

Traumatic experiences of Kenyan secondary school students

David M Ndetei*, Francisa A Ongecha-Owuor, Lincoln Khasakhala, Victoria Mutiso, Gideon Odhiambo and Donald A Kokonya

¹ Department of Psychiatry, University of Nairobi, PO Box 19676-00202, Nairobi, Kenya; Africa Mental Health Foundation, PO Box 48423-00100, Nairobi, Kenya

² Coast Provincial General Hospital, PO Box 91245-80103, Mombasa, Kenya

³ Africa Mental Health Foundation, PO Box 48423-00100, Nairobi, Kenya

⁴ Africa Mental Health Foundation, PO Box 48423-00100, Nairobi, Kenya

⁵ Africa Mental Health Foundation, PO Box 48423-00100, Nairobi, Kenya

⁶ Kakamega Provincial General Hospital, PO Box 72300-00200, Nairobi, Kenya

* Corresponding author, email: dmndetei@uonbi.ac.ke

Background: There is no information on the socio-demographic variations and determinants of Trauma and Post-Traumatic Stress Disorder (PTSD) in Kenyan adolescents.

Objectives: To describe the traumatic experiences of Kenyan high school students and to determine the levels of Post-traumatic Stress Disorder (PTSD) among them, and in relation to sociodemographic variables.

Design: A cross-sectional study of 1 110 students (629 males and 481 females), aged 12 to 26 years, using self-administered questionnaires.

Method: The students completed questionnaires on sociodemographic data followed by the Trauma Checklist and the Child PTSD Checklist.

Results: Being confronted with bad news was the most common type of trauma encountered in 66.7% of the subjects, followed by witnessing a violent crime and domestic violence; 23.2% and 16.5% of the subjects reported physical abuse and sexual abuse respectively. PTSD symptoms were common; avoidance and re-experiencing occurred in 75% of the students and hyperarousal was reported by over 50%. The number of traumatic events was positively correlated with the occurrence of PTSD. The prevalence of full PTSD was 50.5%, while partial PTSD was 34.8%. Male and female subjects were equally affected but the boarders were more affected ($p < 0.05$) and the differences between the schools were statistically significant ($p = 0.000$).

Conclusions: Kenyan secondary school students commonly experience traumatic events and have high rates of PTSD. Further studies are needed to determine the implications of these findings for their health and performance in school. The coping mechanisms need to be delineated and interventions put in place. Long-term studies are required to determine the role of such events in the causation of mental illness.

Introduction

Various studies in the USA have reported that between nine and 42 per cent of urban adolescents experience and witness serious violence (American School Health Association *et al.* 1989, Centers for Disease Control and Prevention 1993, Schubiner, Scott and Tzelepis 1993). There are gender variations, with males being more likely to be exposed to violence and females being more vulnerable to PTSD (Fitzpatrick and Boldizar 1993).

The American studies drew their samples from different risk populations: some high risk, others low risk, hence the wide variations. The findings indicated that all those children who witnessed parental homicide or rape, 90 per cent of those who were sexually abused, and 77% of those who

were involved in a school shooting developed full PTSD. Among the adolescents (15–19 years of age) who were chemically dependent, 29.6% had a higher prevalence of full PTSD compared to a prevalence rate of 6% in a community sample (by 18 years, two-fifths of the community population would have experienced at least one traumatic event). The rate for full PTSD was even higher (69%) for adolescents in the juvenile justice system with a diagnosis of either oppositional defiant or conduct disorder. Their aggressive and impulsive behaviours exposed them to recurrent traumatic events more than children from communities.

There were almost twice as many females than males identified with full PTSD (24.3% for males and 45.3% for females) and the current prevalence rates averaged 15.2%. Current rates for females were more than triple those for males (12.2% for males versus 40.0% for females) and these higher rates were due to a greater risk of rape amongst females.

In Africa, various studies (mainly from South Africa), have produced prevalence rates of exposure to violence and consequent PTSD. Ward *et al.* (2001) found that out of 104 adolescents in four secondary schools in Cape Town, the majority were exposed to at least one type of violent event either as a victim or a witness, and only 6% were likely to meet criteria for PTSD. Other studies among both urban and rural youth have found exposure rates of 67%–95% with 8.4%–40% of children less than 17 years of age fulfilling PTSD diagnostic criteria (Ensink *et al.* 1997, Peltzer 1999).

