drugs may be detected for several days (or weeks in chronic users) after the last use, particularly in urine (Verstraete, 2004). Therefore, the presence of a drug in a biological sample does not necessarily imply that the driver was under the influence or impaired at the time of the accident.

STATISTICAL ANALYSIS

Data capturing was performed using Epi Info™ 7.1.5.2 and statistical analysis was performed using Stata® 14.2 and Microsoft® Excel 2010. The data analysis consisted of descriptive statistics (means, medians, ranges and standard deviations) to characterise the distribution of the data.

RESULTS

A total of 1897 autopsies were conducted at the PMLL over the one-year study period (between 2015 and 2016), of which 496 (26.1%) fatalities were due to road-traffic accidents (including motor-vehicle/motorcycle drivers, passengers, cyclists and pedestrians). Of these, a total of 112 cases (22.6%) were identified as fulfilling the inclusion criteria of a motor-vehicle driver who survived the accident for less than 24 hours.

BLOOD ALCOHOL

The findings for blood alcohol are presented in Table 1. Among the study population, blood-alcohol results were available in 106 (94.6%) cases, of which 61 (57.5%) tested positive for alcohol (≥ 0.01 g/100 mL) and 54 (50.9%) had a BAC above the legal limit (0.05 g/100mL). The average BAC obtained from the cases
which tested positive was 0.15 g/100 mL and the maximum BAC reported was 0.39 g/100 mL, almost eight times the legal limit.

Table 1: Blood alcohol results

<table>
<thead>
<tr>
<th>Blood alcohol results</th>
<th>n</th>
<th>%</th>
<th>Mean BAC (g/100 mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive (BAC ≥ 0.01 g/100 mL)</td>
<td>61</td>
<td>57.5</td>
<td>0.15</td>
</tr>
<tr>
<td>Negative</td>
<td>45</td>
<td>42.5</td>
<td>n/a</td>
</tr>
<tr>
<td>Total</td>
<td>106</td>
<td>100</td>
<td>n/a</td>
</tr>
<tr>
<td>BAC ≥ 0.05 g/100 mL</td>
<td>54</td>
<td>50.9</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Not applicable (n/a)

The age and gender distribution of the study population is provided in Table 2. Males accounted for the majority of the study population (91.1%), and a similar proportion was observed for alcohol-positive drivers (90.2%). The proportion of drivers testing positive for alcohol was greater for those aged between 20 and 40 years, compared to other age groups, which had more alcohol-negative drivers. Most accidents involving alcohol occurred on weekends (Friday to Sunday) and during night-time hours (between 18h00 and 05h59), whereas accidents that did not involve alcohol took place mostly on weekdays, during day-time hours (between 06h00 and 17h59).

Table 2: Demographic characteristics and accident timeframes

<table>
<thead>
<tr>
<th>Demographic characteristic</th>
<th>Total cases (N = 112)</th>
<th>Alcohol negative cases (n = 45)</th>
<th>Alcohol positive cases (n = 61)</th>
<th>Mean BAC (g/100 mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>102 (91.1)</td>
<td>41 (91.1)</td>
<td>55 (90.2)</td>
<td>0.14</td>
</tr>
<tr>
<td>Female</td>
<td>10 (8.9)</td>
<td>4 (8.9)</td>
<td>6 (9.8)</td>
<td>0.20</td>
</tr>
<tr>
<td>Age category (in years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-19</td>
<td>4 (3.6)</td>
<td>2 (4.4)</td>
<td>2 (3.3)</td>
<td>0.15</td>
</tr>
<tr>
<td>20-24</td>
<td>12 (10.7)</td>
<td>4 (8.9)</td>
<td>8 (13.1)</td>
<td>0.14</td>
</tr>
<tr>
<td>25-30</td>
<td>23 (20.5)</td>
<td>7 (15.6)</td>
<td>13 (21.3)</td>
<td>0.16</td>
</tr>
<tr>
<td>31-40</td>
<td>34 (30.4)</td>
<td>12 (26.7)</td>
<td>22 (36.1)</td>
<td>0.14</td>
</tr>
</tbody>
</table>
Time of day

Day: 06:00 – 17:59
Day: 06:00 – 17:59
Day: 06:00 – 17:59

Night: 18:00 – 05:59

Day of the week

Monday – Thursday
Monday – Thursday
Monday – Thursday

Friday - Sunday
Friday - Sunday
Friday - Sunday

Not applicable (n/a)

DRUGS OF ABUSE

The presence of one or more drugs of abuse were confirmed in fifteen of the 112 cases. However, in six of these cases the patient had been hospitalised, and was believed to have received medicinal substances, such as painkillers containing opioids. These cases were excluded since the specific drugs detected could be related to medical treatment history and no other illicit substances were confirmed. Thus, nine cases (8%) were considered to be bona fide DUID cases. The toxicology results for these cases are summarised in Table 3. Alcohol was detected in combination with one or more drugs of abuse in five (4.5%) of the 112 cases, with the mean BAC being 0.08 g/100 mL.

Table 3: Toxicology results obtained from LC-MS/MS confirmation and blood alcohol analysis

<table>
<thead>
<tr>
<th>Case</th>
<th>Drug findings</th>
<th>Alcohol findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Blood</td>
<td>Urine</td>
</tr>
<tr>
<td>1</td>
<td>MOR</td>
<td>6-MAM HYDC MOR</td>
</tr>
<tr>
<td>2</td>
<td>MAMP</td>
<td>NS</td>
</tr>
<tr>
<td>3</td>
<td>THC-COOH</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>THC-COOH</td>
<td>MAMP</td>
</tr>
<tr>
<td></td>
<td>Drug</td>
<td>AMP</td>
</tr>
<tr>
<td>---</td>
<td>-------</td>
<td>-----</td>
</tr>
<tr>
<td>5</td>
<td>HYDC</td>
<td>HYDC</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>MDMA</td>
</tr>
<tr>
<td>7</td>
<td>NS</td>
<td>AMP</td>
</tr>
<tr>
<td>8</td>
<td>HYDC</td>
<td>MOR</td>
</tr>
<tr>
<td>9</td>
<td>AMP</td>
<td>AMP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>AMP</th>
<th>THC-COOH</th>
<th>MOR</th>
<th>HYDC</th>
<th>OXY</th>
<th>HYDC</th>
<th>OXY</th>
<th>HYDC</th>
<th>OXY</th>
<th>HYDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>HYDC</td>
<td>HYDC</td>
<td>HYDC</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>MDMA</td>
<td>-</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>NS</td>
<td>AMP</td>
<td>AMP</td>
<td>0.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>HYDC</td>
<td>MOR</td>
<td>HYDC</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>AMP</td>
<td>AMP</td>
<td>MOR</td>
<td>OXY</td>
<td>HYDC</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Negative result (-); No sample (NS)

3,4-Methylenedioxymethamphetamine (MDMA); 6-Monacetylmorphine (6-MAM); 11-nor-9-carboxy-Δ9-tetrahydrocannabinol (THC-COOH); Amphetamine (AMP); Hydrocodone (HYDC) Methamphetamine (MAMP); Morphine (MOR); Oxycodone (OXY)

Amphetamine-type stimulants (amphetamine, methamphetamine and MDMA) were present in five cases (4.5%), with amphetamine being detected in three. Opioids (morphine, hydrocodone, 6-MAM and oxycodone) were detected in four cases (3.6%), followed by cannabis in three cases (2.7%) (Figure 1). No positive results were obtained for cocaine.

Figure 1: Frequency of different drugs detected by LC-MS/MS
Of the nine positive cases, the proportion of males who tested positive (88.9%) exceeded that of females (11.1%) and in five (55.6%) cases, the driver was younger than 40 years of age. In five of the nine positive cases the decedent was driving a passenger vehicle, in one case a motorcycle, and in one case a truck. Multiple-vehicle accidents (55.6%) were more prominent than single-vehicle accidents (11.1%), and in the majority of cases (55.6%) the accident occurred during daytime hours (between 06h00 and 17h59).

**DISCUSSION**

According to municipal and national statistics, males make up approximately 49% of the population (Lehohla, 2012a, 2012b). However, males accounted for 91.1% of fatally injured drivers during the study period. The greater proportion of male drivers involved in road-traffic accidents compared to women drivers is a consistent finding reported in various studies (Ahlm et al., 2009; Brady & Li, 2013; Del Río et al., 2002; Drummer et al., 2003; Drummer et al., 2012; Morland et al., 2011; Papa et al., 2017). The decedents involved in these accidents were also mostly young drivers. Males between the ages of 20 and 40 years comprised more than 50% of the fatally injured driver population at the PMLL. The higher incidence of young male drivers being involved in road-traffic accidents has also frequently been reported (Brady & Li, 2013; Del Río & Álvarez, 2000; Rudisill, Zhao, Abate, Coben, & Zhu, 2014; Walsh et al., 2005).

The prevalence of drivers testing positive for alcohol (57.5%) is in agreement with statistics reported in the 2018 GSRRS, which stated that 58% of road-traffic deaths in SA involved alcohol (based on 2010 National Injury Mortality Surveillance System data) (WHO, 2018b). The mean BAC obtained from the cases which tested positive (0.15 g/100 mL) also compares relatively well with a previous study conducted by Ehmke et al. (2014) at the PMLL, who reported that alcohol was present in 63% of fatally injured motor-vehicle drivers in 2009, with the mean BAC being 0.17 g/100mL (n = 119). In approximately half of the cases with alcohol results (50.9%), the BAC was above or equal to the South African statutory limit for driving (0.05 g/100 mL). This percentage is on the higher end in comparison with findings reported in epidemiological reviews from other countries, which found that 20 to 50% of drivers killed in road-traffic accidents had BACs above the statutory limit (Jones, 2017; Jones, Kugelberg, Holmgren, & Ahlner, 2009; Rudisill et al., 2014; Voas, Torres, Romano, & Lacey, 2012).

Fatal accidents involving alcohol mainly occurred on weekends (Friday to Sunday) and at night (18h00 to 05h59). The majority of cases which tested positive for alcohol were males (90.2%). This is in agreement with results obtained by Brady and Li (2014) and Petkovic, Palik, & Samojlik (2016), who reported that alcohol involvement was more prevalent in men. It has previously been reported that driving under the
influence is more common among young individuals (Kelly, Darke, & Ross, 2004; Li, Simons-Morton, & Hingson, 2013). In the current study 73.8% of the fatally injured drivers who tested positive for alcohol were ≤ 40 years, with the mean age being 34.7 years. Interestingly, the mean BAC detected in females was higher (0.20 g/100mL) than for males (0.14 g/100mL), and overall, the 41-to-50-year age group demonstrated the highest mean BAC of 0.22 g/100mL. Jones and Holmgren (2009) also found that middle-aged drivers (40 to 55 years) had the highest mean BAC among apprehended drivers in Sweden. The higher BAC observed in women drivers in this study may be attributed to the fact that women typically reach higher BACs, compared to men, when consuming the same amount of alcohol (Jones & Holmgren, 2009).

In the present study, 8% of fatally injured drivers tested positive for one or more drugs of abuse. This proportion is somewhat lower than was found in previous South African studies. A three-year study evaluated 1935 injured patients admitted to trauma facilities located in Cape Town, Durban and Port Elizabeth between 1999 and 2001. Of the patients with transport-related injuries (20.4% of total cases), 30.6% tested positive for urinary cannabis and 9.5% for white pipe (Marais, Sukhai, & Donson, 2004). A similar study was carried out in 2002 by Bowley et al. (2004), who examined 105 patients who had suffered traumatic injuries and were admitted to the Johannesburg Hospital Trauma Unit and the Johannesburg Medico-Legal Laboratory. Of the 22 cases where the injuries were due to motor vehicle-related trauma, 27.7% tested positive for urinary cannabis (Bowley et al., 2004). In a pilot study conducted by Matzopoulos et al. (2013) in 2008, drugs were detected in 14% of the drivers screened at roadblocks (N = 269). However, there are important differences between the above-mentioned studies: firstly, the study populations consisted mainly of living individuals and ante-mortem biological samples were analysed; secondly, different laboratory techniques were used to determine the presence of drugs; and thirdly, in the latter study, the individuals were tested at roadblocks where the time and place was controlled and targeted based on suspicion of persons DUI.

