

## **Prevalence and Severity of Post-Traumatic Stress Disorder among Adolescents Living and Attending Schools in Informal Settlements in Kajiado North sub-county, Kenya.**

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### **Abstract:**

Adolescents living in informal settlements are likely to be exposed to multiple traumatic events, which may lead to the development of psychological disorders such as posttraumatic stress disorder (PTSD). The purpose of this study was to determine the prevalence and severity of PTSD among adolescents who attend selected public primary schools and reside in informal settlements in Kajiado County, Kenya. Two purposively selected primary schools in Ngong Sub-County were studied. A total of 698 respondents met the criteria of being 10 to 14 years old in grades 5, 6, and 7. These respondents filled assent forms and were screened for PTSD using the Child PTSD Symptom Scale self-report (CPSS-SR-5) with a cut-off point of 31 for the purposes of this study. Analyses of data revealed the overall prevalence of PTSD among the respondents screened at baseline to be 40.8 % (95% CI= 37.2 - 44.3). Further, the prevalence of PTSD among males was found to be higher (41.9%) than among females (39.7%) with a proportion of 0.3, ( $p < 0.001$  one sided). With regard to severity, 34.4 % of the respondents had moderate PTSD while 26.2% had minimal PTSD. The respondents who had severe PTSD levels were 20.8% while 15.8% had mild PTSD. Only 2.9% of the respondents had very severe PTSD symptoms above 61. The prevalence of PTSD among children who were 10 years old was found to be 42.2% while that of 11 year olds was 49.2%. Among the 12 year olds, the prevalence of PTSD was 39.6% with 13 and 14 year olds having a PTSD prevalence of 35.5 % and 41.7% respectively. These findings indicate that adolescents living in informal settlements can be considered a vulnerable group with regard to posttraumatic stress disorder. There is therefore need for psychological interventions in schools to support this group of adolescents.

*Key Words:* Post Traumatic Stress Disorder, Trauma, Prevalence, Severity, Adolescents and PTSD, PTSD in Informal settlements in Kajiado

## **Introduction**

Trauma has become an area of interest to health practitioners since studies have indicated that exposure to trauma affects brain development, information processing, school enrollment and performance of adolescents (van Niekerk & Roets, 2017). The effects of trauma have been consequently found to lead adolescents to adopt some behaviors such as drug abuse, irresponsible sexual behavior and joining criminal groups, which put their health and lives at risk (Reeves, 2017). Such risky behaviors have been noted to result to disease, disability and social problems, often leading to early death.

On the other hand, urban informal settlement residency may increase childhood traumas (Meinck, Cluver, Boyes & Mhlongo, 2015). In an earlier study, Karandagolle (2014) asserted that there was plenty of documented evidence which confirmed that growing up in poverty in an informal settlement was likely to lead to individuals developing negative personality characteristics, skill deficits and problems with motivation. The skill deficits in turn are often likely to make the young in the community vulnerable to various problems. Some of the problems may include problems of achievement and those of mental health such as posttraumatic stress disorder. With traumatic events being common in informal settlements, adolescents living in such environments are likely to develop not only the skill deficits but also various mental illnesses such as PTSD resulting from exposure to traumatic events.

According to a World Health Organization survey, upper middle-income and lower middle-income countries were found to have a lifetime prevalence of PTSD of 2.3% and 2.1% respectively (Koenen, Ratanatharathorn, Ng et al., 2017). In an analysis of 71,083 respondents drawn from 26 population surveys in the WHO World Mental Health Survey, Koenen et al. (2017) found the cross-national lifetime prevalence of PTSD to be 5.6% among the population exposed to trauma and 3.9 % in the total sample. These prevalences were relatively low possibly because they were for general populations not constantly exposed to traumatic events.

