

# Post traumatic stress disorder and resilience in veterans who served in the South African border war

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## Abstract

**Objective:** The psychological impact of the South African border war on veterans has received little or no attention. This study determined the prevalence of post-traumatic stress disorder (PTSD), and extent of resilience among a cohort of veterans. **Method:** Of 1527 former students who matriculated from a Johannesburg high school from 1975 to 1988, only 109 were reachable for convenience and snowballing recruitment into this study. An anonymous, internet-based questionnaire was used to obtain information on demography, combat exposure, drug and alcohol use, traumatic events in later life, and recourse to medication and counselling. The Impact of Event Scale – Revised (IES-R) assessed for PTSD and the Connor Davidson Resilience Scale (CD-RISC) measured resilience. Data were processed with STATA; version 11 statistical software package. Analysis included Chi square test and regression analysis. **Results:** The response rate was 49.5% (n=54). The prevalence of PTSD was 33% and significantly associated with combat exposure (p=.012). Despite high prevalence of PTSD in those exposed to combat, 94% showed normal to above-normal level of resilience. CD-RISC scores showed no association with the IES-R. Only current cannabis use was significantly linked with PTSD (p=.044). **Conclusion:** Although the prevalence of PTSD found in this sample was higher than in comparable international studies, this cohort of former SA national servicemen, showed high levels of resilience. The current use of cannabis within the context of prior exposure to military national service or combat should prompt clinicians to screen for the presence of PTSD-associated symptoms.

**Keywords:** Combat Exposure; Post-traumatic Stress Disorder; National Service; Border War; South Africa

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## Introduction

Between 1975 and 1989, approximately 600 000 young white males were conscripted into the South African Defence Force (SADF) during the Border War.<sup>1,2</sup> Although this war lasted 15 years, the psychological impact of the war on the conscripts has received little or no attention.<sup>3,4</sup>

The term 'Border War' applies mainly to hostilities in northern Namibia and Southern Angola. This area was designated an 'operational area' meaning a zone with access limited to the local population, and to security forces which

subjected it to tight surveillance and control. Its common usage also encompasses hostilities on borders with Mozambique, Zimbabwe and Botswana as well as incursions into these countries.

A strong correlation between combat exposure and the development of PTSD has been shown in a number of studies.<sup>5-7</sup> There is consistent data regarding the impact of war on veterans.<sup>5,8-10</sup> The prevalence of PTSD among veterans however appears to vary across wars:

In studies involving the Vietnam war, the life-time prevalence of PTSD varied from 14.7% to 30.1% while that of current PTSD from 2.2% to 15.2%.<sup>5,11,12,13-15</sup> Data from the Gulf and Iraqi Wars, found a PTSD prevalence between 2 and 12%.<sup>16-21,22</sup> while combat veterans of the Yom Kippur War of 1973 in Israel had 14% prevalence of diagnosable PTSD.<sup>23</sup> Solomon and Mikulincer reported on a follow-up study of

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veterans of the 1982 Lebanon War and found a higher prevalence rate for PTSD (65%) in a combat stress reaction group compared to controls (14.5%).<sup>24</sup> The trajectory of both groups in this study showed a trend for improvement over the first three years, with a relapse to the immediate post-war levels at 20 years.

A high PTSD prevalence rate of 56% was reported among the Lord's Resistance Army child recruits in Uganda.<sup>25</sup> Lower prevalence rates were however reported among Nigerian Army peace-keeping force veterans in Sierra Leone (22%) and South African National Defence Force peace-keeping force veterans in Rwanda (26%).<sup>26,27</sup>

The South African border war presents parallels with several of these wars. Many conscripts were exposed to combat, some witnessed or participated in atrocities, and many had contacts with casualties of the war. It is therefore likely that the South African Border war has left large numbers of ex-combatants with emotional and psychological wounds.

Academic studies on the experience of South African national servicemen have been limited mainly to contributions from the disciplines of psychology and sociology.<sup>3,28-32</sup> The scarcity of studies on this issue points to a significant national amnesia which may be due to the secrecy in which the war was conducted and that these veterans were part of the discredited (Apartheid) regime.<sup>33</sup>

Given the paucity of literature and the lack of attention to the impact of this war, we assessed the prevalence of PTSD among a cohort of conscripts from Parktown High School, Johannesburg, their resilience and the relationships between PTSD, resilience and socio-demographic variables. It was hoped that the findings of this study will raise awareness of the pervasive medical and psychological problem of PTSD among former national servicemen, and contribute to naming the lasting psychological effects of war on combatants.

