

**ASSOCIATION BETWEEN SYMPTOMS OF ANXIETY, DEPRESSION  
AND POST-TRAUMATIC STRESS DISORDER AMONG ADOLESCENTS  
WITH A HISTORY OF ABUSE OR NEGLECT**

\*Stella Kemuma Nyagwencha, MA; Dr. Naomi James, Ph.D.; Dr. Alice Munene, Psy. D.

School of Human and Social Sciences, Department of Psychology and Counseling,  
Division of Clinical Psychology, Daystar University, Nairobi, 44400-00100

\*Corresponding author

**ABSTRACT**

The purpose of this study was to establish the association between symptoms of anxiety disorder, depression and post-traumatic stress disorder (PTSD) among adolescents who had experienced abuse or neglect and resident in a charitable children's institution (CCI). This study was conducted in three CCI's in Nairobi County, Kenya. The inclusion criteria was be aged between 13-18 years, have mild or moderate symptoms of anxiety disorder and be resident in a CCI. Participants who met the inclusion criteria were 115 adolescents.

Participants were administered the Socio-Demographic Questionnaire (SDQ), Beck's Anxiety Inventory (BAI), Becks Depression Inventory-II (BDI-II) and Harvard Trauma Questionnaire (HTQ). Results showed that participants who had symptoms of anxiety disorder only were (50.4%), those with symptoms of anxiety and depression were 37.4%, those with symptoms of anxiety, depression and PTSD were 9 (7.8%) while those with a comorbidity of symptoms of anxiety and PTSD were 4.3%. Symptoms of PTSD were correlated with symptoms of depression at  $p < .001$ . Symptoms of PTSD were also correlated with symptoms and anxiety at  $p = .005$  while symptoms of depression were correlated with symptoms of anxiety at  $p = .007$ . Further, age was associated with symptoms of PTSD and depression and not with symptoms of anxiety disorder while gender was not associated with symptoms of PTSD, depression or anxiety disorder. In conclusion, among adolescents who had experienced abuse or neglect, symptoms of PTSD were correlated with symptoms of depression and anxiety disorders while symptoms of depression were correlated with symptoms of anxiety disorders.

**Keywords:** Adolescents, Anxiety, Association, Depression, Kenya, Post-Traumatic Stress Disorder

## **1. INTRODUCTION**

Children and adolescents who experience abuse or neglect develop negative affect which could lead to development of PTSD and depression (Flory & Yehuda, 2015). A study conducted by Carey, Walker, Rossouw, Seedat, & Stein (2008) found that the most prevalent psychological consequence of trauma was depression (33%,  $X^2=10.89$ ,  $p=0.001$ ) and PTSD (63.8%,  $X^2=4.79$ ,  $p=0.034$ ). DSM-5 diagnostic criteria for PTSD symptoms include exposure to a traumatic event leading to presence of intrusive symptoms, avoidance, negative alterations in cognitions, mood and alterations in arousal and reactivity. These symptoms should last for a period of more than 1 month, affect the daily functioning of the person and not be attributed to substance abuse or co-occurring medical condition (DSM-5; American Psychiatric Association (APA), 2013). According to Flory and Yehuda (2015), PTSD and depression are both caused by exposure to trauma and have an overlap of symptoms. PTSD has been found to share symptoms of anhedonia, difficulty concentrating and insomnia with major depressive disorder (Gross, Price, Magruder, & Frueh, 2012).

Depression is a state of low mood, loss of interest or pleasure in activities that were previously enjoyed, appetite and sleep changes and suicidal thoughts or preoccupation (DSM- 5; APA, 2013). In adolescence, depression is displayed through increased irritability or aggression, self-destructive behaviour, problems in school, lack of energy and trouble sleeping and eating. Adolescents with PTSD not only develop a comorbidity with depression but also with anxiety disorders (van Minnen et al., 2015).

Anxiety disorders comprise of a heterogeneous group which share anxiety as a symptom (Wiedemann, 2015). Anxiety disorders comprise of separation anxiety disorder, selective mutism, social anxiety disorder, panic disorder, agoraphobia, generalized anxiety disorder, substance induced anxiety disorder and anxiety disorder due to another medical condition (DSM-5; APA, 2013). Based on the fourth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), obsessive compulsive disorder and PTSD were subsets of anxiety disorders although they have been brought out from this category in the fifth edition of DSM (Beesdo et al., 2009). The core feature in anxiety disorders is avoidance, which in most cases includes overt avoidance of specific situations, places or stimuli (Rapee, 2012). However, it may also involve indirect forms of avoidance like withdrawal, hesitancy, uncertainty or repetitive actions. The main difference between specific anxiety disorders is the trigger for avoidance, situations that are avoided and the content of the beliefs.

