EUROPEAN JOURNAL OF PSYCHOTRAUMATOLOGY
2022, VOL. 13, 2007730
https://doi.org/10.1080/20008198.2021.2007730

EUROPEAN JOURNAL OF PSYCHO-TRAUMATOLOGY
THE OFFICIAL JOURNAL OF THE EUROPEAN SOCIETY FOR TRAUMATIC STRESS STUDIES

Taylor & Francis
Taylor & Francis Group

BASIC RESEARCH ARTICLE

OPEN ACCESS Check for updates

Post-traumatic stress disorder, depression and the associated factors among children and adolescents with a history of maltreatment in Uganda

Herbert E. Ainamani[a], Roland Weierstall-Pust[b], Ronald Bahati[c], Anne Otwine[c], Sam Tumwesigire[d] and Godfrey Z. Rukundo[e]

[a]Department of Mental Health, Kabale University-School of Medicine, Kabale, Uganda; [b]Medical School of Hamburg Department of Clinical Psychology and Psychotherapy, Germany and Oberberg Group, Berlin, Germany; [c]Department of Public Health and Bio Medical Sciences, Bishop Stuart University, Mbarara, Uganda; [d]Department of Pediatrics, Kabale University School of Medicine, Kabale, Uganda; [e]Department of Psychiatry, Mbarara University of Science and Technology, Mbarara, Uganda

ABSTRACT

Worldwide, children who grow up under adverse conditions risk the development of mental health problems. However, reliable data on the estimated magnitude of mental disorders of PTSD, depression and their associated factors among maltreated children and adolescents in low- and middle-income-countries (LMICs) is still lacking. This study estimated the magnitude of PTSD, depression and the associated factors among the children and adolescents with ahistory of maltreatment in Southwestern Uganda.

Methods: In this cross-sectional study, we assessed 232 children and adolescents on the prevalence of PTSD using Child PTSD Symptoms Scale for DSM-5 – Self-Report (CPSS-VSR) and Depression using the Center for Epidemiological Studies Depression Scale for Children (CES-DC). Predictor variables were taken from the Maltreatment and Abuse Chronology of Exposure- Paediatric Version (Pedi MACE). Logistic regressions analyses were selected for statistical modelling while odds-ratios were calculated to assess the strength of associations between the predictor and outcome variables.

Results: In total, 140 (60%) participants fulfiled diagnostic criteria for PTSD and 91 (39%) for depression respectively. Predictor variables of PTSD were witnessing intimate partner violence (OR = 1.48, 95% CI: 1.19–1.83, p = <0.001), having lived in more than two homes (OR = 2.69, 95%CI: 1.34–5.41, p = .005), and being cared for by non-relatives (OR = 2.25; 95%CI: 2.26–223.9, p = .008). Variables predicting depression were witnessing intimate partner violence (OR = 1.30; 95%CI: 108–1.57, p = .006); being cared for by non-relatives (OR = 5.62, 95%CI: 1.36–23.1, p = .001) and being female (OR = .054, 95% CI: 0.30–1.00, p = .005).

Conclusion: Children living under adverse conditions are at a higher risk of developing PTSD and depression. We recommend interventions that aim at reducing adverse psychosocial stressors so as to improve or restore the children's mental health.

Abbreviations: PTSD: Post traumatic stress disorder; LMICs: Low- and middle-income countries; IPV: Intimate partner violence; OVC: Orphans and vulnerable children

ARTICLE HISTORY

Received 23 August 2021
Revised 28 October 2021
Accepted 8 November 2021

KEYWORDS

Adolescents; children; depression; maltreatment; PTSD; Uganda

PALABRAS CLAVE

Adolescentes; Niños; Depresión; Maltrato; TEPT; Uganda

关键词

青少年; 儿童; 抑郁; 虐待; PTSD; 乌干达

HIGHLIGHTS

- Children with a history of maltreatment are likely to meet depression and PTSD diagnosis that is associated with factors such as witnessing intimate partner violence, living in multiple homes, having been cared for by none relatives and being female.

Trastorno de estrés postraumático, depresión y factores asociados en niños y adolescentes con antecedentes de maltrato en Uganda

En todo el mundo, los niños que crecen en condiciones adversas corren el riesgo de desarrollar problemas de salud mental. Sin embargo, todavía faltan datos fiables sobre la estimación de la magnitud de los trastornos mentales de estrés postraumático (TEPT), la depresión y sus factores asociados entre los niños y adolescentes víctimas de maltrato en países de ingresos bajos y medios (PIBM). Este estudio estimó la magnitud del trastorno de estrés postraumático, la depresión y los factores asociados con estos trastornos entre los niños y adolescentes con antecedentes de maltrato en el suroeste de Uganda.

Método: En este estudio transversal, evaluamos a 232 niños y adolescentes en edad escolar respecto a la prevalencia de TEPT utilizando la Escala de síntomas de TEPT infantil para el DSM-5 - Autoinforme (CPSS-VSR) y la depresión utilizando la Escala de depresión del Centro de Estudios Epidemiológicos para Niños (CESDC). Las variables predictoras se tomaron de la Cronología de la Exposición al Maltrato y Abuso, versión pediátrica (Pedi MACE). Se seleccionaron análisis de regresión logística para el modelo estadístico, mientras que se calcularon las razones de probabilidad para evaluar la fuerza de las asociaciones entre las variables predictoras y resultantes.

