

# Victimization and PTSD in A Rural Kenyan Youth Sample

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**Abstract:** Within the last ten years, there has been a growing number of epidemiological studies, examining the effect of trauma exposure in children and adolescents. Although studies concerning Post-traumatic Stress Disorder (PTSD) have been conducted in a wide array of different cultural contexts [1], the knowledge on traumatization and development of PTSD is still limited [2]. Most studies conducted are clinical studies, which deal with subjects that have already been traumatized or affected by specific single events such as war [3], natural disasters [1], serious accidents [4] or physical/sexual abuse [5-7]. Though research indicates that adolescents are very vulnerable to the exposure of Potentially Traumatic Events (PTEs) [8], studies targeting non-clinical youth populations and the impact of their life experiences are very few. With the increasing ethnic diversity of populations worldwide, it is of particular interest to compare the prevalence of exposure and PTSD in children and adolescents of different ethnic backgrounds. When designing preventive interventions and treatment programs for youth suffering from PTSD it is crucial to understand the complex interaction of variables behind the disorder. Differences in prevalence of exposure, PTSD and demographic variables between ethnicities may reveal some important clues to the etiology of the disease.

The present study replicated six previous non-clinical studies which were designed to provide epidemiological information about exposure to PTEs, and the prevalence of PTSD among adolescents (see Table 1). The six studies were conducted in different countries and were very similar in their research methods and samples. The studies have been conducted in four European countries: Denmark [9], Iceland, [10], Lithuania [11], and the Faroe Islands [2], as well as in two Asian countries: Israel [12], and India [13] of which the four first samples were nationally representative.

**Keywords:** Posttraumatic stress disorder, adolescents, traumatic exposure, cross-cultural research, Kenya.

## EXPOSURE AND TRAUMATIZATION IN ADOLESCENTS

### Exposure

Though studies indicate that adolescents are very vulnerable to the exposure of PTEs [8], research targeting non-clinical youth populations and the impact of their life experiences is very sparse. It has been documented that the risk of experiencing traumatic events is highest in adolescence [14] and that 25%-85% of youths report experiencing a high-magnitude traumatic event by the age of 16 [15, 16]. The six studies that the present replicated have also shown high rates of exposure, suggesting that between 77% and 90% of adolescents have been exposed to at least one PTE.

### Negative Life Events as Potentially Traumatizing Events

The DSM-IV Criterion A1 is defined as exposure to an event that involves actual or threatened death, serious injury, or other threat to one's physical integrity; or witnessing an event that involves death, injury, or a threat to the physical integrity of another person; or learning about unexpected or violent death, serious harm, threat of death or injury or threat to physical integrity experienced by a family member or other close relations [17]. Less severe but more commonly experienced life events have been examined to a much lesser

degree, even though it has been shown, that these also might be associated with PTSD symptoms [2, 9]. In order to examine the determining factors in the development of PTSD in a study both direct and indirect experiences and also some few negative life events that are not obviously traumatic were included (See Table 2).

### Traumatization

Prevalence estimates for PTSD in children and youth populations have ranged from between 3%-6% in community samples, to 60% and higher in specific high risk or at-risk samples [6]. The 5-7 year follow-up study of adolescents who survived the shipwreck of Jupiter in 1988 found that 15% still met criteria for PTSD [18]. Another follow-up study found that 33 years after a landslide in Aberfan, 29% of the children still met the criteria for PTSD [8]. In the six studies that the present replicates, between 6% and 20% of the total samples of adolescents met the criteria for PTSD while further 12% to 16% reached a subclinical level of PTSD. The highest levels of symptoms were found in the Faroe Islands while the lowest symptom levels were found in Lithuania.

Accumulative data shows that childhood and adolescence is a high-risk period in life in terms of experiencing PTEs and furthermore that this group is vulnerable to the development of PTSD after the experience of traumatic events [8, 19]. Even so, the empirical literature has offered little guidance for professional psychologists treating youths with PTSD [15]. Exposure to trauma and negative life events in

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**Table 1. Overview of Epidemiological Studies of Adolescents from Seven Different Countries**

	Subjects			Age (mean)	Direct Exposure (Mean of experienced events)	Indirect exposure (Mean of experienced events)	Direct/Indirect Exposure (%) of Subjects exposed to at least one event*			PTSD (%)			Subclinical PTSD (%)			Most frequent direct events
	Males	Females	All				All	All	All	Males	Females	All	Males	Females	All	
Elklit, (Denmark) 2001	50%	50%	390	14	2.5	3.2	78	87	82.5	5.6	12.3	9	11.2	17.4	14.1	Death of someone close, threats of being beaten & humiliation or persecution by others
Bödvars-dóttir & Elklit, 2007 (Iceland)	50%	49%*	206	14.5	2.6	3.5	79	74	76.5	12	20.3	16	11	13	12	Death of someone close, threats of violence & traffic accidents
Rhiger, Elklit & Lasgaard, 2008 (Israel)***	43%	57%	494	15.6	3.1	4.1	-	-	85	-	-	-	-	-	-	Almost being injured or killed, war & violent assault
Doman-skaitė-Gota, Elklit & Christiansen, 2009 (Lithuania)	45%	55%	183	15.1	1.9	2.4	81	80	80	2.4	9.1	6.1	8.5	15.2	12.2	Threats of being beaten, near drowning, death of someone close & robbery/theft
Petersen, Elklit & Olesen, 2010 (The Faroe islands)	46.6%	51.4%**	687	14.2	2.9	4.8	89	94	91.5	14	41	20	15	25	14	Death of someone close, threat of being beaten, humiliation or persecution & near drowning
Rasmussen & Elklit (Submitted)	53.3%	46.7%	411	14.2	2.5	3.3	85	70	78.1	10.5	8.9	10	18.7	14	16.5	Death of someone close, traffic accident & serious illness
Karsberg (Kenya) & Elklit	65.8% <sup>b</sup>	33.8 %**	477	16.4	5.6	7.2	96.3	91.8	94.76	30.5	42.3	34.5	19.8	32.2	23.8	Serious illness, death of someone close & witnessed other people being injured or hurt

