

# Insomnia, Depression and Anxiety as Associated by Traumatic Events, Coping Strategies and Coping Resources among Internally Displaced Adolescents in North-East Nigeria

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## Research Article

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## Abstract

**Background:** Internally displaced adolescents (IDAs) in Nigeria are a high risk group for mental health problems. More knowledge is needed about the associations between traumatic events, coping strategies, coping resources (social support and optimism) and mental health problems (insomnia, depression, and anxiety) in this group.

**Methods:** In this cross-sectional study, a disproportionate stratified sampling strategy was used to select 109 adolescents (10-21 years of age) from an internally displaced persons camp, while a purposive sample was used to recruit 27 IDAs in non-camp setting. Insomnia Severity Index, Revised Children's Anxiety, Depression Scale, Harvard Trauma Questionnaire Part I, Coping Style Questions, Crisis Support Scale, and Life Orientation Test were used.

**Results:** Significant negative correlations were observed between whom respondents are living with and depression, while their needs positively correlated with insomnia, depression and anxiety. There was significant positive relationship between traumatic events score and insomnia, depression and anxiety. Problem and emotion-focused coping were associated with lower levels of insomnia. Whereas problem, emotion, avoidance-focused coping and social support were associated with lower levels of depression and anxiety symptoms. In hierarchical analysis, traumatic events contributed 51% variance on insomnia, 47% on depression and 45% on anxiety. Addition of coping strategies and coping resources significantly explained insomnia (7% versus 1%), depression (21% versus 3%), and anxiety (24% versus 5%).

**Conclusion:** There is a need for intervention to integrate problem, emotion and avoidance focused coping alongside with adequate social support in adjustment of IDA's mental health problems.

**Keywords:** Traumatic events; Coping strategies; Optimism; Social support; Insomnia; Depression; Anxiety

## Introduction

Among internally displaced adolescents (IDAs) populations, it is estimated that approximately 45% develop mental health problems due to traumatic exposure and disruption of adolescent's life. Displacement may cause disruptions to many facets of an adolescents' life which can have far reaching impacts on areas such as family support networks, continuing education (authors, in press) [1]. In addition, the American Psychological Association suggested that displacement triggered by conflict and violence is known to induce psychological disorders such as PTSD, insomnia, anxiety and depression [2]. Although developing mental health problems is a risk following exposure to traumatic events, many individuals do not develop mental health problems [3-5]. Therefore, an important question is why some individuals develop mental health problems after being exposed to traumatic events, while others do not. Finding an answer to this question is imperative regarding displaced adolescents, as adolescents constitutes over 58% of the internally displaced population in Nigeria and this group are very vulnerable to traumatic stress experience and mental health problems [6]. Block and Singh reported that 45% of mental health problem in this group [1]. The question of which IDAs will go on to develop mental health problems may relate to risk factors that vary between individuals. However, most researchers investigating predictors of mental health outcomes in displaced populations have predominantly focused on the negative factors such as trauma exposure on mental health outcomes, while fewer studies have explored the positive factors (e.g., coping) which may likely promote and protect adjustment following traumatic stress [7-10].

Coping is defined as ongoing cognitive and behavioral efforts to manage specific external and /or internal demands that are appraised as taxing or exceeding the resources of the person [11,12]. Thus, for IDAs, coping with the traumatic event of displacement can pose a greater challenge, especially if the traumatic exposure is perceived to exceed the individual's coping abilities. However, various suggestions have been made regarding the most appropriate approach to categorize coping in terms of function and efficacy [13]. The Folkman and Lazarus typology of coping distinguished the two major functions of coping strategies as either problem-focused coping, which deals with the problem that is causing the distress, or emotion-focused coping, which focuses on distressing emotions [12,14]. Coping is considered to be of critical importance in determining whether a traumatic

event results in adaptive or maladaptive mental health outcomes.

Despite the fact that theoretical models regarding stress, coping and the measurement of these constructs have advanced in the scientific literatures, these models and measures have predominantly centered on the cognitive and behavioral processes of adjustment to stressors by adults. Therefore, a theory on coping needs to recognize children's and adolescents' level of cognitive functioning and developmental, as adolescents' and adults' coping strategies differ in important ways. For instance, Folkman, Lazarus, Pimley and Novacek, found age-related differences between a group of younger adolescents and a group of older adults [15]. The younger group used problem-focused strategies of coping more frequently and emotion-focused forms of coping less frequently than the older group.

Similarly, Raviv, Oppenheimer and Bar-Tal pointed out that adolescents and adults react differently in displacement context, especially when facing the trauma [16]. That is, that the concept of the world as a safe place is violently shattered when adolescents experience traumatic events, this is due to their brain and body are just developing compare with adults. Adolescents cope by trying to make sense of their displacement and ongoing suffering, explaining the cause and then developing different coping strategies such as cognitive and behavioral which determine the adjustment reactions. In addition, nearly all children and adolescents express some kind of distress or behavior change in the acute phase of recovery from traumatic event [17]. According to American Psychological Association some of the reactions include development of new fear, separation anxiety, sleep disturbance, sadness, and loss of interest in normal activities, anger, and decline in school work, irritability and somatic complaints [18].