Resultados: En total, 140 (60%) participantes cumplieron los criterios de diagnóstico de TEPT y 91 (39%) de depresión, respectivamente. Las variables predictoras de TEPT fueron presenciar violencia de pareja (OR = 1,48, IC del 95%: 1,19 - 1,83, p = <0,001), haber vivido en más de dos hogares

CONTACT Herbert E. Ainamani hainamani@kab.ac.ug Department of Mental Health, Kabale University-School of Medicine, P. O. Box 317, Kabale, Uganda

(OR = 2,69, IC del 95%: 1,34 – 5,41, p = 0,005), y ser atendido por no familiares (OR = 2,25; IC 95%: 2,26 - 223,9, p = 0,008). Las variables que predicen depresión fueron presenciar violencia de pareja (OR = 1,30; IC del 95%: 108–1,57, p = 0,006); estar al cuidado de no-familiares (OR = 5,62, IC 95%: 1,36-23,1, p = 0,001) y ser mujer (OR = 0,054, IC 95%: 0,30-1,00, p = 0,005).
Conclusión: Los niños que viven en condiciones adversas, como la exposición a la violencia de la pareja y permanecer en varios hogares, tienen un mayor riesgo de desarrollar trastorno de estrés postraumático y depresión. Recomendamos intervenciones que tengan como objetivo reducir los estresores psicosociales adversos para mejorar o recuperar la salud mental de los niños.

乌干达有虐待史儿童和青少年的创伤后应激障碍, 抑郁及相关因素

在世界范围内, 在不良条件下长大的儿童有发展心理健康问题的风险。然而, 关于中低收入国家 (LMIC)中受虐待儿童和青少年中 PTSD, 抑郁及其相关因素的精神障碍预估水平的可靠数据仍然缺乏。本研究估计了乌干达西南部有虐待史儿童和青少年中 PTSD 和抑郁的严重程度以及这些疾病相关因素。
方法: 在本横断面研究中, 我们使用 DSM-5 儿童 PTSD 症状量表 - 自我报告 (CPSS-VSR) 评估了 232 名学龄儿童和青少年的 PTSD 流行率, 使用流行病学研究中心儿童抑郁量表(CESDC)评估了其抑郁流行率。预测变量取自虐待和滥用暴露年表– 儿童版 (Pedi MACE)。选择逻辑回归分析进行统计建模, 同时计算优势比以评估预测变量和结果变量之间的关联强度。
结果: 总共有 140 (60%) 名和 91 (39%) 名参与者分别符合 PTSD和抑郁的诊断标准。 PTSD 的预测变量是目睹亲密伴侣暴力 (OR = 1.48, 95% CI:1.19–1.83, p= <0.001), 住在两个以上家中 (OR = 2.69, 95%CI:1.34– 5.41, p= .005) 和由非亲属照顾 (OR = 2.25; 95%CI:2.26– 223.9, p= .008) 。预测抑郁的变量是目睹亲密伴侣暴力 (OR = 1.30;95%CI:108– 1.57, p= .006);由非亲属照顾 (OR = 5.62, 95% CI: 1.36-23.1, p= .001) 和女性 (OR = .054, 95% CI: 0.30-1.00, p= .005)。
结论: 生活在不良条件下的儿童, 例如遭受亲密伴侣暴力和住在不同家中, 患 PTSD 和抑郁的风险更高。我们建议采取旨在减少不良心理社会应激源的干预措施, 以改善或恢复儿童的心理健康。

1. Background

Posttraumatic stress disorder (PTSD) and depression are the major psychiatric conditions studied within the vulnerable communities such as those exposed to violence and child maltreatment of all forms (Ainamani, Elbert, Olema, & Hecker, 2020; Bapolisi, Song, Kesande, Rukundo, & Ashaba, 2020; Cluver & Gardner, 2006; Horesh, Lowe, Galea, Uddin, & Koenen, 2015; O'Donnell, Creamer, & Pattison, 2004; Olema, Catani, Ertl, Saile, & Neuner, 2014; Thabet, Abed, & Vostanis, 2004). These mental disorders occur in different communities and across age groups including children and adolescents (Cao, Wang, Cao, Zhang, & Elhai, 2017; Telman et al., 2016).

Although the clinical features are generally similar in different subpopulations, there are some variations in clinical presentations. For example, children with depressed moods may often exhibit irritability and behavioural changes (Krieger, Leibenluft, Stringaris, & Polanczyk, 2013; Stringaris, Maughan, Copeland, Costello, & Angold, 2013). Furthermore, children with PTSD may also exhibit excessive fear and sleep problems, compared to adults who may be able to describe typical features of PTSD (Cao et al., 2017; Margolin & Vickerman, 2007; Scheeringa, 2011). Previous studies on PTSD and depression in East Africa have largely focused on adult populations with little emphasis on maltreated children and adolescents (Ainamani, Elbert, Olema, & Hecker, 2017; Ainamani et al., 2020; Bapolisi et al., 2020). The few available studies on children and adolescents have concentrated on cognitive functioning of children living with HIV (Ashaba et al., 2018; Nakasujja et al., 2010; Nampijja et al., 2018) and other behavioural problems related to childhood maltreatment other than PTSD and depression (Hecker, Hermenau, Salmen, Teicher, & Elbert, 2016; Nkuba, Hermenau, Goessmann, & Hecker, 2018; Ssenyonga, Magoba Muwonge, & Hecker, 2019; Thabet et al., 2004).