\* 1% of the participants did not state their gender

\*\*2% of the participants did not state their gender

\*\*\* This study used other diagnostic frameworks than PTSD and Subclinical PTSD to measure the effect of exposure.

these formative years can potentially affect maturation, personality traits, and cause various self-injurious and suicidal behaviors, depression, or other psychiatric disturbances [8]. The above results underline the potential severe long-term effects that severely stressful circumstances can have on children and adolescents if effective treatment is not provided. As is the case with adults, once established, PTSD in

youth can be chronic and impairing. It is thus important to treat PTSD early and effectively to prevent further aggravation of the condition.

**Demographic Variables**

Originally, PTSD was conceptualized as a normal response to overwhelming psychic trauma. But because there

is growing evidence of great variations in the prevalence of PTSD following exposure to different kinds of stressors, there is increasing acceptance of the idea that exposure to a trauma may not always be sufficient to explain the development of PTSD [20]. It has been shown possible to detect certain demographic variables and ways of life that may have a strong moderating influence on the development of psychopathology. The following demographic variables were therefore included.

### Gender Differences

Gender differences have been found in relation to exposure and traumatization and have been associated with certain specific traumatic events [7]. It has been suggested that females are victimized more frequently than males in family-oriented events such as family-related violence or sexual abuse, and by self-inflicted events such as suicide attempts. On the other hand, males are suggested to be more frequently victimized than females in out-door related events such as motor-vehicle accidents [9, 16] and violent assaults [12]. It has been shown that there is an overrepresentation of females with PTSD. Meta-analytic conclusions on gender differences in PTSD across the lifespan show that females are roughly twice as likely to be traumatized by a traumatic event than males [1, 21] and three times as likely at age 16 to 24 [21].

### Family Environment

The family environment is another variable that has shown to be important to the development of PTSD in youth [22]. Findings suggest that living in a single-parent household is strongly correlated with higher levels of exposure to negative life-events and development of PTSD [11]. This may be due to lack of stable role-models, parental supervision or conflicts between the parents [7]. The often lower socio-economical status of single parents may be an influential factor as well [11].

### Age

The literature on PTSD show mixed results when it comes to age. Some studies find no differences while others have found that older children show higher levels of post-traumatic stress than younger children [1].

### Socio-economic Status (SES)

Many studies have shown low SES to be positively related to PTSD [20]. In a recent study of children and adolescents SES was indeed found to be a very significant independent correlate of PTSD [23]. But studies also exist where no correlation is found. In a study by Zwirs *et al.* [24] no association between SES and prevalence of any psychiatric disorder including PTSD<sup>1</sup> was found. Thus, it is still an area that needs more attention research-wise.

### PTSD Research in Kenya

When it comes to research on PTSD, Africa certainly seems to live up to the nickname 'the forgotten continent':

<sup>1</sup> SES was in this study measured by parents' education level. This has been criticized for being an unsatisfactory single measure of SES and may thus explain why no association was found. [30]

Africa is very poorly represented in the global mental health literature [25]. Africa is the poorest and less developed continent in the world.<sup>2</sup> With a population of around one billion people, it is a continent where millions of people suffer from hunger, disease, sexual/physical abuse, violence, and political corruption.<sup>3</sup> Some mental health practitioners working in Africa note that 'psychological trauma [...] may be so common as to be considered normal' [26]. Kenya is one of the poorest countries in the world [27]. In 2009 47% of the nation had an income below the poverty line according to the World Bank.<sup>4</sup> Life expectancy is only 54 years and combined with a massive birthrate this means that over 40% of the population are children [5]. As many as 2.1 million Kenyans are living with HIV/AIDS [5]. This is the 9<sup>th</sup> highest prevalence of the disease in a country in the world.

Judging from searches in international databases, the present study seems to be one of the first epidemiological, non-clinical study on PTSD in a youth population done in Kenya - and in the whole of Africa. It seems out of proportions that this huge continent is the least studied in relation to PTSD, since it may be the place where help is most relevant and most needed. In spite of the fact that the vast majority of people affected by potentially traumatic experiences such as war, serious illness, violence, natural disaster, torture etc. reside in less developed countries, the majority of studies in the area of PTSD have been conducted in developed countries [28]. This study aims to contribute to the cross-cultural literature on PTSD by studying a hitherto unstudied population<sup>5</sup>. It is important that we compare African results with results from the rest of the world, so that we will learn more about potential cultural influences on PTSD in these countries and in general. This will enable researchers and clinicians to make assessments and treatments more adaptive and culturally sensitive. Studies based on adolescents, young adults, and adults have shown large differences in exposure and prevalence of PTSD in various countries [9]. One explanation to this may be methodological differences. This is why cross-national studies like this where the same methodology is applied are important.

### Aim

To examine the prevalence of experienced PTEs and PTSD-like states and to investigate the relationship between experiences of PTEs, socio-demographic variables and PTSD-like states among Kenyan adolescents.

## METHODS

### Subjects

A sample of 477 Kenyan secondary school students<sup>6</sup> from three different boarding schools, one girls' school and

<sup>2</sup> Source: <http://data.worldbank.org>

<sup>3</sup> Source: [www.unicef.org](http://www.unicef.org)

<sup>4</sup> Source: <http://data.worldbank.org>

<sup>5</sup> Prior to the present, studies on PTSD have been conducted in a Kenyan context. However, they have been conducted in Nairobi and never in the rural areas of Kenya.