Some researchers have studied the effect of coping strategies on mental health outcomes with finding suggesting that emotion-focused coping is more linked with higher mental health problems, whereas problem-focused coping is associated with lower mental health indicators [19-21]. Others researcher (e.g., Cherewick, Kohli, Remy, Murhula, Bin Kurhorhwa, Morindi, and Glass,2015) argued that in conflict environments, problem-focused coping (engagement) may perhaps be an inappropriate coping strategies compared to emotion-focused coping (disengagement) because the adolescents may be helpless to enthusiastically change conflict stressors [22]. Instead, emotion-focused coping may be an

adaptive strategy that is more easily accessible and useful than problem-focused-strategies. In contrast, Lazarus and Folkman asserted that people usually resort to a combination of problem-focused and emotion-focused coping in stressful encounters [23]. Similarly, Weisz, McCabe and Dennig suggest that within conflict settings the use of multiple strategies (that is, problem, emotion and avoidance focused strategies) may particularly be critical to mental health resilience and recommend that coping flexibility may lead to better outcomes [24]. In other words, internally displaced adolescents may likely respond in adjusting their traumatic experience by use of various forms of coping strategies.

Most researchers e.g., Lazarus have recognized that coping cannot be considered as a reaction to stressful experiences only, but should also be considered as a consequence of coping resources [12]. Therefore, this present study utilized the conservation of resources (COR) theory of Hobfoll [25]. The COR model assumed that people strive to obtain, restrain, and protect the things, or resources they value. The COR theory posits that individuals possess both internal and external coping resources and the loss of these resources reduces one's options and leads to distress [25,26]. Basically, resilient individuals use internal resources such as (optimism) and external resources (social and family support) to adapt to stress [27]. This study considered optimism as internal and social/family support, as external resources. Optimism is defined as a propensity or tendency to expect that good things rather than bad things will happen, and plays an important role in self-regulation of behavior [28]. It is considered as a major determinant of whether people continue to pursue valued life goals against the backdrop of adversity [29]. On the other hand, low levels of optimism are linked with poor mental health outcomes such as depression. Similarly, a person low in optimism, or high in pessimism, tends to use more avoidance coping strategies that are related to distress, such as disengagement from social situations and denial. It is thought that optimism can play a protective role against negative mental health outcomes because persons high in optimism are more likely to engage in efforts to manage stressors [30].

In terms of external resources (social support), the study of Holahan & Moos; Pierce and Sarason (as cited in Zeidner and Endler) suggests that the perception of social support is expected to influence the manner in which an individual copes with stress and the outcomes of the coping efforts [31,32]. In this present study, perceived social support refers to the belief that specific

transactions such as helping behavior would be provided by others if needed (e.g., by parents, relatives, government and non-governmental agencies). Ozer, Best, Lipsey and Weiss noted that in the aftermath of trauma, perceived social support seems to serve an important secondary prevention role [33]. Findings suggest that the perception of social support may foster more accurate and more positive appraisals of self and others. This may encourage the development of more effective and realistic coping strategies for dealing with traumatic stress. Furthermore, the perception of social support may help the displaced adolescent to confront challenges more effectively, especially if they believe others will help them when the challenge exceeds their personal resources. Thus, this suggests that when studying the effect of coping strategies, coping resources should be included. However, to date few studies have focused on how coping resources (e.g., optimism and social support) may predict mental health outcomes. Clearly, more research on the relationships between traumatic stress, coping strategies, coping resources and mental health outcomes is needed, especially in internally displaced adolescents who are commonly faced with traumatic stress. More knowledge about factors that might predict vulnerability to poor mental health is useful in the development of intervention programs for IDA's.

In summary, the present study will examine the following research questions: First what extent will IDA's selected socio-demographics and displacement factors correlate with insomnia, depression and anxiety? Second, what are the relationships between traumatic events, coping strategies, coping resources (social support and optimism) and mental health outcomes (insomnia, depression and anxiety)? The third, will variance in mental health outcomes depend on the severity of traumatic events, coping strategies and coping resources adopted?

## Method

### Participants

This cross-sectional study sampled a total of N=136 internally displaced adolescents. The age range of the respondents was 10-21 years, with a mean of 16.5 years (SD=2.45). Sixty percent of the respondents were female.

### Sampling Strategy

Two sampling strategies were used. First, a disproportionate stratified sampling strategy was used to select 109 participants from Stefanos Foundation IDP

camp located at the hostel of Zang Commercial Secondary School Jos, Plateau State in Nigeria. The rationale for utilizing disproportionate stratified sampling was due to an unequal gender distribution from the reference population [34,35]. Secondly, a purposive sample of 27 IDAs living in the host community was selected from the K-Vom community in Jos South Local Government of Plateau State.