Studies conducted in Europe have reported between 8.8% and 18% of fatally injured drivers testing positive for drugs (illicit and/or licit) (Ahlm et al., 2009; Costa et al., 2012; Del Río & Alvarez, 2000; Del Río et al., 2002; Jones et al., 2009; Legrand et al., 2014; Morland et al., 2011). This percentage is reportedly higher in countries such as Australia (23.5%), and even greater in studies conducted in the USA, where between 24.6% and 31.8% of fatally injured drivers tested positive (Brady & Li, 2013, 2014; Drummer et al., 2003; Rudisill et al., 2014). The results from this study compare well with findings from other countries when keeping in mind that the current study only tested for a selected number of drugs of abuse, thereby overlooking certain drugs or drug classes that were included in the above-mentioned studies.
The higher proportion of young male drivers DUID, as seen in the current study, was expected and has been well documented in a number of studies (Davey, Armstrong, & Martin, 2014; Kelly et al., 2004; Rudisill et al., 2014; Schulze, Schumacher, Urmeew, & Auerbach, 2012). Unfortunately, the positive detection of only nine cases allows for limited interpretation of the related demographics and characteristics of these cases.

In international studies, the prevalence of illegal drugs among fatally injured drivers is variable, as is the frequency of the different substances detected. Still, several studies have reported similar findings indicating that stimulants, opioids, and cannabinoids are frequently detected substances among fatally injured drivers (Ahlm et al., 2009; Brady & Li, 2013, 2014; Costa et al., 2012; Del Río & Alvarez, 2000; Del Río et al., 2002; Drummer et al., 2003; Morland et al., 2011; Rudisill et al., 2014). It may be expected that the drugs detected among drivers are likely to reflect the general drug use trends observed in the particular community in which the study is performed. The low detection of cannabis (only present in three cases) is thus unexpected, since cannabis is alleged to be the most popular drug used in Gauteng (Nel, 2017). On the other hand, amphetamine-type stimulants featured more prominently compared to cannabis in a South African study conducted by Matzopoulos et al. (2013).

Drivers who are exposed to drug-drug or drug-alcohol combinations carry the highest risk of being involved in a road-traffic accident (Movig et al., 2004). The additive effects and greater impairment of psychomotor performance when alcohol is combined with other drugs have been demonstrated in previous studies (Doria, 1990; Drummer et al., 2004; Kelly et al., 2004). In this study, alcohol was detected in combination with one or more drugs of abuse in 4.5% of the total number of cases. The highest BAC recorded was 0.16 g/100 mL, in combination with amphetamine. Other drugs found in combination with alcohol included methamphetamine, cannabis, morphine, oxycodone and hydrocodone. In a large review of drivers killed in US traffic crashes between 1999 and 2010, Rudisill et al. (2014) reported that alcohol was detected in combination with other drugs in 45.3% of drug-positive cases (n = 23 500). Poly-drug-use (excluding drug-alcohol combinations) was evident in five (55.6%) of the nine cases in the current study. The combinations included heroin and cannabis; methamphetamine, amphetamine and cannabis; morphine and hydrocodone; and amphetamine and opioids. This is in keeping with reports that poly-drug-use is often detected in road-traffic injuries and fatalities. Studies have indicated that up to 20% of injured or killed drivers were under the influence of more than one substance at the time of the crash (Brady & Li, 2013; Callaghan et al., 2013; Jones et al., 2009; Movig et al., 2004).

As previously mentioned, the NRTA does not define the term ‘narcotic’. A comprehensive statutory definition thus needs to be formulated in a medical, legal and pharmacological context, to include other...
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A JOURNAL OF INJURY AND VIOLENCE PREVENTION, Vol. 18, No. 1, September 2020

classes of impairing drugs and identify the specific psychoactive substances prohibited by this law. Drug-driving legislation does, however, present with several complications in comparison to alcohol, due to the vast number of drugs available (each with unique pharmacological properties, effects and detection periods), and the limited evidence available demonstrating the relationship between drug concentrations and impairment. Internationally, some countries have taken the approach of passing per se laws for commonly abused drugs. Per se standards are generally classified into two types: zero-tolerance laws which prohibit driving under the influence of drugs at any detectable concentration, and per se laws which stipulate concentration limits for certain drugs or their metabolites (DuPont et al., 2012; Liebenberg, Du Toit-Prinsloo, Saayman, & Steenkamp, 2019). These laws make it illegal for drivers to operate a vehicle while having a detectable or specified concentration of a certain drug in their system, with no further evidence of impairment (or lack thereof) required.

Currently, there is a lack of standardised or routine drug screening for non-alcohol substances on randomly stopped drivers, or drivers who have been involved in accidents in SA. Drug screening is usually only requested on an ad-hoc basis when road-traffic authorities or medical practitioners have a particular reason to suspect that the driver may have been under the influence of drugs. This is mainly due to limited resources, backlogs at state laboratories causing long waiting periods for results, and a lack of statutory regulation. Ideally, the NRTA should make detailed provisions for drug-testing procedures on samples obtained at the roadside and in emergency rooms and mortuaries, and should specify the admissible medical evidence that would be required to prove or support a DUI offense. That being said, to adopt a standardised approach for the drug testing of drivers, it would be imperative to strengthen the laboratory testing capacity in SA (which is already strained) in order to accommodate for the increased caseload.

LIMITATIONS

Due to limited resources, it was possible to perform only qualitative confirmation for nine drugs of abuse. It is thus recommended that quantitative analyses be performed to determine specific drug concentrations and that additional drugs or drug classes, especially prescription medication, be included in future studies. Additionally, given the sample size of 112 drivers, the drug prevalence of only 8% allows for limited statistical inferences to be made regarding the characteristics of these cases. Results should therefore be interpreted with this in mind.
CONCLUSION

In this study, drugs were detected in approximately one in twelve drivers who were fatally injured in motor-vehicle accidents in Pretoria. Current practices for detecting driving under the influence of drugs in SA may be inadequate and under the existing legislation, law enforcement programmes and investigative procedures, very few cases of drug-driving are identified or pursued. Well-defined investigative protocols (for use by law-enforcement and healthcare professionals), as well as more efficient drug testing, could lead to significant improvements in the detection and successful prosecution of drugged drivers in SA. It is important for further research to be carried out and interventions such as random roadside testing and mandatory or routine testing of drivers involved in road-traffic accidents (including those fatally injured) should be considered in order to better establish the prevalence and profile of drug- and alcohol-impaired driving in SA.

ACKNOWLEDGEMENTS

The authors wish to thank Marga Kinnear from the Pretoria Forensic Chemistry Laboratory and Tracy Snyman from the Department of Chemical Pathology at the University of the Witwatersrand for their assistance with the toxicological analyses.

FUNDING

This work was supported by the National Research Foundation [grant number: 103058], the South African Medical Research Council (Self-Initiated Research Grant), and the Gauteng Department of Health.
REFERENCES


National Road Traffic Act. See NRTA.


RTMC. See Road Traffic Management Corporation.


UNODC. See United Nations Office on Drugs and Crime.


Scripting of Domestic-violence Simulations to Improve Prehospital Emergency-care Diagnostic Probity and Healthcare Responsiveness in Low- to Middle-income Countries

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ABSTRACT

The global occurrence of domestic violence is a disturbing problem which leaves both victims and interventionists with a sense of helplessness. Emergency-care providers have been identified as a critical contact point for victims. The interlude between the act of violence and the victim’s hospitalisation provides opportunities for screening, medical care and appropriate referral (primary, secondary and tertiary prevention). Both the current training of emergency-care providers and research on the domestic-violence response are unjustifiably minimal. Simulation training is not foreign to prehospital emergency care. However, the use of domestic-violence-related scripted scenarios (to promote diagnostic probity) is novel. Therefore, the primary research question was: How does the scripting of evidence-informed simulations of domestic-violence cases enhance practitioner responsiveness and patient safety among prehospital emergency-care students?

The paradigm and methodology for this qualitative study was social constructivism and grounded theory respectively. The data collection comprised a literature review, focus-group discussions and participant observation during patient simulations. The data was analysed through the method of constant comparative analysis.

It was found that the scripting of simulations with the use of peer-based training may be an effective method of achieving improved responsivity to domestic violence. Traditional EMS training with expensive manikins may not be as effective for this purpose, as students require a level of feedback and fidelity through which they can convey their empathy and history-taking skills. Further research should be conducted to determine the most effective methods for assessing standardised domestic-violence patient simulations.

Keywords: Domestic violence, gender-based violence, medical simulation, patient script, emergency care, emergency-care provider, screening implementation, prehospital, qualitative, social constructivism, grounded theory, low- and middle-income countries (LMICs)

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INTRODUCTION

Domestic violence (DV) is a complex healthcare burden for South Africa and the rest of the world (World Health Organization/WHO, 2013). This act of violence is a gross violation of human rights and in South Africa particularly, it is on the rise. A survey conducted by Stats SA in partnership with the South African Medical Research Council (SAMRC), found that 21% of women 18 years old and older reported that they had experienced violence at the hands of a partner (South Africa, 2017). Globally, in 2012, women were as likely to die by the hands of an intimate partner or a family member as they were to die by the hands of a stranger (UN, 2017). Emergency-care providers employed by Emergency Medical Services (EMS), firefighters and the police service have a distinguishing characteristic in that they are by default the first interventionists on the scene of an emergency. EMS possess a unique trifecta of capabilities allowing them to conduct primary, secondary and tertiary-level prevention in relation to DV (Naidoo, Knight, & Martin, 2013). Prehospital emergency-care providers are in an advantageous position for the early detection of DV occurrences, allowing them to screen, medically treat and refer victims to appropriate care (specialised medical or psychological care), as well as collect/maintain forensic evidence (Naidoo et al., 2013).

Despite the global concern, there is a paucity of studies directly pertaining to emergency-care (EC)-provider responses to victims of domestic violence, particularly in low- to middle-income countries (LMICs). Little research effort has been made to enhance prehospital emergency-care providers’ responses to victims of DV, and at the time of this study, no direct research was found on how South African EC-provider responses to DV can be improved with specialised medical simulation training. The aim of the study was therefore to determine how EC-provider responses to DV can be enhanced through the deliberate scripting of DV-based simulations.

BRIEF OVERVIEW OF THE LITERATURE ON SIMULATION-BASED MEDICAL EDUCATION IN EMERGENCY CARE

Simulation is defined by the Healthcare Simulation Dictionary as “A technique that creates a situation or environment to allow persons to experience a representation of a real healthcare event for the purpose of practice, learning, evaluation, testing, or to gain understanding of systems or human actions” (Lopreiato, 2016, pp. 34). Simulation-based education is increasingly used in healthcare for training, research and assessment, as a way of mitigating the challenges of present-day healthcare and ensuring the safety of
patients (Tun, Alinier, Tang & Kneebone, 2015). The professions which benefit the most with this approach to training are the ones which inherently involve complex situations.

During medical education, students are exposed to real patients so that they can acquire the necessary skills which form the basis of their profession. These skills are associated with clinical and non-clinical learning outcomes, the former being interventions such as intravenous access, oxygen therapy etc, and the latter including outcomes such as patient/family communication and conveying sympathy. There is an ethical and moral obligation to provide optimal treatment to patients and to ensure their physical and emotional wellbeing. However, paradoxically, students honing their skills may indiscriminately place patients at risk of unnecessary harm (Lateef, 2010). The value proposition of simulation training is that learners are free to make decisions without any life-altering repercussions. There is no risk of self-harm, or harm of the simulated patient or bystanders (Alharbi, 2016). Medical, nursing and various other healthcare staff therefore use this form of training to develop and refine their skills, repeatedly if necessary, but without the risk of harm associated with ‘conditioning’ in the traditional sense.