Further, based on a diagnostic interview data in a National Comorbidity Survey Adolescents Supplement, only 5% of adolescents had PTSD with 1.5% having severe impairment (Kessler, 2017). The same study revealed that the female respondents generally had higher lifetime prevalence for PTSD (8.0%) than males (2.3%). According to Wilson and Joshi (2018),

approximately 4% of children and teens in the United States of America are affected by PTSD, even though only 18% of surveyed pediatricians felt they had adequate knowledge on pediatric PTSD. Contrasting these prevalence levels in North and Central America, the DSM-5 (American Psychological Association, 2013) noted that in Europe, Asian, African and Latin American countries, the rates of PTSD were much lower at 0.5 -1.0% in the general population.

Further, findings of prevalence studies revealed rates ranging from 33 percent to more than 50 percent of those exposed among individuals in the military, those affected by genocides (such as the 1994 Rwanda Genocide) and survivors of rape. In Africa, Atwoli, Stein, Koenen and McLaughlin (2015) reported a lifetime prevalence of 78.3% such as was reported in South Africa as documented in the South African Stress and Health Survey. This high prevalence rate was supposedly attributed to being a female and an increased trauma load.

For instance, to document the forms and types of traumatic events experienced by the people displaced during the 2007/2008 post election violence in Kenya, a study was carried out at Maai Mahiu among 139 purposively sampled respondents (Musau, Munene & Khasakhala, 2017). The study documented various types and forms of traumatic events and found a high prevalence for PTSD of 62.1 %. However, in another study carried out in Nairobi, Kenya to establish the prevalence of symptoms of posttraumatic stress, depression, and anxiety among adolescents who had a history of abuse and lived in charitable children's institutions (CCI's), the prevalence of PTSD was found to be relatively lower (21.6%) among the 232 respondents (Nyagwencha, Munene, James, Mewes & Barke, 2018). It is important to note that these adolescents were living in CCI's which is likely a more sheltered environment than the informal settlements. This could possibly explain the lower PTSD prevalence rates.

It can be noted that there is a glaring disparity in PTSD prevalence rates across different regions and populations making it difficult to have a standard general prevalence rate as seen in other disorders such as depression and anxiety. In an attempt to explain the disparities in PTSD prevalence rates and traumatic events, Atwoli et al. (2015) reported how different surveys across the world by World Mental Health (WMH) revealed significant differences when describing the prevalence of traumatic events. They further asserted that the variation noted in the prevalence of the traumatic events and lifetime PTSD prevalence can be related to the historical, political and

cultural factors associated with those regions. A good example at hand is the high rates in South Africa that could be attributed to the prolonged discrimination, political violence and rising rates of crime (Atwoli et al., 2015). This is a narrative that can be seen as a common thread in most African countries since they have been exposed to similar incidences through the years.

Further, the difference between the lifetime prevalence rates given by WMH surveys and previous surveys are likely to have arisen from the methodology applied with 'worst event' surveys yielding higher prevalence rates compared to WMH surveys that apply randomly selected traumatic events (Atwoli et al., 2015). From the literature reviewed, it is evident that most studies carried out in Africa are done within at risk populations with relatively high exposure to events that are traumatic such as those living in urban informal settlements and most likely post conflict populations. This could possibly bear an explanation to the high PTSD prevalence rates displayed by the studies reviewed in Africa. This may require further investigations on how best to determine prevalence rates especially among adolescents, a population that is of great interest to most researchers due to its changing nature that could as well be used to predict future trends.

A survey of Kenyan adolescents and youth by National Council for Population Development found that in Nairobi, young people below the age of 15 were 30% of the total Nairobi population of 3,134,799 in 2009 and was projected to drop to 25.9% by 2030 (NCPD, 2015). With these high estimates of the youth population, it would therefore be a concern that about 50% of adolescents aged 12 to 17 have been exposed to or witnessed traumatic events that predispose them to developing PTSD with approximately 6% of girls meeting the criteria for PTSD (Cisler et al., 2015). Additionally, there was limited information on prevalence rates of PTSD in developing countries especially those in Sub-Saharan Africa where most youths were found to be exposed to multiple traumatic events (Harder et al., 2012). Even more limited was information on PTSD prevalence rates among adolescents living in informal settlements in Kajiado County.

Therefore, the purpose of this study was to determine the prevalence and severity of posttraumatic stress disorder among adolescents who attend selected public primary schools in

informal settlements in Kajiado County, Kenya. This would contribute to the knowledge on adolescents with PTSD living in informal settlements in Kenya.