### Procedure of Data Collection in the Camp

Ethical approval for this research was obtained from the Institutional Review Board at the [Blinded for review]. The camp manager of the Stefanos Foundation IDP camp also granted approval for the conduct of the study. A list of IDAs was drawn via the registry obtained from the chairman of the camp. Efforts were made to select potential participants based on the study eligibility criteria such as being aged 10 to 21 years, with no previous history of mental health problems, and having been internally displaced. A meeting was scheduled with individuals who met the aforementioned criteria and had expressed interest in participating after the purpose and nature of the study had been explained to them. Consent was gained from adolescents' parents or legal guardian, verbal assent was gained from the adolescents themselves immediately prior to testing in this study, and participants were informed that they have freedom to terminate participation at any time without prejudice. The questionnaires were administered to them in the office of the camp director.

### Procedure of Data Collection in the Host Community

The following procedure was taken to select participants living in the K-Vom host community. The community leader was approached in order to discuss the purpose of the study and seek the authorization to access the IDPs in their residence. After the community leader granted verbal permission, the research teams visited each household where IDAs resided to identify potential participants. Potential participants were interviewed to determine which fell within the age range for this study. Once a participant was deemed eligible, the purpose and the nature of the study were explained after which consent and verbal assent was gained. At the same time, IDAs were then informed regarding their freedom to terminate the study without any repercussion.

Once the adolescents say they are happy with the conditions stipulated in the conduct of the study then the questionnaires was administered in a quiet corner of their

home. Although, the questionnaire were written in English, while some participants had difficulty with accessing spoken and written language, members of the research team supported participants by reading and explaining the questions as required.

## Measures

### Mental Health Outcomes, Coping Strategies and Coping Resources

Participants completed a single, structured (closed ended) questionnaire that comprised a number of scales examining different areas: (a) mental health symptoms (insomnia, depression, and anxiety), (b) traumatic events, and (c) coping strategies and resources (optimism and social support).

*Insomnia symptoms* the Insomnia Severity Index (ISI) were used to measure insomnia symptoms. The ISI is based on Diagnostic and Statistical Manual of Mental Disorder (DSM-IV) and International Classification of Sleep Disorders criteria for insomnia, and the ISI is consistent with diagnostic criteria for insomnia. The ISI is a 7-item questionnaire, which assesses three classification of insomnia: the nature, severity, and impact [36,37]. Its dimensions assess early morning awakening, sleep dissatisfaction sleep maintenance, and severity of sleep difficulties. A 5-point Likert scale was used to rate each item (e.g., 0 = no problem; 4 = very severe problem), yielding a total score ranging from 0 to 28. However, the total score between (0-7) indicates absence of insomnia, (8-14) for sub-threshold of insomnia, and (15-21) represent moderate insomnia while (22-28) is an indicative of severe insomnia. More so, Chung, Kan and Yeung reported a Cronbach alpha of 0.83 of this scale for adolescent population [38]. However, in this present study a Cronbach's alpha of 0.85 was obtained, which indicates a high reliability of the scale. The ISI has previously been used among internally displaced adolescent populations [39].

*Anxiety and depression* was measured by the Revised Children's Anxiety and Depression Scale-Short (RCADS-S), (Ebesutani, Reise, Chorpita, Ale, Regan, Young, & Weisz) which consists of 25 items and measures symptoms of anxiety disorders and depression in children and adolescents using the criteria from the (DSM-IV). The RCADS-S was reduced by Ebesutani, et al. [40] from the original RCADS 47-items of Chorpita, Yim, Moffitt, Umemoto and Francis (2000) [41] with the aim of obtaining better scale reliability for the depression total and anxiety total scales by: (a) retaining the 10 items

depression total scale, and (b) reducing the 37-item anxiety total scale. The current study used the shorter RCADS-S 25, which has 25 items and includes subscales: separation anxiety disorder (SAD; three items); social phobia (SP; three items); generalized anxiety disorder (GAD; three items); panic disorder (PD, three items); obsessive compulsive disorder (OCD, three items); and major depression disorder (MDD; ten items) [40]. The batch scoring procedure were used to compute RCADS-S 25 for depression and anxiety elevation, with a total score less than 65 been categorized as 0= indicating 'normal', total score above 65 is categorized as 1=indicating 'borderline', and a total score greater than 70 is then categorized as 2=indicating 'clinical'. The RCADS-S 25 has satisfactory psychometric validity, with good internal consistency and adequate reliability and validity, and has been used with adolescent populations [42]. However, a Cronbach's alpha of 0.93 was obtained in this present study showing a high reliability of the scale.