<sup>6</sup> Since 1985, public education in Kenya has been based on an 8-4-4 system with eight years of primary education followed by four years of secondary school and then four years of university. As an alternative the four years of secondary school can be followed by a two years diploma.

two boys' schools were selected. The students were from 13 to 20 years old and had a mean age of 16.4. The gender distribution was 161 (33.8%) girls and 314 (65.8%) boys (two students did not state their gender). There was an average of around 50 students per class. 473 (98.8%) students stated with whom they live when not at the boarding-school: 140 (29.6%) lived with both parents, 289 (61.1%) lived with one of their parents and 44 (9.3%) had other arrangements such as living with uncles, siblings, grandparents or other relatives.

The three boarding schools were located in central and northern Kenya in the towns of Dol Dol and Archer's Post. The two schools in Dol Dol, St. Francis Girls and Dol Dol Boys, were provincial schools and this means that a certain academic level is required to be accepted. Uaso Boys' School in Archer's Post is a district school, the lowest academic level in Kenyan secondary schools. It is the impression of the authors that the physical and environmental conditions of these three schools were quite typical for the larger part of the schools in Kenya. Although it has to be said that there are schools in the bigger cities of Kenya with higher standards both academically and resource-wise.

### Procedures

The study was approved by the Assistant District Education Officer of Laikipia North District, and also by the headmasters of the three boarding schools. A pilot study with 7 respondents at the age of 13-14 was first conducted in the city of Nanyuki. From the pilot study it was obvious that the students had some language difficulties and that the questions to be answered by scales caused some trouble. It was a strong tendency that the students answered in the extremes in Likert scale-type questions. As an example, if the question was: 'I am comfortable depending on others' and the students had to answer from a scale that ranged from 1 to 5. 1 being 'not at all characteristic of me' and 5 being 'very characteristic of me', then all of the seven students had a strong tendency to answer either 1 or 5. This was apparent throughout all scales. Therefore, in the actual study, the first author made a great effort of explaining the system of the scales and also to create an atmosphere, where there was no such thing as stupid questions.

The students filled out a questionnaire package containing questions concerning demographic variables, exposure to traumatic events along with the psychological impact of these events. The questionnaires were filled out in the classroom. The students were informed that their answers were anonymous; that it was voluntary to participate and they were asked to answer as truthfully as possible, in spite of the somewhat uncomfortable subject. An average of 15-20 minutes was spent on introduction and explanation before the students were asked to fill out the questionnaires. The students spent approximately one and a half hour filling out the questionnaires. The researcher requested that the headmaster of all three schools would spare one or more teachers for each class so that they would be able to answer and explain the questions that the researcher was not able to and indeed the teachers were very helpful with this. The students did not seem uncomfortable answering the questions and the teacher encouraged them to answer honestly and tell everything. Only a few students covered their papers with the hand or

**Table 2. Socio Economic Data (%)**

Lives with (N=473)		
Both parents	29.6	
One of the parents	61.1	
Other arrangements	9.3	
Assets in Household (N=477) Running Water, Car, Bicycle, Electricity, tv		
None of the assets	17.6	
One of the assets	32.1	
Two of the assets	18.2	
Three of the assets	13.2	
Four of the assets	9.7	
Five of the assets	13.2	
Meals Per Day (N=471)		
One meal	10.2	
Two meals	53.3	
Three or more meals	36.5	
Parents Education Level (N=438)		
	Mothers	Fathers
No education	48.8	44.3
Primary school	23.4	19.6
Secondary school	19.3	18.3
Diploma	5.9	10.3
Bachelor's degree	2.4	3.2
Master's degree	0.2	4.3

turned away. The students were given pens and calculators as an appreciation of their help.

### Measures

The first part of the questionnaire contained questions about demographic variables such as gender (1=males, 2=females), age (1=13 years, 2=14 years, 3=15 years, 4=16 years, 5=17 years, 6=18 years) and living arrangements when not living at the boarding school (1=living with one parent, 2=living with both parents, 3=other arrangements). The validity has been questioned when using children and adolescents evaluation of parents' education level as the only measure of Socio-Economic Status (SES) [29]. Therefore, the students were asked about several circumstances in their family household that were used as rough measures of SES to add to the validity of the measure: not only parents' education level (1=None, 2= Primary School, 3=Secondary School, 4=Diploma, 5=Bachelor's Degree, 6=Master's Degree) but also number of meals a day and assets in household. The measures number of meals a day and assets in household were inspired by measures used in cross-cultural research done by Aarø *et al.* (2009). The students were asked to tick off how many meals a day they are used to have in their household (1=one meal, 2=two meals, 3=three or more). The students were also asked how many of the following five assets they had in their household: running water, electricity, car, bicycle and TV. (0=none, scores from 1 to 5 = number of assets).

The last part of the questionnaire contained a list of 20 PTEs (see Table 2) where the students were asked to point out which of these they had been exposed to (direct exposure), and which they had witnessed or heard someone being exposed to (indirect exposure). This list of events was selected on the basis of prior research and clinical experience covering both events that meet the DSM IV A1 Criterion and also some potentially negative life events such as pregnancy/abortion, divorce, being bullied, and absence of a parent. These negative life events were included because it has been shown that not only experiences that meet Criterion A1, but also other intense negative experiences in the family environment can be associated with traumatic responses in adolescents [9]. Psychometric data is not yet available for the negative life event measures but data from the previous six studies supports that the events included in the 20 item questionnaire are frequently experienced by youths across nations and cultures and that they are potentially traumatizing [7].