The use of simulation training not only enhances technical and functional training. Improvements can also be made in problem-solving and decision-making skills. The skills of interpersonal communication or team competencies may also be improved (Lateef, 2010). The common factors in these potential improvements are the requirements of active listening and collaboration, in addition to foundational knowledge and practical skills. The evidence for the effectiveness of simulation training in the improvement of patient-care outcomes is not strong. The relatively few studies which were conducted appear to confirm an improvement in clinical performance after simulation training (in the context of anaesthesia) (Shear, Greenberg & Tokarczyk, 2013). Smith and colleagues were also able to show that simulation training improved perinatal care and outcomes, decreased litigation claims and reduced midwifery sick leave (Smith, Siassakos, Crofts & Draycott, 2013).

In the academic sector, however, there is a considerable body of evidence indicating the improvement of educational outcomes with the use of simulation training. It has been shown that learners who perform simulated tasks show noticeable improvement when an additional simulated task is completed (Lateef, 2010). Excluding skill performance, researchers who were attempting to find a link between simulation training and an improvement in patient safety noted an increase in the confidence of students (based on self-reporting in questionnaires) when performing various skills; they also noted an improvement in student preparedness (Green, Tariq, & Green, 2016).
Simulation-Based Medical Education (SBME) will be the specific term used in the context of EC-provider training. SBME can consist of various learning orientations to achieve different results, such as the behaviourist, cognitivist, humanist, social learning and constructivist approaches (Torre, Daley, Sebastian & Elnicki, 2006). There has not been a proven ‘best-fit’ learning orientation which supports EC-provider students’ approaches to domestic violence incidents.

International data from the United States of America suggests that simulation training may be effective in enhancing the confidence and competence of nursing students when addressing interpersonal violence (Wood, 2016). In Israel, standardised patients were used to improve the perceived capabilities and overall management of DV cases for physicians. The improvements came from addressing the lack of knowledge, lack of skills and psychological difficulties associated with domestic violence (Shefet, Dascal-Weichhendler, Rubin, Pessach, Itzik, Benita & Ziv, 2007). A study by Cox-George et al., in the United Kingdom, found that simulation teaching is likely the best way to teach under- and postgraduate students about DV as it closely resembles real-life clinical scenarios. There are also the added benefits of incorporating multi-disciplinary approaches and of feedback and debriefing in a protected environment (Cox-George, Moffatt & Jones, 2017).

UNDERSTANDING THE VALUE OF SBME LEARNING ORIENTATIONS

There are multiple learning orientations, each with their own attributes and areas of benefit. The behaviourist orientation makes use of ‘Learning Theory’. This theory is teacher-centred, where the role of the teacher is to manipulate the environment/objects in the environment to provoke a predefined response from the learner. The behaviourist learning orientation is particularly advantageous when developing the learner's psychomotor skills, such as programming a syringe driver or inserting an intravenous catheter (Torre et al., 2006). The cognitivist orientation “focuses on the learner’s cognitive structures and internal environment; the learner will make use of his/her insight, perceptions, information processing, and memory to facilitate learning by assigning meaning to events” (Torre et al., 2006, pp. 904).

In contrast, social constructivism is a theory of knowledge which maintains that all cognitive functions, including learning, are dependent on interactions with others (such as parents, lecturers and peers) (McInerney, 2002). It is for this reason that for learning to take place, a successful collaborative method is warranted. The teaching must occur in a situationally specific and contextually bound medium for learning to take place (McInerney, 2002). Social constructivism has a role to play in medical simulation, in specific and appropriate learning opportunities. The learners can make meaning from the practical lessons (in the
form of simulations) by interacting with one another and with the simulation facilitator (which could be educational staff or even other learners), and by drawing on past experiences (real-life or simulated). The situation or context of the simulation can, however, influence the achievability of the learning outcome.

**RESEARCH DESIGN AND METHODS**

**RESEARCH DESIGN**

Within the social-constructivist paradigm (Charmaz, 2008), a qualitative design was utilised, owing to its value in expanding knowledge on a topic of which little is known (Griffiths & Mooney, 2012). This design is advantageous to explore the perceptions (formed through knowledge, attitudes, beliefs, and practices) of participants concerning the topic at hand (domestic-violence-related emergency care). Using focus-group discussions and participants’ observation, non-verbal language could be observed, providing rich data that included body language, mannerisms and signs of distress (such as sweating or the use of eye contact) (Oltmann, 2016). By contrast, a quantitative design would not have been appropriate, as it was unlikely to provide an in-depth description of the nature of the underpinning complex events (Fahie, 2014). This study used focus-group discussions before and after simulation testing, as well as participant observation during the simulation testing. Participant observation further concretes the use of a qualitative design, as simulation training is a display of human behaviour that is classically a qualitative observation.

Furthermore, the study followed a grounded theory design to guide, collect and code data in order to identify emerging categories and generate practice-theory (Charmaz, 2008). An assumption is made that although the physical world exists, (apart from perception) reality itself is social (Feeler, 2012). This reality emerges in the language individuals use to refer to their experiences (and perceptions) of that world, in conjunction with the researcher’s involvements and interactions. What the researcher may bring to the data influences what they see in it (Charmaz, 2008).

Social constructivism is a theory of knowledge which stipulates that all cognitive functions, including learning, are dependent on interactions with others (such as parents, lecturers, peers). The central idea of the paradigm is that human learning and knowledge are constructed and shared through social interaction, rather than resting on individual experience (Vygotsky, 1978). Vygotsky’s theory of the Zone of Proximal Development may tie into the teaching of DV to EC-provider students, as it acknowledges that there are ranges of skills or tasks which may be too difficult for an individual to master alone. However, with assistance or guidance by peers and/or more knowledgeable individuals, the task can be mastered
(Vygotsky, 1978). It is for this reason that for learning to take place, a successful collaborative method is necessary. In the *Handbook of constructionist research* Charmaz (2008) stated that the extent to which grounded theorists invoke social constructionist premises depends on their epistemological stance and approach to research practice. The varied disciplines of psychology, education, nursing, and occupational and environmental medicine have all made use of Charmaz’s theory in developing their constructivist approach for their respective studies (Mills, Bonner & Francis, 2006). This study (which easily draws from the philosophies of education, psychology, forensics, medicine and social work) uses the approach proposed by Charmaz.

**PARTICIPANT AND SITE SELECTION**

The sampling of the study participants was purposive. The inclusion criteria for participant selection consisted of EC providers who were registered as undergraduate students in the Bachelor of Emergency Medical Care (BEMC) programme at the Cape Peninsula University of Technology, Cape Town, South Africa, who, when qualified, would register with the Health Professions Council of South Africa (HPCSA) as independent practitioners. Postgraduate students were excluded, since simulated practice is absent in postgraduate study. The ideal participant was a student who was regularly training in the simulated environment, so as to avoid the performance anxiety and associated ‘confounding’ of first-time simulated practice. The value proposition of simulated clinical practice may be relative to the design of the educational programme, hence a single university familiar to the researcher and participants was selected. These criteria allowed for rich data to be collected during the focus-group discussions and simulation testing, as some participants may have had years of experience while others had no experience in encountering domestic violence in the prehospital setting (notwithstanding their personal experiences with DV). People not registered with the institution or the HPCSA (as an Emergency Care Practitioner Student) at the time of the study were excluded. Finally, because this sampling was based on volunteerism, people who did not wish to take part in the study were self-excluded.

There was no unfair exclusion or inclusion. Participants were recruited exclusively on the grounds of volunteering. The age, gender, race, years of experience and religious views of the participants were not predefined or targeted. Twenty-nine participants were recruited for the study. This number of participants allowed for a lively discussion during focus-group discussions, but also maintained a small enough group so that everyone would be able to contribute to the discussion (Rewey, Zimmerman & Scholz, 2011). The participants were separated into groups based on their year of study (first year, second year, etc). The recruitment strategy was based on direct recruitment of voluntary participants and involved informed
consent. Ethics approval for the study was granted by the university’s Departmental Research Ethics Committee (CPUT/HW-REC 2018/H28).

RESEARCH METHODS

To enable theoretical propositioning (as is the goal of grounded theory), the intent of the study was to conduct between-method triangulation. The methods included a literature review, focus group discussions (FGDs) (held before and after simulated practice), and participant observation of simulated practice.

PRE-AND POST-SIMULATION FOCUS GROUP DISCUSSIONS

There were eight FGDs throughout the data-collection period; one before and one after a patient simulation session for each of the four groups. There was an average of seven participants per FGD. These focus-group discussions were used to generate information on collective views and to determine the rationale for those views. They were useful in generating a rich understanding of the participants’ perceptions. A multi-method design was used in the discussions, to explore the topic. Group languages and narratives derived from the discussions were used in later stages of the data-collection phase. Different participant groups may have different interpretations of or beliefs about a specific topic. Alternatively, each participant cohort also has the potential to bring across a belief which is identical to that of other cohorts, although they may use different vernaculars/narratives to portray this belief. The data gained in these discussions was used to help develop four patient scripts for implementation in the participant observation phase of data-collection.

As indicated, this study was based on a grounded theory methodology. These FGDs lasted approximately 60 minutes each and all were audio recorded. The FGD data collection procedure was performed over a period of one month. During this time, EC provider/student personal beliefs and professional attitudes regarding DV victims and emergency-care simulated practice were documented. The focus groups were facilitated by the researcher, as this ensured a standardised approach to data-collection and participant interaction. Having different facilitators for these discussions could have caused exposure to confounding factors, such as facilitators with different worldviews, different methods of phrasing questions and different ways of handling sensitive topics. Having one focus-group facilitator deepened the authenticity of the study and created an insider status.
PARTICIPANT OBSERVATION OF PATIENT SIMULATIONS

Participant observation has utility when there are multiple opportunities to observe nonverbal expressions of feelings and interactions between participants. It is particularly useful when there are interactions between individuals who are unable/unwilling to share, due to societal norms or out of respect to other participants (Kawulich, 2005).

For this study, the participants were asked to separate into two groups (one being the EC providers and one being the DV victims). The standardised patients were provided with a pre-brief before the scenario (indicating patient characteristics, mannerisms, medical history, social history, etc.). The standardised patients were scripted not to dialogue but rather to the actions/inactions of the participant playing the role of the EC provider. Improvisation was encouraged for the scenario to flow realistically.

The instrumentation used in this study were the Standardised Patient Briefs 1 to 4. The scripts were designed online on iRISTM software. iRISTM is a “web-based platform created for the purpose of designing high-quality scenarios that offer the best learning experience” possible (iRISTM, n.d.). The evidence which guided the creation of the scripts consisted of South African statistics about the demographics of victims. This victimology described the variables which could be adjusted to create simulations. Table 1 indicates the various headings which aided in the design of the scripts. The gender, age, marital status, citizenship status, underlying health conditions, home environment, injury patterns and the degree of the victims’ acceptance of the violence are all independently adjustable factors which make up the victim descriptions in the simulation. All patients in the designed scripts were female, as they are the most likely victims of DV. The researcher recognises that DV occurs across all genders; however, the most common occurrence of DV is gender-based violence (generally male-on-female violence). Using the 2016 Statistics South Africa report (South Africa, 2017), it was found that the most common age group of victims of physical violence perpetrated by a partner, was the range 18 to 24 years old. Therefore, all but one patient was aged within this range. The patient scripts did not have a race assigned to the victim. In South Africa, separated and divorced women are more likely to experience DV (South Africa, 2017). For the purpose of simulation, the patients in DV cases 1, 3 and 4 were still married to their abusers, and DV case 2 had recently broken up with her partner (ex-boyfriend). The demographics of the patients in DV cases 3 and 4 were almost identical; however, the patient in DV case 3 was an undocumented immigrant (with no support from family or friends). The description of the simulation varied according to the individual simulation. The description included a brief identification of the type of call the EC-provider participant was ‘dispatched’ to (e.g. assault, fall from height, abdominal pain), the narrative of what had happened to the patient, the general
impression of the patient, and how the patient will respond to being transported for further care. The abuser was not physically present in the performed simulations; however, the threat of his return was made in all of the cases.