*Traumatic Events:* The Harvard Trauma Questionnaire (HTQ) Part I was used to measure traumatic events. The HTQ Part I contain 25 war-related trauma items. According to Mollica, Caspi-Yavin, Bollini, Truong, Tor, and Lavell a new HTQ needs to be developed for every war-affected population. Consequently, the Part I of the HTQ adaptation was informed by in-depth interviews with 15 IDAs living in Nigeria who had experienced traumatic events related to the Boko Haram displacement prior to this study [43]. An essential checklist of 20 specific conflict-related displacement experiences was assembled from the IDAs, which described common conflict exposure, situations of attack by the Boko-Haram and other war-related traumatic events (Authors, blinded for review). Five items were further extracted from Badri, Crutzen, and Borne's Darfuri version of the HTQ Part I [44]. Because these items are similar to the content as cited by the Nigeria IDAs. This was subjected to a five step validation as suggested by Flaherty, Gaviria, Pathak, Mitchell, Wintrob, and Richman which resulted a total of twenty five item after a pilot testing among 34 IDAs [45]. All items were understood and needed no further restructuring. The Nigeria HTQ part I version comprises 25 items. The guidelines required for the HTQ was followed as the participants were accessed with the 25 potentially traumatic events questions and to respond according to individual events using a four Likert options (N = No, H= Heard about, W=Witnessed, E= Experience). Part I of the Nigeria HTQ version measures the following four dimensions of traumatic experience: Boko-Haram (eight items,  $\alpha = .86$ ), Family loss (six items,  $\alpha = .88$ ), Material loss (three items,  $\alpha = .92$ ), and Forced

displacement difficulties (eight items,  $\alpha = .93$ ). For the whole scale a total Cronbach's alpha of  $\alpha = .94$  was obtained, showing a high reliability of the scale. Fox and Tang are of the view that the 'experience' option indicates direct exposure of conflict-related trauma [46]. While higher severity are been underscored by the proximity of the event as symbolized by the 'witnessed' option. In addition, similar to the study by Badri, Crutzen, and Borne among displaced Darfuri females, the current study focused on the 'experienced' and 'witnessed' responses [44]. Accordingly, the 'experienced' and 'witnessed' options were re-coded into binary responses: '1' indicating experience and/or witness of trauma; and '0' indicating heard about or no trauma experience. A sum score was created for all items known as the experienced and /or witnessed cumulative dimension.

*Coping strategies* were measured by the Coping Styles Questionnaire (CSQ) originally consisted of 60 items (4-point Likert scale; 0= never to 3= always) measuring four coping styles: rational coping, emotion-focused coping, avoidance coping and detached coping [47]. In this study, we used the 30 items CSQ to assess coping strategies on three subscale: Problems focused coping (10-items), emotion focused (10-items), and avoidance focused coping (10-items). For the subscale, the relative number that make up each coping style used are: *Problem focused coping* (active coping 2-items, planning 2-items, suppression of competitive activity 2-items, restraint 2-items, seeking social support for instrumental reason 2-items). *Emotion-focused coping* (positive integration and growth 1-item, seeking social support for emotional reason 2-items, turning to religion 1-item, acceptance 2-items, venting emotions 4-items). *Avoidance coping* (denial 3-items, mental disengagement 3-items, behavioral disengagement 4-items). Elklit, Ostergard, Kjaer, Lasgaard and Palic reported internal consistency of the three subscales for a population of young refugees, in which the reliability ranged from modest to satisfactory (rational coping  $\alpha = .79$ ; emotion-focused coping  $\alpha = .58$ ; avoidance coping  $\alpha = .68$ ). In the present study a Cronbach's alpha of .84 was obtained for the problem coping, .78 for emotion coping and .91 for avoidance coping, replicating this high reliability [48].

*Social support* was measured by the Crisis Support Scale (CSS), which assesses the accessibility or availability of other people, who provide emotional and practical support when required, and who are willing to listen, and help with practical things in times of crisis [48,49]. In this study, the CSS seven items were used to measure levels of perceived social support during the displacement stages.

The responses are rated on a seven-point Likert scale. A higher score indicated a higher level of perceived crisis support. In the present study the score will be dichotomized into low and high social support.

The CSS appears to be a reliable and effective instrument for the assessment of social support, mainly because of its brevity and the inclusion of multidimensional feature of social support. Similarly, Elklik, et al. reported good internal consistencies of the CSS in their study among young refugees (CSS T1  $\alpha = .70$ ; T2 =  $\alpha .80$ ) [48]. In the present study a Cronbach alpha of .84 was obtained showing a high reliability of the scale.

*Optimism* was measured by the Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges), which measures dispositional optimism [50]. Of the 10-item self-report questionnaire, optimism is measured with 3 items and pessimism with another three items. Another 4 items are filter items. The 10-item LOT-R includes assesses statements such as "In uncertain times, I usually expect the best" and "I rarely count on good things happening to me". Items are scored on a scale from 0 (strongly disagree) to 4 (strongly agree). Scoring is kept continuous, as there is no benchmark for being an optimist/pessimist. The LOT-R has been found to possess adequate predictive and discriminant validity with a Cronbach's alpha of .78. In addition, in the present study a Cronbach's alpha of .63 was obtained, showing a minimum acceptable reliability.

According to Scheier, Carver and Bridges the test-retest correlations ranged from 0.56 to 0.79 when administered at intervals ranging from 4 to 28 months. The LOT-R has been used among displaced and adolescent populations [50,52].