## **Methodology**

The research design adopted by the study was a quasi-experimental design to determine the prevalence and severity of posttraumatic stress disorder among adolescents living and attending primary schools in informal settlements in Kajiado County, Kenya. Two primary schools were purposively selected for the study due to their location in informal settlements and the large population of students they had. Additionally, they were both located in Kajiado North sub-county and the respondents had similar socio-demographic characteristics. The total population of the two schools was 2345 from pre-primary to grade 8 with only 943 being in the target category of grade 5 to 7 according to school records. The respondents were screened for PTSD using CPSS-SR-5. A total of 698 respondents met the criteria of being 10 to 14 years old in grades 5, 6, and 7. These respondents filled assent forms and were screened for PTSD using the Child PTSD Symptom Scale self-report (CPSS-SR-5). The school administrator provided informed consent for the respondents since they were all below 18 years. The mean age of the participants (N= 698) was 12.2 years (SD= 1.2), with 360 boys (51.6%) and 338 girls (48.4%).

In the first school, the respondents were put in classrooms by streams with 9 groups having 40 respondents and one group had 30 respondents. Five research assistants who had been taken through prior training were each assigned two groups to administer questionnaires one after the other. The research assistants distributed the assent forms and explained to the respondents who then signed the forms if they were willing to take part in the study. The CPSS-SR-5 questionnaires were then distributed to the participants. The questions on the CPSS-SR-5 were each read out loud to the respondents who were then given time to answer each question. This method was adopted to ensure that the participants understood each question, asked for clarification, had enough time to answer the questions and to ensure there were no missing values.

## **Socio-demographic Information**

The socio-demographic variables that were queried included the age, gender, grade, religion, and school attendance. The participants were also asked what their primary language of communication was and the number of friends they had in school and at home. With regard to the family set up, the questionnaire asked whether both biological parents were living together, or they were living with a step parent. It also enquired if the parents were separated, divorced or whether they were living with a single parent or a guardian. To gather information on exposure to violence, the participants were asked if they had witnessed violence at home, at school or any other place. Further they were asked if they had personally experienced physical violence and if so, how frequently they had experienced the violence.

The CPSS-SR-5 was applied to screen, diagnose and assess the presence and severity of PTSD among the participants. The 20 PTSD symptom items on the questionnaire were rated on a 5-point scale measuring frequency and severity with '0' indicating 'not at all' to '4' indicating '6 or more times a week'. In addition to this, there are 7 functioning items rated on 'yes' or 'no'. To calculate the total score of symptom severity, the 20 symptom items are used with scores of 0 to 10 indicating minimal PTSD, 11 to 20, mild PTSD, 21 to 40, moderate PTSD, 41 to 60, severe PTSD and 61 to 80 indicating very severe PTSD. The study included participants with scores of 31 to 60 at baseline indicating moderate to severe PTSD.

The CPSS-SR-5 was found to have a very good internal consistency for total symptom severity (Cronbach's alpha = .924) and a good test-retest reliability ( $r = .800$ ) (Foa, Asnaani, Zang, Capaldi & Yeh, 2018). Further, the CPSS-SR-5 demonstrated a convergent validity with CPSS-I-5 ( $r = .904$ ), and discriminant validity with the Multidimensional Anxiety Scale (MASC) for Children and Child Depression Inventory (CDI) (Foa, Asnaani, Zang, Capaldi & Yeh, 2018). To identify probable PTSD diagnosis among children who had been assessed, a cut off score of 31 was recommended to be used. According to the past studies, the CPSS-SR-5 was therefore found to be a reliable and valid self-report instrument for diagnosing and assessing the severity of PTSD for children and those adolescents between the ages of 8 to 18, as per the symptoms outlined in the fifth edition of the DSM.

The frequency of the severity of PTSD was computed by the various categories of severity and then prevalence of PTSD computed from the frequency table. The frequencies of adolescents

who had experienced trauma were computed by age, gender, religion and grades. The study also applied binomial test to estimate the overall prevalence of PTSD among the screened respondents in addition to prevalence by gender. Further, the study investigated the prevalence of PTSD by age among the adolescents.