Table 1: Standardised Patient Script Domains

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient demographics</td>
<td>Guided by South African statistics.</td>
</tr>
<tr>
<td>Description</td>
<td>The description includes a brief identification of the type of call the EC-provider participant was ‘dispatched’ to, the narrative of what happened to the patient, the general impression of the patient, and how the patient will respond to being transported for further care.</td>
</tr>
<tr>
<td>Presenting history</td>
<td>This is what the EC-provider participant was told just before the simulation started.</td>
</tr>
<tr>
<td>Previous medical history and allergies</td>
<td>The medical histories of the scripted patients were mostly insignificant in all of the scripts. The patient in DV case 4 was HIV-positive and on medication.</td>
</tr>
<tr>
<td>Patient’s opening statement</td>
<td>There were no quoted lines the standardised patient had to say. However, each DV case had its guideline for how the patient should respond to the EC provider at the start of the simulation.</td>
</tr>
<tr>
<td>Presentation and behaviour of patient</td>
<td>The general appearance/body language/mood and extent of communication varied according to the extent of the injuries sustained and the victim’s outlook.</td>
</tr>
<tr>
<td>Open-ended questions and guidelines</td>
<td>The patients in DV cases 1 and 2 shared information openly. However, the patients in DV cases 3 and 4 required more questioning and trust before they could share more details.</td>
</tr>
<tr>
<td>Patient’s history of violence</td>
<td>This section was specific to the individual injuries sustained.</td>
</tr>
<tr>
<td>Family medical history</td>
<td>None of the scripts had a patient with a family medical history.</td>
</tr>
</tbody>
</table>
Social medical history
None of the patients were abusing substances. Most of the patients did not have significant social support. Only 1 out of the 4 scripts had a patient who was currently employed.

Physical exam findings
This is what the EC provider would have discovered in his/her inspection of the patient. The injuries presented in the simulation were mostly confined to the central region (head and back) and limbs.

What should the patient expect from the visit?
All of the scripts had “professionalism, no judgement” under this heading.

Participant observation during simulated practice commenced soon after the initial focus group discussions. As this study used grounded theory as a methodology, there was no contrived focus during the participant observation. The time interval between the first FGD and the simulations allowed for patient scripts to be designed and drafted based on the information and evidence gained during the discussions. This preceded the literature review. It was essential for the simulations to be at a level that the participants would find challenging, yet still informative. The assumption was made that if the simulations were too in-depth and emotionally charged, the participants would struggle to achieve their outcomes of providing holistic care to the patient. The FGDs were therefore used to determine the extent of knowledge/experience of the participants so that suitably challenging simulations could be drafted. The implementation of DV related simulations was therefore based on the concept of knowledge scaffolding. There would be little value in having highly complicated and hyper-realistic simulations, when the knowledge-base of the student is ill-formed. Vygotsky’s “Zone of Proximal Development” speaks to the above, as the content which needs to be covered in the simulation may be too difficult for the participant to master alone. However, “it can be mastered with the assistance or guidance of adults or more-skilled peers” (Vygotsky, 1962).

The total frequency of the simulations (n = 14) depended on the data gathered from the FGDs (to reach saturation). These simulations lasted from 7 to 19 minutes each. The purpose of the simulations was to outline the practitioner’s approach to a DV victim in the prehospital setting. The simulations were video-recorded. The web-based software, iRIS®, was used to help design and implement the patient simulations. At no time during the simulations was the dignity of the participants impaired. Any participation from the
researcher, during the participant observation, was guided by educational best practice to not render participants vulnerable to undue bias and influence.

**RESULTS AND DISCUSSION**

The category, “Conducting effective DV-based simulations” (Table 2) emerged from the following selective codes: ‘Potential value in peer-based training for DV-related simulations’, ‘The realism in DV-based simulations’ and ‘Factors that align to realistic simulations’. These selective codes were obtained from the data-triangulation of the pre-simulation FGDs, the simulations, and the post-simulation FGDs. Axial codes were developed from the raw data in the initial phase of data-analysis. These axial codes were used to develop the selective codes.

**Table 2: Category Formation**

<table>
<thead>
<tr>
<th>Category formed</th>
<th>Conducting effective DV-based simulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selective codes</td>
<td>Potential value in peer-based training with DV-related simulations</td>
</tr>
<tr>
<td>Axial codes from pre/post-simulation focus-group discussions and participant observation during simulations</td>
<td>Weaknesses of doll-based simulations</td>
</tr>
<tr>
<td></td>
<td>Value in peer-to-peer training</td>
</tr>
<tr>
<td></td>
<td>Simulations as a proxy for DV education</td>
</tr>
<tr>
<td></td>
<td>The value of a learning-centred simulation environment</td>
</tr>
</tbody>
</table>
The value in semi-structured simulations

Many of the topics of discussion in the post-simulation FGD were centred on the elements which can make a simulation life-like. For simulations to be effective in their role of training, realism was found to be essential. Participants found that responding to DV in the real world is made challenging because of the potentially hostile environment and the “unknown” (entering a house without suspecting DV). Because the simulations were performed in a “controlled environment” and the theme for the data-collection session was DV, this element of surprise was lost. The participants found that the simulations were extremely immersive in terms of the depth of conversation between the patient and EC provider, body language, patient history and presentation. They remarked that “Thought is being put into it [the simulation scripts]”, and “More should be done”. There was a connection made between the level of perceived realism in simulation training and the magnitude of effective learning. Simulations require outcomes, as well as limitations. At least one person (the standardised patient or the EC-provider student) should know when the simulation will end. This point came from a participant asking, “Where does it [simulation] begin and where does it end?”

It was found to be critical to have a standardised patient briefing before the simulation begins: “They should brief you … to instil the gravity of the sims.”; and “Sim [simulation] victims should have a proper briefing – [the facilitator should start by] chatting to the victims”. Simulations involving standardised patients are only as effective as the standardised patient is prepared. Standardised patients should be comfortable and knowledgeable about their role. Although the patient scripts were user-friendly, there was still a need to have the facilitator go through key points for individual standardised patients, before the commencement of the simulations. Scripting of the patient’s role was found to be highly effective. Participants without experience in the prehospital environment or experience interacting with victims of DV were able to play the role of the patient effectively. One participant mentioned that, in his experience working with DV victims (in a previous academic programme), the participant (who only made use of the script to guide her presentation) performed in a manner indistinguishable from a real victim. Patient scripting was therefore critical to the progression of the simulation.

The environment in which the simulations took place was one which fostered comfort. Participants did not feel the subjective experience of judgment while performing their simulations. This is in contrast to the environment in which “normal” EMC simulations are performed. As is often remarked: “Someone breathing down your neck won’t help”. The subjective experience of the participants was that the DV
simulations were learning-centred, as opposed to “stress-testing” or an assessment-based event. A participant explained that DV simulation training was “a subtle art” and should be treated as such. The ability for feedback to occur from the victim’s point of view was appreciated – participants were, for instance, able to tell each other if they were “sitting too close or too far away” during the simulation.

The lack of previous DV simulation training was evident in the observations. This was manifested in the almost identical DV victim approach, regardless of the participants’ year of study. This suggested that, currently, the progressive years of study are not protective for victims, as one might expect of emerging healthcare professionals. There was a universal, pervasive uneasiness experienced by each of the participants. In times of student ‘dis-ease’, protocols have the inherent value of providing structure. The DV screening protocol provided the structured approach to the DV victim interaction. This was, however, a ‘bare-bones’ outline. The participants needed to add their own conversational techniques for the standardised patients to provide information. This was particularly important, as the standardised patients were guided (by the script) to not freely disclose information. The participants in this study agreed unanimously that the use of peer-based training in simulations can be beneficial generally, and specifically in DV education.

A study was conducted by Rantatalo, Sjöberg and Karp in 2018, entitled “Supporting roles in live simulations: how observers and confederates can facilitate learning”. The objective of this study was to examine the extent and content of what students learn from participating in live simulations when they take part in roles other than that of a primary participant. The findings of the study (Rantatalo et al., 2018) resonate with the data collected in this study. It was determined that valuable information can be obtained from the participant acting as the DV victim. The standardised patient can provide face-to-face feedback in real time to the participant playing the role of the EC provider. The study by Rantatalo et al. (2018), used Swedish police trainees during their simulation education. It concluded that the participants who were engaged in simulations, but who were not the primary participants (the EC providers in this study), are crucial in producing realistic scenarios for the primary participant to act in. They can also effectively adjust the difficulty of the simulation, therefore contributing to the learning outcomes of the simulation (Rantatalo et al., 2018). The Rantatalo study supports the information gained in the data collection and it reinforces Vygotsky’s theory of sociocultural learning, where the candidate needs to be engaged in the learning process with the assistance of other people (Vygotsky, 1978).

The topic of ‘simulation realism’ was common within all the groups of participants. A contrast was made between traditional manikin-based training and the use of peer-based training (participants with
standardised patient scripts). It was agreed that practising clinical procedures such as intravenous access and intubation on manikins was appropriate, but that gaining patient history (medical or social) was problematic. Similarly, encouraging EC-provider/patient dialogue between a student and a manikin appeared counter-productive, as the simulation facilitator would often take the role of speaking for the patient and any questions directed to the patient by the participant would be answered by the facilitator. The participants found this highly distracting and unrealistic, therefore hindering potential learning opportunities. In this study, the participants were able to make eye contact with another human being, who could react to poor conversational techniques/unwelcoming body language. Also, feedback could be provided from the victim’s perspective, which could enhance future attempts at the victim/EC-provider encounter (simulated or real).

There is a growing base of evidence which indicates that the mere presence of a participant in a simulation does not necessarily imply learning. The simulation must be purposefully designed, with measurable outcomes, to potentiate active learning (Dieckmann, 2009; Hopwood et al., 2016; Sjöberg et al., 2019). The fidelity (realism) employed would be a function of the design choices and resource and creative limitations. DV responses are challenged by the limitations of measurable outcomes. In the category named ‘Conducting effective domestic-violence-based simulations’, the word ‘effective’ holds little value if outcomes cannot be evaluated. An outcome is a statement which reflects measurable change owing to an intervention/effort that was made (National Resource Center on Domestic Violence, n.d.). The outcome evaluation assesses what occurred as a direct result of the programme, and it must be “measurable, realistic and philosophically tied to program activities” (National Resource Center on Domestic Violence, n.d.:1). Victims’ satisfaction ratings of EC providers’ responsivity would be ideal, but this is largely unrealistic. Following up on victims is challenging, time-consuming and expensive and may bring increased risk of harm. The use of EC providers’ self-reporting of their response can be beneficial, however this is not likely to be a true reflection of the DV response, due to self-reporting bias. Creating systems which can monitor victims’ movement from one intervention to the next could assist in appraising uptake of referral, but may result in risk of coercion. Such systems would involve keeping track of when and where an EC provider made contact with the victim; where he/she was transported to (if transported); which facility doctor/nurse made contact; if the patient was referred to a social worker; if counselling services were utilised; if legal proceedings took place; if a victim shelter was used; and finally, if the victim later returned to the abuser (indicating a continuation or interruption of the cycle of abuse).

Future domestic-violence education of EC providers may very well include the use of simulation training in addition to theoretical sessions. The simulations required no equipment (implying that it is not resource-
intensive) and the only resources which were used were the patient scripts and a hard copy of the domestic-violence screening protocol.