In addition, most humanitarian aid targeting maltreated children and adolescents has focused on the provision of education, food and child protection mainly for orphans and other vulnerable children (OVC) with no focus on the mental health problems (Gana et al., 2014; Roelen, Delap, Jones, Chettri, & Review, 2017). Yet, orphans and vulnerable children often come from socially disadvantaged communities with experiences of all forms of child maltreatment that may take any form of abuse and neglect by a parent, caregiver, or community member that results in potential physical, emotional or sexual harm (Afifi et al., 2015; Gilbert et al., 2009; Stoltenborgh, Bakermans-kranenburg, Alink, & van Ijzendoorn, 2014).For example, child maltreatment may take on potentially traumatic events such as witnessing intimate partner violence, or sibling being beaten by an adult or a fellow child, witnessing or experiencing rape or sexual assault, verbal abuse and perceiving that their feelings have not been understood by family members or other adults either at home or in the community (Ainamani, Rukundo,

Nduhukire, Ndyareba, & Hecker, 2021; Leeb & Fluke, 2015).

Interestingly, studies from high-income countries have indicated a high comorbidity rate of depression and PTSD (Breslau, Davis, Peterson, & Schultz, 1997; Kessler et al., 2005; Norris, Murphy, Baker, & Perilla, 2004; Schlenger et al., 1992). A recent systematic review of studies in LMICs found the prevalence of depressive symptoms at 28% and PTSD at 87% among the youth (Kolaitis, 2017). A Ugandan study among 102 former child soldiers attending primary schools in Northern Uganda found a PTSD prevalence of 55% and depressive symptoms at 88.2% (Ovuga, Oyok, & Moro, 2008). However, no previous studies in East Africa have assessed the prevalence of PTSD and depression among children and adolescents with a history of maltreatment. Some of the studies in this area have focused on orphan hood and other behavioural problems such as problems with peer, conduct disorders, aggression, and school violence rather than PTSD and depression (Hecker, Hermenau, Isele, & Elbert, 2014; Nkuba et al., 2018).

In the current study, we estimated the prevalence of PTSD, depression and the associated factors among the children and adolescents with a history of childhood maltreatment in Southwestern Uganda. We also identified risk factors that could be targets for future interventions aimed at improving the mental health of maltreated children and adolescents.

2. Methods

2.1. Study design

This was a cross-sectional study in which 223 children and adolescents from two primary schools and one secondary school were recruited.

2.2. Study setting

The study was conducted in the districts of Mbarara and Rubanda in Southwestern Uganda. Two hundred thirty-two children and adolescents between the ages of 8–18 were recruited from two primary schools and one high school. These schools were selected due to the fact that they are supported by not-for-profit organizations for purposes of educating orphans and vulnerable children with severe forms of child maltreat. This region is mainly inhabited by Bantu and non-Bantu ethnic groups with severe domestic violence and children orphaned by HIV (Satzinger, Kipp, & Rubaale, 2012; Schember et al., 2021), child maltreatment (Ainamani et al., 2021; Ssenyonga et al., 2019) and refugee crisis resulting from organized violence in the neighbouring countries (Ainamani et al., 2020; Bapolisi et al., 2020; Onyut et al., 2005).

2.3. Recruitment and sampling procedure

Data were collected from June 2018 to May 2019. The social workers within the schools helped us to locate children and adolescents with a known history of maltreatment. Most of the children identified in our study were those from either dysfunctional household, orphaned by one or two parents, living in a child headed home or living with an old aged grandparent or having been abandoned. Only children between the ages of 8 to 18 were recruited. Two counsellors and one Psychologist conducted the interviews. The interviewers went through one-week training in the psychological assessment and practiced the assessment in joint interviews to accomplish high inter-rater reliability. Generally, each interview took 45–60 minutes in a private setting within the school premises. Children with severe symptoms of depression and PTSD were referred to the nearest health facilities for specialized treatment.

2.4. Ethical considerations

Clearance to conduct research was obtained from Mbarara University Research Ethics Committee (MUST-REC) and Uganda National Council for Science and Technology (UNSCT). Before the interview, content, procedure, risks, the right to withdraw, and confidentiality were explained, and written informed consent (signature or fingerprints) of both caregiver and child were obtained. In addition to their parents, children and adolescents were asked to give their informed assent. Each family received two bars of soap as compensation for taking part in the research project.

2.5. Measures

All instruments were translated into Runyankore Rukiga and back-translated to English in a blind-written form as recommended by previous studies (Beaton, Bombardier, Guillemin, & Ferraz, 2000). Face-to-face interviews included social demographic factors such as age, gender, school, relationship with the current primary caregiver and education level. All the interviews were conducted in English which is official medium of instruction in Ugandan schools.

