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RISK FOR POSTTRAUMATIC STRESS DISORDER ASSOCIATED WITH DIFFERENT FORMS OF INTERPERSONAL VIOLENCE IN SOUTH AFRICA

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Abstract

The South African population is exposed to multiple forms of violence. Using nationally representative data from 4,351 South African adults, this study examined the relative risk for posttraumatic stress disorder (PTSD) associated with political, domestic, criminal, sexual and other (miscellaneous) forms of assault in the South African population. Violence exposure was assessed using the 'worst event' list from the WHO's Composite International Diagnostic Interview (CIDI) and a separate questionnaire assessing experiences of human rights abuses, and lifetime PTSD was assessed according to the APA's Diagnostic and Statistical Manual of Mental Disorders criteria using the CIDI. Findings indicated that over a third of the South African population has been exposed to some form of violence. The most common forms of violence experienced by men were criminal and miscellaneous assaults, while physical abuse by an intimate partner, childhood physical abuse and criminal assaults were most common for women. Among men, political detention and torture were the forms of violence most strongly associated with a lifetime diagnosis of PTSD, while rape had the strongest association with PTSD among women. At a population level, criminal assault and childhood abuse were associated with the greatest number of PTSD cases among men, while intimate partner violence was associated with the greatest number of PTSD cases among women. Recommendations for mental health service provision in South Africa and for future research on the relative risk for PTSD are offered.

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Keywords

South Africa; post-traumatic stress disorder (PTSD); violence; relative risk

Over the past several decades, South African society has been characterized by multiple forms of violence exposure. Until the country's transition to democracy in 1994, state-perpetrated human rights abuses such as detention without trial, torture and politically motivated assaults were endemic (Truth and Reconciliation Commission, 1998). While democracy brought a reduction in politically-motivated violence, some reports indicate that post-apartheid South Africa has extremely high rates of violent crime, sexual violence and domestic abuse. For example, some surveys have found that South Africa has among the highest incidences of murder and armed robbery (Shaw, 2002), rape (Bollen, Artz, Vetten & Louw, 1999) and intimate partner violence (Abrahams, Jewkes, Laubscher & Hoffman, 2006) worldwide. This pervasive violence may be the legacy of South Africa's socio-political history of apartheid and violent repression, combined with ongoing socio-economic inequality and deprivation (Fajnzylber, Lederman & Loayza, 2002; Shaw, 2002).

Studies have consistently indicated that violence is more likely than other forms of trauma to be associated with posttraumatic stress disorder (PTSD) (Breslau, Kessler, Chilcoat, Schultz, Davis & Andreski, 1998; Creamer, Burgess & McFarlane, 2001; Norris, Murphy, Baker, Perilla, Gutierrez Rodriguez F. & Gutierrez Rodriguez, J., 2003; Perkonig, Kessler, Storz & Wittchen, 2000; Stein, Seedat, Herman, Moomal, Heeringa & Kessler, 1997; Zlotnick, Johnson, Kohn, Vicente, Rioseco & Saldivia, 2006). The symptoms of PTSD include different forms of re-experiencing the trauma (for example, through nightmares, sensory flashbacks or involuntary images), behavioral attempts to avoid traumatic reminders, amnesia for some aspects of the trauma, emotional numbing, and symptoms of hyperarousal (such as an exaggerated startle response and constant hypervigilance for danger), all of which must be present for at least one month and cause significant distress or impairment in functioning (American Psychiatric Association, 2000). Although it has been recognized that PTSD does not capture the full range of psychiatric response to trauma, which often also includes depression and substance abuse amongst others (Kessler, Sonnega, Bromet, Hughes & Nelson, 1995), and that it does not adequately describe the complex personality adaptations that often occur in response to experiences of early or prolonged abuse (Herman, 1992), a sizable minority of trauma survivors suffer from PTSD, both in economically developed countries (Breslau et al., 1998; Kessler et al., 1995; Stein, Walker, Haze & Forder, 1997) and in the few developing countries where the epidemiology of PTSD has been established (Norris et al., 2003; Zlotnick et al., 2006). Across these studies, rape has consistently been found to be the most pathogenic trauma, carrying the highest risk for the development of PTSD for both men and women. Childhood physical abuse and physical assault in adulthood also carry a high conditional risk of PTSD for both genders.