Fearfulness, distress or shyness are some of the components that accompany the avoidance. Avoidance is also a core feature in PTSD.

A study conducted by Zayfert, Becker, Unger, and Shearer (2002) among civilians found that patients with primary PTSD diagnosis had 1.6 comorbid anxiety disorders. PTSD patients have been found to have 80-90% comorbidity of anxiety disorders and depression (Kessler, Sonnega, Bromet, Hughes, & Nelson 1995 as cited in van Minnen et al., 2015). Statistics show that 25-50% of depressed youth have anxiety disorders while 10-15% of youth with anxiety disorders have depression too (Axelson & Birmaher, 2001). In a study conducted in Kenya among youth aged 13-17 years found that major depressive disorder was associated with any anxiety disorder (OR=2.41, 95% CI 1.20 to 4.87,  $p=0.012$ ) and other psychiatric disorders like conduct disorder (OR = 2.93, 95% CI 1.04 to 8.26,  $p=0.035$ ) and other psychiatric disorders (Khasakhala, Ndeti, Mathai, & Harder, 2013). Further, major depressive disorder was higher among late adolescents at (OR= 2.66, 95% CI 1.40 to 5.05,  $p=0.003$ ). A study conducted in Kenya among 13-20-year old high school students did not find any statistically significant associations between PTSD symptoms and age (Karsberg & Elkit, 2012). However, the study found associations between symptoms of PTSD with gender and number of exposures to traumatic events.

Comorbidity of PTSD, depression and anxiety disorders may be due to symptom overlap of avoidance (Axelson & Birmaher, 2001). According to Axelson & Birmaher (2001) there is a strong association between anxiety and depression due to the negative affectivity found in people with both disorders. Findings from a study by Barlow (2002) found that the genetic and neurobiology of anxiety and depression are closely related and they overlap. Research conducted by Fergusson and Woodward (2002) examining the association between anxiety disorders and depressive disorders found that anxiety disorders in general increased the probability of one developing a secondary depressive disorder.

A study conducted in Netherlands among 18-65 year olds found a strong association between physical abuse, emotional neglect, psychological abuse and comorbidity of anxiety and depressive disorders (Hovens et al., 2012). Comorbidity of PTSD, anxiety disorder and depression in adolescents leads to substantial functional impairment (Kendall et al., 2010).

Comorbidity affects adolescents in their academics, mental health, treatment utilization, increased suicide attempts and conflict with parents (Al-Biltagi & Sarhan, 2016). Contrary to that, Cummings, Caporino, and Kendall (2013) state that comorbidity of anxiety disorders among depressed adolescents may not worsen their functioning. The explanation they give is that such adolescents do not develop greater depression severity compared to those with depression alone. However, anxious youth with comorbid depression show greater anxiety severity than those with anxiety alone (Guberman & Manassis, 2011). Cummings et al. (2013) conclude that severely anxious youth are more prone to comorbid depression but the depression is not necessarily severe. Further, severely depressed youth consistently demonstrate severe anxiety.

Research conducted by Cortina, Sodha, Fazel, and Ramchandani (2012) found that considerable levels of psychological problems existed in children and adolescents in sub – Saharan Africa with 9.5% having specific psychiatric disorders. Despite children in sub Saharan Africa having psychiatric disorders, there seems to be scarcity of data in non-western societies, including those in sub-Saharan Africa, on prevalence, comorbidities and risk factors that predispose adolescents to develop anxiety disorders, depression and PTSD (Abbo et al., 2013). However, an important framework and data is provided by research done in developed countries (Lund et al., 2007). This study sought to fill this knowledge gap by identifying the association between symptoms of PTSD, depression and anxiety disorder among adolescents who had experienced abuse or neglect and resident in a charitable children's institution.

## **2. DATA AND METHODOLOGY**

Guided by the research objectives, the study used mixed methods research. Qualitative and quantitative data was collected. The researcher purposely select CGHS, AHC and CH to represent other CCI's in Nairobi County, Kenya. Threats of internal validity were controlled by selection of CCI's that were as similar as possible.

### **Study Population**

The researcher chose CGHS, AHC and CH because they had a high population of adolescents that would assist in getting the research sample and the adolescents attend school within the CCI, hence, they were accessible. According to the directors of the CCI's, the estimated population of adolescents in CGHS was 122, AHC 87 and CH 47. The study had 66 males (57.4%) and 49 females (42.6%). This showed that the study had more male respondents than females. The respondents were between the ages of 13-18 years with a mean age of 15.65 ( $\pm 1.665$  SD). Seventeen year olds were 30 (26.1%), 14 year olds were 19 (16.5), 16 year olds were 18 (15.7%), and 13 year olds were 16 (13.9%) similar to 15 and 18 year olds who were 16 respectively. This indicated that the respondents were almost equally distributed in the ages except 17 year olds who were the most and were 26.1%.