## Results

This study utilized 698 respondents aged between 10-14 years where 48.4% were female, while 51.6% were male. With regard to their ages, 10.2% of them were aged 10 years, 18.6% were 11 years old, whereas 12 and 13 years olds were 28.2% each with 14 year olds being 14.8% of the screened respondents. The study found an overall prevalence of PTSD at 40.8% (95% CI = 37.2 - 44.3) in the sample population under study (see table 3). Of these, 34.4 % of the respondents had moderate PTSD while 26.2% had minimal PTSD. Further, 20.8% of the respondents had severe PTSD levels while 15.8% had mild PTSD. Only 2.9% of the respondents had very severe PTSD symptoms above 61 (see Table 2). The prevalence of PTSD among females was found to be at 39.7% while that of males was 41.9%. These findings indicate that in this sample, the males had a higher PTSD prevalence than the females.

With regard to age, of the 698 respondents who were screened, 71 were 10 years of age. In this group, a binomial test indicated that the proportion of respondents who had CPSS scores equal to or above 31 was 0.4225, which was greater than test proportion of 0.3,  $p = 0.019$  (one sided). This indicated that the prevalence of PTSD among children who were 10 years old was 42.2%. For the respondents who were 11 years of age, the proportion with CPSS-SR -5 scores equal to or greater than 31 was 0.4923,  $p < 0.001$ . This showed that the prevalence of children aged 11 years was about 49.2%. Among the 12 year olds, the proportion of respondents with CPSS scores equal to or greater than 31 was 0.3959,  $p = 0.003$ . This implied that the prevalence of PTSD among 12 year olds was approximately 39.6%. On the other hand, the respondents who were 13 years of age at the time of screening, had the proportion of those with CPSS scores equal to or greater than 31 at 0.3553,  $p = 0.055$ . This indicated that the prevalence of PTSD among 13 year olds at 35.5% was not statistically significant from the test proportion of 0.3 (30%). The adolescents aged 14 years had a proportion of respondents with CPSS scores equal to or greater than 31 at 0.4175,  $p = 0.007$ . This implied that the prevalence of PTSD among fourteen year olds

was about 41.8% and that the prevalence of PTSD among this group was statistically significantly higher than the test proportion of 0.3.

*Table 1. Socio-demographic Characteristics*

		Count (N)	Percentage (%)
Gender	Female	338	48.4%
	Male	360	51.6%
Age	10	71	10.2%
	11	130	18.6%
	12	197	28.2%
	13	197	28.2%
	14	103	14.8%
	Total	698	100.0%

*Table 2. PTSD Severity*

	PTSD severity				
	Frequency	%	Bootstrap for Percent <sup>a</sup>		
			Std. Error	95% Confidence Interval	
				Lower	Upper
0-10: Minimal	183	26.2	1.6	22.8	29.4
11-20: Mild	110	15.8	1.4	13.2	18.6
21-40: Moderate	240	34.4	1.8	30.7	37.5
41-60: Severe	145	20.8	1.5	17.9	23.8
> 61: Very severe	20	2.9	.6	1.7	4.2
Total	698	100.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

*Table 3. Presence or absence of PTSD by Frequency*

	Frequency	Percent	Bootstrap for Percent <sup>a</sup>		
			Std. Error	95% Confidence Interval	
				Lower	Upper
	No-PTSD	413	59.2	1.9	55.7
PTSD	285	40.8	1.9	37.2	44.3
Total	698	100.0	.0	100.0	100.0

*Table 4. Binomial test results to estimate the prevalence of PTSD by gender among the screened respondents*

Gender		Category	N	Observed Prop.	Test Prop.	Exact Sig. (1-tailed)
Female	PTSD incidence	CPSS >=31	1	134	0.397	0.3 .000
		CPSS < 31	0	204	0.604	
		Total		338	1.0	
Male	PTSD incidence	CPSS >=31	1	151	0.419	0.3 .000
		CPSS <31	0	209	0.581	
		Total		360	1.0	