Exposure to political violence such as torture and other state-perpetrated human rights abuses (as distinct from combat exposure) is low in economically developed countries, where most of the epidemiological surveys of trauma exposure and PTSD have been conducted. The conditional risk for PTSD associated with different forms of violence has seldom been reported in countries with a history of state-perpetrated human rights abuses. In Chile, Zlotnick and colleagues (2006) assessed exposure to human rights abuses such as torture as part of a broader category of "other events". While this category was strongly predictive of PTSD, particularly for women, it is not possible to establish how much of this risk is associated specifically with torture or other forms of political violence. A population-based study conducted in the late 1990s in four low-income post-conflict settings (Algeria, Ethiopia, Gaza and Cambodia) found that the risk of PTSD that is associated with torture and with conflict-related events experienced

after the age of 12 years is generally higher than that associated with 'domestic stress' (including emotional and physical abuse) experienced in childhood (De Jong, Komproe, van Ommeren, El-Masri, Araya & Khaled, 2001). The study did not, however, provide data on the comparative risk of PTSD associated with other forms of violence, such as criminal assault, rape and sexual abuse, and physical abuse by an intimate partner in adulthood. The relative risk for PTSD that is associated with political violence has therefore seldom been directly compared with that associated with a range of other common forms of violence.

The South Africa Stress and Health Study (SASH; Williams, Herman, Kessler, Sonnega, Seedat, Stein et al., 2004) is the most comprehensive psychiatric epidemiological study conducted in South Africa to date and, amongst other aspects of mental health and disorder, has yielded national prevalence data on trauma exposure and PTSD. Sociodemographic predictors of the risk for different types of trauma exposure, and the association between type of trauma exposure and levels of general distress, have recently been reported for the SASH sample (Williams, Williams, Stein, Seedat, Jackson & Moomal, in press), as have the 12-month (Williams, Herman, Stein, Heeringa, Jackson, & Moomal, 2008) and lifetime (Stein et al., in press) prevalence of PTSD. However, the risk for PTSD associated with exposure to different forms of violence in the South African population is still unknown. In economically developing countries like South Africa, fiscal constraints often limit the provision of mental health care (Landman & Henley, 1998) and in contexts of multiple traumatisation it may therefore be useful to establish the risk of developing PTSD in order to target prevention and intervention strategies as efficiently and effectively as possible. The current study therefore aimed to establish the relative risk for PTSD that is associated with human rights abuses (specifically, detention¹, torture and politically motivated physical assault), domestic violence in the form of childhood physical abuse and physical abuse by intimate partners, criminal assault and sexual violence, in a nationally representative sample of South African adults.

Method

Sample

The SASH study is a national probability survey of adult South Africans living in households and hostel quarters (the latter were included to maximize coverage of young working age males) (Williams et al., 2004). Individuals of all race and ethnic backgrounds were included in the study. The sample was selected using a three-stage sample design. The first stage involved the stratified selection of primary sampling units based on the 2001 South African Census Enumeration Areas (EAs). The second stage involved the sampling of housing units within clusters selected within each area. The third stage involved the random selection of one adult respondent in each sampled housing unit. Field interviewers made up to three attempts to contact respondents and the overall response rate was 85.5%. The response rate includes all reasons for non-response, including refusals and failure to contact. The vast majority of non-response was attributable to failure to contact, while relatively few refusals were encountered. In line with the demographics of the South African population as a whole (Williams et al., 2008), the total sample of 4,351 adults was largely female (58.6%) and Black (79.7%), although other racial groups are represented (10.4% Coloured; 7.2% White; 2.7% Indian/Asian)². The mean age of the sample was 37 years. Half of the sample (50.1%) were married, and most were unemployed (69.2%), had less than 12 years of education (62.7%) and lived in urban areas (61.6%).

¹While detention is not in itself a form of violence, in that it does not necessarily involve physical assault, detention under Apartheid typically entailed an extended period of very harsh physical conditions and physical maltreatment that did not always meet criteria for torture (Foster, Davis & Sandler, 1987). In this sense we consider it to constitute a particular form of physical abuse suffered by many South Africans.