The students were asked to pick out the event that they regarded as being the most stressful. The Harvard Trauma Questionnaire Part IV (HTQ) [30] was used to determine the level of PTSD at the time after this event. The HTQ consisted of 31 items, of which the first 17 correspond to the PTSD-symptoms in the DSM-IV. In the analysis of variance, HTQ total, which was the sum of the first 17 items, was also used as a measure for the degree of PTSD symptomatology. The items were scored on a 4-point Likert scale (1= not at all, 4= extremely). Since diagnostic interviews were not performed the PTSD scores were not fully diagnosed and can therefore only be an estimate. HTQ Part IV measures the intensity of three symptom groups of PTSD: Intrusion (criteria B), Avoidance (criteria C) and Hypervigilance (criteria D). To meet the diagnostic criteria for PTSD it is necessary to have symptoms from all three symptom clusters; at least one symptom from the Intrusion symptom cluster, 3 symptoms or more from the Avoidance symptom cluster and 2 symptoms or more from the Hypervigilance symptom cluster. A subclinical level of PTSD is reached if two out of three symptom clusters are present and if the last criterion is only missed by one symptom. The criterion for the Intrusion symptom cluster must, however be met, since only one symptom is needed to meet this. Good validity and reliability on HTQ has been reported cross-culturally [30, 31] in very culturally diverse countries, although it seems that certain items may carry different meanings across cultures. E.g. the item referring to "not being able to remember the traumatic experience well", have been shown to have low item-total correlations [31]. The cross-cultural validity of HTQ Part IV has been tested in at least two African settings; West Africa and South Africa [32, 33] Both studies found relatively poor results and proposed that caution is advised when analyzing the results of the HTQ when used in an African cultural context. However, it was hypothesized 1) that the long introduction of explaining scales and psychological terms in each class, 2) that it was possible to ask questions - both to the researcher but also the teachers, 3) that the official language of Kenya is English and that the country has a long history of colonial influence - would have a positive influence on the validity of the HTQ results in the present study. The internal consistency of the HTQ scale was acceptable with a Cronbach Alpha of .75. As the internal consistency of the

three subscales: intrusion, avoidance and hypervigilance, were below .70, these were not used in the analyses.

## RESULTS

### Socio-economic Measures

438 (91.8%) of the students stated their father's education level and 461 (96.6%) stated their mother's education level (see Table 2). Of these 44.3% of the fathers and 48.8% of the mothers did not have an education, 19.6% of the fathers vs. 23.4% of the mothers finished primary school, 18.3% of the fathers vs. 19.3% of the mothers finished secondary school, 10.3% of the fathers vs. 5.9% of the mothers finished a diploma, 3.2% of the fathers vs. 2.4% of the mothers had a Bachelor's degree and finally 4.3% of the fathers vs. 0.2% of the mothers had a Master's degree.

Of 477 (100%) students 17.6% did not have any of the five assets, 32.1% did only have one of the assets, 18.2% had two of the assets, 13.2 had three of the assets, 9.7% had four of the assets and 13.2% had all five assets. Out of 471 (98.7%) of the students, 10.2% were only used to getting one meal a day, 53.3% usually got two meals a day and 36.5% used to get three meals a day or more.

Considerable differences were found between the three schools, especially in terms of socio-economic differences. Of the girls from St. Francis, 19.9% had a father with no education while 57.7% and 47.2% of the boys from Dol Dol Boys' School and Uaso Boys' School respectively had a father with no education. Of the girls from St. Francis, 28.6% had a mother with no education, while 53.4% and 61.8% from Dol Dol Boys' School and Uaso Boys' School had a mother with no education. Of the girls, 48.4% had three meals or more each day while this was only true for 32.1 % of the boys from Dol Dol Boys' School and only 26% of the boys from Uaso Boys' School.

### Exposure

A total of 94.8% (boys=96.3%, girls=91.8%) of the students reported having been directly or indirectly exposed to a PTE (see Table 3). The distribution in prevalence of exposure to a single event or more was equal between the two genders. The mean number of direct experienced PTEs was 5.6 events: 0 events= 10.4%, 1 event= 9.2%, 2 events= 10%, 3 events= 7.9%, 4 events= 8.1%, 5 events or more= 54.4%. The average of indirect exposure was 7.2 events. There was a significant gender difference in the average of direct exposure ( $F= 4.56$ ;  $P < .0005$ ) with boys' average being 6.2 events and girls' average being 4.4 events. The most frequent direct events recorded were: serious illness (55.3%), death of someone close (54.3%), witnessed other people being injured or hurt (38.6%), being close to being injured or hurt (37.9%) and absence of a parent (37.5%). Least, but yet remarkably prevalent, was rape (10%), pregnancy/abortion (14%) and suicide attempt (15%). The males had the highest rates of exposure on all items including rape, sexual abuse, and being responsible for a pregnancy/abortion. There were significant differences in the gender distribution in many of the items. The largest differences were found in witnessed other people getting injured or killed, came close to being injured or killed, near-drowning and severe childhood ne-

**Table 3. Trauma and Negative Life Events According to Exposure and Gender and Statistical Gender Differences Based on  $\chi^2$  Analyses**