Of all these African studies, only two have introduced gender as a determinant of both exposure and subsequent PTSD (Seedat *et al.* 2000, Seedat *et al.* 2004). Seedat *et al.* (2000) found a 12.1% prevalence of PTSD found in three Cape Town school surveys ($n = 307$), with girls reporting more exposure to trauma and PTSD symptoms than boys. Seedat *et al.*'s. (2004) comparative study between Cape Town, South Africa, and Nairobi, Kenya, found a more than 80% rate of reported exposure to severe trauma in both urban areas, either as victims or witnesses. Kenyan adolescents, compared with South African adolescents, had significantly higher rates of witnessing violence (69% vs 58%), physical assault by a family member (27% vs 14%) and sexual assault (18% vs 14%). However, rates of both full symptoms of PTSD and partial symptoms of PTSD were higher in the South African samples than in the Kenyan sample (22.2% vs 5%, and 12% vs 8% respectively). Both boys and girls were likely to meet PTSD criteria.

While the studies by Seedat *et al.* (2000) and Seedat *et al.* (2004) looked at gender as a variant, they also identified other variants, such as age structure and school related variants, as determinants of exposure and development of PTSD symptoms. Those studies did not expound on the structure of the samples studied except that they were school surveys in either urban or rural schools. This study is therefore the first reported school survey in Africa to include more variants in relation to exposure to trauma and PTSD symptoms development.

Methods

Instruments

The following instruments were arranged in sequence to constitute one questionnaire, referred to here as the Trauma Questionnaire for the purpose of this study: socio-demographic data, the Trauma Checklist and the Child PTSD/partial PTSD Checklist. The socio-demographic data enquired for age, gender, year (form) of study, and whether the respondent was a boarder or a day scholar.

The Trauma Checklist, adopted from Kaufman *et al.* (1997) and used by Seedat *et al.* (2004), was used in this study for purposes of comparison. It is based on a list of DSM-IV symptoms qualifying as trauma (American Psychiatric Association 1994). Respondents were also required to circle the most frightening or upsetting event that had ever happened to them.

The Child PTSD Checklist, composed of a scale of 17 DSM-IV symptoms of PTSD, by Seedat *et al.* (2004), was replicated in this study for purposes of comparison. This checklist rates the presence, in the past month, of each of the 17 symptoms required for a DSM-IV diagnosis of PTSD, in order to assess the presence of current PTSD. This current PTSD is related to the most upsetting event selected by the respondent from a traumatic events checklist. The events in the list meet the criteria A of DSM-IV criteria for PTSD. The presence of each of the 17 symptoms of PTSD is rated

on a four-point Likert formula, ranging from 0 to 3 (0 = not at all, 1 = some of the time, 2 = most of the time, and 3 = all the time). A conservative threshold score of 2 ('most of the time') was used to endorse the presence of a symptom. Partial-symptom PTSD was defined as having at least one symptom in each DSM-IV symptom criterion category (re-experiencing, avoidance, hyper arousal) (Stein *et al.* 1997, Marshall *et al.* 2001). Full PTSD diagnosis was made when all DSM-IV-R criteria for PTSD (i.e. criteria A, B, C, D, and E) were met. There were eight different sets of questionnaires on various aspects of mental health in schools, with the Trauma Questionnaire being just one of the eight.

Subjects and procedures

Nairobi has 49 public secondary schools. Seventeen of these were selected to reflect the following variables (although the Trauma Questionnaire was only administered in 16):

1. National versus provincial schools — National schools compete for the top students on the basis of performance at the national examinations at the end of primary school. A quota system is used to ensure all administrative and geographical regions of the country are represented. Provincial schools only admit students from the Nairobi area, on a competitive basis, after the selections to national schools are done.
2. Boarding, day and mixed boarding and day schools.
3. Boys only, girls only and mixed schools.
4. Neighbourhood status — high-class, low-class and middle-class neighbourhoods. Neighbourhood status was determined on the basis of the socioeconomic status of the residents, with low-class neighbourhoods tending towards and including slums, high-class neighbourhoods tending towards and including the least densely populated areas, and middle-class being in between.
5. Geographical area in relation to the central point of the city.

All the questionnaires were in English which is the first language for most urban and many rural adolescents in Kenya, and a second language for others. It is the medium of instruction in Kenya from the pre-primary level. To gain admission to high school, good grades in English are considered the most important criteria. The students who took part in this study were all fluent in spoken and written English.