### **Data Collection Instruments**

The following instruments were used to collect data

1. Socio-Demographic Questionnaire
2. Becks Anxiety Inventory
3. Becks Depression Inventory-II

#### 4. Harvard Trauma Questionnaire

Socio-Demographic Questionnaire was used to collect information from the participants concerning their age, gender, school details, level of education and family history among others. Beck's Anxiety Inventory (BAI) which consists of 21 questions was used to screen for anxiety symptoms. In this study, BAI assessment tool was found to have a reliability of Cronbach's alpha  $\alpha = .89$ . Cut off points for BAI symptoms were 0-7 minimal, 8-15 mild, 16- 25 moderate and 26-63 severe anxiety.

The researcher used Beck's Depression Inventory-II (BDI-II) to screen for depression symptoms. BDI-II had 21 items scored from a range of 0–3, relating to symptoms of depression and feelings of hopelessness. The researcher adapted the conventional cut of points for BDI-II which are 0-9 minimal depression, 10-18 mild depression, 19-29 moderate depression and 30-63 severe depression (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). BDI-II was considered suitable because it was developed by Beck within the context of his cognitive theory of depression. BDI-II's external consistency, reliability and concurrent validity have been established across a wide variety of samples. In this study, BDI-II had a Cronbach's alpha of  $\alpha = .88$ . This showed that BDI-II was reliable.

Harvard Trauma Questionnaire (HTQ) was used to assess for PTSD. It was developed by Harvard Program in Refugee Trauma (HPRT). It is a checklist that inquired about emotional symptoms of PTSD in response to a traumatic experience. The questions included four categories of response, not at all, a little, quite a bit and extremely. They were rated 1-4 respectively. Participants with a score of  $> 2.5$  were considered to have symptoms of PTSD (Mollica et al., 1992). In this study, HTQ had a Cronbach's alpha  $\alpha = .83$ . This showed that HTQ was reliable.

#### Results and Discussion

The study sought to identify the specific disorder and comorbidities that the respondents were presenting with at baseline.

**Table 1: Comorbidity of Symptoms of Anxiety, Depression and PTSD (N=115)**

Symptoms	n	%
Only anxiety	58	50.4%
Only anxiety and depression	43	37.4%
Only anxiety and PTSD	5	4.3%
Only anxiety, depression and PTSD	9	7.8%

Table 1 presents the frequency and percentage of respondents who had comorbidity of symptoms of anxiety disorder, depression and PTSD. Participants who had symptoms of anxiety disorder only were 58 (50.4%). Those participants with a comorbidity of symptoms of anxiety and depression were 43 (37.4%) while those with symptoms of anxiety, depression and PTSD were 9 (7.8%). Participants with a comorbidity of symptoms of anxiety and PTSD were 5 (4.3%). These findings indicated that half of the participants had symptoms of anxiety disorder only. Additionally, a smaller percentage of participants had a comorbidity of symptoms of anxiety disorder, depression and PTSD.

The study sought to determine the association between age, sex and symptoms of anxiety disorder, depression and PTSD.

**Table 2: Correlations between Age, Sex and Symptoms of Anxiety, Depression and PTSD (n=115)**

Variables	Measure				
	Age	Sex	HTQ	BDI	BAI
Age		-.12	.19*	-.19*	-.11
<i>p</i>		.216	.042	.039	.225
Gender			.05	.13	.10
<i>P</i>			.618	.171	.289
Baseline HTQ SS				.41**	.26**
<i>P</i>				< .001	.005
Baseline BDI-II SS					.25**
<i>P</i>					.007
Baseline BAI SS					

Note. HTQ SS=Harvard trauma questionnaire sum scores; BDI-II SS= Beck's Anxiety Inventory sum scores; BAI SS= Beck's Anxiety Inventory sum scores

\* Correlation is significant at the 0.05 level (2- tailed)

\*\* Correlation is significant at the 0.01 level (2- tailed)

Table 2 presents the correlations between age, sex and symptoms of anxiety (BAI), depression (BDI-II) and PTSD (HTQ) score. Age was correlated with symptoms of PTSD at .19. The direction of the relationship between age and PTSD symptoms was positive. Findings of the study showed that as age increased, PTSD symptoms increased too. However, the strength of the association was small ( $.1 < |r| < .1$ ). Correlations test showed that statistically significant associations were found between age and symptoms of PTSD at  $p=.042$ .

Age was also correlated with symptoms of depression at .19. The direction of the relationship between age and symptoms of depression was negative. Findings of the study showed that as age increased the symptoms of depression decreased. However, the strength of the association was small ( $.1 < |r| < .1$ ). Correlations test showed that statistically significant associations were found between age and depression at  $p=.039$ .