Events	Direct Exposure (%)			Indirect Exposure (%)		
	Males (n=161)	Females (n=310)	All (n=471)	Males (n=161)	Females (n=310)	All (n=471)
1. Traffic accident	11.8	22.6	19.0 <sup>3</sup>	53.4	49.0	50.3
2. Other serious accidents	23.6	14.9	20.7 <sup>1</sup>	36.0	40.8	38.8
3. Physical assault	19.9	23.9	22.5	23.0	26.8	25.5
4. Rape	6.8	11.5	9.8	23.6	34.4	30.5 <sup>2</sup>
5. Witnessed other people being injured or killed	24.2	45.9	38.4 <sup>5</sup>	34.2	49.7	44.3 <sup>4</sup>
6. Came close to being injured or killed	26.1	43.9	37.8 <sup>5</sup>	28.6	42.0	37.4 <sup>3</sup>
7. Threatened to be beaten	31.1	35.7	34.0	24.2	38.9	33.8 <sup>4</sup>
8. Near-drowning	14.3	27.7	23.0 <sup>5</sup>	23.0	31.2	28.2
9. Attempted suicide	11.2	17.5	15.2	28.6	36.0	33.2
10. Robbery/theft	29.8	36.3	33.8	43.5	51.0	48.0
11. pregnancy/abortion	10.6	15.6	13.8	32.3	43.3	39.2 <sup>1</sup>
12. Serious illness	49.7	58.0	54.9	51.6	54.8	53.4
13. Death of someone close	52.2	55.7	54.1	50.3	54.8	52.8
14. Divorce	24.2	31.8	29.0	35.4	42.4	39.7
15. Sexual abuse	12.4	23.9	19.8 <sup>4</sup>	23.6	36.3	31.7 <sup>3</sup>
16. Physical abuse	22.4	30.6	27.8 <sup>1</sup>	22.4	33.1	29.4 <sup>2</sup>
17. Severe childhood neglect	14.9	30.9	25.3 <sup>5</sup>	27.3	34.7	31.9
18. Humiliation or persecution by others (bullying)	28.0	34.7	32.2	29.8	36.9	34.2
19. Absence of a parent	34.2	39.2	37.4	32.9	38.5	36.5
20. Other traumas	4.3	11.1	8.8 <sup>3</sup>	5.0	13.4	10.4 <sup>4</sup>

<sup>1</sup>  $P < .05$ ; <sup>2</sup>  $P < 0.01$ ; <sup>3</sup>  $P < 0.005$ ; <sup>4</sup>  $P < 0.001$ ;

<sup>5</sup>  $P < 0.0005$

glect, where the prevalence of exposure were much higher for the boys than the girls.

### Traumatization

Of the total sample 34.5% met the criteria for PTSD; 30.5% of the boys and 42.3% of the girls. Nine students equalling 1.9% of the total sample, met the criteria for PTSD without ticking off direct or indirect exposure to a PTE. A further 23.8% reached the level of subclinical PTSD; 19.8% of the boys and 32.2% of the girls, missing the PTSD diagnosis by one symptom from either the C or D cluster in DSM IV. Of the St. Francis girls 42.3% met the criteria for PTSD. The prevalence of estimated PTSD was 31.6% for the Dol-Dol boys and 28.3% of the Uaso boys.

### Demographic Variables

To examine the relationship between certain demographic variables and PTSD symptomatology, an analysis of variance between HTQ total as the dependent variable and demographic variables as independent variables, was carried out (See Table 4). Age, education of the parents, not living with two parents, meals a day and assets in household were not significantly related to PTSD symptoms. The female gender was positively and significantly associated with a

high HTQ score ( $F = 6.11$ ;  $P < .05$ ; effect size = .08; mean HTQ total: girls = 38.8; boys = 36.6). The total numbers of indirect and direct exposure to PTEs were significantly related to PTSD symptomatology ( $F = 1.99$ ) and ( $F = 2.24$ ) respectively.

## DISCUSSION

### Exposure

As expected, the results show that adolescents in Kenya are exposed to PTEs to a very high degree. Of all the respondents, 88% had been directly exposed to a PTE and 94.8% (91.8% males and 96.3% females) had been directly or indirectly exposed to a PTE. These numbers are, as expected, higher than previous findings in similar studies, where the prevalence of exposure ranges between 76.5% and 90% for at least one indirect or direct exposure in the total sample. In agreement with the predictions of the study, the results showed that Kenyan adolescents are exposed to several PTEs ( $M = 5.6$  events). The Kenyan adolescents were somewhat older than the adolescents from the other 6 surveys; however, this cannot fully explain the much higher level of exposure reported by Kenyan adolescents compared to adolescents from other parts of the world. The high prevalence of exposure is much in line with an extensive research

study of 990 adolescents conducted in Eastern Democratic Republic of Congo [34]. Here 95% of the students reported having been exposed to at least one traumatic event, and on average, the adolescents had been exposed to 4.7 traumatic events. Also in the Congo study, the boys had significantly higher exposure rates than the girls.

Experiences that we in the Western world would consider being potentially severely traumatizing such as rape, physical abuse and sexual abuse, were not uncommon in Kenyan youth. Ten percent of the students reported having been directly exposed to rape, 20% had been exposed to sexual abuse and 28.7% had been exposed to physical abuse (See Table 3).

The most frequently experienced PTEs were somewhat similar to those in the previous six similar design studies. 37.9% - 55.3% of the total sample of Kenyan youths had experienced serious illness, experienced the death of someone close, witnessed other people being injured or hurt, came close to being injured or hurt and/or experienced the absence of a parent. That serious illness has been experienced by more than half of the subjects can partly be explained by the high prevalence of HIV, malnutrition, and starvation in the country. Because the mortality rate in Kenya is very high, experiencing the death of someone close and not living with your biological parent can also be considered common experiences - even in youths. In 2007 and 2008, a political and financial crisis erupted in Kenya. As a result of this, riots broke out and over 1200 people were killed, thousands were injured, and up to 300.000 people were displaced [35]. Additionally, brutal fights between tribes over their grazing rights or other usage of land are taking place all over the country currently [36]. Because of an explosive population growth there is increasing conflict over the few available resources such as grass and water for the livestock. This leads to increasing intertribal conflict and poverty. This conflict is especially an issue in the area where the present study was conducted. These circumstances above may partially explain the high prevalence of exposure to violence and death among the Kenyan adolescents. Even so, death of someone close and experiences of violence were also two of the most prevalent experiences of adolescents in the previous six studies. There may be different reasons and explanations behind the potentially traumatizing experiences of Kenyan youths, than in e.g. the Danish or Indian youths. But looking at the general picture, it seems to be a universal condition for adolescents, that the prevalence of exposure to death and violent behavior is high. This may even be viewed as a normal part of being a human being. However, prevalence and frequencies of other experiences and the level of traumatization vary decidedly between nations and this underlines the importance of examining the traumatic experiences of adolescents in different cultural contexts.