CONCLUSION

The paradigm of social constructivism enabled the topic of domestic-violence (DV) intervention by emergency-care providers to emerge organically. The central idea of the paradigm is that human learning and knowledge are constructed and shared through social interaction, rather than being an individual experience (Vygotsky, 1978). The grounded-theory methodology, in turn, gave access to a poorly researched area. The validation of this methodology in the emergency-care (EC) field is evidenced by this study and may hold significant value for future research endeavours.

This study aimed to position EC providers as advocates for DV victims’ interests during the (simulated or real) emergency-care interaction. The primary research question was answered by utilising data from a literature review, pre-simulation focus-group discussions, patient simulations with participant observation, and post-simulation focus-group discussions. The literature review indicated that although efforts were made to determine the use of simulations in various contexts, little research was done on simulation training for EC providers. Prior research was conducted on the thoughts, attitudes and beliefs of nurses, doctors and social workers about simulation. However, the evidence for EC providers in general, was limited. The literature review included evidence that was used to construct the patient simulations and scripts. This allowed the creation of simulations using real-world data, rather than personal judgement or experience. This was the first documented attempt at creating evidence-informed DV simulations for South African EC providers.

THE CONTRIBUTION TO KNOWLEDGE

The value proposition of domestic-violence simulated practice in EC is that future simulations can be developed using real-world statistics, thereby mitigating simulation facilitator bias in DV education. EC-providers’ responsiveness may be enhanced by allowing students to interact with standardised DV victims, who can provide a level of authenticity through which they can convey their empathy and hone history-taking skills, while receiving feedback during and after simulations – all of which are lacking in manikin-based simulated practice. This form of simulation training is inexpensive – therefore, resource intensity will not become a barrier to a scaled implementation of simulated practice which aims at enhancing domestic-violence intervention capacity within the academic sector and civil society.
THE RECOMMENDATIONS FOR PRACTICE/POLICY

Further research may be needed on how to best assess the outcomes of scripted simulations of DV cases for EC providers. Simulations need outcomes to make them effective (Rantatalo et al., 2018). There is little evidence to suggest the most effective method of assessing standardised patient simulations within a domestic-violence context (Heron et al., 2009), or in the EC-provider context. Like the phenomenon of domestic violence, domestic-violence simulations have an inherent complexity. Intuitively, it would be unwise to assess simulation participants on how well they follow a script, as the human dynamic is what makes scripted simulations beneficial. The quality of domestic-violence documentation in a peer-based simulation could be a component of a larger quality assessment. Victim intervention with rigorous quality-control measures for documentation will likely potentiate improvements for future emergency care.

There is secondary evidence suggesting that inter-professional training can be of benefit for cases such as domestic violence cases (Kuliukas, Oehlers & Berlingeri, 2016). There is thus room for further research into this proposition for the South African context, which may include the South African Police Services, Emergency Medical Services, hospital staff (doctors and nurses) and social workers. This may promote a culture of domestic-violence response within the public sector (stakeholders in domestic-violence intervention), thus supporting the needs of some of society’s most vulnerable.

Domestic violence must be seen as a medico-legal concern for all those involved. The criminal act of DV is repetitive (and serial) in nature, and in its most violent form, may lead to grievous bodily harm, femicide and suicide. The United Nations reports that in 2012, globally, women were as likely to die by the hands of an intimate partner or a family member as they were to die by the hands of a stranger (UN, 2017). Poor or non-responses from emergency-care systems render the profession complicit in normalising the occurrence of domestic violence and in undermining opportunities for early detection and prompt care and referral. Provider responsiveness (in a professional capacity and in fulfilment of obligations) specific to domestic violence has not been appropriately stressed in emergency-care providers’ training. It is imperative that EC providers respond to the health effects of DV by working to interrupt the cycle of abuse, provide supportive care for victims and protect and promote medico-legal evidence while performing their healthcare duties. Self-identified male and female caregivers have the opportunity to reframe their own attitudes about domestic violence and are invited (rather than indicted) to play a role in violence prevention. That we do this within the resource constraints of low- and middle-income countries, nuances the value proposition of simulation scripting for domestic-violence interruption.
REFERENCES

https://pdfs.semanticscholar.org/e6d8/e881db54e0fe88e098e0ee4980dbbb4f8c.pdf


https://doi.org/10.1177/160940691401300108


https://doi.org/10.1155/2016/4237523


UN. See United Nations.


WHO. See World Health Organization.

Annexure 1

Domestic Violence Case 1

(Standardised Patient Briefing)

Created by: W Craig

Produced on: 9-Jun-2019

Description

The participant is dispatched to a P2\(^2\) call for an assault. The patient was punched in the eye the previous night when she and her husband were arguing. The ambulance was only dispatched the following morning. The husband is extremely apologetic and acting kind to the patient. This is not the first time this has happened; 2 months prior, her husband had shoved her into the wall because she was not listening to him. The patient believes that it was her fault. At the moment she feels safe around her husband, as she knows that he only hits her when he is intoxicated. The patient will refuse to go to the hospital and will not want to lay criminal charges against her abuser.

Patient Demographics and Candidate Brief

Abi, female, 24

Presenting History (Candidate Storyboard)

You are dispatched on a Priority 2 call for an incident which had happened the previous night. An adult female patient was punched in the eye.

Previous Medical History

None

\(^2\) Priority 2: In the Western Cape EMS, this is a lower-priority case (non-life-threatening), unlike a Priority 1 case (P1).
Known Allergies

None

Patient’s Opening Statement

Light-heartedly say that you do not need an ambulance. You called for EMS in the heat of the moment last night, but this morning your husband apologised for everything.

Presentation and Behaviour of Patient and Carers

<table>
<thead>
<tr>
<th>Role</th>
<th>General appearance</th>
<th>Body language</th>
<th>Mood/affect</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient</td>
<td>The right eye is bruised and tender. You should be relaxed and appear content.</td>
<td>Relaxed, open body language.</td>
<td>Light mood, you are not concerned with the situation or what happened last night.</td>
<td>You should be very open about the events of the previous night.</td>
</tr>
</tbody>
</table>

Open-Ended Questions and Guidelines

| Information to share | Information to withhold |
You should share that you were punched in the face by your husband. Your husband is extremely apologetic and acting very kindly now. This is not the first time that this kind of thing has happened. Two months ago, he shoved you into the wall because you were not listening to him – you believe it was your fault. You do not want to go to the hospital or lay charges. You feel safe around your husband, because you know that he only hits you when he is drunk.

### Patient History of Present Illness

<table>
<thead>
<tr>
<th>Location</th>
<th>Right eye</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>Aching</td>
</tr>
<tr>
<td>Severity</td>
<td>4/10</td>
</tr>
<tr>
<td>Duration</td>
<td>Since last night</td>
</tr>
<tr>
<td>Timing</td>
<td>Last night @ approximately 21:00</td>
</tr>
<tr>
<td>Context</td>
<td>You were punched in the eye the previous night when you and your husband were arguing.</td>
</tr>
<tr>
<td>Modifying factors</td>
<td>Putting an ice-cloth on it makes it feel better.</td>
</tr>
<tr>
<td>Associated signs and symptoms</td>
<td>None</td>
</tr>
<tr>
<td>Illnesses/injuries</td>
<td>Hospitalisation</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Shoved into the wall about 2 months ago in another argument with your husband. Bruising to your back.</td>
<td>None</td>
</tr>
<tr>
<td>Medications (prescription, OTC, supplements)</td>
<td></td>
</tr>
<tr>
<td>Allergies and reaction (e.g. meds, environmental, food)</td>
<td></td>
</tr>
</tbody>
</table>

**Family Medical History**

<table>
<thead>
<tr>
<th>Family-tree info</th>
<th>Conditions/chronic diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

**Social Medical History**

<table>
<thead>
<tr>
<th>Subsstance abuse</th>
<th>Home environment</th>
<th>Social support</th>
<th>Occupation</th>
</tr>
</thead>
</table>
Not me, but my husband drinks a lot. The home environment changes a lot. There were a lot of arguments leading up to the incident from last night. But things are a lot better now. I feel safe at home. I have friends, but I don’t see them often. Currently unemployed; my husband says that I do not need to work if I keep the house looking nice.

Physical Exam Findings

Bruised right orbit.

What Should Patient Expect from this Visit?

Professionalism, no judgment.

Guidelines for Feedback

Feedback will take place in the post-simulation focus-group discussion.
How the Private sector can Address the Issue of Gender-based Violence

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ABSTRACT

This paper positions gender-based violence (GBV) as an issue that affects employees in the private sector, considering that global statistics show that at least 35% of women across the world experience some kind of GBV in their lifetime. GBV has presented many challenges to all stakeholders for decades. While multiple research reports and interventions have been published on the prevalence and scope of this issue, there is little evidence available on the progress being made towards its elimination. It has become clear that addressing this issue will necessitate multi-sectoral collaboration and participation, since government and non-government organisations on their own have not made significant progress in spite of their many focused efforts. Within the framework of the global sustainability objectives (GSOs) calls have increasingly been made on the private sector to address the inextricably linked issues of gender inequality and GBV, but it still seems unclear how organisations in the private sector can address it and why it is their responsibility. Most forms of GBV are not perpetrated by strangers and thus remain unreported. The social, physical, emotional and financial consequences for all stakeholders are exacerbated by the stigma associated with GBV, which makes it difficult for victims and perpetrators to seek help. By acknowledging that both victims and perpetrators are among their employees, private-sector organisations can make this topic far more communicable, can put support structures in place, and can allocate resources to address this issue. The discussion concludes with specific recommendations of how the private sector can participate and collaborate in eliminating GBV.

Keywords: gender-based violence, social responsibility, global sustainability, strategic communication

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INTRODUCTION

The National Strategic Plan for addressing gender-based violence (GBV) in South Africa, released by President Ramaphosa on 11 March 2020, directed a very specific call to the private sector to participate in addressing this issue. GBV has been a global crisis for many decades and, to date, research reports and statistics show little or no progress towards its elimination (Jewkes & Dartnall, 2017). Global reports over many years have indicated that GBV is prevalent across cultures, ‘race’, religions and socio-economic status. Initially, GBV was addressed mainly by international health organisations such as the World Health Organization (WHO) and the United Nations (UN), predominantly as a public-health concern. However, it has become more apparent over recent years that GBV is a social issue that stems from culture, religion, gender inequality and patriarchy, among other things, and that it has been perpetuated through societal structures, such as organisations. There have been increasing calls to all sectors to intervene in addressing GBV. The cost of GBV to the global economy was estimated at $1.5 trillion (UN Women, 2016), while the economic cost of GBV to South Africa has been estimated at between R28.4 and R42.4 billion (KPMG, 2014). Still, there has been little evidence of widespread successful GBV interventions (Abrahams, Mathews, Martin, Lombard, & Jewkes, 2013). It has also become clear, as Morrison and Orlando (2005) argue, that accounting-based measures of GBV are insufficient, suggesting that different perspectives are needed. While many private-sector organisations have GBV interventions through corporate philanthropy, they have not taken action to address the issue head-on. The purpose of this commentary is to show that just funding non-government organisations dealing with GBV issues is no longer sufficient. GBV is the responsibility of stakeholders across all sectors and the criticality of the private sector’s participation and intervention, in particular, has to be clearly articulated.

THE PHYSICAL, EMOTIONAL AND SOCIAL IMPACT OF GBV

One of the greatest challenges pertaining to GBV is the silence that perpetuates the issue, because of the stigma associated with it. Therefore, the physical, emotional and social impact of GBV remains unpronounced, because it causes shame, discrimination and social exclusion, as shown by Seedat, Van Niekerk, Jewkes, Suffla and Ratele (2009) and Jewkes and Dartnall (2017). This stigma also means that both victims and perpetrators have remained invisible in spaces such as the workplace, where people have limited awareness of their colleagues’ personal lives. The issue of sexual harassment and abuse in the work environment, as one of the many kinds of GBV, came under the spotlight in 2016, when the #MeToo movement was started by Tarana Burke. It spread virally as a hashtag on social media in 2017, following the charges against media producer Harvey Weinstein (BBC News, 2020). For the first time, women had a
large-scale platform for coming forward and speaking out against the sexual abuse they had experienced in work contexts, and for promoting solidarity and empathy among survivors and victims (Rodio-Colocino, 2018). Thousands of voices were heard and victims’ narratives of the trauma they had experienced provided much-needed insight into the devastation caused by this kind of GBV and its prevalence.