Symptoms of PTSD were correlated with symptoms of depression at .41. The direction of the relationship between symptoms of PTSD and symptoms of depression was positive. Findings of the study showed that as symptoms of PTSD increased, depression symptoms increased too. The strength of the association was medium ( $.3 < |r| < .4$ ). Correlations tests showed that symptoms of PTSD were associated with symptoms of depression at  $p < .001$ .

Symptoms of PTSD were also correlated with symptoms and anxiety at .26. The direction of the relationship between symptoms of PTSD and anxiety symptoms was positive. Findings of the study showed that as symptoms of PTSD increased, the symptoms of anxiety disorder increased too. The strength of the association was medium ( $.3 < |r| < .3$ ). Correlations tests showed that symptoms of PTSD were associated with symptoms of anxiety at  $p = .005$

Symptoms of depression were correlated with symptoms of anxiety at .25. The direction of the relationship between symptoms of depression and anxiety symptoms was positive.

Findings of the study showed that as symptoms of depression increased, symptoms of anxiety increased too. The strength of the association was medium ( $.3 < |r| < .3$ ). Correlations test showed that symptoms of depression were associated with symptoms of anxiety at  $p=.007$ .

These findings showed that age was associated with symptoms of PTSD and depression and not with symptoms of anxiety disorder. In addition, symptoms of anxiety disorder were associated with symptoms of PTSD and depression. Gender was not associated with symptoms of PTSD,

depression or anxiety disorder.

These study findings showed that adolescents aged 13-18 years who had experienced abuse or neglect and resident in a CCI had a comorbidity of symptoms of anxiety disorders, depression and PTSD. It is important to note that the primary diagnosis when a person has experienced trauma is PTSD or depression and anxiety disorder tends to be a comorbid disorder. This finding is supported by a study conducted by Primary Care Youth Stress Clinic at University of Stellenbosch in South Africa that found that children exposed to traumatic events develop comorbidity of PTSD and other mood symptoms (Carey, Walker, Rossouw, Seedat, & Stein, 2008). Additionally, this was also found to be true in a study conducted by Carey, Walker, Rossouw, Seedat and Stein (2008) that found that the most prevalent psychological consequence of trauma was depression (33%,  $X^2=10.89$ ,  $p=0.001$ ) and PTSD (63.8%,  $X^2=4.79$ ,  $p=0.034$ ).

This is supported by a study that found that anxiety disorders tend to co-exist with depression and their comorbidity is common in children and adolescents (Al-Biltagi & Sarhan, 2016).

Similarly, this finding is supported by a study conducted by Chavira, Stein, Bailey, and Stein (2004) who state that anxiety and depression are common in youth. A study conducted by Van Minnen, Zoellner, Harned, and Mills, (2015) found that adolescents with PTSD tend to have a comorbidity of anxiety disorders and depression.

This study found statistically significant associations between age and symptoms of PTSD at  $p=.042$  contrary to a study conducted among 13-20 year old students in Kenya that found there to be no statistically significant association between age and PTSD symptoms (Karsberg & Elkit, 2012). In this study, age was also significantly associated with symptoms of depression at  $p=.039$  similar to a study conducted in Kenya among youth aged 13-17 years (OR= 2.66, 95% CI 1.40 to 5.05,  $p=0.003$ ) (Khasakhala et. al., 2013). However, this study found a negative relationship between depression and age while other studies found a positive relationship between age and symptoms of depression (Khasakhala et al., 2013; Merikangas et al., 2010).

Statistically significant associations were found between symptoms of PTSD and symptoms of depression at  $p<.001$ . Additionally, symptoms of PTSD and depression were significantly associated with symptoms of anxiety in a positive direction similar to findings of other previous studies (Fergusson & Woodward, 2002; Beesdo et al., 2007; Bittner et al., 2004).

However, this study did not find any statistically significant associations between gender and symptoms of anxiety, depression or PTSD contrary to findings of other studies (Schimmenti & Bifulco, 2013; Avenevoli, Swendsen, Jian-Oing He, Burstein, & Merikangas, 2015).



## CONCLUSION

This study has shown that adolescents who experience abuse or neglect have a comorbidity of symptoms of PTSD, depression and anxiety disorders. Among participants with mild and moderate symptoms of anxiety disorder, positive significant associations were found between age and symptoms of PTSD at  $p=.042$ . Contrary to that, age was negatively associated with symptoms of depression at  $p=.039$  while symptoms of PTSD were positively associated with symptoms of depression at  $p<.001$ . Symptoms of PTSD and depression were also positively associated with symptoms of anxiety at  $p=.005$  and  $p=.007$  respectively.

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