The event questionnaire has not yet been validated but it seems to function well across European and Asian cultures [9,13]. In the present study the events also seemed relevant. All events were endorsed by the students with a remarkable prevalence. In the event questionnaire there are a few lines where it is possible for the students to write other crisis related events that they think are important. This opportunity was not used by many in the present study, and when the

students wrote down something else it was most often to explain an aspect of one of the already existing events or to explain an event where more than one event happened at the same time. No event was consistently reported as an additional crisis-event. This could imply that the events in the questionnaire are sufficient to explain potentially traumatizing exposure in the Kenyan adolescents.

### Gender Differences in Exposure

In previous studies, it has been hypothesized that females are generally more exposed to intra-familial PTEs and that boys are more exposed to out-of-home PTEs [9]. However the present data suggest that Kenyan boys are more directly exposed than girls to all PTEs with the exception of serious accidents and more indirectly exposed than girls with the exception of traffic accidents. Thus, the outcome does not support the hypothesis about gender specific exposure.

A fairly large proportion of the boys reported direct exposure to pregnancy/abortion which seems quite peculiar. The most obvious explanation is that the boys reported pregnancies where they were directly involved. Also, when a boy in Kenya impregnates a girl, it is often forced on him to marry the girl and to take full responsibility of his actions, or alternatively to raise money for an early abortion. Kenya is a very patriarchic society and being the head of the family is demanding both economically and responsibility-wise. Because there are a lot of negative circumstances automatically related to getting a girl pregnant, especially for a young boy, it may be reported as direct exposure to a PTE. In a Western frame of mind, we would expect that issues such as rape and sexual abuse would be more prevalent in females than males. Even so, the present results are comparable to the Indian study where the males also reported higher exposure to rape and sexual abuse than the females [13]. Some boys could have misunderstood the purpose of the question and may have reported their own direct experience of sexually abusing, impregnating or raping another person. The boys in the present study have considerable lower socio-economical means than the girls, which is a possible influential factor as well. An additional explanation of the higher reports of sexual abuse and rape in Kenyan males than females may be found in that the majority of people in Kenya regard sex before marriage as being wrong and a girl in these countries may be rejected (by the family or society) or regarded of less value if she has had sexual relations before she is married whether it is her own fault or not [37]. The same, however, is not the case for the boys. Therefore, girls may be more reluctant to report sexual abuse or rape than males in these countries. A final notion is, that sexual abuse, as stated in the sexual offences act from Kenya in 2006, is defined as sexual contact with a girl under the age of 16 and sexual contact with a boy under the age of 12 [5]. It may be, that even though the official laws of the country does not condemn sexual contact with a boy above the age of 12, the influence of international media creates an awareness in the adolescents so that an officially legal (and widely practiced) behavior, is still reported as rape or abuse.

Overall, data indicate that Kenyan boys are exposed to many more PTEs than Kenyan girls. This is also confirmed by the gender differences in average of exposure. The Kenyan boys had been directly exposed to an average of 6.2

events and the girls' average of exposure was 4.4 events. The general tendency of boys being more exposed than girls has also been found in the Indian study [13] and may be explained by certain specific cultural norms and restrictions. Also it may be an expression of either a cultural heightened focus on protection of girls in these countries, a lessened focus on protection of boys, or a combination of both. If one would want to lower the potentially traumatic exposure of Kenyan boys and girls these cultural norms would be a recommendable focus area.

### **Traumatization**

The present results suggest that more than a third of all Kenyan adolescents fulfill the symptom criteria for PTSD. Of the students, 34.5% fulfilled the criteria for estimated lifetime PTSD and another 23.8% reached a subclinical level of PTSD.

As predicted, the prevalence of estimated PTSD in this study was high compared to the previous six similar studies. When looking at the prevalence in the only former Kenyan studies, the estimated prevalence of PTSD in this study seems to be an extraordinary find. In a comparison between the effects of terrorist bombings in Nairobi and Oklahoma City, the prevalence of PTSD was 10.2% in Kenyan men and 14.2% in Kenyan women, respectively [25]. In yet another study, the prevalence of PTSD was estimated to be 5% in Kenyan youths from Nairobi schools [16]. However, in a recent study from Congo a much higher prevalence of PTSD among adolescents was found: Of 990 respondents, 52.2% met the symptom criteria for PTSD. In this study adolescents from the rural areas were significantly more exposed to potentially traumatic events and the girls from rural areas had a significantly higher prevalence of PTSD than the girls from urban areas. This may partially explain the present high prevalence found in Kenya. Studies from Nairobi are, not likely to be representative for all of Kenya. Only around 3 million people out of the whole Kenyan population of approximately 40 million people live in Nairobi and the conditions of the rest of the population, of which the vast majority (around 20 millions) are farmers, are very much different than those of the people living in the capital. The schools in Nairobi are generally better and support and information are generally easier to come by here, than in the rest of the country and this may have a preventing and protective effect against traumatization. Also, people in Nairobi are not as affected by drought, disease, and hunger as people who live in the rural areas of the country. Since the present study has been conducted in small villages in rural areas, it seems reasonable that the PTSD prevalence in the present study is higher than in studies that only examines subjects from metropolises like Nairobi. Studies measuring the prevalence of PTSD in HIV-infected individuals from Nigeria and South Africa estimated the prevalence of stigma-related PTSD to be 27.4% in Nigeria [38] and 31% in South Africa [39] - figures that correspond very well with the findings of the present study. Since Kenyans from rural areas of the country are more vulnerable to and plagued by risk factors such as diseases, starvation and other health-related problems, one explanation of why the prevalence of these studies are more similar to the prevalence in the present study may be that the living conditions of these HIV-infected individuals from