However, sexual harassment and abuse is only one form of GBV. Its most prevalent forms are intimate-partner violence (IPV), domestic violence (DV) and violence against children (VAC) experienced, in most cases, in their homes. The stigma attached to these forms of GBV is even worse, which means that victims and their families are too ashamed and scared to come forward because they fear discrimination, judgement and not being believed. For these reasons, GBV has been viewed as a private matter that employers did not wish to get involved in. A shift in this perception occurred when specific calls on the private sector were made by sources such as Colford (2014, p. 1), who represented the World Bank when he stated the following:

If a sense of social responsibility isn’t enough to get corporate leaders thinking pro-actively, they should at least consider their business’ long-term enlightened self-interest. A workforce that’s de-motivated or demoralized – or, worse, physically injured or emotionally abused – will suffer lower morale and higher absenteeism, will trigger higher health-care costs, will be distracted from seizing new business opportunities, and will fall short of fulfilling its full productive potential. That economic reality should spur the private sector to take constructive, preventive action.

Even though this statement foregrounds the economic implications of GBV, it also alludes to the emotional and physical devastation GBV causes. More recently, a number of brutal killings of young women in South Africa drew sharp attention to IPV. These included the deaths of Karabo Mokoena, whose body was burned after she was brutally murdered by her intimate partner on 28 April 2017 (Daily Maverick, 2018); Uyinene Mrwetyana on 24 August 2019, Leihandré Jegels, who was shot by her boyfriend in September 2019; Janika Mallo, the 24-year-old who was raped and killed by two family acquaintances; 16-year-old Ayakha Jiyane and her three younger step-siblings, who were found hanged in September 2019; eight-months pregnant Tshegofatso Pule, who was found hanging from a tree in June 2020, and Naledi Phangindawo, who was allegedly hacked to death by her partner on 6 June 2020. The impact of the trauma associated with deaths such as these on families, friends, acquaintances and society was widely described and necessarily and unavoidably extends to the workplace. While femicide represents a worst-case scenario, the consequences for surviving victims of IPV and DV, identified by Day (1995), include the following:
• physical problems (e.g. stomach aches, headaches, asthma, insomnia);
• emotional problems (e.g. depression, anxiety, guilt, self-blame, post-traumatic stress disorder);
• behavioural problems (e.g. aggression, suicidal behaviours, alcohol and illicit drug use, truancy/early school-leaving);
• cognitive problems (e.g. distortions in attitudes and beliefs about violence and abusive behaviour);
• difficulty concentrating and learning; and
• social problems (e.g. isolation, difficulty trusting, and accepting and/or using violence in peer and dating relationships).

Other non-monetary social costs include those represented in disability-adjusted life years (DALY) (Dalal, & Svanström, 2015) or the longer-term consequences for children and adolescents exposed to DV and IPV that impact future functioning (Fakunmoju, & Rasool, 2018). It therefore makes sense from an employee-wellbeing perspective that private-sector organisations should reconceptualise their corporate and social responsibility in terms of the current global sustainability objectives (GSOs), which make specific reference to GBV and focus on gender equality. Private-sector organisations should also know that gender inequality was recognised as a key driver of GBV many decades ago. To date, no country has however achieved gender equality, nor is any country likely to do so by 2030 (UN Women, 2019). The shift that now needs to take place is the reconceptualisation of GBV as an issue that requires strategic intervention by the private sector.

Much work has been done by organisations such as the Sexual Violence Research Initiative (SVRI) (2020), Business for Social Responsibility (BSR) and HERrespect (2017) to pave the way for private-sector organisations to address GBV as an issue that affects employees’ wellbeing and their organisations’ success, although it seems that these reports have not yet been considered or used by the private sector in South Africa. The following section considers some of the developments in business and industry that have been benchmarked in current literature on organisations and global sustainability.

**WHAT THE PRIVATE SECTOR CAN DO TO ADDRESS GBV**

Holmström (2006) showed how the concepts of corporate social responsibility (CSR) and the relationship between organisations and society had evolved, placing an increasing emphasis on organisations’ accountability for not addressing issues that affect society. Recent theoretical developments in the fields of organisation studies and strategic communication place great emphasis on human-centredness and on the
achievement of the GSOs, as shown by Galpin, Whittington and Bell (2015). The central tenet in these approaches is ‘that people are more important than profit’. From this perspective, there are specific guidelines or actions that private-sector organisations should follow.

**Recognise GBV as an issue that affects employees**

UN Women (2019) showed that, globally, one out of three women experience some kind of GBV in their lifetime. South Africa was dubbed the rape capital of the world as early as 1995 (Jewkes, & Abrahams, 2002) and as Jewkes and Dartnall (2017, p. 493) maintain, “in most settings women are more at risk of being forced into unwanted sexual acts by an intimate partner than any other type of perpetrator”. In fact, Jewkes and Abrahams (2002, p. 1240) state that “women's right to give or withhold sexual intercourse is one of the most commonly violated human rights in South Africa”. UN Women (2020) confirmed that 35 percent of women globally experience some kind of GBV in their lifetime, and it can reasonably be deduced that these figures include women in organisational settings. A study on the prevalence of GBV in the four provinces in South Africa conducted by the Medical Research Council showed that as many as 77 percent of women in Limpopo, 51 percent of women in Gauteng, 45 percent of women in the Western Cape and 36 percent of women in KwaZulu-Natal reported experiencing some kind of GBV in their lifetime (Gender Links, 2014). Considering these statements, it is likely that one out of three women in any organisational setting will experience some kind of GBV in their lifetime. It is therefore imperative for private-sector organisations to recognise these facts and to acknowledge the likelihood that there are most probably perpetrators and victims among their employees. The study by Davis and Meerkotter (2017) supported this and showed that many of the GBV distress calls recorded on the TEARS Foundation’s Help-at-your-fingertips hotline were made from affluent neighbourhoods in Gauteng and women working in private-sector organisations.

**Create platforms for employees to engage on GBV issues**

Platforms that acknowledge the issue of GBV in its various forms can facilitate dialogue and can encourage support-seeking among both victims and perpetrators, who may often feel isolated because others’ experiences of GBV are not disclosed (Reference). The availability of this kind of service does not suggest that employees will immediately start engaging openly about these sensitive and stigmatised topics, but the communication needs to start in the workplace, where access to information and support can be put into place. Employee wellbeing programmes can raise awareness of GBV issues and provide information on where to go or what to do if it happens.
Address gender inequality more rigorously

Private-sector organisations need to reflect on their communication with all stakeholders, including employees, to ensure that no gender-stereotyping or perceptions that influence societal values, norms and attitudes by condoning GBV can be communicated in its content (BSR, 2017). They also need to determine how they can develop platforms and channels for communication about GBV, its prevalence and its consequences for all stakeholders. As suggested by the Women Empowerment Principles (2020), the private sector should demonstrate its commitment to achieving gender equality and women empowerment by including it in its business strategies. The latest gender-gap report released by the UN in 2020 shows to what extent gender inequality makes women and girls more vulnerable to GBV and other human rights violations, compared to men and boys.

Publicly express disapproval of any kind of GBV

This should include any kind of GBV, such as sexual harassment in the workplace as well as in the private lives of individuals. Programmes and partnerships with other stakeholders should be communicated in CSR reports to demonstrate how they serve the best interests of all stakeholders (creating shared value) in finding solutions to address GBV in South Africa.

Participate in GBV policy development

BSR (2017) further proposes HR-led policy development relating to the support of GBV intervention and prevention. It is also important for the private sector to engage in dialogue with other stakeholders and to establish multi-sectoral platforms on which to collaborate to find solutions for GBV intervention. Even though such actions will, admittedly, require resources, the cost of no action for South Africa has been made abundantly clear in the National Strategic Plan for South Africa (2020).

Provide the necessary resources to address GBV

UN Women (2019) proposes that private-sector organisations dedicate appropriate financial and human resources to design and implement a holistic workplace response to IPV in particular, and that they build understanding and a supportive environment. The Women Empowerment Principles (2020) further suggest
that private-sector organisations should create strategic executive committees on gender equality as a way of demonstrating commitment from the very top.

As indicated, achieving these objectives will require multi-sectoral collaboration. Until now, GBV activism and interventions have been driven predominantly by government organisations, as well as global and local non-government organisations. The statistics show that these sectors have been unsuccessful and arguably make it clear that all stakeholders need to be involved to achieve results. Sharokh and Edström (2015) reiterate the need for multi-sectoral and multidimensional responses to GBV that incorporate a life-cycle perspective to inform understandings of GBV, participatory education and community mobilisation, as well as a specific focus on the structural violence and institutional inequalities that fundamentally shape GBV. They show that effective interventions should address harmful masculinities, rather than focus on single and specific behaviours and attitudes. They further show how employee engagement should challenge deeply held beliefs at a personal level, so that employees can connect them with the processes of wider societal change.

Given that no successful GBV intervention programmes in the private sector in South Africa have been publicised, it is important for private-sector organisations to share the insights that they gain from their programmes, so that they can accelerate further interventions across all sectors. Information and support are readily available from organisations such as Safer Spaces, Sonke Gender Justice, Safer Homes and Respect for Everyone (SHARE), SVRI, and Gender Links, among many others, some of whom report successful interventions. Creating multi-sectoral stakeholder networks can further foster GBV activism and collaboration among stakeholders such as community forums, schools, police stations and other businesses. Such participation and collaboration to support the National Strategic Plan for GBV intervention in South Africa require leadership and commitment from industry leaders.

CONCLUSION

This commentary discussed how the private sector needs to recognise that corporate philanthropy will no longer suffice when addressing issues such as GBV (Vilkė, Raišienė, & Simanavičienė, 2014). Private-sector organisations can be key influencers and change agents. They are often represented by opinion leaders and influencers on social media and other platforms, where they can set the agenda for GBV interventions. The stigma surrounding all kinds of GBV will not dissipate if these topics are avoided and remain incommunicable. It is a human right for all people to feel safe, protected and free from any kind of discrimination and social exclusion, and it is the responsibility of private-sector organisations as definitive
stakeholders to enable the achievement of this GSO. Although significant progress has been made in recognising that these objectives should form part of organisational strategy, much work remains to be done before a change in GBV occurrence will be seen. Considering what is known about GBV and its prevalence in all societies, there is no justification for any objections to or ignorance about the responsibilities of the private sector to develop a strategic approach towards GBV intervention in terms of the GSOs (Galpin et al., 2015). UN Women (2019, p. 6) concludes:

In the workplace, women can find protection, emotional support and respite from the violence they are experiencing at home, through information and referral to services, such as counselling. The support provided by an employer can be the difference between an employee staying in an abusive relationship or taking action to address it. When workplaces understand, recognize and respond to violence against women, women can continue to work and access the support they need.

REFERENCES


BSR. See Business for Social Responsibility.


Conference Report

World Conference on Drowning Prevention 2019, Durban, South Africa

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INTRODUCTION

The World Conference on Drowning Prevention (WCDP) is a biennial conference hosted on behalf of the International Life Saving Federation (ILS). It aims to bring together international researchers and practitioners in the field of water safety and drowning prevention. WCDP 2019 was co-sponsored by the World Health Organization (WHO) and hosted by Lifesaving South Africa in Durban, South Africa between the 8th and 10th October 2019. This was the first WCDP hosted by an African nation, and the conference theme, “Ubuntu: Growing global drowning prevention capacity”, strongly reflected the intent of the hosts to encourage participation of stakeholders from African countries that have been under-represented at previous WCDP events.