Secondary school education consists of four grades named Form I to Form 4, with the average age of entry into Form I being 13 years of age. Some schools offer an extra one or two years vocational training before the students can either go to university or look for jobs.

Ethical clearance for the study was obtained. The head teachers were visited for explanation and to get their permission for the study, and also to suggest to the research assistant the best time when the questionnaires could be administered to the whole school.

The class teachers, who had been trained by the principal author, participated in the distribution of the questionnaire once the whole class was seated and the voluntary nature of the study had been explained. Total anonymity was assured. The eight sets of questionnaires were distributed so that every ninth student got the same questionnaire, in this case the Trauma Questionnaire. The questionnaire explained that after finishing with the questionnaire, whether it had been fully completed or not, the respondents were to fold it and insert it into a ballot box at the exit of the classroom, in the absence of the teacher.

The research assistant collected the ballot boxes from each class in all the sampled schools and took them to one of the authors from the Africa Mental Health Foundation who held a secret code for each of the 17 schools. This code was broken only after all the analyses were done. The data were entered and analysed using SPSS version 11.5.

Results

A total of 1 110 students (629 males and 481 females) from Form 1 to 4 filled in the questionnaires. The majority were boarders (80.7%). Their ages ranged from 12 to 26 years (mean = 16.6; sd = 1.46). The majority were aged between 15 and 18 years.

The traumatic events were grouped into 11 major categories. Table 1 shows the incidence, frequency and the age when they occurred. Being confronted with bad news was the commonest traumatic event (66.7%) followed by accidents and violent crimes. Up to 91.7% had experienced at least one traumatic event, 14% had been exposed to five traumatic events, while 0.5% had been exposed to nine traumatic events.

Amongst the various traumatic events, only the following significant associations were established in relation to socio-demographic variants.

1. Car accident: males ($p = 0.024$);
2. Serious fire: males ($p = 0.041$);
3. Witness of a violent crime: males ($p = 0.50$), provincial schools ($p = 0.008$);
4. Other accidents: males ($p = 0.047$);
5. Sexual abuse: provincial schools ($p = 0.000$), high-class neighbourhood ($p = 0.013$) and Form 2 ($p = 0.032$);
6. Witness to domestic violence: high-class neighbourhood ($p = 0.004$);

The total number of traumatic events correlated positively with increased frequencies of hyper-vigilance (witness to violent crime, $p = 0.004$; witness to domestic violence, $p = 0.000$; and physical abuse, $p = 0.000$); Avoidance (car accident, $p = 0.04$; other bad accident, $p = 0.000$; serious fire, $p = 0.04$; witness to domestic violence, $p = 0.000$; and physical abuse $p = 0.000$); Re-experiencing (other type of accident, 0.001 ; witness to domestic violence, 0.000 ; and physical abuse $p = 0.000$). The symptoms were most severe following car accidents, serious fires, physical abuse or having witnessed domestic violence.

The frequencies of PTSD symptoms among the students are shown in Table 2. The symptom clusters of PTSD were significantly associated with only a few socio-demographic variants. Hyper arousal was significantly associated with being in Form 3 ($p = 0.016$). Avoidance was significantly associated with boarding schools ($p = 0.020$) and high class neighbourhood ($p = 0.009$). Re-experiencing was significantly associated with being male ($p = 0.041$), being in boarding school ($p = 0.048$), being in a boys-only school ($p = 0.013$) and Form 3 ($p = 0.027$).

Approximately half (50.5%) of the 1 110 students met the criteria for full PTSD while 386 (34.8%) had partial PTSD. Only 164 (14.7%) were symptom free. The frequencies of full PTSD and partial PTSD among the male and female students were not statistically different. However, significantly more boarders compared to day scholars had full PTSD.

Table 3 summarises trends across the various socio-demographic variables. When full and partial PTSD were combined, there were no significant differences between males and females, types of neighbourhood, school status, single-sex and co-educational schools or different ages. However, there were significant differences between boarders and day scholars with partial and full PTSD being more prevalent among boarders and most prevalent in Form 3 and least in Form 1.