Children's exposure to family violence and adversities encountered at home and within communities were assessed using the Maltreatment and Abuse Chronology of Exposure Paediatric Version (Pedi MACE). The Pedi MACE has good psychometric measures and has been previously used in comparable samples in Tanzania and Uganda (Ainamani et al., 2021; Hecker et al., 2016; Nkuba et al., 2018). This tool consists of 45 dichotomous (yes/no) questions, measuring witnessed or self-experienced forms of

childhood maltreatment throughout one's lifetime with different subscales (Hecker et al., 2016; Teicher & Parigger, 2015). The subscales that were considered in this study included emotional abuse by adults or parents (five items), physical abuse by parents or guardians at home (six items), witnessing parental intimate partner violence [four items (IPV)], witnessing parental abuse to siblings (four items), and neglect (ten items). We summed up each subscale to come up with sum total scores for each sub-scale that were subsequently used in the analysis.

Depression was assessed using the *Center for Epidemiological Studies Depression Scale for Children* (CES-DC) (Faulstich, Carey, Ruggiero, Enyart, & Gresham, 1986). This is a 20-item self-report depression inventory with total scores ranging from 0 to 60. Each response to an item is scored as: 0 = 'Not at All', 1 = 'A Little', 2 = 'Some', 3 = 'A Lot'. Items 4, 8, 12, and 16 are phrased positively, and thus have to be inverted prior to the calculation of the total score. Higher CES-DC scores indicate higher levels of depression. Scores above 15 indicate significant depressive symptoms in children and adolescents (Costello & Angold, 1988; Margolin & Vickerman, 2007). However, in this study, we adopted a cut off score of >30 symptoms that was used by a research team from Harvard and Rwandan Universities for probable depression among children and adolescents in Rwanda (Betancourt et al., 2012).We considered cultural differences between the other studies that had used this tool and the nearest to our sample was that one carried out in Rwanda with a cut-off point of probable depression at >30 symptoms instead of using the lower threshold of > 15 (Qi, Yang, Tan, Wu, & Zhou, 2019). In the Rwandan study, CES-DC was validated and showed high psychometric measures; Cronbach alpha of 0.86 and test-retest reliability of r = 0.85. In the current study the Cronbach alpha was 0.87.

Post-traumatic stress disorder (PTSD) was assessed using the revised Child PTSD Symptoms Scale for DSM-5 – Self-Report (CPSS-VSR) (Foa, Asnaani, Zang, Capaldi, & Yeh, 2018). This is a 20-item scale that assesses the occurrence and frequency of PTSD symptoms in relation to the most distressing event experienced by an individual. Participants are asked to rate the frequencies of listed symptoms during the previous 2 weeks on a 5-point Likert scale from 0 ('not at all/only once') to 4 ('almost every week'). The scale has four subscales: intrusions, negative cognition and emotion alteration, avoidance, and hyper-arousal. The overall severity of all the four subscales yields up to a total sum score of 80 symptoms severity with a cut off score of 31 on the DSM-5 PTSD to signify probable PTSD diagnosis (Foa et al., 2018; Foa & Tolin, 2000). This scale has been used in Uganda (Ainamani et al., 2021) and provides good psychometric properties and showed high psychometric measures Cronbach alpha of 0.92 and test–retest reliability of r = 0.93 (Qi et al., 2019). In the current study the Cronbach alpha was 0.86.

2.6. Data analysis

Data were analysed using SPSS version 23 for Mac. Descriptive statistics, chi-square and t-tests were used to assess differences in prevalence of PTSD and depression in relation to social demographics. Logistic regression models were used to estimate the associations between predictor and outcome variables of PTSD and depression. Odds-ratios (OR) were calculated.

3. Results

3.1. Sample characteristics

In total, participants were 232 children and adolescents with an average mean age of (14.03, *SD* 3.25). One hundred and twelve (48%) of the participants were females, while 120 (52%) were males. Majority of the participants 145 (63%) attended primary school and 87 (38%) were in high school. One hundred and one participants (44%) had only mothers as their main primary caregivers followed by those who were under the primary care of grandmothers 40 (17%). Twenty-one (9.1%) had primary caregivers as fathers, while 30 (13%) had other relatives as their main primary caregivers. Only 19 (8%) participants were cared for by another person. Overall, 103 (44%) participants reported to have lived with more than two families in their lifetime.

3.2. Prevalence of PTSD and depression

PTSD scores ranged from 0 to 72 with mean scores of 32.48 (*SD* = 15.11) and depression ranged from 02 to 48 with mean scores of 26.31 (*SD* 10.15). Following a previous study [49], a cut-off of score of >31 was used to detect probable PTSD (Costello & Angold, 1988).

In general, the prevalence of PTSD and depression within our sample was at 140 (60%) and 91 (39%), respectively. Participants who lived in more than two homes showed a higher prevalence of PTSD at 75 (73%) and depression at 51 (50%). There were more participants with PTSD among the category that indicated having a mother as their primary caregiver 56 (55%) than the rest of the caregiver categories and the difference was statistically significant (X^2 = 11.46, p < .01). Children in primary school at 48 (33%) showed more depressive symptoms than those in high school. Participants who witnessed IPV had more PTSD symptoms (M = 3.4, SD = 1.94, p = .001) and depression (M = 3.16 SD = 1.97, p < .001). In the same way, participants who witnessed IPV had more PTSD symptoms (M = 3.4, SD = 1.94, p = .001) and

Table 1. Demographic characteristics of the participants with PTSD and depression.