Instruments

Lifetime exposure to detention, torture and politically motivated assaults was assessed by an instrument developed for the SASH study based on extensive pilot work. To elicit detailed information about experiences during Apartheid, in-depth interviews were conducted with 90 South Africans from diverse backgrounds. Content analysis was used to analyze the themes of these interviews and a formal interview with structured questions was then created. The structured interview was then re-administered to many of the same respondents to clarify any difficulties. The instrument assesses exposure to a range of specific forms of torture (such as electric shocks, having limbs broken, being suffocated, and being subjected to extreme temperatures, while in detention) and politically motivated assault (such as being beaten, stoned or stabbed).

Lifetime exposure to other forms of violence were assessed using the traumatic events list in the PTSD module of the World Mental Health Composite International Diagnostic Interview (WMH-CIDI; WHO, 1997), a structured psychiatric interview designed for use by trained interviewers. The following forms of violence were assessed: childhood physical abuse (assessed by the item “As a child, were you ever badly beaten up by your parents or the people who raised you?”), physical abuse by intimate partners (“Were you ever badly beaten up by a spouse or romantic partner?”), criminal assault (“Were you ever mugged, held up or threatened with a weapon?”), rape (“Did someone ever have intercourse with or penetrate your body with a finger or object when you did not want them to, either by threatening you or by using force?”), other forms of sexual abuse [“Other than this (referring to the item about experiences of rape) were you ever sexually assaulted or molested?”], as well as any other physical assaults that are not covered by these categories (“Were you ever badly beaten up by anyone else?”).

The lifetime presence of DSM-IV PTSD (APA, 1994) was also assessed using the CIDI. Many of the participants in the SASH study had experienced multiple traumas (Williams et al., in press) and, following previous studies of conditional risk (e.g. Creamer et al., 2001; Kessler et al., 1995; Norris et al., 2003), in such cases respondents were asked the PTSD symptom questions only for the one event that they judged to have been the worst.

The CIDI has been widely used in previous epidemiological studies in other countries. Good inter-rater reliability, test–retest reliability and validity have been found in earlier versions of the CIDI (Andrew & Peters, 1998), while good validity of CIDI diagnoses compared to diagnoses based on blinded clinical reappraisal interviews have been found in previous methodological studies (Haro, Arbabzadeh-Bouchez, Brugha, de Girolamo, Guyer & Jin, 2006). In addition to the English version, for the SASH study the CIDI was translated into five different languages: Afrikaans, Zulu, Xhosa, Northern Sotho, and Tswana (Williams et al., 2004). Virtually all South Africans speak at least one of these languages. Translation procedures followed the translation protocol used by the World Health Organization’s (WHO’s) World Mental Health surveys, which entails iterative back-translation conducted by panels of bilingual and multilingual experts, with discrepancies being resolved by consensus of an expert panel.

²Although the authors reject the use of racially constructed terms as discriminatory, it is nevertheless necessary to use these terms insofar as the racially inequitable socioeconomic legacy of Apartheid has implications for current patterns of trauma exposure. In the Population Registration Act under Apartheid, the term ‘Black African’ was used to describe indigenous South Africans, ‘White’ was used to denote persons of European descent, ‘Coloured’ was used to denote persons of mixed racial features, while persons of Indian or Asian descent were categorised together. In order to monitor the transformation and redress of historical inequalities, South Africans are still frequently requested to identify themselves according to one of these categories on official forms in both the state and private sector.

Procedure

SASH interviewers were extensively trained in centralized group sessions lasting one week. The interviews were conducted face to face using the language version preferred by the participant. The entire SASH interview lasted an average of three and a half hours, with some requiring more than one visit to complete. Data were collected between January 2002 and June 2004.

Data Analysis

Analyses were conducted with STATA Version 10.0. All analyses accounted for the survey design using weights that included sample selection, non-response and post-stratification factors. Crude associations were examined using Pearson's chi-square tests, and multiple logistic regression was used to examine independent associations between PTSD and exposure to violence. In addition, we examined the conditional risks of PTSD associated with different forms of violence exposure. While using the participant's 'worst' event to assess PTSD is commonly used to establish risk of PTSD related to different types of traumatic events (e.g. Creamer et al., 2001; Kessler et al., 1995), it can result in conditional risk being over-estimated (Breslau et al., 1998; Kessler et al., 1995). Following Norris et al.'s (2003) epidemiological study of trauma and PTSD in Mexico, we addressed this issue by calculating a range of estimates of conditional risk for all persons who experienced specific events, not only for those who described specific events as the most stressful. Since the CIDI only enquires about PTSD in relation to a specific list of events, which does not include torture, detention and politically motivated assaults (as noted above, exposure to these events was assessed with a separate instrument, developed for the study), it was not possible to establish a range of conditional risk estimates for these human rights abuses. For these events, we are therefore only able to report their association with PTSD.