### Statistical Analyses

All data were analyzed using the Statistical Package for the Social Sciences (version 24.0 for Windows). Firstly, in order to test research question one zero-order correlations were conducted to test for the direction of the association between trauma, coping strategies, coping resources and mental health outcomes. Secondly, research question two was tested by use of multiple hierarchical regression analyses to study the variance of traumatic events, coping strategies and coping resources (social support and optimism) on mental health outcomes (insomnia, depression and anxiety). The assumptions underlying hierarchical multiple regression were assessed with a sample size of 136 adequate to examine

the six included independent variables and measures of collinearity were acceptable [53].

### Results

Of the 136 participants,  $n = 51(37\%)$  had no formal education,  $n = 66(48\%)$  had primary education, and  $n = 17(13\%)$  had completed their secondary education, while  $n = 2(1.5\%)$  were attending university education. A total of  $n = 58(43\%)$  of the participants were married,  $n = 74(54\%)$  were single, while  $n = 4(2.9\%)$  were widowed. Of the participants,  $n = 109(80.1\%)$  lived in the camp while  $n = 27(19.9\%)$  lived in host community. Participants without any religion was  $n = 1(0.7)$ , Muslims were  $n = 9(6.6\%)$  and  $n = 126(92.6\%)$  were Christians. In term of participants needs a total of  $n=57(41.9\%)$  were in need of financial support,  $n = 20(14.7\%)$  needs were to return back to their displaced home,  $n = 19(14.0\%)$  were in need of food and accommodation,  $n = 17(12.5\%)$  were in need of peace,  $n = 14(10.3\%)$  were in need of education and  $n = 9(6.6\%)$  need government assistant. Further results showed that 17(12.5%) reported absence of insomnia, 58(42.6%) had sub-threshold of insomnia, 38(27.9%) had moderate level of insomnia and 23(16.9%) had severe level of insomnia. Based on the RCADS-S cut-off point as recommended by Ebesutani, et al. (2012) [40] for depression elevation shows that: 34 (25.0%) had normal level of depression, 62 (45.6%) had borderline depression and 40 (29.4%) showed clinical levels of depression. For the anxiety total scale, 42 (30.9%) had normal level of anxiety, 60 (44.1%) had borderline level of anxiety and 34 (25.0%) showed clinical levels of anxiety.

Results from Table 1 shows that there was statistically significant correlation between different displacement factors with insomnia, depression and anxiety. The results from the correlation analysis shows that at 95% confidence interval only whom participants are living with (p-value 0.003) associated with depression. While, the participants needs (p-value 0.038, 0.000 and 0.000, respectively) are associated with insomnia, depression and anxiety. Furthermore, among all significant correlations whom participants are living with were negatively correlated with depression ( $r=-0.251$ ), whereas participants needs were positively correlated with insomnia ( $r = 0.178$ ), depression ( $r = 0.416$ ), and anxiety ( $r = 0.360$ ). In addition, there was no significant association of age, gender, time spent at present place, and duration of displacement with insomnia, depression and anxiety. Similarly, no significant associations of whom participants are living with were found on insomnia and

anxiety symptoms. However, these results implies that socio-demographic parameters (age and gender), and displacement factors (time spent at present place and duration of displacement) were not significant correlates

of insomnia, depression and anxiety symptoms. Likewise, whom participants are living with were not significant correlates of insomnia and anxiety symptoms.

Parameter	Insomnia		Depression		Anxiety	
	R	p	r	p	r	P
Age	.158	.088	-.024	.783	.036	.674
Gender	.054	.529	-.063	.465	-.021	.810
Time spent at present place	.095	.272	.154	.074	.128	.139
Duration of displacement	-.088	.309	-.022	.799	-.001	.988
Whom are you living with	-.012	.890	-.251**	.003	-.132	.126
What are your needs	.178*	.038	.416**	.000	.360**	.000

r = Correlation co-efficient; p = Significance; Negative values specify opposite correlation.

\*\* Correlation is significant at 0.01 level (2-tailed). \*Correlation is significant at the 0.05 level (2-tailed)

**Table 1:** Correlation between socio-demographic, displacement parameters, insomnia, depression and anxiety.

As shown in Table 2, the traumatic events score had significant positive relationship with insomnia. The results show that high traumatic event scores were associated with higher levels of insomnia. There were significant inverse relationships between problem focused coping, emotional focused coping and insomnia. Avoidance coping, social support and optimism were not significantly related to insomnia.