Nigeria and South Africa are more similar to the living conditions of Kenyans who live in rural areas, than those of Kenyans who live in Nairobi. Generally, there is a tendency that African studies on traumatization and other health-related issues are conducted in the bigger cities of the country [40,25]. Because of the big differences between the lives of farmers and workers and the living conditions in the city and the rural areas, and because the majority of people in most African countries live in rural areas, this may give us a biased impression of the real situation of whole population. In conclusion, considering that the major part of Kenyans live in rural areas and that the conditions in Nairobi are different from those of the rest of the country, the estimated prevalence of PTSD in the present study may be more representative of the present situation in Kenya than the lower prevalence measured in previous studies from Nairobi. Ultimately, because of the big differences a study that examines the situation in both the rural areas and the bigger cities must be the optimal future solution.

It has to be noted, that the internal consistency of the three subscales intrusion, avoidance and hypervigilance were not satisfactory, and the scales were therefore discarded. A further examination of the inter-item correlations made it clear that these low values were not a result of problems with one or two specific questions. There were weak inter-item correlations in most of the HTQ items within the subscales. This could imply one of two things: 1) that the students did not fully understand what they were asked or 2) that their experience of symptoms and understanding of symptoms are different from those which the HTQ is founded on. The HTQ is originally founded on data from adults and there is no reliability and validity data for adolescents [2] or Kenyan subjects yet. It was obvious from the study that Kenyan adolescents were not used to thinking in scales and they were prone to answer in either-or. On several occasions the author was told by local teachers that it is a distinctive cultural feature in Kenya that people think in absolutes. This is a problematic issue when conducting a questionnaire package that is mainly founded on scales. Furthermore, even though good reliability and validity has been reported cross-culturally, there is still some doubt whether all the items of HTQ are generalizable to all cultures [31-33]. It seems likely that the prevalence of PTSD in the present study could be somewhat affected by the low internal consistencies. Furthermore, the measures used to estimate PTSD in this study did not include a diagnostic interview and it has not been assessed whether there was an overall impact on the level of functioning (Criterion F). This may have produced more (or less) cases of PTSD than would have been assessed in a true diagnostic setting.

### **Gender Differences in Traumatization**

A considerable amount of research shows that women have higher rates of PTSD than men [41, 42]. In line with this, most of the previous six similar studies on traumatization in youth find that female adolescents at least twice as often as males meet the criteria for PTSD [2, 9-11]. In the Indian study though, no significant gender differences were found [13]. In the present study significant gender differences were found. 30.5% of the boys and 42.3% of the girls met the criteria for PTSD. 42.3% of the St. Francis girls, 31.6% of the Dol-Dol boys and 28.3% of the Uaso boys met

**Table 4. Analysis of Variance Between Demographic Variables and Severity of PTSD**

	F-Ratio Values	df	Effectsize ( $\eta^2$ )
Gender	6.111	1	0.08
Age	1.46	7	0.03
Education father	0.33	5	0.01
Education mother	1.23	5	0.02
Not living with both parents	1.20	3	0.01
Meals a day	2.53	2	0.01
Assets in household	1.64	4	0.02
Tribe	1.18	7	0.03
Number of direct events experienced	2.243	20	0.12
Number of indirect events experienced	1.992	20	0.11

p < 1) .05 2) .01 3) .005

the criteria for PTSD. Since the schools are gender divided, it is hard to say whether this difference is a result of the school environment or gender differences. But, considering the socio-economic advantage of the girls from St. Francis, and the fact that St. Francis is the school at the highest level academically, it seems likely that the difference in the prevalence of PTSD is rather an expression of the female vulnerability that has been shown to exist in the area of PTSD.

In a study by Norris, Perilla, Ibanez & Murphy [42] it is suggested that gender differences in symptoms of PTSD may be related to cultural issues such as gender roles. Their theory is that cultures that are more traditional in terms of gender roles, will amplify gender differences in PTSD. Compared to the countries of the previous similar design studies, Kenya and India [13] are very traditional countries when it comes to gender roles. According to the theory then, there should be larger gender differences between the PTSD symptomatology of Kenyan and Indian youths than there were in Danish, Icelandic, Lithuanian and Faroese youth. However, this was not the case. In Lithuania and the Faroe Islands the gender ratios were 1:4 and 1:3 respectively. The gender ratio in Denmark and Iceland was 1:2 and the Kenyan and Indian was 1:1 ½ and 1:1 respectively. The above theory is thus not supported neither in the present study nor in the Indian study. A possible explanation for the relatively small gender difference in PTSD prevalence reported by Kenyan adolescents could be that the girls of St. Francis were shown to have considerable socio-economic advantages over the boys from the two other schools; their parents were better educated and they had more meals a day. A fair assumption could be that the differences in socio-economic conditions between the genders has diminished the gender-differences in prevalence of PTSD. An interesting question therefore arises: Would the gap between genders in the prevalence of PTSD be larger, if the females did not have this advantage? Furthermore, a common denominator in collectivistic societies is an extensive protection of girls and a more *laissez faire* upbringing of boys. Parents in collectivistic societies tend to be particularly concerned about their daughters behavior [43]. In these societies, womens' and girls chastity are the keys to the family's honour [44, 45]. Parents therefore place greater restrictions on their daughters' social activities than their sons' activities [43]. In accordance with this,

Males in India and Kenya seem to be much less protected than the females and thus more vulnerable to traumatization. Thus, cultural specific circumstances such as parenting norms, could additionally potentially diminish the gender differences in PTSD.