*Table 5. Binomial test results to estimate the prevalence of PTSD by age among the screened respondents*

Age			N	Observed Prop.	Test Prop.	Exact Sig. (1-tailed)
10	PTSD incidence	CPSS >= 31	30	0.4225	0.3	0.019
		CPSS < 31	41	0.5775		
		Total	71	1.0		
11	PTSD incidence	CPSS >= 31	64	0.4923	0.3	0.000
		CPSS < 31	66	0.5077		
		Total	130	1.0		
12	PTSD incidence	CPSS >= 31	78	0.3959	0.3	0.003
		CPSS < 31	119	0.6041		
		Total	197	1.0		
13	PTSD incidence	CPSS >= 31	70	0.3553	0.3	0.055
		CPSS < 31	127	0.6447		
		Total	197	1.0		
14	PTSD incidence	CPSS >= 31	43	0.4175	0.3	0.007
		CPSS < 31	60	0.5825		
		Total	103	1.0		

## Discussion

This study established that adolescents living in informal settlements were indeed exposed to traumatic events which resulted in PTSD. This concurs with the situation globally, whereby many studies have confirmed that exposure to traumatic events sometimes results to PTSD. The

findings in this study further support what was suggested by Meinck et al. (2015) that urban informal settlement residency was likely to increase childhood trauma. This was evident in this study since a majority of the respondents (73%) had mild to severe PTSD symptoms (see Table 2) even though only those who had scores of 31 and above were considered of clinical significance for the purposes of this study.

According to Atwoli, et al., (2015), trauma exposure was found to be higher in low income countries (such as Kenya) than in higher income countries. On the other hand, lifetime PTSD prevalence rates were found to be generally the same across countries. Their study however revealed that higher PTSD prevalence rates were found in postconflict settings of different natures. Further in the argument, Atwoli et al. (2015) reported with concern how different World Mental Health (WMH) surveys revealed higher rates of PTSD among groups of people whose nature of work exposes them to increased risk of trauma such as those in the police force, fire fighters, and medical personnel handling emergencies. Since living in informal settlements has equally been confirmed to have a higher risk of exposure to trauma, this explains why majority of the participants in this study had mild to severe PTSD although the study only focused on those participants who had clinically significant symptoms of PTSD with CPSS-SR-5 scores of 31 and above.

Taking the cut off scores of 31 and above in CPSS-SR-5 scores measure of PTSD into consideration (see method section), the prevalence for PTSD in this study was found to be 40.8% (95% CI = 37.2 - 44.3). This falls within the range of PTSD prevalence rates of 3-52% as noted by Harder et al. (2012), even though this applied to developed countries. Moreover, Sareen (2014) found that estimates of PTSD prevalence among high risk groups range widely between 1% and 40%. This prevalence rate of 40.8% is equally similar to the PTSD prevalence rate of 40% found among victims following disasters (Sheerin et al., 2019). It is also close to a prevalence rate of 37% (95% CI = 22 - 45) for self-reported PTSD revealed by a systematic review and meta-analysis of mental disorders in general refugee populations (Molendijk et al., 2019). These differences in prevalence rates have been posited to be due to either true differences across samples or simply methodological issues in carrying out the assessment (Sareen, 2014). However, when adjustments are allowed for the methodological factors, torture reported by individuals was found to be one of the strongest factors associated with PTSD. This

was followed by cumulative and repeated exposure to traumatic events such as is seen among the participants in this study due the informal settlement environment in which they reside (Bryant, 2019). Arguably, this may explain the relatively high levels of PTSD prevalence rates among adolescents living in and attending school in informal settlements.