There was a significant positive relationship between traumatic events and depression, indicating that the

higher the traumatic events the higher the depression. In addition, there were significant inverse relationships between problem-focused coping, emotion-focused coping, avoidance-focused coping, social support and depression. Finally, traumatic events scores were significantly and positively related to anxiety. There was significant inverse relationships between problem focused coping, emotional focused coping, avoidance coping, social support and anxiety.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1. Insomnia	14.36	6.49	-								
2. Depression	26.01	6.98	.55**	-							
3. Anxiety	39.93	10.14	.57**	.90**	-						
4. Traumatic event	43.68	14.52	.51**	.47**	.45**	-					
5. Problem coping	19.99	6.49	-.29**	-.54**	-.59**	.17*					
6. Emotion focus coping	19.43	6.57	-.23**	-.50**	-.53**	.21*	.79*	-			
7. Avoidance coping	20.66	7.23	-.11	-.50**	-.48**	.21*	.66*	.75**			
8. Social support	32.70	7.87	-.06	-.27**	-.32**	-.10	-.05	-.10	-.18*	-	
9. Optimism	11.88	2.41	.07	.08	.15	-.07	-.20*	-.21*	-.08	.13	-

Note. \*\*Correlation is significant at the 0.01 level (2-tailed). \*Correlation is significant at the 0.05 level (2-tailed).

**Table 2:** Zero-order correlation showing the associations between traumatic events, problem coping, emotion focused coping, avoidance coping, social support, optimism, insomnia, depression and anxiety.

### The Variance on the Insomnia based on Severity of Traumatic Events, Coping and Coping Resources

From the hierarchical regression analysis, the first model (see Table 3) revealed that traumatic events contributed approximately 51% observed variance in

insomnia symptoms. The result also showed that traumatic events had a significant influence on insomnia. In the second model, the introduction of coping strategies significantly increased the variance observed in the insomnia symptoms by 7%. Traumatic events, problem focused coping and avoidance coping were significant independent predictors of insomnia. In the third model,

addition of coping resources contributed 1% to the model. While traumatic events, problem focused coping and avoidance coping remained significant predictors of insomnia, the influence of emotional focused coping, social support and optimism were non-significant in this

model. The results demonstrated that respondents with higher traumatic events and avoidance coping strategy had significantly higher insomnia scores, while those with higher problem coping strategy had significantly lower insomnia.

PREDICTORS	MODEL I			MODEL II			MODEL III		
	B	T	P	B	T	P	B	T	p
Traumatic events	.51	6.93**	<.01	.50	6.80**	<.01	.503	6.85*	<.05
Problem coping				-.32	-2.74*	<.05	-.316	-2.65*	<.05
Emotion focus coping				-.05	-.38	>.05	-.056	-.41	>.05
Avoidance coping				.24	2.21*	<.05	.225	2.00*	<.05
Social support							-.083	-1.12	>.05
Optimism							-.017	-.23	>.05
R		.513 <sup>a</sup>			.578 <sup>b</sup>			.584 <sup>c</sup>	
R <sup>2</sup>		0.26			0.33			0.34	
Δ R <sup>2</sup>		0.26			0.313			0.310	
Df		1,134			4,131			6,129	
F		47.97			16.39			11.11	

Note. Significance levels \* $p < .05$ , \*\* $p < .01$

**Table 3:** Summary of hierarchical regression analysis showing the influence of traumatic events, coping strategies and coping resources on insomnia.

### The Variance on the Depression Score based on Severity of Traumatic Events, Coping and Coping Resources

In the first model explaining variance of depression scores (Table 4), traumatic events significantly predicted depression. The traumatic events contributed 47% to the variance observed in the depression score. The addition

of the coping strategies in the second step to the model contributed about 21% observed variance on depression score. Traumatic events and problem focused coping were significant independent predictors of depression. In the third model, addition of coping resources contributed 3% to the model.

PREDICTORS	MODEL I			MODEL II			MODEL III		
	B	T	P	B	T	p	B	T	P
Traumatic events	.47	6.17**	<.01	.37	5.60**	<.01	.36	5.59**	<.01
Problem coping				-.34	-3.18*	<.05	-.37	-3.54**	<.01
Emotion focus coping				-.03	-.22	>.05	-.05	-.39	>.05
Avoidance coping				-.18	-1.76	>.05	-.11	-1.13	>.05
Social support							-.20	-3.10*	<.05
Optimism							-.07	-1.02	>.05
R		.470 <sup>a</sup>			.676 <sup>b</sup>			.704 <sup>c</sup>	
R <sup>2</sup>		0.221			0.457			0.496	
Δ R <sup>2</sup>		0.215			0.440			0.472	
Df		1,134			4,131			6,129	
F		38.05			27.12			21.12	

Note. Significance levels \* $p < .05$ , \*\* $p < .01$ .

**Table 4:** Summary of hierarchical regression analysis showing the influence of traumatic events, coping strategies and coping resources on depression.



Traumatic events, problem focused coping, and social support remained significant independent predictors of depression whereas, the influence of emotion focused, avoidance coping and optimism were non-significant in the model. The result indicated that respondents with high level of traumatic events significantly reported higher level of depression. Whereas, respondents with high level of problem focused coping and high social support significantly reported low depression.