Discussion

A comparison with other studies revealed that the percentage of those who had experienced at least one traumatic event (91.7%) is higher than the rates of 83% and 85% reported in previous studies of South African and Kenyan samples, respectively (Seedat et al. 2004). The South African sample did not reveal any gender differences in any of the types of events studied. However, as in this study, there were differences in the Kenyan sample for similar types of events, with boys experiencing more traumatic events than girls. This study therefore replicates Seedat et al.'s 2004 Kenyan findings with regards to boys' and girls' experiences of traumatic events. However, higher frequencies of traumatic events among the boys did not manifest as higher rates of full or partial PTSD (as discussed below), suggesting that there could be other factors at play.

Since most learners at provincial schools are day scholars, their significantly higher chances of witnessing violent crime could be a reflection of increased exposure at home. The same explanation could apply for sexual abuse which is also more commonly associated with high-class neighbourhoods. Sexual abuse in provincial schools (which are mostly day schools) could be a reflection of environmental exposure when out of school, whereas in national and boarding schools, it could be

Table 1: Traumatic events: incidence, frequency and age at occurrence

Traumatic event	No information	Never happened	Yes	Number of events				Age when events first occurred				
				1	2	3 to 4	>10	1–5	6–10	11–15	16–20	20+
Car accident	14.1	71.6	14.2	86.7	5.3	6.2	1.8	10.9	25.5	41.8	21.8	–
Any other bad accident	11.9	52.7	35.4	54.1	22.1	9.0	14.8	16.8	29.2	48.7	5.3	–
Serious fire	14.1	71.7	14.1	78.9	14.7	4.2	2.1	17.5	30.0	45.0	7.5	–
Witness to a disaster	14.4	72.6	13.0	62.4	28.8	10.6	8.2	17.1	31.4	45.7	5.7	–
Victim of a violent crime	21.3	55.1	23.6	55.5	21.2	16.1	7.3	2.0	13.7	54.9	29.4	–
Witness to a violent crime	22.6	43.3	34.1	45.2	24.6	10.1	20.2	4.5	18.2	64.8	11.4	1.1
Confronted with traumatic news	12.7	20.6	66.7	38.5	23.6	22.3	15.6	1.9	13.6	62.3	20.1	1.9
Witness to domestic violence	22.8	49.8	27.4	36.1	18.3	11.2	34.3	12.3	24.6	53.8	9.2	–
Physical abuse	18.5	58.4	23.2	45.6	21.3	9.6	23.5	5.7	22.6	64.2	7.5	–
Sexual abuse	33.2	50.5	16.5	51.1	26.7	7.8	14.4	10.7	25.0	35.7	28.7	–
Other incident	83.0	11.7	5.3	70.7	14.6	9.8	4.9	5.9	11.8	41.2	41.2	–

Table 2: Frequency of PTSD symptoms clusters in the total sample (N = 1110)

Symptom	Frequency	Mean number of symptoms (s.d.)
Hyperarousal	591 (53.2%)	2.7 (3.1)
Avoidance	841 (75.8%)	7.3 (6.4)
Re-experiencing	841 (75.8%)	5.1 (4.5)

Table 3: Trends across sociodemographic variables

Variable	Description	Full PTSD	Partial PTSD	None	Total	p-values*
Gender	Male	324 (51.5%)	212 (33.7%)	93 (14.8%)	629	0.670
	Female	236 (49.1%)	174 (36.2%)	71 (14.8%)	481	
Residence	Boarding	458 (51.1%)	318 (35.5%)	120 (13.4%)	896	0.029*
	Day	102 (47.7%)	68 (31.8%)	44 (20.6%)	214	
Neighbourhood	High-class	286 (48.4%)	210 (35.5%)	95 (16.1%)	591	0.387
	Middle-class	89 (55.3%)	55 (34.2%)	17 (10.6%)	161	
	Low-class	184 (515%)	121 (33.9%)	52 (14.6%)	357	
School status	National schools	152 (48.7%)	104 (33.3%)	56 (17.9%)	312	0.176
	Provincial schools	408 (51.1%)	282 (35.3%)	108 (13.5%)	798	
School sex	Boys' schools	250 (51.2%)	173 (35.5%)	65 (13.3%)	488	0.334
	Girls' schools	247 (49.9%)	175 (35.4%)	73 (14.7%)	495	
	Mixed schools	63 (49.6%)	38 (29.9%)	26 (20.5%)	127	
Form	1	128 (51.0%)	93 (37.1%)	30 (12.0%)	251	0.018*
	2	128 (51.8%)	78 (31.6%)	41 (16.6%)	247	
	3	145 (57.5%)	79 (31.3%)	28 (11.1%)	252	
	4	94 (41.7%)	93 (41.3%)	38 (16.9%)	225	
Age	14	16 (47.1%)	14 (41.2%)	4 (11.8%)	34	0.073
	15	80 (50.0%)	57 (35.6%)	23 (14.4%)	160	
	16	81 (49.1%)	60 (36.4%)	24 (14.5%)	165	
	17	101 (57.1%)	61 (34.5%)	15 (8.5%)	177	
	18	70 (44.3%)	61 (38.6%)	27 (17.1%)	158	
	19	18 (51.4%)	7 (20.0%)	10 (28.6%)	35	
	20	5 (41.6%)	5 (41.6%)	2 (16.7%)	12	
	21	2 (50.0%)	1 (25.0%)	1 (25.0%)	4	
	22	1 (100.0%)	–	0	1	
	26	–	–	1 (100.0%)	1	