	PTSD (n = 140)				Depression (n = 91)			
Variable	n	%	M	SD	n	%	M	SD
Gender								
Male	62	55			37	33		
Female	78	65			54	45		
Age								
≤12	35	55			19	30		
>12	105	63			72	43		
Level of Education								
Primary	83	57			48	33		
Secondary	57	66			43	49		
Main Career								
Father	14	67			10	48		
Grand mother	24	60			14	35		
Mother	56	55			34	34		
Non-relatives	16	53			12	40		
Other relatives	18	95			13	68		
Siblings	12	57			8	38		
Living >2 homes								
No	65	50			40	31		
Yes	75	73			51	50		
IPV-witnessed			3.14	1.94			3.16	1.77
Witnessing violence against siblings			2.73	2.84			2.92	1.97
Parental emotional abuse			2.21	2.06			2.13	1.71
Parental physical violence			3.23	1.78			3.02	1.57
Neglect			7.66	4.16			5.58	1.67

Notes: X^2. Chi-square, IPV, intimate partner violence, *$p \leq 0.05$. **$p \leq 0.01$. ***$p \leq 0.001$.

depression (M = 3.16, SD = 1.97, $p < .001$). Results are presented in Table 1.

3.3. Factors associated with PTSD among children and adolescents

In a multivariate logistic regression analysis that estimated the association between different predictor variables of PTSD, we found a significant association between exposure to IPV, having stayed in more than two or more homes, and being cared for by non-relatives. Our results showed that children's exposure to intimate partner violence, living in more than two homes and being cared for by non-relatives were strongly associated with PTSD symptoms severity [(OR = 1.48; 95%CI: 1.19 – 1.83), (OR = 2.69; 95% CI: 1.34–5.41) (OR = 22.54; 95%CI: 2.26–223.87)]. Results are shown in Table 2.

3.4. Factors associated with depression among children and adolescents

Binary logistic regression analysis was conducted with gender, age, education, categories of primary caregivers, having lived in two or more homes, and predictor variables of depression such as parental emotional abuse, physical abuse, and parental abuse to siblings, intimate partner violence and child neglect. We found that only exposure to intimate partner violence and being female were strongly associated with depression [(*OR* = 1.3; 95%*CI:* 1.08–1.57), (OR = 0.54, 95% CI, 0.30–1.00)] respectively. Finally, we also found that the odds of developing depression were higher in children who were being cared for by non-relatives (OR = 5.62; 95%CI: 1.36–23.25) than the rest of the caregiver categories. Results are presented in Table 3.

Table 2. Multivariate logistic regression analysis of factors associated with PTSD.

	PTSD			
			95% CI	
	OR	*P*	Lower	Upper
Sex (female)	0.71	0.28	0.37	1.33
Age category (≤12)	0.68	0.36	0.30	1.54
Level of education (high school)	0.72	0.38	0.34	1.51
Primary caregivers' category Siblings (ref)				
Father	1.47	0.61	0.34	6.36
Grand mother	1.42	0.57	0.41	4.94
Mother	1.34	0.61	0.44	4.06
Other relatives	0.79	0.72	0.22	2.89
Non-relatives	22.5	.008	2.26	223.87
Having lived in 2 or > homes	2.69	.005	1.34	5.41
Parental emotional abuse	0.99	0.91	0.81	1.21
Parental physical abuse	1.04	0.74	0.83	1.31
Witnessing violence against siblings	1.31	0.12	0.94	1.82
Intimate partner violence witnessed	1.48	<.001	1.19	1.83
Neglect	1.08	0.34	0.92	1.27

Notes: OR odds ratio, CI, confidence interview, *$p \leq 0.05$. **$p \leq 0.01$. ***$p \leq 0.001$.

Table 3. Multivariate logistic regression analysis of factors associated with depression.

	Depression			
			95% CI	
	OR	*p*	Lower	Upper
Sex (female)	0.54	0.05	0.30	1.00
Age category (≤12)	0.61	0.24	0.27	1.39
Level of education (high school)	0.52	0.06	0.26	1.04
Caregiver categories Siblings (reference)				
Father	1.83	0.41	0.44	7.57
Grand mother	1.05	0.94	0.31	3.56
Mother	1.11	0.86	0.37	3.28
Other relatives	1.03	0.96	0.29	3.70
Non-relatives	5.62	.001	1.36	23.3
Having lived in 2 or > homes	1.69	0.11	0.89	3.21
Parental emotional abuse	1.01	0.91	0.81	1.26
Parental physical abuse	1.05	0.67	0.84	1.31
Witnessing violence against siblings	1.10	0.21	0.95	1.27
Intimate partner violence witnessed	1.30	.006	1.08	1.57
Neglect	1.13	0.19	0.94	1.37

Notes: OR odds ratio, CI, confidence interview, *$p \leq 0.05$. **$p \leq 0.01$. ***$p \leq .001$.