## Method

### Design

*This was a cross sectional and descriptive study.*

### Study population, sampling methods and sample

The study population was the 1527 students who matriculated from a boys only high school in Johannesburg between 1975 and 1989. The names of these matriculants were obtained from school yearbooks. Convenience and snowball sampling methods were used to obtain a study sample. Matriculants were traced from the class reunion lists and also from searches in telephone directories and on the internet. Those who responded to the invitation were asked to provide the contact details of other eligible matriculants known to them. The current addresses of 109 matriculants were found and these were invited to participate in the study by filling out a web-based questionnaire.

### Measurement instruments/data collection

The questionnaire was compiled for the purpose of this study. The first section contained an introduction and an invitation to participate. The second section sought specific demographic data including home language, marital status,

number of children, religious affiliation, occupation, level of education, age at intake into the army, date of intake into the army, postings and army rank during national service. Questionnaire items used to construct an index of combat exposure were: service units, military postings, rank, exposure to combat, exposure to fire fights, operational incursions into Angola and acts of war against civilians. This data was used by the researcher to arrive at a composite unit of exposure to combat: group 1 (Special Forces plus minor field), group 2 (infantry, artillery and armour) and group 3 (non-field). This approximated well with the ranking of middle, high and low exposure to combat, used by Fett et al.<sup>10</sup> The third section comprised the Impact of Event Scale – Revised (IES-R) developed by Horowitz, Wilner and Alvarez and revised by Weiss and Marmar which was used as to determine PTSD.<sup>34</sup> This self-report scale has been tested and used in other studies.<sup>35-37</sup> Respondents were asked: 'Indicate how distressing each difficulty has been for you with respect to your National Service. How much were you distressed or bothered by these difficulties?' The fourth section was the Connor Davidson Resilience Scale (CD-RISC) which is a measure of stress coping ability developed and validated to measure resilience.<sup>38</sup> It was selected for this study as it is short and designed for use with PTSD. The survey questionnaire ended with a link to a check-out section (in effect a separate second questionnaire) seeking a return email address, for those respondents who wished to receive feedback on the results.

### Data Collection

An anonymous web-based questionnaire was set up on the Wits University Health Sciences faculty web-site using free web-based software called LimeSurvey accessible on: <http://docs.limesurvey.org/tiki-index.php?page=Question+types>. Invitations to participate containing a link to the questionnaire were sent via email and via the postal services to respondents.

### Data analysis

The raw data were exported to a Microsoft Excel file format, where string data (strings of words) were converted to numerical data. This data was encoded and converted into the STATA version 11 statistical analysis package. Analysis included descriptive statistics of socio-demographic variables such as age at intake into the army, marital status, educational level and religious affiliation. In addition, the score on the IES-R scale was compiled as a measure for assessing the presence of PTSD.

Since the literature on the CD-RISC gives no cut-off values for PTSD the researcher allocated cut-off scores according to the logic in Table I. A resilience score designated 'Low' was set at 51 or less, since this represents the mean for the two lowest-ranking 'PTSD' groups in the study, and is also very close to two standard deviations (95% confidence level) below the mean for the category 'general population' (a score of 48). The other categories were 'Impaired' at a score of 52 – 61 and 'general population' at a score of 62 or more. The score of 62 is one standard deviation below the mean for the 'general population' group.

**Table I: Connor-Davidson Resilience Scale scores by study group<sup>38,(p79)</sup>**

Study Group	Group No.	N	Mean (sd)
General Population	1	577	80.4 (12.8)
Primary Care	2	139	71.8 (18.4)
Psychiatric outpatients	3	43	68.0 (15.3)
GAD patients	4	24	62.4 (10.7)
PTSD patients	5	22	47.8 (19.5)
PTSD patients	6	22	52.8 (20.4)

GAD = generalized anxiety disorder; PTSD = posttraumatic stress disorder

The associations between these categories of PTSD and resilience (respectively) and the demographic variables (Level of Combat Exposure, Educational Level, Marital Status, Post-National Service Traumatic Experiences and Drug Use) were analysed using the non-parametric chi-square test. Regression models were used to examine variables which were significantly associated with PTSD and resilience.<sup>39</sup> Statistical significance was set at  $p < .05$ .