* p-values: Differences between similar variables measuring different constructs within the variables for all and partial PTSD combined against none

a reflection of homosexuality within school dormitories. It is therefore not surprising that there were no differences between boys and girls in terms of sexual assault.

The higher likelihood of Form 2 students being sexually abused is most likely a reflection of sexual bullying during their first year in secondary school. Witnessing domestic violence had a significant association with high-class neighbourhoods and this could be a reflection of the kind of students who go to schools located in these areas, that is mainly national schools which mainly attract students from rural areas where domestic violence is culturally tolerated.

There were significant variations in the clustering of the different PTSD symptoms (hyperarousal, re-experiencing and avoidance) on different socio-demographic variants. Re-experiencing and hyperarousal accounted for the higher levels of PTSD in Form 3. The authors have no conclusive explanation for this but it may be related to the common observation in Kenyan schools (pers. comm. with various heads of schools in Kenya) that of all the four class levels, Form 3 is the one usually associated with school unrest whenever such unrests occur.

At least four of the eight PTSD criteria for avoidance overlap with those seen in depression, a disorder that often co-occurs with PTSD in Kenyan and South African students (Seedat et al. 2004). The majority of the boarding schools and all but one of the national schools included in this study are located in high-class neighbourhoods. These national schools are also boarding schools. It is therefore not surprising that these two variants formed a significant relationships with avoidance. Children in boarding schools tend to be away from their families for a long time and are only allowed visitors on a few days over each of the three-month school sessions. The national schools attract students from diverse backgrounds: some live far away in rural areas and most of them experience a cultural shock within their own country. It is therefore more likely for anomie to develop. Pressure to perform is also highest in boarding schools and national schools. In addition, boarding schools have very strict routines. All of these factors could lead to depression in students in boarding and national schools. These are the most likely explanations for the significant association of avoidance with boarding schools and high-class neighbourhoods in which most of the national schools are located.

The authors have no explanation for the significant relationship between boys' schools and re-experiencing symptoms as compared with other PTSD symptoms, although this may also be a reflection of the similar significant association with the male gender. However, boys have been shown to be more prone to traumatic events than girls (Seedat et al. 2004) in Kenyan but not in South Africa. The Kenyan findings in the aforementioned study are replicated here as discussed earlier.

In a South African sample, re-experiencing was significantly associated with the female gender ($p < 0.003$) while there was no difference in an earlier Kenyan sample (Seedat et al. 2004). This study found the opposite to that found in the South African sample, despite use of identical instruments. With the exception of this, there were no significant gender associations in other clusters of PTSD symptoms, similar to the finding of Seedat et al. (2004) in Kenya and in South Africa.

Seedat et al. (2004) found rates of 21–24% for full PTSD and 12% for partial PTSD in South Africa, whereas in Kenya the rates were 4–5% and 8% respectively depending on gender. The findings from this study were 49.1%–57.5% and 33.7%–36.2% respectively. Thus levels of PTSD and partial PTSD in this study were much higher than those reported earlier by Seedat et al. (2004). The explanation for this variation could be in relation to the sampling method used in South African and earlier Kenyan studies. The current study used a sampling process that ensured the sample was representative, not only of Nairobi public secondary schools but also countrywide, as it included national schools that admit students from all over the country through the quota system used for selection into these schools. Therefore, the prevalence reported here is more likely to be truly reflective of the Nairobi children in particular and Kenyan children in general. The reports by Seedat et al. (2004) did not give details of the representativeness of the samples.