### The Variance on the Anxiety Score Based on Severity of Traumatic Events, Coping and Coping Resources

At step 1 the result revealed that traumatic events significantly predicted anxiety, and accounted for

approximately, 45% of variance observed in the anxiety score (Table 5). The addition of the coping strategies to the model significantly accounted for 24% of variance in anxiety. It was further revealed that traumatic events, problem focused coping were significant independent predictors explaining the variance on anxiety score. The addition of coping resources to the model contributed 5% observed variance on the anxiety score. Traumatic events, problem focused coping and social support were significant independent factors explaining the variance on anxiety score, the influence of emotion-focused, avoidance coping and optimism were non-significant in the model. This implies that respondents with high level of traumatic events significantly reported higher anxiety. More so, those with high problem focused coping and high social support significantly reported lower level of anxiety.

PREDICTORS	MODEL I			MODEL II			MODEL III		
	B	T	P	B	T	P	B	T	p
Traumatic events	.45	5.75**	<.01	.34	5.25**	<.01	.33	5.26**	<.01
Problem coping				-.43	-4.09**	<.01	-.46	-4.58**	<.01
Emotion focus coping				-.04	-.35	>.05	-.04	-.39	>.05
Avoidance coping				-.10	-.98	>.05	-.03	-.36	>.05
Social support							-.25	-4.03**	<.01
Optimism							-.00	-.07	>.05
R		.445 <sup>a</sup>			.687 <sup>b</sup>			.729 <sup>b</sup>	
R <sup>2</sup>		0.198			0.472			0.532	
Δ R <sup>2</sup>		0.192			0.456			0.510	
Df		1,134			4,131			6,129	
F		24.82			29.25			24.40	

Note. Significance levels \* $p < .05$ , \*\* $p < .01$

**Table 5:** Summary of hierarchical regression analysis showing the influence of traumatic events, coping strategies and coping resources on anxiety.

### Discussions

This study is, to the best of our knowledge, the first to explore the association between traumatic events, coping strategies, coping resources with mental health outcomes and is conducted for the purpose of exploring the impact of those factors on mental health among a sample of IDAs in Nigeria.

First, our study shows none statistically significant association of age, gender, time spent at present place, duration of displacement with insomnia, depression and anxiety. Whereas, participants needs were positively associated with insomnia, depression and anxiety. However, whom participants are living with were significantly associated with high level of depression, nevertheless no statistically significant were found for

insomnia and anxiety. In terms of whom participants are living with our finding is not in congruence with previous work noting association between anxiety and whom participants are living with (Abbo, Kinyanda, Kizza, Levin, Ndyabangi & Stein) [54].

Second, and similar to previous research, this study found a high level of mental health symptoms among IDAs and a positive association between traumatic events and mental health symptoms. Our results were consistent with the study of Goldstein, Wampler and Wise in war exposed Bosnian children, with greater symptoms of depression and anxiety reported as associated with traumatic events such as witnessing death, injury or torture of a member of their nuclear family [55]. Furthermore, this result is comparable with the study of Durakovic-Belko, Eulenovic and Dapic that found 8% of

war traumatic score predicted depression symptoms among children and young people [56]. Similarly, our findings supported other studies, which indicated that people who are subjected to traumatic events such as escaping from a war zone, exposure to violence, loss of family members, and forced displacement, regularly suffer from sleep disturbances. For instance, Cernovsky found that for Czechoslovakian refugees living in Switzerland, escaping from conflict was inversely related to incidence of sleep problems (such as restless sleep and difficulties falling asleep) [57]. Similarly, a study by Basishvili et al., found that after 15 years of displacement to Tbilisi, internally displaced persons from Abkhazia still suffered from insomnia as result of over thinking and traumatic stress exposure was strongly related to the IDPs' vulnerability of insomnia [39]. Also, for sample of North Korean refugees Lee, Jun, Lee, Park, Kim, Lee and Kim, reported that insomnia was positively associated with traumatic events [58].

In terms of coping strategies, Coyne and Racioppo found that emotion focused coping and avoidance coping are generally related to worse mental health outcomes [59]. This is not in congruence with this study's findings in which problem, emotion, and avoidance focused coping had significant inverse relationship with depression and anxiety. Our findings also contradict those of Emmelkamp, Komproe, Van Ommeren and Schagen who found problem focused coping strategies (working as a coping strategy), and avoidance coping strategies (drinking alcohol, ignoring problems and isolating oneself) were significantly positively associated with elevated depression and anxiety symptoms among Bhutanese refugees in Nepal [60]. This indicated that coping through problem focused coping does not protect against mental health problems. However, problem focused coping has a complex relationship with mental health outcomes. Indeed, some studies found little or no association between problem focused coping and mental health [61,62], and for avoidance coping strategies and mental health [63,64]. Specifically, one explanation to which problem focused coping positively associated with depression and anxiety, as reported by Emmelkamp et al., could be linked to the evidence indicating that problem focused coping do not necessarily protect against poor mental health across all populations and age groups [60]. For instance, children and adolescents coping strategies are often noted to vary from those of adults [65,66]. This is due to several factors such as developmental stage, and level of cognitive and emotional maturity [67]. Nevertheless, our study strongly supported the assertion of Lazarus and Folkman that people usually resort to a

combination of problem-focused and emotion-focused coping in stressful encounters [23]. In addition, Weisz, McCabe, and Dennig suggested that the use of multiple coping strategies (i.e., problem, emotion, and avoidance-focused strategies) in conflict settings is particularly critical to resilience and better mental health outcomes [24]. This is congruent with our findings where internally displaced adolescents endorse various coping strategies (problem focused coping, emotion focused coping and avoidance coping strategies) in adjusting their mental health symptoms.