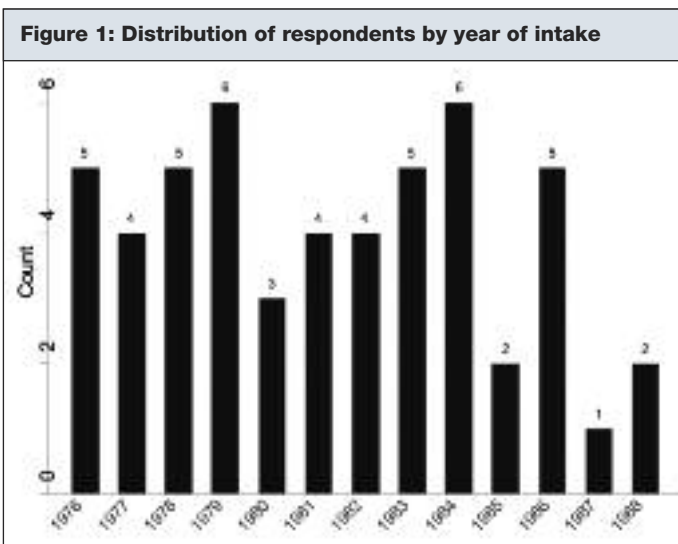
**Ethics**

The study was approved by the Human Research Ethics Committee of the Faculty of Health Sciences, University of the Witwatersrand.

**Results**

Of the 109 matriculants that were traceable from the master list, 90 responded and filled the web-based questionnaire. Thirty six questionnaires were excluded, either because of incomplete responses or the respondents did not do national military service. The final sample consisted of 54 respondents.

The spread of respondents by year of intake is mostly even across the years of intake, although the average respondents per year from 1985 onwards declined by almost half - Figure 1. The mean age of this cohort at conscription was 19.3 years (range: 16 – 28 years), with 67% in the age range 16 to 19 years. Most respondents (94%) were English speaking with 77% reporting having had tertiary education.



Most respondents (93%) were in a relationship with only 19% (n=10) being divorced at any time. All the respondents had fathered children with the majority (75%) having three or more. Most respondents (89%) reported religious affiliations, with the largest religious group being Anglican.

Two of the respondents (4%) reported they had medical or psychological interventions during or immediately after their national service. Fourteen respondents (26%) had counselling at some point after their national service. In this study, 12% of respondents reported alcohol abuse or dependence, and of these 6% were consuming alcohol at a toxic level. Respondents were asked to provide a daily quantity of alcohol consumed. The amounts were captured and tabulated to produce the number of units consumed per day. Units were taken as one unit equivalent to 340ml beer, one glass of wine, or one tot of hard liquor. A figure of greater than or equal to four units per day was used to define alcohol abuse or dependence.<sup>40</sup> A figure of 7 units or more was taken to place the respondent at risk for liver toxicity.<sup>41</sup>

The IES-R scores categorized 33% (n=18) of respondents in the PTSD range while the CD-RISC scores found that 94% (n=51) showed normal to above normal levels of resilience.

Current cannabis use was significantly associated with PTSD ( $p=.044$ ).

Respondents in combat units (Infantry, Artillery and Armoured units) were significantly more likely to have PTSD compared to those in non-combatants units (non-field, special forces, minor field) ( $p=.012$ ) – Table II. Second, a logistic regression analysis was performed to compare the odds ratios for the association between group status [Group 1 (special forces and minor field), Group 2 (infantry, artillery and armour) and Group 3 (nonfield) as the base variable] and PTSD. This comparison gives a sense of the observed dose-response relationship between group (as a proxy measure of combat exposure) and PTSD status (on IES-R scores). The regression shows that those in Infantry, Artillery and Armour had 8 times greater odds of being positive for PTSD compared to those in the Non Field group

**Table II: Association between PTSD and Combat Exposure**

	Group 1 Special Forces & Minor Field	Group 2 Infantry, Artillery & Armour	Group 3 Non-Field	Total
<b>Normal</b> % by column	10 90.91	17 51.52	9 90.00	36 66.67
<b>PTSD</b> % by column	1 9.09	16 48.48	1 10.00	18 33.33
<b>Total</b> % by column	11 20.37	33 61.11	10 18.52	54 100

Pearson  $\chi^2 = 8.7682$   $p = .012$   
 Likelihood ratio  $\chi^2 = 9.8225$   $p = .007$   
 Fisher's exact = .015

**Table III: Logistic regression of PTSD and Combat Exposure**

<i>PTSD Status on the Impact of Event Scale (IES-R)</i>	<i>Odds Ratio</i>	<i>Std Error</i>	<i>z</i>	<i>p value</i>	<i>95% CI</i>
Infantry, Artillery & Armour SpecForces/MinField	8.470588 0.9	9.40363 1.338282	1.92 0.07	.054 .944	.961505 to 74.62349 .0488115 to 16.5944
Number of observations = 54 LR (chi <sup>2</sup> ) = 9.82 Prob > chi <sup>2</sup> = .0074 Log likelihood = -29.46053 Pseudo R <sup>2</sup> = .1429					

(odds ratio=8.5;  $p = .054$ ); while those in the Special forces & Minor Field group had roughly the same (0.9,  $p = .944$ ) odds, and the difference from the base group was not statistically significant (Table III). The odds ratios should be interpreted with caution in view of the small sample size and large confidence intervals.