4. Discussion

The main objective of this study was to estimate the prevalence of PTSD, depression and their associated factors among children and adolescents with a history of maltreatment in southwestern Uganda. Our results indicate high prevalence of both PTSD (60%) and depression (39%) among children and adolescents within our sample. Factors that were associated with both PTSD and Depression included; being cared for by non-relatives and witnessing intimate partner violence while being female and living in two or more

homes were associated with depression and PTSD respectively.

The prevalence of PTSD in our study was higher than that of a study in Northern Uganda among abducted former child soldiers (Winkler et al., 2015) and lay within the range of other studies on children and adolescents exposed to war and other natural calamities (Roberts, Ocaka, Browne, Oyok, & Sondorp, 2008). We argue, however, that potential protective factors such as an appetitive processing of violence cues that are appealing and intrinsically rewarding can provide resilience in child soldiers might account for the relatively lower rates found in combatant samples (Hecker, Hermenau, Maedl, Schauer, & Elbert, 2013; Hermenau, Hecker, Maedl, Schauer, & Elbert, 2013). For example, studies have found a buffering effect of appetitive aggression towards the development of PTSD among child soldiers and other combatants (Weierstall, Castellanos, Neuner, & Elbert, 2013).

Different factors such as exposure to intimate partner violence, being cared for by non-relatives, and having lived in two or more homes predicted PTSD in our study. This is in line with prior studies that have found an association between exposure to violence and the risk of developing PTSD among both children and adult samples (Ainamani et al., 2020; Brockie, Dana-Sacco, Wallen, Wilcox, & Campbell, 2015; Margolin & Vickerman, 2007; Olema et al., 2014). Concordantly, epidemiological studies on child and adolescent mental health have found risk factors associated with child mental health to be stressful events, children being raised by single parents, interpersonal violence, foster care disciplining difficulties and unfavourable home environment (Lesinskiene et al., 2018; Salazar, Keller, Gowen, & Courtney, 2013). Furthermore, our finding may be explained by the fact that children who are cared for by non-relatives are often subjected to child maltreatment and hard labour (Andersen, Lyss, Dumont, & Teicher, 1999; Breslau, Davis, Andreski, & Peterson, 1991; Macdonald, Danielson, Resnick, Saunders, & Kilpatrick, 2010; Nkuba et al., 2018; Satterthwaite et al., 2016)., family chaos and less family cohesion (Scheeringa, Wright, Hunt, & Zeanah, 2006). More often, vulnerable children rotate from one home to another seeking for safe shelter. We recommend that policy makers responsible for child advocacy and vulnerability should always consider children whose primary caregivers are non-relatives especially in LMICs where adoption issues are not streamlined. Surprisingly, gender did not predict PTSD in the current sample. This finding contradicts previous findings that have found a correlation between being female and the development of PTSD (Ainamani et al., 2020; Dell'osso et al., 2012; Ehlers & Clark, 2000; Hammen, 2004; Qi et al., 2019). However, most of these studies were conducted in highly traumatized communities and documented rape or overwhelming loss as a pre-conditional factor for developing PTSD, thus explaining the variation between our results and results from previous studies. We found no association between age groups, neglect and symptoms of PTSD. This is not surprising though, as our findings are in line with Wisdom's earlier findings (Widom, 1999) that did not find a correlation between child neglect and PTSD after adjusting for other cofounders. To support this finding, we argue that as opposed to exposure to violence, neglect may not pose a severe personal threat or physical injury such as pushing, shoving, slapping or death of a family member that is highly considered in PTSD diagnosis (Zelazny & Simms, 2015). Moreover, the study of Hecker and others in Tanzania (Hecker, Boettcher, Landolt, & Hermenau, 2019) found a correlation between violence, abuse and mental health problems but not neglect. The contradiction between previous finding on parental, physical abuse, neglect and mental health problems is also likely to result from differences in research study designs of the previous studies. For example, some were prospective studies, others used control groups (Christ et al., 2019; Hayashi et al., 2015; Negele, Kaufhold, Kallenbach, & Leuzinger-Bohleber, 2015; Springer, Sheridan, Kuo, & Carnes, 2003) and others used mediation path models (Klumparendt, Nelson, Barenbrügge, & Ehring, 2019). It is also important to note that most children from our sample were from schools supported by non-profit organizations that provide physical items and it seems the children in these schools no longer feel the pain of neglect since there is readily available food, scholastic items, clothes and accommodation fully paid for.

Our findings on the association of age and PTSD are contradictory to most previous studies that have examined the association between age groups and PTSD (Fan et al., 2017; Scheeringa, Peebles, Cook, & Zeanah, 2001; Scheeringa, Zeanah, Myers, & Putnam, 2003; Schlenger et al., 1992). However, our findings could be supported by earlier findings that discovered that sometimes children do not meet the PTSD diagnosis, due to avoidance and numbing subscales of PTSD that are more internal (Scheeringa, 2011; Scheeringa et al., 2001). The authors recommended a reduction of the number of symptoms required for children to qualify for a PTSD diagnosis.