KEYNOTE SESSION HIGHLIGHTS

The first plenary session reflected on the progress of the global drowning prevention effort since the publication of the WHO Global Report on Drowning in 2014 (Global Report on Drowning: Preventing a leading killer, 2014). Dr David Meddings (WHO, Geneva) outlined the challenges and opportunities for advancing global drowning prevention at both the global and local levels. He anticipated the release of further technical guidance by the WHO, and emphasised the importance of building cross-cutting partnerships between stakeholders within the Sustainable Development Framework (Transforming our world: The 2030 agenda for sustainable development, 2015). Dr Olive Kobusingye (Makarere University, Uganda) delivered a powerful keynote entitled Surviving water in Africa: myths, nets, and living on the edge. This reinforced the need for accelerated action and made a strong call for local data that can inform contextually relevant solutions for Africa and other low- and middle-income countries (LMICs). Dr Colleen Saunders (University of Cape Town, South Africa) delivered a presentation framing drowning challenges in South Africa and contrasting drowning risks across their diverse societal and developmental contexts.

The second plenary, facilitated by the ILS Drowning Prevention Commission’s chair, Justin Scarr, explored the synergies between the international development sector and drowning prevention, specifically how the drowning prevention sector can enable progress towards achieving the United Nations (UN) Sustainable Development Goals (SDGs). The session panel consisted of Dr Rebecca Sindall (University of KwaZulu-Natal, South Africa), who outlined insights and lessons from the water, sanitation and hygiene sector, with reference to her work in marginalised and informal settlement communities in South Africa; Dr Jagnoor Jagnoor (The George Institute for Global Health, India), who highlighted community vulnerabilities, the value of indigenous knowledge and intersections between the global Disaster Risk Reduction (DRR) and
SDG agendas; Prof Ashley van Niekerk (South African Medical Research Council), who focused on preventing drowning in early childhood, touching on the relationships between the objectives and interventions of early childhood care and the development agenda; and Gemma May (Royal National Lifeboat Institution, United Kingdom), who described the challenges and value of working towards a first-ever UN Resolution on Drowning Prevention.

The final plenary session explored two personal stories of survival against the odds, framed by a deeper investigation of the science of survival and the solutions that emerge from traumatic incidents. South African Paralympian and “Shark Boy”, Achmat Hassiem, had the audience engrossed in a tale of the day he was attacked by a White Shark and his subsequent impact on shark conservation and drowning prevention. Sarah Waries then outlined the work of the South African NGO, Shark Spotters, highlighting the value of novel and locally relevant programmes in solving local problems. Brett Archibald (South Africa) told of his 36 hours lost at sea after he fell from a surf charter boat in the waters off Indonesia. To provide a scientific rationale for stories of survival like Brett’s, Prof Mike Tipton (University of Portsmouth, United Kingdom) delivered a standout presentation about the survival hierarchy and its implications for prevention, search and rescue.

THEMATIC FOCUS AREAS

The conference programme covered five themes emerging from ongoing efforts to address the key issues highlighted in the 2014 WHO Global Report on Drowning (Global Report on Drowning: Preventing a leading killer, 2014). The first theme focused on Situational assessments for informed prevention. Many presentations pointed out the need for better data, noting that drowning is often under-reported, with large gaps in data across geographic and demographic areas. The need to capture the right data for informed policy and programme implementation was well recognised in this focus area and throughout the conference programme. There were renewed calls for high-quality data from LMICs, particularly in Africa, to inform contextually relevant interventions. Clemens, Oporia, Kobusingye et al. presented elegant findings from a phased approach to estimating the burden of drowning in Uganda and highlighted the value and challenges of combining multiple sources of information at a local level, in the absence of formal surveillance programmes. In addition to calls for better surveillance, the need for the appropriate dissemination of research results was consistently stressed. Improved communication and the translation of evidence for greater impact with those best positioned to inform prevention is necessary for evidence-based practice. Looking forward to WCDP 2021 in Colombo, Sri Lanka, this theme is expected to focus on community-level studies that identify barriers to the implementation of research-based interventions;
studies focused on drowning behaviour to increase understanding of the psychological processes underpinning decisions and attitudes towards aquatic risks; studies that focus on drowning survivors, including the welfare and resilience of rescuers, family and friends of those impacted by non-fatal drowning; and a greater emphasis on empowering partnerships between local communities, practitioners and researchers.

The second theme revolved around establishing, defining and evaluating *Effective interventions*. A highlight from these sessions was the increasing use of evidence in designing prevention interventions, including problem identification, establishing the need for an intervention, and changes in attitudes and intended behaviour among target groups. A noteworthy observation was the increasing use of social media as a cost-effective, targeted tool for prevention campaigns, enabling organisations and policy makers to launch interventions and receive rapid feedback from the target groups. In addition, it was encouraging to observe the increasing focus on multi-stakeholder approaches, with multiple partners and stakeholders at the local and national level building engagement and commitment to programme goals. Looking forward to WCDP 2021, this theme is expected to focus on identifying research methodologies that will demonstrate that an intervention was effective beyond increasing awareness, in that it shifted attitudes and brought about changes in intended behaviour; sharing examples of how an effective intervention can lead to community or organisational change; and developing stronger partnerships between the academic and drowning prevention practitioner communities that lead to new ideas, new perspectives and more effective programmes.

The pragmatic theme describing *Strategies for supporting sustainable prevention efforts* emphasised the need and opportunity for multi-sectoral collaboration and intersectionality, globally, nationally and locally; the importance of delivering the right message to the right people in the right format; and the need for evaluation to be embedded in a robust programme design from the outset. It was heartening to see increased recognition of the drowning burden in South Africa with the presentation, by researchers from the South African Medical Research Council, of the first provincial strategy for water safety and drowning prevention for the Western Cape. This was followed by calls for similar projects across the country and a commitment by local delegates to form a national drowning prevention and water safety coalition. In 2021, we hope to hear greater discussion of drowning prevention programme failures and shortcomings, which may benefit and improve future programme design; increased recognition of working through differing gender and culture lenses, as it relates to programme impact and sustainability; and the impact of working through other sectors to achieve drowning prevention.
Sessions discussing *Advancements in rescue and resuscitation* highlighted a growing understanding of the sector’s role in disaster risk reduction (DRR), with a need to focus not only on flood rescue, but also on prevention and mitigation through changes in human actions and decision-making. There was increased recognition that the transfer of knowledge and skills from high-income to LMIC settings is not an easy process, nor automatic pathway. In addition, the continued development of the WHO Non-fatal Drowning Framework, with the expectation of imminent piloting and testing, was encouraging. In 2021, we expect to see more studies that explore education, teaching methods and approaches to increase the effectiveness of training; increasing use of technology and analytics to improve the efficiency and effectiveness of rescue services and guide resourcing; and increased collaboration within and across rescue agencies and the communities they serve.

The last theme explored areas of alignment between *Drowning prevention and the development agenda*. This theme saw a strong focus on Africa, with a growing recognition that solutions that prevent drowning in high-income countries or Asian LMICs may not be relevant in Africa. There was an increased focus on drowning as a social justice issue, with strong links to DRR and the early childhood development sectors, and recognition that the Sendai Framework and SDGs have areas of commonality with drowning prevention. Lastly, there was a call to embrace diversity as a strength of the sector, especially when working with communities where technical expertise may be less important than local context. In 2021, we expect to see increased recognition of the breadth of drowning prevention, particularly in the area of risk reduction; increased links to international agendas; and increased use of participatory research designs in intervention development *with* communities and not *for* communities.

**ENCOURAGING DIVERSE PARTICIPATION**

The costs of attending an international conference can be prohibitively expensive for many people working on drowning prevention in LMICs (Arend & Bruijns, 2019). As over 90% of global drownings take place in LMICs, there is considerable value in having individuals from these countries attend the conference in order to share their knowledge of the contexts in which drowning happens in LMICs. With the assistance of key funding partners, the WCDP 2019 therefore adopted the peer-sponsorship programme, SupaDel, developed by the African Federation for Emergency Medicine ([http://www.afjem.com/supadel.html](http://www.afjem.com/supadel.html)) to support the participation of delegates from low-resource settings. This saw the sponsorship of 13 delegates from LMICs to attend the conference fully funded by fellow participants and contributing sponsors. The model was well received, and we encourage conference organisers to build it into their conference planning from an early stage.
LOOKING TO THE FUTURE

Reflecting on the legacy of WCDP 2017 (Vancouver, Canada), there are continued efforts within the sector to understand, advocate for and mitigate drowning risk for migrants and refugees, and sustained efforts in research and advocacy for non-fatal drowning stemming directly from the 2017 conference. As we look forward to 2021, we hope that WCDP 2019 will leave a legacy of Ubuntu within the sector as our delegates strive to:

1. Accelerate action to prevent drowning locally – South Africa can be seen as a microcosm of the diverse societal and developmental contexts in which drowning occurs globally. Effective drowning prevention requires locally relevant solutions, based on community-level data.
2. Collaborate with DRR partners – Drowning prevention, at its heart, is risk reduction, and there is a need for greater collaboration between drowning prevention organisations and the wider DRR sector. The advocacy embodied in the work towards a UN Declaration on Drowning recognises the disastrous scale of drowning globally.
3. Co-produce knowledge with the communities we aim to protect – Respecting the value of indigenous knowledge and the inclusion of the most at-risk communities in developing the drowning prevention interventions that work for them, will help build resilient communities.

ACKNOWLEDGEMENTS

The authors wish to acknowledge the contributions of the local organising committee, volunteer abstract reviewers, as well as thematic chairs who were unable to travel to the conference (Dr Amy Peden, Dr Jenny Blitvich, Dr Peter Wernicki) for their contributions to a successful academic programme.

REFERENCES


In 1998, Thabo Mbeki, then Deputy President, described South Africa as a country of two nations, one relatively prosperous and white and the other largely poor and black (Government Communications, 1998), a legacy of colonialism and apartheid (Sader, 2015). Twenty-six years later, we remain a country of two nations.

Achille Mbembe (2015), in his lecture, “Decolonizing Knowledge and the Question of the Archive”, describes South Africa as having entered a negative moment – a moment most African postcolonial societies have experienced. “A negative moment is a moment when multiple old and recent unresolved crises seem to be on the path towards a collision; … a moment when contradictory forces – inchoate, fractured, fragmented – are at work” (p. 2). The South African Fallist movement, described by Maldonado-Torres (2017) as a “major earthquake that moved the foundations of South African consciousness and society” (p. 14), served as evidence of this negative moment in relation to the lack of transformation in higher education.

Undeniably, transformation in higher education has been a challenge post-1994, given the pressures to respond to the needs of a country emerging from a colonial and apartheid past characterised by gross structural inequalities and inequities. The initial trajectory of higher-education transformation post-1994 was informed by the goals of equity and redress (Sader, 2015). However, South Africa’s emergence in the global economy began to influence reforms in higher education, impelled by wider political and economic reforms and a shift to a global knowledge economy. Against the backdrop of a society characterised by
gross social and economic inequality, higher-education reform began to reflect changes in line with the call to prepare South Africa for participation in the global economy, and universities began to restructure in response to globalisation (Department of Education, 1997). A key change was the corporate for-profit culture that emerged across universities and the commodification of knowledge, which significantly shifted the role and nature of universities.

The Fallist movement, that is, the #Fees Must Fall, #Rhodes Must Fall campaigns, served to highlight racialised socio-economic and gendered injustices that emerged post-1994. It also focused our attention on the lack of transformation in higher education in terms of equity and redress, and called for radical social change towards a decolonised, just South Africa and decolonised universities. The Fallists called for the removal of colonial symbols, which they saw as symbolising the violence of colonialism. They also called for an end to the academic capitalism reflected in the corporate university, greater access to higher education for historically excluded people, institutional changes away from the dominant westernised patriarchal culture, employment equity and decolonisation of the curriculum.