#### Socio-demographic Variables

As shown in Table 4, the hypotheses regarding gender differences and number of experienced PTEs being related to PTSD symptomatology were confirmed. Not living with both parents was not significantly related to PTSD symptomatology as expected. Neither were age, parents' education, meals a day or assets in household. It has been hypothesized that children and adolescents in the absence of a parent may be more vulnerable to traumatization because of a lack of a stable role model or a stable home environment [9]. In Kenya, many men have more than one wife. This means that in case of one wife's death, there will still be someone to take care of the children and someone to serve as a female role model. Also, often the families live close together in large numbers with uncles, aunts, adult siblings, grandparents, and so on. This may also function as a protective factor if one of the biological parents of the children dies or leaves. These circumstances may explain why children in Kenya seem not to be as vulnerable to this transition as children in other countries.

A reason why there is no significant relation between socio-demographic variables such as parents' education, meals a day, assets in household and PTSD symptomatology may be that adolescents in Kenya are not more protected from exposure to traumatizing events even though they are better off socio-economically. Diseases, violence, sexual abuse, rape, and serious accidents are influencing Kenyan adolescents no matter their socio-economical situation, and these risk factors seem more determining than the protective effect of socio-economical circumstances.

#### Limitations

There are several limitations to be considered in the present study: With the aim of making the study as representative for Kenya as possible, the study has been conducted in three different schools in rural areas of central and northern Kenya. However, as argued, it would be optimal to also in-

clude subjects from larger cities. The study relied on self-reports which may have produced some bias. The students were sitting close in the classroom and some of their teachers were present. This may have affected the way they answered. It was obvious from the pilot study and also the actual study that certain psychological terms and answering in scales were new to the students. Also, even though English is the official language of Kenya, there were certain items that needed to be translated to local languages. And, because some subjects are taboos in Kenya, it may have been hard for the students to answer truthfully. This notion is, however, not supported by the relatively high rates of sexual abuse and rape reported by the students. It has been suggested that individuals in poverty-stricken societies may be motivated to report symptoms of psychological distress in the hope of gaining resources [46]. There was an open question in the end of the questionnaire, where the students could write anything that came into their minds. Some of the students asked for sponsorship, money or help in any other way. If the students believed that it would strengthen their cause to report symptoms that were worse than in reality, this may be a big bias in the study. The internal consistency of the HTQ scale was not as good as could have been wished for. This may have been caused by language difficulties, problems in understanding specific psychological terms, or it may have been because Kenyan people have a different way of conceptualizing and experiencing psychological symptoms than the conceptualization and experiences of the people on which the HTQ is founded. And finally, the construct of the event questionnaire has not yet been validated and since it is originally based on clinical experience and research that is primarily founded in a European context, it is still questionable if the items are adequate in the cultural context. Nine students met the symptom criteria for PTSD without ticking of any experiences of PTE's and this could imply that the students may have had traumatic experiences that were not included in the event list. However, in the present study all events were experienced by the students with a high prevalence and the open item "other traumas" were mainly used to add aspects to events that had already been ticked off. This supports the relevance of the 19 chosen event-items. It is a concern that some students may have reported direct experiences of sexual abuse, rape and violence as perpetrators which was not the intent of the questionnaire. This issue needs to be addressed in the future with a more thorough description of direct and indirect exposure in the questionnaire.

## CONCLUSION

There is increasing evidence to suggest that experiencing PTEs is a condition in life for most adolescents. Kenyan adolescents seem to be particularly vulnerable in regard to exposure and traumatization compared to adolescents from other nations. Experiences that would be considered uncommon and highly traumatizing in Western societies were not uncommon experiences for Kenyan adolescents. Ten percent of the students reported having been directly exposed to rape, 20% had been exposed to sexual abuse and 28.7% had been exposed to physical abuse. The Kenyan boys reported the highest rates of exposure in all items. It was suggested that in general, Kenyan boys may be less protected than Kenyan girls, something which has made them more vulnerable than

girls towards experiencing PTEs of every kind. Of the Kenyan students, 34.5% fulfilled the criteria for estimated PTSD and another 23.8% reached a subclinical level of PTSD. In concordance with previous research, girls were found to be more vulnerable towards the development of PTSD having experienced a PTE. Vulnerability was also connected to the number of direct and indirect experienced PTEs. No associations between socio-economic status, age, tribal relations and PTSD were found, and in contrast to previous similar studies living in a single parent household was not associated with an increase in trauma symptoms either. Among other explanations it was suggested that the Kenyan family structure may be a protective factor towards the experience of abandonment or death of a parent and that a higher socio-economic status in Kenya may not be protective against traumatization because severe PTE exposure is present in the lives of a major part of the population and thus affects all layers of the society. Problematic issues in the present study, underlines the need for culture-specific and locally developed measures when measuring psychological symptomatology in non-western settings. Certain Kenyan culture-specific features may have biased the outcome of the study. However, small variations in the results does not change the overall conclusion that Kenyan adolescents living in rural areas seems to be very vulnerable towards exposure to multiple potentially traumatizing events and that many Kenyan adolescent are indeed very negatively affected psychologically by these experiences.

## CONFLICT OF INTEREST

The author(s) confirm that this article content has no conflicts of interest.

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