Other studies in Kenya found even higher PTSD prevalence rates possibly because they were carried out among populations who had been exposed to specific traumatic events making them high risk populations. For instance, a study that was carried out at Maai Mahiu after the 2007/2008 post election violence found a high prevalence for PTSD at 62.1%. (Musau et al., 2017). This was possibly because of the traumatic events they had been exposed to that included being displaced from their own homes, not to mention material losses and human lives. Further, a cross-sectional study carried out in Kenya to describe traumatic events and to determine the PTSD levels among high school students found a higher prevalence rate of 50 % (Ndeti et al., 2007). Even though the population was not carried out in informal settlements, such as the population of this study, it was comparable since it was among adolescents. However, the prevalence rates were notably higher (50%) than those revealed by our study (40.8%). This was intriguing since one would expect adolescents living in informal settlements to have higher PTSD prevalence rates than adolescents attending high school in the general population. The high prevalence rates in this case could possibly have been caused by factors that are specific to high school students.

Another study carried out in Uganda among Congolese refugees, 75% of the female refugees met the criteria for PTSD leading to an overall prevalence of PTSD of 49.4% (Ssenyonga, Owens & Olema, 2012). This higher prevalence was presumably attributed to the post conflict situation that these refugees were exposed to since they were fleeing from their war-torn countries where they were likely to have been exposed to multiple traumatic events.

According to Bryant (2019), several challenges arise in the field of PTSD one of which is the instrument used for diagnosis. He asserted that many studies have indicated higher PTSD Prevalence rates when the DSM-5 criteria is used compared to when ICD-11 guidelines are used. This may explain the relatively high prevalence rates that our study found since we used the DSM-5 criteria to diagnose PTSD.

On the other hand, other studies were done in Africa that revealed lower PTSD prevalence rates. In a South African based rural study, 8.4% of the participants were diagnosed with PTSD, while 21.7% of children in an urban school and children's home were diagnosed with PTSD, showing a higher prevalence in urban setting than rural settings. In another study involving 2041 boys and girls from Cape Town (South Africa) and Nairobi Schools (Kenya), 22.2% of the participants met the criteria for PTSD with no differences in prevalence between the genders (Swain, Pillay & Kliewer, 2017).

Yet another study was carried out in an informal settlement in Kenya by Harder, et al., (2012) among school attending youth aged between 6 and 18, after a contested presidential election that led to a war-like violence. Even though the study had a similar socio-demographic composition as this study, the findings of the study done six months after the violence ended, revealed a prevalence rate for PTSD of 18 % in a study population of 552, a prevalence rate that was much lower than the prevalence of this study (40.8%). This lower prevalence rate could possibly be explained by the possibility of the adolescents being actively cushioned by other protective factors which shielded them from developing PTSD. In yet another study carried out in Kenya to establish the prevalence of symptoms of posttraumatic stress, depression, and anxiety among adolescents who had a history of abuse and lived in charitable children's institutions, the prevalence of PTSD was found to be 21.6% among the 232 respondents (Nyagwencha, Munene, James, Mewes & Barke, 2018). These lower prevalence rates in CCI's could as well be attributed to protective factors offered by the CCI's.

Further from Africa, similarly lower prevalence rates were revealed by studies that were carried out by Reeves (2017) that indicated that in the United States of America, 43% of individuals who are 18 years and above have been exposed to trauma. The trauma exposure of 19-24 year olds in the urban areas was estimated at 82.5% with a PTSD prevalence of 30%. Among 17-18 year olds in foster care, the trauma exposure was estimated at 80.3% with a PTSD prevalence of 30% (Reeves, 2017).

With regard to gender, our study found males to have a higher PTSD prevalence (41.9%) than females (39.7%). These findings were supported by a study in Ethiopia that had male participants report higher PTSD prevalence (70%) than females (30%) (Haji & Shikuro, 2019). This is

similar to the findings of a study carried out to determine the prevalence and severity of PTSD among children living in Children's homes in Nyeri County which found that more male participants (52.6%) had PTSD than females (47.4%) (Maina, Munene & Tuikong, 2019). Similarly, earlier studies had asserted that 60% of men experienced traumatic events in their lifetime compared to 50% of women and that men are more likely to experience every type of trauma (Galovski, et al., 2013). These findings were further supported by another study that revealed boys to significantly report more stressors and traumatic events than girls (Thabet, & Thabet, 2017). In yet another study among detained youth, significantly more males (93.2%) than females (84%) had experienced traumatic events with Hispanic males having significantly higher prevalence rates (19.6%) than Hispanic females (16.9%) (Abram, Teplin, King, Longworth, Emanuel, Romero... & Olson, 2013). This could possibly explain the higher prevalence rates among the male adolescents in our study. The males in this informal settlement have likely so far been exposed to several types of trauma compared to their female counterparts leading them to have higher PTSD prevalence rates. Another study that explored the prevalence and severity of PTSD among students who lived in Wenchuan one year after an earthquake similarly revealed that male students were more prone to developing PTSD than their female counterparts (Fu et al., 2013).