Ethical considerations

Informed consent was obtained from participants after they were informed about the purpose, risks and benefits of the study. Interviewers were trained to make referrals to an appropriate health care professional for participants who became distressed during the interview process. Participant confidentiality was maintained by ensuring that all identifying information was kept separate from the study data.

Results

Prevalence of Exposure to Different Forms of Violence

Table 1 reports the prevalence of exposure to each type of violence. Over a third of the sample (38%) had been exposed to some form of violence, with men (42.9%) reporting a significantly higher rate of overall exposure than women (34.3%).

Only 2.3% of the total sample had directly experienced some form of politically motivated violence but men were significantly (4.1%) more likely to have done so than women (0.8%). Among men, politically motivated assault outside the context of detention or torture was the most common form of political violence (2.7%), followed by detention (2.4%), and then torture (1.3%).

Criminal assault was the most commonly reported form of violence in the total sample (18.2%), and the most common form experienced by men (25.9%), while women were significantly less likely to have experienced a criminal assault. Physical abuse during childhood was the next most common form of violence reported by the total sample (12.0%), with men and women reporting similar rates of exposure (12.3% and 11.7%, respectively). Physical abuse by an intimate partner was the most common form of violence experienced by women (14.0%), and

was comparatively rare (but not absent) among men. In total, 3.5% of the sample had experienced some form of sexual violence, with this form of trauma being significantly more common among women (5.3%) than men (1.3%). For women, penetrative rape was the most common form of sexual violence (3.7%), with other forms of sexual assault less commonly reported (2.1%), while for men other forms of sexual assault (1.0%) were more common than penetrative rape (0.3%). Of the total sample, 12.4% had experienced some other form of physical assault that was not captured by the other categories, but men were significantly more at risk of this than women (8.7% and 3.7%, respectively).

Association Between Type of Violence Exposure and PTSD

Table 2 shows the associations between specific types of violence and PTSD. This indicates the degree to which each form of violence predicts a lifetime diagnosis of PTSD. It does not, however, indicate that a particular form of violence is necessarily the index trauma for PTSD (that is, it cannot be ascertained that the predictor event is the focus of the flashback experiences, intrusive images, behavioural avoidance of traumatic reminders etc.).

There are some significant gender differences in the risk associated with specific forms of violence. For men, detention and torture are the forms of violence most strongly associated with PTSD, followed by domestic violence in the form of childhood physical abuse or physical abuse by an intimate partner. Exposure to criminal assault, politically motivated assault outside the context of detention, and miscellaneous forms of physical assault carry weaker associations with PTSD. For women, rape is most strongly associated with PTSD, followed by physical abuse by an intimate partner and criminal assault. Among men, childhood physical abuse is associated with a more than four-fold increase in the odds of a lifetime diagnosis of PTSD, while no such association was observed among women. In addition, men who experienced miscellaneous physical assaults are at an increased risk of a lifetime diagnosis of PTSD, while there is no such association among women. Due to the low numbers of men reporting sexual abuse, and the low numbers of women reporting human rights abuses, it was not possible to establish gender differences in risk for PTSD associated with these forms of violence. However, it is noteworthy that, overall, detention and torture are more predictive of PTSD than any other form of violence, including rape, which has been found to carry the highest risk of PTSD for both men and women in previous studies.

Conditional Risk for PTSD

Table 3 presents the prevalence of lifetime diagnosis of PTSD associated with specific types of violence. As detention, torture and politically-motivated assaults were not specifically included in the CIDI as index traumas on which to base the assessment of PTSD, the conditional risk associated with these types of violence (i.e. the risk of meeting a lifetime diagnosis of PTSD once this form of violence has been identified as the worst event to which a person has been exposed) cannot be established and is therefore excluded from Table 3. While political violence is now relatively rare in South Africa, the other forms of violence assessed in this study are all very common, and unpacking the conditional risk associated with each of these provides a more accurate picture of the psychiatric effects of violence in South African society.