### Discussion

This study found a high level of PTSD (33%) among former national servicemen and marks the first attempt to evaluate the psychological impact of the border wars on veterans. This prevalence rate is similar to the figure of 30.1% found in the National Vietnam Veterans Readjustment Study (NVVRS)<sup>5</sup> but much less than the 56% reported for child soldiers in the LRA in Uganda.<sup>25</sup> Nonetheless, this study reports a substantially higher prevalence than levels reported in other international literature.<sup>18,20,21,22,17,15,26,4</sup> In accordance with previous studies, this finding confirms that combat exposure creates a lasting negative psychological impact on veterans. This constitutes a hidden cost of military conflict.

When comparing this prevalence rate to international studies it is important to consider the psychometric instrument used. The different PTSD instruments and scoring systems used in the above studies may explain variation in prevalence rates. Instruments which do not conform closely to the DSM III and IV 17-item criteria for PTSD could be expected to under-report the prevalence of PTSD.<sup>11,16,18,20,21</sup> Studies utilising the PTSD checklist (PCL-C) with a 17-item scoring system for documenting the existence of PTSD show higher PTSD prevalence figures, which range from 10 to 20%: the Lebanon War (11-27%), the Gulf War (12.1%), Afghanistan and Iraq (11.2 to 19.9%), with outliers Nigeria (22%) and Uganda (56%).<sup>22,24,17,26,25</sup> The IES-R is scored similarly to the PCL-C and has yielded a comparable score in this study. Both the IES-R and the PCL-C have a factor structure which closely approximates the DSM IV diagnostic criteria.

Low motivation to serve and weak ideological commitment to the goals of conflict have been strongly associated with PTSD<sup>42,43</sup> and may account for the high prevalence reported in this study. This cohort possibly had a reduced motivation for combat since participating in the border wars not a personal ideological choice but a legislative requirement.

A further explanation for the high prevalence rate of PTSD in this study is that respondents are now in their

midlife developmental stage. A 20-year longitudinal study of Lebanon War veterans noted an increase in post-traumatic symptoms twenty years after the war which was related to aging and mid-life changes:

*'Midlife generally entails some reduction in activity and a shift from planning to reminisce and from occupation with current events to the review and rethinking of one's life. In the course of this transition, the altered perspective may force the forgotten or suppressed traumatic memories up to the foreground again'.<sup>24,(p.664)</sup>*

An Eriksonian perspective has been suggested i.e. the majority of these respondents were exposed to traumatic events as young men, at the stage of identity development. At each developmental level the traumatic experience needs to be 'reworked' as the cues of the next level of development become prominent.<sup>44</sup> This viewpoint is supported by the stream of memoir-type literature written by former national servicemen<sup>45</sup> and might suggest that support to veterans should be life-long as they rework the psychological impact of wars through life.

The high proportion of respondents with children and in stable family relationships would imply that this sample sustained a high level of intimacy, a trait that could explain the high level of resilience found among them. Similar results were found in other studies<sup>5,46</sup> and assisting veterans to achieve stable family relationships could ensure a high level of resilience.

Previous studies have linked low education attainment with vulnerability to PTSD.<sup>6,46</sup> Despite the high PTSD prevalence in the current study, a high proportion of respondents had attained tertiary education, which could reflect respondents' coping and resilience. Alternatively, the greater resilience in this cohort could have led to higher educational attainment but these cannot be confirmed for South Africa considering the design and limitations of the current study.