However, a study among detained youth revealed that there was no significant difference in the overall prevalence of PTSD for males or females (Abram et al., 2013). Similarly, another study involving 2041 boys and girls from Cape Town (South Africa) and Nairobi Schools (Kenya), revealed that 22.2% of the participants met the criteria for PTSD with no differences in prevalence between the genders (Swain, Pillay & Kliewer, 2017). This is contrary to other findings from a survey that was done by Baker (2018) for England that 5.1% of women and 3.7% of men had PTSD, and another that stated that females had a higher lifetime prevalence for PTSD at 8.0% than males at 2.3% (Kessler, 2017). Further, American Psychological Association (2013) suggested PTSD to be more prevalent among the female gender than the male gender across the lifespan. The findings of this study therefore, that revealed boys to have higher PTSD prevalence than girls, would require further study to find out the reasons behind this difference.

Concerning the age, the prevalence of PTSD among children who were 10 years old was approximately 42.2% ( $p = 0.019$ ) while that of 11 year olds was 49.2% ( $p < 0.001$ ). Among the

12 year olds, the prevalence of PTSD was 39.6% ( $p = 0.003$ ) with 13 and 14 year olds having a PTSD prevalence of 35.5 % ( $p = 0.055$ ) and 41.7% ( $p = 0.007$ ) respectively. From these results, it can be noted that the younger participants (10 and 11 years) had relatively higher PTSD levels. This is supported by a study indicating that younger participants had higher PTSD than the older participants (Haag et al., 2019). Yet another study confirmed that younger school children experience higher psychological distress than their older counterparts (Elklit, Vangsgaard, Olsen, & Ali, 2019). According to Elklit et al. (2019), the younger school going children may experience higher prevalence of PTSD possibly because the traumatic experiences are likely to influence how they express their affection thereby increasing their risk-behavior above what is age appropriate. On the other hand, the older adolescents may withhold information about their traumatic experiences therefore revealing lower PTSD prevalence rates as posited by Haag et al. (2019). This is however, contrary to earlier findings by Abram et al. (2013) that revealed lower percentages (82.4% males and 59.1% females) among detained youth in an age group category of 10-13 as opposed to youth aged 14-18 (94.2% males and 86.5% females) showing that the younger adolescents reported lower percentages of trauma.

Several studies have indicated different prevalence rates across diverse populations. It is not clear the extent to which these differences can be attributed to actual differences in the populations. Further, the differences could also be attributed to methodological factors such as instruments used and how the sample was selected (Mahmood et al., 2019).

## **Conclusion**

The findings of this study indicate that a significant proportion of adolescents living in informal settlements have posttraumatic stress disorder. Further research is required that would give guidance on how the adolescents can be protected from the exposure to traumatic events, and the adverse side effects of the traumatic events. This would furnish the policy makers with valuable information that would help protect the adolescents who are at risk in the informal settlements. Given the relatively high prevalence rates of PTSD, it would also be a valuable consideration to avail school based counseling services to the adolescents to cushion them with coping skills that would prevent them from developing PTSD. The school based counseling would be easily accessible to them and would help alleviate symptoms of PTSD. Moreover, the teachers and

caregivers need to be trained on basic counseling skills to help them understand how to deal with the adolescents in the informal settlements. It is essential to point out that the sample of this study restricted its generalizability due to the special population of participants in informal settlements. However, the CPSS-SR-5 tool used to measure PTSD in this study, together with the methodology makes it credible enough to be generalized among similar and related populations.

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