Column (A) shows, for men and women separately, the number of participants in the sample who experienced each form of violence. Column (B) indicates the percentage of Column (A) who met criteria for PTSD specifically linked to that form of violence (that is, an experience of that form of violence was identified as being the person's worst event), column (C) shows the percentage of Column (A) who met criteria for PTSD for some other event (that is, the worst event was either another form of violence or another form of trauma exposure), and column (D) shows the total percentage of Column (A) who met criteria for PTSD for any reason. The values in columns (B) and (D) provide a range within which the true conditional

risk is likely to fall (Norris et al., 2003). Column (E) provides a population-level estimate of the proportion of South African women and men who have PTSD due to that category of violence, based on a combination of the prevalence of each form of violence and its association with PTSD.

The results in Column B indicate that the conditional risk for PTSD shows a distinct gender pattern. For women, rape is the most pathogenic trauma, carrying the highest conditional risk for PTSD, while for men childhood physical abuse is the most pathogenic (bearing in mind that political violence is not included here due to its exclusion from the CIDI 'worst events' list). As indicated in Column E, it can be estimated that more South African women have PTSD due to physical assault by an intimate partner (0.4%) than due to any other form of violence, followed by rape (0.2%), while more South African men have PTSD due to childhood physical abuse (0.1%) and criminal assault (0.1%) than due to other forms of violence.

Discussion

These findings indicate that over a third of the South African population is exposed to some form of violence during their lifetime. This rate of violence exposure is similar to that reported in Norris et al.'s Mexican study (35%) and Breslau et al.'s survey in the United States, but is difficult to compare with other epidemiological studies as most do not report the prevalence of exposure to 'any form of assaultive violence'. This finding is inconsistent with some previous studies which have suggested that rates of violence in South Africa are amongst the highest in the world. However, these studies have used different methodologies, relying for example on comparative police statistics of reported cases (Bollen et al., 1999; Shaw, 2002) or on prevalence surveys in specific geographical regions (Abrahams et al. 2006) rather than nationally representative samples.

In line with previous findings from other countries (Creamer et al., 2001; Kessler et al., 1995), the findings of this study indicate that men are exposed to more violence than women in general, but that men and women are at risk of different types of violence. However, the specific patterns of exposure for men and women found in this study are difficult to compare with previous studies, as categories of violence exposure have not been assessed in a comparable way across studies. This study found that South African men are most at risk of being victims of criminal violence, followed by childhood physical abuse, physical assault that is not domestic, criminal, political or sexual in nature, and then politically motivated violence, and are at very low (but not no) risk of intimate partner violence and sexual violence. South African women are most at risk of being victims of physical assault by an intimate partner, followed closely by childhood physical abuse and criminal assault, are at a lesser risk of sexual violence or of experiencing a physical assault that is not domestic, criminal, political or sexual in nature, and are at low risk of being a direct victim of any form of politically motivated violence.

It is important to bear in mind that these findings reflect self-reported exposure rates, and that certain types of violence (such as rape or physical assault by an intimate partner) may be under-reported by participants. Also, these rates represent the prevalence of victimization across the population as a whole, whereas certain forms of violence exposure in South Africa are more prevalent in some segments of the population than others (see Williams et al., in press).

These results indicate that, for men, experiencing political detention and torture is most strongly associated with a lifetime diagnosis of PTSD. The point estimates for the association between political detention and torture and PTSD (odds ratios 6.3 and 7.7, respectively) are substantially greater than those for criminal assault (OR = 4.5) or childhood physical abuse (OR = 1.3), although the breadth of the confidence intervals around these estimates means that we cannot

exclude sampling error as an explanation for these findings. Nevertheless, it appears that while criminal assault is the most common form of violence exposure among South African men, it is not the most pathogenic. While previous studies have indicated that detention and torture carry a high risk of PTSD, this risk has not previously been directly compared with a range of other forms of violence exposure.