It is in this context that the College of Humanities at the University of KwaZulu-Natal hosted their second annual Decoloniality Summer School: “Decolonizing Knowledge and Power: Postcolonial Studies, Decolonial Horizons.” The Summer School is part of a series of lectures, seminars and workshops under the UKZN Social Cohesion flagship programme, aimed at capacity building. Deputy Vice-Chancellor (DVC) and Head of the College of Humanities, Professor Nhlanhla Mkhize, who opened the summer school, emphasised that decoloniality is integral to what we do in universities and said, “We need to decolonise knowledge in its entirety and not just limit it to the humanities and social sciences.” Participants in the 2020 Summer School included academics, activist scholars, students and representatives of local social movements and non-governmental organisations. While the Summer School is open to all, its target audience is academics, researchers, policy-makers, student activists, post-graduate students and social activists from local social movements.

The Decoloniality Summer School, offered in collaboration with the Centre of Study and Investigation for Decolonial Dialogues (CSIDD), El Mirador de Colón on the Mediterranean Sea in Barcelona, Spain, is part of a larger intellectual and political initiative generally referred to as the modernity/(de)coloniality research project (Grosfoguel, 2019). It provides a critical space for engagement with the debates and discourses on decoloniality and decolonisation in the sphere of knowledge and higher education. Prof Grosfoguel, Director at the CSIDD and Professor in the Department of Ethnic Studies, University of California, Berkeley, at the 1st UKZN Summer School emphasised that universities should be at the centre of these
conversations, as they have a critical role to play in the country. He was emphatic that “(w)e must decolonise power and knowledge and have critical conversations to move universities to pluraversities”.

He further explained that “an underlying assumption of the decolonial project takes knowledge-making, since the European Renaissance, as a fundamental aspect of coloniality – the process of domination and exploitation of the capitalist/patriarchal/imperial Western Metropolis over the rest of the world. Decolonising ‘knowledge and power’ becomes, then, a task and a process of liberation from assumed principles of knowledge and understanding of how the world is and should be, as well as from forms of organising the economy and political authority.” To this end, the Summer School questioned basic assumptions ingrained in the idea of modernity, progress and development, and encouraged thinking and living in search of non-Eurocentric and non-corporate social and human values (Grosfoguel, 2019). In introducing decolonial thought, Grosfoguel explained that we live in a world characterised by unequal power relations between the North and the South, which is the result of more than 500 years of Western colonial expansion and imperial designs. In his words, this “Western-centric/Christian-centric, capitalist/patriarchal, heteronormative, modern/colonial world system denies the epistemic diversity of the world and pretends to be mono-epistemic”.

Nelson Maldonado-Torres, Professor of Latino and Caribbean Studies at Rutgers University, in introducing the decolonial turn, reminded us that decolonial thinking existed since the inception of modern forms of colonisation in the 15th and 16th centuries. However, the significant shift away from modernisation towards “decoloniality as an unfinished business” occurred in the 20th century and is ongoing (Maldonado-Torres, 2011, p. 2). He explained that anti-colonial and decolonial political, intellectual and artistic expressions existed before the decolonial turn. However, it was not to the extent of self-awareness, and regional and global exchanges occurred in the twentieth century, which were characterised by an increased “self-conscious and coalitional effort to understanding decolonization, and not simply modernity, as an unfinished project” (Maldonado-Torres, 2011, p. 2).

The philosophical orientation to decoloniality presented by Grosfoguel and Maldonado-Torres provided the foundation for an engagement with African anti-colonial and decolonial thinking. Elelwani Ramugondo, Professor of Occupational Therapy at the University of Cape Town, suggested that “genocide at the point of colonial encounter is not only a historical event, but an ongoing phenomenon as a function of coloniality”. She argued for a disruption of the dominant understanding of health and wellness, “which is racist, capitalist, patriarchal and often paternalistic within christian-centric logics”, and proposed a decolonial approach to health research, practice and education. “A decolonial approach provides a lens for
critical analyses of intersections of power, identities, and knowledges and can help disrupt dominant understandings of health and well-being” (Ramugondo, 2020).

One of our most prolific African decolonial thinkers, Sabelo Ndlovu-Gatsheni, using decoloniality as a point of departure and the idea “that every human being is born into a valid and legitimate knowledge system”, reminded us that “African people had their own valid and legitimate indigenous systems of education prior to colonisation”. He explained, “Eurocentric modernity through colonialism and imperialism unleashed a particularly racial ethnocentric attitude that led European colonialists to question the very humanity of African people” and this questioning and denial of “African people’s humanity inevitably enabled not only genocides but epistemicides, linguicides and cultural imperialism” (Ndlovu-Gatsheni, 2017, p. 5). Co-presenting with UKZN student Thobane Zikalela, Ndlovu-Gatsheni focused on trajectories of struggles for an “African university” and questioned if “Africans can create African futures within a modern world system structured by global coloniality” (Sabelo Ndlovu-Gatsheni, 2014, p. 181).

Rithuli Orleyn from the Blackhouse Kollective, a community-based organisation established as “an ideological home for black radical thought”, co-presented with Maldonado-Torres. Their work aimed at disrupting “the dominant logic of theorising about blackness from spaces that serve to maintain the intellectual negation that embody philosophical thought in white-dominated spaces”. Shahnaaz Suffla, Professor Extraordinaire, and Mohamed Seedat from the Institute for Social and Health Studies, University of South Africa, drawing on their experiences of transdisciplinary, community-engaged, liberatory research, presented a historical account of decolonial psychology and facilitated a workshop on decolonising praxis, using participatory methodologies. A highlight of the Summer School was the play, “An Adaptation of Césaire’s Notes from my Native Land” by Pumelela Push Nqelenga, Tamantha Hammashlag and Ongezwa Mbele, performed by UKZN students from the School of Arts.

Presenters Saleem Badat (UKZN), Zodwa Radebe (UNISA), Vuyolwethu Seti-Sonamzi (UNISA) and Mershen Pillay (UKZN) shared their research on decolonising the African university. Writer and poet Betty Govinden, Relebohile Moletsane (UKZN) and Ronelle Carolissen (Stellenbosch University) presented on feminist thinking from the South. The Summer School also hosted a public symposium, themed ‘Decolonizing the University – What would a decolonial knowledge project that privileges human flourishing look like?’
REFERENCES


CALL FOR PAPERS

IMPECTS AND RESPONSES TO COVID-19: PERSPECTIVES FROM THE GLOBAL SOUTH

Social and Health Sciences (SaHS), previously African Safety Promotion: A Journal of Injury and Violence Prevention (ASP), is planning a Special Issue or Section on the coronavirus pandemic, particularly on its individual, family, community and societal impacts in Africa and more broadly in the Global South, the interventions to support families and communities, and the community responses to both the disease and interventions by government and civil society to manage the pandemic and its consequences.

Topics could include, but are not limited to:
- Psychosocial and political implications of the pandemic
- Effects on material well-being
- Coronavirus and identity
- Pedagogical implications
- Consequences for political organisation and impacts on policy
- Public health responses
- Social activism in the time of coronavirus

The coronavirus pandemic has infected millions of people and hundreds of thousands have already died. The response to the pandemic has been led by public health experts, especially through behaviourally-based prevention strategies. However, social scientists and political
activists have also made important interventions here. The health guidelines and government orders in response to the coronavirus have ushered in secondary effects. Local and global economic activities have, in large part, ground to a halt. Reports are that national and international economies are being hugely affected and the negative social effects will be more dire than those of the 2008 global recession. Yet, the true extent and medium-to long-term consequences of the pandemic on communities and societies in the Global South will need to be examined. In May, in most of the Global South, infection was still relatively low but rapidly escalating. However, weak health systems and significant burdens of communicable and chronic non-communicable conditions can mean that the loss of life may still increase significantly.

The loss of lives is painful for loved ones and the larger group to which the deceased belonged. Beyond loss of lives and illness, though, the coronavirus could have novel and potentially profound, but as yet unexplored, social, economic, political, cultural and psychological effects. It is possible that some of the effects may be generative, not only adverse. Hence, while there are already indications of the manifold effects of the pandemic and responses, we will need to better understand the multifarious socio-political effects of the health epidemic. Beyond the immediate public health and economic impacts of the unfolding pandemic, in-depth examination of the heterogeneous effects of the pandemic could help us realise how widespread income poverty, inequality between the upper-classes and lower-classes, disabling unevenness in food security and the distribution of social goods such as quality public transport, education, stable and safe energy supply, and adequate housing, and linguistic hierarchies have far-reaching consequences inside and beyond impoverished communities. We may also find that countries and people living in marginalised communities respond to the coronavirus and government orders in other ways that are not immediately discernible or prominent in existing narratives and discourses about containing the spread and human cost of the pandemic.

**Guidelines for Submissions**

SaHS is a multidisciplinary forum for critical discussion and debate among scholars, practitioners, activists, students and policy-makers whose interests and work intersect with the social and health sciences. While based in Africa, SaHS invites submissions from the broader Global South, as well as the Global North. All articles in the journal are subject to independent and blind peer review. Original theoretical, empirical, applied and policy submissions (6 000 words in length excluding the title, abstract, references, figures and tables), and short communications or perspectives (2 500 words, excluding references) are invited. Please direct queries and submit your contributions to the Managing Editor, Dr Ghouwa Ismail (sahs@unisa.ac.za) by **31 July 2020**. Previous ASP issues can be found at: [https://journals.co.za/content/journal/safety](https://journals.co.za/content/journal/safety)
SUBMISSION GUIDELINES

Social and Health Sciences (SaHS), previously African Safety Promotion: A Journal of Injury and Violence Prevention (ASP) is published twice a year. Submissions within the following guidelines are welcome. Please submit your contributions or queries to the Editor-in-Chief, Social and Health Sciences, at Institute for Social and Health Sciences, University of South Africa, P. O. Box 1087 Lenasia, 1820, South Africa, or via e-mail to ismaig@unisa.ac.za or sahs@unisa.ac.za. Scientific contributions are to be prepared and submitted as indicated below.

MANUSCRIPT PREPARATION

The manuscript must be accompanied by a letter indicating that the article has not been published elsewhere. This letter must be signed by all listed authors to indicate their agreement with the submission. All manuscripts should be typed in 1.5 spacing with a margin of 3.5 cm on the left and right sides of the page. The manuscripts should be in 12-point Times New Roman font, with the main headings in capitals and bold, and sub-headings in capitals. No enumerations and section numbering should be included, and all graphs and tables should be inserted at the end of the document. There are five categories of submissions accepted for publication in ASP, as detailed below.

ORIGINAL CONTRIBUTIONS

Criteria for manuscripts submitted under this category have been revised and include changes to word length as well as a new subcategory for qualitative research or studies using ‘mixed methods’ (combining qualitative and quantitative research methods). Revised criteria are as follows:

a) Full scientific manuscripts following quantitative research methods should not exceed 5 000 words in length excluding the title, abstract, references, figures and tables.

b) Manuscripts following qualitative, or a combination of quantitative and qualitative research methods should not exceed 6 000 words in length excluding the title, abstract, references, and tables.

LITERATURE REVIEWS

Manuscripts submitted as a literature review should not exceed 6 000 words excluding the title, abstract, references, and tables.

BOOK REVIEWS

Copies of books may be sent to the Editor-in-Chief.

PERSPECTIVES

These communications include commentaries on events in the injury prevention sector, and organisation or programme reports. These should not exceed 2 500 words, excluding references. Perspectives should offer informed, critical commentary on especially emerging theoretical, research, programmatic or policy issues in the injury prevention, safety and peace promotion sectors. There should be some theoretical or research basis for the interrogation of these conceptual, research or policy issues and the perspective conclusions should have clear relevance for the prevention domain.
All original contributions should have the following sections:

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