Furthermore, our findings on the prevalence of depression were higher than most of the previous findings examining this phenomenon (Chapman et al., 2004; Hecker et al., 2016; Karsberg & Elklit, 2012; Shiferaw, Bacha, & Tsegaye, 2018). For example, one study on the prevalence of depression among school-aged children in central Uganda found the prevalence of depression at 21% (Nalugya-Sserunjogi et al., 2016). Surprisingly, findings from our study are lower than one previous study in Rwanda that used the same tool and similar threshold cut-off points to screen for probable depression among 366 adolescents (Betancourt et al., 2012). In this study, the prevalence

of depression was at 47%. A number of assumptions could explain this deviation. Although our sample was relatively small compared to some of the previous study samples, it seems to have been exposed to traumatizing events related to family violence.

Moreover, our sample was selected from the most vulnerable group of children with dysfunctional families as opposed to most of the previous studies whose sample was majorly from nationwide representations (Nalugya-Sserunjogi et al., 2016; Salazar et al., 2013; Shiferaw et al., 2018). Lastly, these deviations from other studies may be partly explained by differences in the design of the studies. For example, research has shown that studies that used research screening instruments showed much higher prevalence of mental health disorders than those which used diagnostic instruments (Cortina, Sodha, Fazel, & Ramchandani, 2012).

Furthermore, factors such as exposure to intimate partner violence, being cared for by strangers or non-relatives, and being female, predicted depression among the children and adolescents in our sample. In line with our findings, previous research has found that mental health disorders, such as depression and anxiety, are associated with poor family bonds and exposure to violence (Pine, Cohen, Gurley, Brook, & Ma, 1998; Thompson, Mazza, Herting, Randell, & Eggert, 2005). In line with the above previous research, the finding that being cared for by non-relatives or strangers was in line with previous research with poor familiar bonds and attachments (Pine et al., 1998). We argue that development of quality bonding and attachment is difficult for children that are cared for by non-relatives or strangers, especially if they are placed in some of these homes after attaining a certain age.

The finding that being female is associated with depression in our study is not surprising. It concurs with previous studies that have found similar results that have found a correlation between women and a number of mental disorders (Hankin, Mermelstein, & Roesch, 2007). This association has been supported by a number of researchers that attribute a number of factors, such as biological and genetic, to including females being more likely to internalize their feelings after a traumatizing event and may subsequently fall into depression (Ainamani et al., 2020; Dell'osso et al., 2012; Hankin et al., 2007; Wang, Lu, Lin, & Zhou, 2019).

A number of limitations for this study should be noted. First, the cross-sectional nature of our study's design does not allow us to assess the extent to which intimate partner violence is related to PTSD and Depression or even how PTSD is related to depression. We recommend prospective studies in the future to shed light on the causal relations. Secondly, our small sample of children and adolescents might not provide a basis for the prevalence of depression and PTSD among the vulnerable maltreated children; however, our findings provide a basis for future studies to establish the prevalence of these mental health disorders.

Third, it is possible that the convenience sampling method could have resulted in a selection bias that limits the ability to generalize our findings. However, the possibility of biases such as social desirability can never be completely ruled out for studies of this kind.

Lastly, our sample was drawn from suspected children and adolescents of maltreatment as endorsed by the social workers. It is possible that some children and adolescents with a history of maltreatment could have been left out. We recommend future studies to include all the children in schools to ascertain the levels of child maltreatment and the prevalence of mental health problems in Uganda.

5. Conclusion

Children and adolescents with a history of maltreatment (OVC) in Uganda are prone to developing PTSD and depression. Equipping community members, caregivers, social workers and teachers with the knowledge about detrimental effects of child maltreatment may be essential for psychological assessment and treatment of maltreated children and adolescents.

Acknowledgments

We thank the children and caregivers who participated in this study; the administrators of New Times Nursery School, Kishanje Highlands High school and Murole Preparatory school. We are grateful to our motivated research assistants; Ninsiima Ainembabazi and Eunice Atuheire for assistance with data collection. We also thank Mr. Chris Brett for proofreading through our paper.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

Research reported in this publication was partially supported by Bishop Stuart University given to HEA as part of staff career development fund in 2018. The funders did not in any way influence the data or results.

Ethics approval and consent to participate

Clearance to conduct research was obtained from Mbarara University Research Ethics Committee (MUST-REC) and Uganda National Council for Science and Technology (UNSCT). To ensure comprehension and full awareness of the content, we collected oral and written informed consent from the participants. Before obtaining consent/assent, the interview, content, procedures, risks, the right to withdraw, and confidentiality were explained. Caregivers consented on

behalf of their children and children provided assent. Each participant was interviewed in a private and quiet setting. Each family received two bars of soap as compensation for taking part in the research project.

Availability of Data and Material

Due to sensitivity and privacy involved in this particular sample of children and the sampled schools, the data sets used and analyzed during the current study are available from the corresponding author on a reasonable request.

Authors' contributions

HEA participated in the conception and design of the study, collected the data, performed the data analyses, interpreted the data, and drafted the manuscript. RWP participated in the conception of the study and provided substantial revision of the manuscript. BR participated in the conception of study and data collection and revised the manuscript.AO and ST participated provided substantial revision of the manuscript and GZR participated in the conception and design of the study and revision of the manuscript. All authors read and approved the final manuscript.