The 12% of respondents who reported alcohol dependence or abuse is higher than the findings from the Veterans Experience Study (VES).<sup>8</sup> This is comparable with the lifetime diagnosis of alcohol dependence of 39%, with current alcohol dependence of 11% in the National Vietnam Veterans Re-adjustment Study (NVVRS).<sup>5</sup> This could represent under-reporting since 22% of respondents did not answer this part of the questionnaire. It is also

possible that alcohol use among this cohort has diminished with time as noted in a longitudinal study of Vietnam veterans followed up between 1984 and 1998.<sup>6</sup>

Cannabis use was reported by 13% of respondents which may also be an underreporting especially since socially undesirable habits are usually underreported. Lower rates of drug abuse have however been reported in other studies such as the NVVRS, where lifetime drug dependence of 5.7% and current drug dependence of 2% were found. The association of cannabis use with PTSD may reflect an attempt to self-medicate the symptoms of PTSD. Substance abuse, especially cannabis use should therefore prompt screening for PTSD among patients who have had combat exposure. Conversely, the presence of PTSD should also prompt screening for substance abuse, as this may be a sign of lower resilience.

Most respondents were 16-19 years old at conscription. This matches findings from other studies and may reflect one of the pervasive realities of combat-related PTSD.<sup>47 (p.61),48</sup> Servicemen conscripted between 17 and 19 years old, have higher risks for PTSD.<sup>5</sup> This is possibly because of their relative psychological vulnerability and the absence of long term social ties which could assist in absorbing the aftermath of combat exposure. Commentaries from the perspectives of sociologists<sup>2</sup> and historians<sup>49</sup> suggest that former national servicemen in South Africa experience low levels of social support and this may contribute to the PTSD level found in this study in line with other studies.<sup>50 (p.330)</sup> The protective role of social support for both prisoners of war and veterans was stressed in an Israeli study.<sup>51</sup>

PTSD is not linked only to combat exposure, but also to participating in or witnessing atrocities; and to combat training.<sup>52,53</sup> The association reported in this study between PTSD and combat exposure is also characterized by a dose-response between combat exposure and PTSD, consistent with findings from other studies.<sup>5,10,54,7</sup> The South African experience of the aftermath of the border war may thus show a similar chronicity to that found in the 1995 National Co-Morbidity Study in the USA.<sup>55</sup>

As shown in Table III, the majority of respondents show normal to above normal resilience, which fits the assertion of Solomon and Dekel (2007) that resilience may be enhanced by the stimulus of trauma.<sup>56</sup> They assert that:

- Growth may arise out of traumatic experiences,
- Growth and distress may be two separate, independent dimensions of the traumatic experience, where high scores on one dimension do not necessarily entail low scores on the other, and that most people will respond to even extreme stress with some mixture of both resilience and vulnerability.
- Salutary and pathological outcomes are positively correlated; hence the most highly distressed persons are also likely to show the highest psychological growth. There may be an optimal level of distress that promotes resilience. At higher levels of trauma and PTSD, however, a point is reached where the person is overwhelmed by distress and resilience is impaired. This relationship is supported by other studies.<sup>57,58</sup>

The response rate of 49.5% is not unusually low for an unsolicited social survey considering the sensitive nature of PTSD and the length of time since the event which could also explain the difficulty experienced with tracing former matriculants. This response rate was similar to that reported in other studies,<sup>24,26,59</sup> although two long term studies have reported response rates of 69% and 80%.<sup>12,13</sup>

Self-report scales used in this study could result in information biases, misclassifications and misinterpretation.<sup>60</sup> Responses could also have been influenced by recall bias since the events occurred 22 to 34 years ago. The sensitive nature of the topic could encourage responses perceived by respondents to be socially desirable. Nonetheless, it is suggested that the anonymity and confidentiality provided by the web-based design enhanced autonomy and allowed respondents to report the truth.

The current study design presupposes that respondents have access to the internet and can use it, making it prone to selection bias as former servicemen who for any reason were not able to participate in internet interactions would have been excluded. Therefore, those who participated in the study might have been the most economically empowered and resilient. Servicemen who have low resilience and high levels of PTSD might have also avoided responding to the survey, using avoidance as a coping mechanism.

The small sample size undermined this study's predictive power. The results must therefore be generalized with extreme caution. In addition, time since exposure to combat-related and the amount and type of non-combat exposure were not adjusted for in the analyses.

Despite these limitations, this study provides a contribution to the literature in that it is the first study reporting the prevalence of PTSD and resilience among former South African national servicemen exposed to combat during the border war. It further provides a foundation based on which future studies can be developed.

## Conclusion

Although the prevalence of PTSD is high among former South African servicemen who were exposed to combat during the border war, the majority showed a high level of resilience. Cannabis use among former national servicemen should prompt screening for PTSD and referral for further management by appropriately skilled health care practitioners.

The chronicity of PTSD suggests a need for longitudinal studies that track the influence of combat exposure, pre-existing traumatic experiences, treatments, social support and post-war traumatic events on the incidence and course of PTSD.

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