It is possible that detention and torture are highly pathogenic traumas that form the index trauma for PTSD in a high percentage of those South African men who survive such experiences. However, since the conditional risk of PTSD due directly to experiences of detention and/or torture could unfortunately not be established in this study, it is also possible that experiences of detention and torture may create a vulnerability for PTSD, which might then develop in response to another 'worst event'. In either case, it is apparent that South African men who have survived detention and torture are at extremely high risk for having PTSD compared with South African men who have experienced other forms of violence.

If the actual percentage of South African men with PTSD in the general population is considered, criminal assault and childhood physical abuse are the most important forms of violence exposure among men (political violence, for which conditional risk could not be calculated, is excluded; however, the number of men in this representative sample who reported exposure to human rights abuses is substantially lower than the number who reported exposure to criminal assault, domestic violence and other physical assaults).

In line with previous findings from other countries, rape is the most pathogenic trauma among South African women, followed by physical assault by an intimate partner. However, in terms of the actual percentage of South African women who can be estimated to be suffering from PTSD, intimate partner violence is a more important form of violence.

In a developing country context with an under-resourced mental health system, such as South Africa, it is important to develop preventive and intervention programs that address those forms of violence that create the greatest mental health burden for that society. The findings of this study indicate that deciding which forms of violence, and which survivors of violence, to target might depend on whether the primary aim is to reduce the total number of men and women with PTSD in the population (in which case, the focus could be on male survivors of criminal assault and childhood physical abuse, and female survivors of intimate partner violence), or to target survivors of those traumas that carry the highest risk of PTSD (in which case, the focus could be on male survivors of detention and torture, and female survivors of rape). Currently in South Africa there are a number of non-governmental organisations (NGO's) that provide a service to women who have experienced gender-based violence, but little specialised support for this population in the state mental health service. There are also few state or NGO services specifically for survivors of torture, criminal assault or childhood physical abuse, each of which require somewhat different intervention foci. Another approach to setting mental health care priorities in under-resourced contexts might be to target interventions towards those survivors of violence who have the most severe PTSD (Landman & Henley, 1998), a factor that was not explored in this study.

Some limitations of the present study should be noted. Firstly, although there is some existing evidence for the cross-cultural validity of the CIDI, reliability and validity has not yet been established for the translated versions of the CIDI used in this study, or for the questionnaire used to assess exposure to human rights violations. Some degree of caution is therefore required in using these findings to inform mental health policy without more data. Secondly, it is important to recognize that the psychological impact of trauma is far broader than PTSD alone, and it is possible that other trauma sequelae may also create a mental health burden for South Africans. Finally, untangling the complex relationship between multiple traumas and PTSD

remains a methodological challenge in trauma research. In multiply traumatised samples, it is very difficult to conclusively link PTSD symptoms to a specific trauma experience. Even where participants themselves attribute their PTSD symptoms to a particular event, it is possible that other trauma experiences have also played a casual role in the development of PTSD and are also represented in the person's re-experiencing and avoidance symptoms. However, given the absence of South African data on the prevalence of violence exposure and related psychiatric sequelae, the findings of this study are an important starting point in mapping the mental health needs of a multiply traumatised society.

It would be useful for future research to investigate whether similar patterns of relative risk are present in other countries where multiple forms of violence are common, in order to establish whether the patterns reported here have some universality or are unique to the South African context. Such research could overcome the methodological limitations of the present study by including specific forms of human rights abuses in the list of 'worst events' that is used to assess the presence of PTSD, and by exploring the relationship between different types of violence and the severity of PTSD symptoms. Further, the relationship that different forms of violence have with a range of other common trauma-related disorders also bears further investigation.

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References

- Abrahams N, Jewkes R, Laubscher R, Hoffman M. Intimate partner violence: prevalence and risk factors for men in Cape Town, South Africa. *Violence* 2006;21:247–264.
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 4th ed.. Washington DC: APA; 1994.
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 4th ed., text revision. Washington DC: APA; 2000.
- Andrew G, Peters L. The psychometric properties of the Composite International Diagnostic Interview. *Social Psychiatry and Psychiatric Epidemiology* 1998;33:80–88. [PubMed: 9503991]
- Basoglu, M.; Jaranson, JM.; Mollica, R.; Kastrup, M. Torture and mental health: A research overview. In: Gerrity, E.; Keane, TM.; Tuma, F., editors. *The mental health consequences of torture*. New York: Kluwer Academic; 2001. p. 35-62.
- Bollen, S.; Artz, L.; Vetten, L.; Louw, A. Violence against women in metropolitan South Africa: a study on impact on service delivery (Monograph No. 41). Johannesburg: Institute for Security Studies; 1999.
- Breslau N, Kessler RC, Chilcoat HD, Schultz LR, Davis GC, Andreski P. Trauma and posttraumatic stress disorder in the community: The 1996 Detroit area survey of trauma. *Archives of General Psychiatry* 1998;55(7):626–632. [PubMed: 9672053]