The high levels of PTSD and partial PTSD can be speculatively explained in several ways. The traumatic events happened more than once, starting when the respondents were toddlers and continuing through adolescence (Table 1). These events are common among people living in an urban setting (the majority of the sample were from the Nairobi area). Most of the students in the provincial schools would have lived and gone to school in Nairobi for several years before joining high school. Daily commuting by day scholars increases the incidence of being exposed to accidents. Being in an urban setting, the students have a high chance of witnessing or being victims of violent crimes unlike in a rural setting where such events are a relatively rare occurrence. Most cases of spontaneous recovery from PTSD occur within a year of the traumatic event. However, in this study, levels were higher because of vulnerability to relapse upon re-exposure.

Full PTSD and partial PTSD varied significantly across the 16 schools combined ($p = 0.000$). However, when the different variables in the schools are taken into account, some explanations for

the differences in different schools begin to emerge (Table 3). There were no significant differences in PTSD with regard to neighbourhood, school status and school gender. There was no significant difference between genders. One would have expected girls to have higher levels of PTSD than boys because of sexual abuse but media reports in Kenya suggest equally-alarming levels of sexual abuse in boys. Indeed, Seedat et al. (2004) found more boys than girls endorsed sexual trauma, and that the risk of developing PTSD following sexual assault was the same for both genders. This finding is different from the earlier finding in three Cape Town school surveys where girls reported more trauma exposures and PTSD symptoms than boys (Seedat et al. 2000). There are conflicting findings on the incidence and prevalence of gender proneness to traumatic events and PTSD. Indeed, studies from other parts of the world have produced conflicting results, some showing no gender difference in PTSD (Giaconia et al. 1995), others a greater incidence in boys (Schwab-Stone et al. 1999), while others found a higher incidence for girls (Singer et al. 1995), although these differences are most likely a reflection of differences in samples. Seedat et al. (2004) found the opposite — boys were more exposed to traumatic events than girls, compared with the 2000 findings (Seedat et al. 2000).

That boarders had significantly higher levels of PTSD but at a low level of significance, contrary to expectation. Day scholars are more likely to be re-exposed to accidents and violent crimes compared to boarders because they commute daily between school and home and are exposed to crime, especially children residing in slum areas. On the other hand, it is possible that the events that accounted for the PTSD occurred before the students went to high school and became boarders. It is also possible that being a day scholar or a boarder does not account for all variables accounting for development of PTSD. Only further studies will clarify this.

Since most of the traumatic events first occurred when the students were aged between 11 and 15 years, and since symptoms of PTSD occur after exposure, it is possible that the significant difference occurring between the class levels ($p = 0.018$) is due to high incidence of first exposure to traumatic events when the students are in the age group (11 to 15 years) and are in either Form 1 or Form 2, respectively.

Conclusions and recommendations

The high rate of traumatic events experienced by the students in this study is more representative of Nairobi adolescents than Kenyan adolescents in general. The levels of full PTSD and partial PTSD are also high. There is a wide variation across the various schools, suggesting that socio-demographic factors and the type of traumatic events experienced are important determinants of PTSD development — not merely the number of traumatic events. This study forms a baseline for future studies in Africa in the area of psycho-trauma in adolescents.

Further, the findings of this study, taken together with findings from other studies discussed, suggest a multiplicity of traumatic events that meet DSM-IV criteria for PTSD. Traumatic events checklists, while useful in providing cues for recall, may not be exhaustive. It is possible a traumatic event resulted in PTSD may be missed simply because it is not on the list.

The development of PTSD symptoms, the specific symptoms, their frequency and severity, are best understood according to a bio-psycho-social model. Each component of this model has a multiplicity of factors, and individual factors may vary from one person to another, depending on the individual's past experiences and anticipated future. All of these factors interact in a complicated manner to produce an individualised meaning (conscious or unconscious or both) for a particular event, or different events — a meaning which determines whether or not that particular person develops PTSD. It is therefore not surprising that different studies produce different results, despite fairly similar sampling instruments. Future work on determinants and predictors of PTSD should endeavour to embrace a bio-psycho-social model, as complex as it is.

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