In terms of social support as a coping resource, our findings are consistent with the study of Paardekooper which shows that higher social support of Sudanese refugee children living in camp in Uganda tended to have lower levels of depression [68]. Similarly, Allden, et al. (1996) found lower depression and anxiety symptoms scores among Burmese refugees who reached out to 'friends' [61]. Pedersen, Tremblay, Errazuriz and Gamarra and Maerker, Povilonyte, Lianova and Pohlmann had similar findings in Peru and Chechnya, respectively [69,70]. In this manner, our findings corroborate other research indicating that social support is important predictor of mental health problems [71]. Likewise, these findings resonate with the importance of social support identified as a protective factor in several studies of the mental health of war-affected children [72,73].

The hierarchical regression models revealed that traumatic events contributed 51% variance observed for insomnia, 47% for depression and 45% for anxiety. Traumatic events, problem focused coping, avoidance coping were the only independent predictors of insomnia in the third step of the model. Also, traumatic events, problem focused coping and social support were independent predictors of depression and anxiety in the third step of those models [74-76]. Our study further revealed that the contribution of coping strategies variance on mental health outcomes were 7% in insomnia, 21% for depression and 24% for anxiety. In contrast, coping strategies did not contribute significantly in the prediction of depression in the study of children and adolescents from the former Yugoslavia [56].

Besides that coping contributed to the variance in the models, traumatic events accounted for a larger proportion of the variance on mental health outcomes, such that increased exposure of traumatic events significantly increased respondent insomnia, depression and anxiety symptoms. However, this study first and foremost underlines that traumatic events are a strong

predictor of mental health problems and particularly are important to consider for the mental health of IDAs.

### Limitations and Strengths

As this study utilizes a cross-sectional design the results do not allow for strong conclusions to be made concerning the cause and effect relationship between variables. Rather, it only allows understanding temporal relationship between the studied variables. In addition, retrospective data are potentially subject to recall bias. Participants who have been displaced for several years, experience chronic, or more traumatizing violence during displacement may be less likely to remember distant experiences that occurred during the initial conflict. The use of both disproportionate stratified and purposive sampling means that we were unable to adjust for the population estimates, meaning that the data may have a potential sampling bias that might have affected the representativeness of the IDAs' population parameters. Nevertheless, our study has several strengths. First, this is one of the largest studies to examine the association of socio-demographics/displacement parameters, traumatic events, coping strategies and coping resources on mental health outcomes. Secondly, next to that of providing variance of these factors on mental health outcomes, our study is a small contribution to the gap in the literature by providing internationally comparable data [77-80].

### Conclusion and Perspectives

Problem-focused coping, and avoidance coping appeared to be protective against insomnia, likewise, problem-focused coping and social support appeared to be protective against depression and anxiety, whereas severity of traumatic events appeared to be associated with increased poor mental health problems (insomnia, depression and anxiety). Our findings, in terms of the predictive influence of traumatic events, coping strategies and social support used by the IDAs may be useful to establish an evidence based upon which policy and programming decisions may sit.

The results obtained in this study are largely consistent with most studies across displaced populations. What this current study adds, is the displacement factors and combined endorsement or utilization of problem, emotion, and avoidance-focused coping strategies in the adjustment of mental health problems. In addition, it is likely that when displacement stressors seem uncontrollable engaging emotion-focused coping can then be negatively associated with mental

health problems. More research is needed to understand these dynamics in more details. Thus, considering the fact that adolescents are still within their developmental stage, we do not know if their coping reaction in endorsing different form of coping strategies vary by age or as they develop into adulthood and so a longitudinal study will be invaluable to this direction. However, based on the study's overall findings, we recommended for improvement on social support together with the process that can enable the integration of problem, emotion, and avoidance-focused coping strategies for IDAs. In addition, intervention that is focused on supporting IDAs needs would be invaluable since increased needs of the respondents significantly increased their mental health problems. Finally, the results of this study suggest that coping strategies of IDAs are important predictors of mental health problems; therefore, it is of necessity for mental health professionals, to pay attention to these aspects.

### Authors Contribution

**DPO:** General design, writing the manuscript, data analysis and acquisition, interpretation, approval of the final version. **DJ:** Study design, feedback on data analysis, revisions of manuscript, and approval of the final manuscript. **YI:** Data collection, approval of the final manuscript. **SIA:** Data coding, approval of the final manuscript.

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