- Creamer M, Burgess P, McFarlane AC. Post-traumatic stress disorder: Findings from the Australian National Survey of Mental Health and Well-being. *Psychological Medicine* 2001;31:1237–1247. [PubMed: 11681550]
- Crescenzi A, Ketzler E, van Ommeren M, Phuntsok K, Komproe I, de Jong JTVM. Effect of political imprisonment and trauma history on recent Tibetan refugees in India. *Journal of Traumatic Stress* 2002;15(5):369–375. [PubMed: 12392224]
- De Jong J, Komproe I, van Ommeren M, El-Masri M, Araya M, Khaled N. Lifetime events and posttraumatic stress disorder in 4 postconflict settings. *Journal of the American Medical Association* 2001;286(5):555–562. [PubMed: 11476657]
- Fajnzylber P, Lederman D, Loayza N. Inequality and violent crime. *Journal of Law and Economics* 2002;45:1–39.
- Foster, D.; Davis, D.; Sandler, D. Detention and torture in South Africa. London: James Currey; 1987.
- Haro JM, Arbabzadeh-Bouchez S, Brugha TS, de Girolamo G, Guyer ME, Jin R, et al. Concordance of the Composite International Diagnostic Interview Version 3.0 (CIDI 3.0) with standardized clinical assessments in the WHO World Mental Health Surveys. *International Journal of Methods in Psychiatric Research* 2006;15:167–180. [PubMed: 17266013]
- Herman, J. Trauma and recovery: from domestic abuse to political terror. London: Pandora; 1992.
- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry* 1995;52(12):1048–1060. [PubMed: 7492257]
- Landman WA, Henley LD. Tensions in setting health care priorities for South Africa's children. *Journal of Medical Ethics* 1998;24:268–273. [PubMed: 9752631]
- Maercker A, Schützwohl M. Long-term effects of political imprisonment: A group comparison study. *Social Psychiatry and Psychiatric Epidemiology* 1997;32(8):435–442. [PubMed: 9409158]
- Norris FH, Murphy AD, Baker CK, Perilla JL, Gutierrez Rodriguez F, Gutierrez Rodriguez J. Epidemiology of trauma and posttraumatic stress disorder in Mexico. *Journal of Abnormal Psychology* 2003;112(4):646–656. [PubMed: 14674876]
- Perkonig A, Kessler RC, Storz S, Wittchen HU. Traumatic events and posttraumatic stress disorder in the community: Prevalence, risk factors and comorbidity. *Acta Psychiatrica Scandinavica* 2000;101:46–59. [PubMed: 10674950]
- Resnick HS, Kilpatrick DG, Dansky BS, Saunders BE, Best CL. Prevalence of civilian trauma and posttraumatic stress disorder in a representative national sample of women. *Journal of Consulting and Clinical Psychology* 1993;61:984–991. [PubMed: 8113499]
- Shaw, M. Crime and policing in post-apartheid South Africa: Transformation under fire. London: Hurst and Co; 2002.
- South African Institute of Race Relations. South Africa Survey 2003/2004. Johannesburg: South African Institute of Race Relations; 2004.
- Stein D, Seedat S, Herman A, Moomal H, Heeringa SG, Kessler RC, et al. Lifetime prevalence of psychiatric disorders in South Africa. *Journal of Traumatic Stress*. (in press)
- Stein M, Walker J, Hazen A, Forde D. Full and partial posttraumatic stress disorder: Findings from a community survey. *American Journal of Psychiatry* 1997;154:1114–1119. [PubMed: 9247398]
- Truth and Reconciliation Commission. Truth and Reconciliation Commission of South Africa Report. Cape Town: CTP; 1998.
- Williams DR, Herman A, Kessler RC, Sonnega J, Seedat S, Stein DJ, Moomal H, Wilson CM. The South Africa stress and health study: Rationale and design. *Metabolic Brain Disease* 2004;19:135–147. [PubMed: 15214513]
- Williams DR, Herman A, Stein DJ, Heeringa PB, Jackson H, Moomal H, et al. Twelve-month mental disorders in South Africa: Prevalence, service use and demographic correlates in the population-based South African Stress and Health Study. *Psychological Medicine* 2008;38:211–220. [PubMed: 17903333]
- Williams SL, Williams DR, Stein DJ, Seedat S, Jackson PB, Moomal H. Multiple Traumatic Events and Psychological Distress: The South Africa Stress and Health Study. *Journal of Traumatic Stress*. (in press)
- World Health Organization. Composite International Diagnostic Interview (CIDI, Core Version 2.1). Geneva, Switzerland: World Health Organization; 1997.

Zlotnick C, Johnson J, Kohn R, Vicente B, Rioseco P, Saldivia S. Epidemiology of trauma, post-traumatic stress disorder (PTSD) and co-morbid disorders in Chile. *Psychological Medicine* 2006;36:1523–1533. [PubMed: 16854253]

Table 1

Prevalence of exposure to violence

	Males %	Females %	Total %
Human Rights Abuses			
Politically motivated physical assault	2.7%**	0.6%	1.6%
Detention	2.4%**	0.3%	1.3%
Torture	1.3%**	0.2%	0.7%
Domestic Violence			
Physical abuse during childhood	12.3%	11.7%	12.0%
Physical abuse by intimate partner	1.3%	13.6%**	7.9%
Criminal Assault	25.9%**	11.6%	18.2%
Sexual Violence			
Rape	0.3%	3.7%**	2.1%
Other sexual assault	1.0%	2.1%*	1.6%
Other Physical Assault	18.7%**	7.0%	12.4%
Any form of violence	42.9%**	34.3%	38.3%

* Significantly higher level than counterpart at $p < 0.05$ level

** Significantly higher level than counterpart at $p < 0.0001$ level

Table 2

Odds ratios for the association between specific forms of trauma and lifetime diagnosis of PTSD, for males and females

	Males Odds Ratio (95% CI)	Females Odds Ratio (95% CI)
Human Rights Abuses		
Politically motivated physical assault	2.5 (0.61–10.15)	-
Detention	6.3 (2.34–16.68)	-
Torture	7.7 (2.88–20.41)	-
Domestic Violence		
Childhood Physical Abuse	4.5 (2.00–10.22)**	0.9 (0.38–2.09)
Partner Abuse	5.3 (0.85–32.57)*	3.2 (1.48–7.10)
Criminal Assault	1.3 (0.61–2.62)	3.2 (1.79–5.85)
Sexual Violence		
Rape	-	5.6 (2.87–10.78)
Sexual Assault	-	1.2 (0.35–6.07)
Other Physical Assault	2.2 (1.10–4.57)*	1.7 (0.74–4.00)

* Significantly higher than counterpart at $p < 0.05$ level** Significantly higher than counterpart at $p < 0.01$ level

Table 3

Prevalence of Lifetime PTSD Based on Worst Reported Event

	(a) Total <i>n</i> reporting category	(b) % of <i>n</i> with PTSD linked to category	(c) % of <i>n</i> with PTSD linked to another event	(d) % of <i>n</i> with PTSD for any reason	(e) Estimated % of population with PTSD due to category
Women					
Domestic Violence					
Childhood Abuse	298	1.0	1.3	2.3	0.1
Partner Abuse	365	2.6	3.6	6.1	0.4
Criminal Assault	276	0.5	5.8	6.3	0.1
Sexual Violence					
Rape	94	4.7	6.4	11.1	0.2
Sexual Assault	50	0	3.1	3.1	0.0
Other physical assault	185	0.3	3.8	4.1	0.1
Men					
Domestic Violence					
Childhood Abuse	215	0.6	5.2	5.8	0.1
Partner Abuse	26	0	8.8	8.8	0.0
Criminal Assault	429	0.3	1.9	2.2	0.1
Sexual Violence					
Rape	4	-	-	-	-
Sexual Assault	15	-	-	-	-
Other physical assault	311	0	3.4	3.4	0.0