References

Afifi, T. O., Taillieu, T., Cheung, K., Katz, L. Y., Tonmyr, L., & Sareen, J. (2015). Substantiated reports of child maltreatment from the Canadian incidence study of reported child abuse and neglect 2008: Examining child and household characteristics and child functional impairment. *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie*, *60*(7), 315–323. doi:10.1177/070674371506000704

Ainamani, H. E., Elbert, T., Olema, D. K., & Hecker, T. (2017). PTSD symptom severity relates to cognitive and psychosocial dysfunctioning - a study with Congolese refugees in Uganda. *European Journal of Psychotraumatology*, *8*(1), 1283086. doi:10.1080/20008198.2017.1283086

Ainamani, H. E., Elbert, T., Olema, D. K., & Hecker, T. (2020). Gender differences in response to war-related trauma and posttraumatic stress disorder – A study among the Congolese refugees in Uganda. *BMC Psychiatry*, *20*(1), 17. doi:10.1186/s12888-019-2420-0

Ainamani, H. E., Rukundo, G. Z., Nduhukire, T., Ndyareba, E., & Hecker, T. (2021). Child maltreatment, cognitive functions and the mediating role of mental health problems among maltreated children and adolescents in Uganda. *Child and Adolescent Psychiatry and Mental Health*, *15*(1), 22. doi:10.1186/s13034-021-00373-7

Andersen, S. L., Lyss, J., Dumont, N. L., & Teicher, M. H. (1999). Enduring neurochemical effects of early maternal separation on limbic structures. *Annals of the New York Academy of Sciences*, *877*(1), 756–759. doi:10.1111/j.1749-6632.1999.tb09317.x

Ashaba, S., Cooper-Vince, C., Maling, S., Rukundo, G. Z., Akena, D., & Tsai, A. C. (2018). Internalized HIV stigma, bullying, major depressive disorder, and high-risk suicidality among HIV-positive adolescents in rural Uganda. *Global Mental Health (Cambridge, England)*, *5*, e22–e22. doi:10.1017/gmh.2018.15

Bapolisi, A. M., Song, S. J., Kesande, C., Rukundo, G. Z., & Ashaba, S. (2020). Post-traumatic stress disorder, psychiatric comorbidities and associated factors among refugees in Nakivale camp in southwestern Uganda. *BMC Psychiatry*, *20*(1), 53. doi:10.1186/s12888-020-2480-1

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976)*, *25*(24), 3186–3191. doi:10.1097/00007632-200012150-00014

Betancourt, T., Scorza, P., Meyers-Ohki, S., Mushashi, C., Kayiteshonga, Y., Binagwaho, A., … Beardslee, W. (2012). Validating the center for epidemiological studies depression scale for children in Rwanda. *Journal of the American Academy of Child and Adolescent Psychiatry*, *51*(12), 1284–1292. doi:10.1016/j.jaac.2012.09.003

Breslau, N., Davis, G. C., Andreski, P., & Peterson, E. (1991). Traumatic events and posttraumatic stress disorder in an urban population of young adults. *Archives of General Psychiatry*, *48*(3), 216–222. doi:10.1001/archpsyc.1991.01810270028003

Breslau, N., Davis, G. C., Peterson, E. L., & Schultz, L. (1997). Psychiatric sequelae of posttraumatic stress disorder in women. *Archives of General Psychiatry*, *54*(1), 81–87. doi:10.1001/archpsyc.1997.01830130087016

Brockie, T. N., Dana-Sacco, G., Wallen, G. R., Wilcox, H. C., & Campbell, J. C. (2015). The relationship of adverse childhood experiences to PTSD, depression, poly-drug use and suicide attempt in reservation-based native American adolescents and young adults. *American Journal of Community Psychology*, *55*(3–4), 411–421. doi:10.1007/s10464-015-9721-3

Cao, X., Wang, L., Cao, C., Zhang, J., & Elhai, J. D. (2017). DSM-5 posttraumatic stress disorder symptom structure in disaster-exposed adolescents: Stability across gender and relation to behavioral problems. *Journal of Abnormal Child Psychology*, *45*(4), 803–814. doi:10.1007/s10802-016-0193-1

Chapman, D. P., Whitfield, C. L., Felitti, V. J., Dube, S. R., Edwards, V. J., & Anda, R. F. (2004). Adverse childhood experiences and the risk of depressive disorders in adulthood. *Journal of Affective Disorders*, *82*(2), 217–225. doi:10.1016/j.jad.2003.12.013

Christ, C., de Waal, M. M., Dekker, J. J. M., van Kuijk, I., van Schaik, D. J. F., Kikkert, M. J., & Goudriaan, A. E. (2019). Linking childhood emotional abuse and depressive symptoms: The role of emotion dysregulation and interpersonal problems. *PLoS One*, *14*(2), e0211882. doi:10.1371/journal.pone.0211882

Cluver, L., & Gardner, F. (2006). The psychological well-being of children orphaned by AIDS in Cape Town, South Africa. *Annals of General Psychiatry*, *5*(1), 8. doi:10.1186/1744-859X-5-8

Cortina, M. A., Sodha, A., Fazel, M., & Ramchandani, G. (2012). Prevalence of child mental health problems in Sub-Saharan Africa: A systematic review. *Archives of Pediatrics & Adolescent Medicine*, *166*(3), 276–281. doi:10.1001/archpediatrics.2011.592

Costello, E. J., & Angold, A. (1988). Scales to assess child and adolescent depression: Checklists, screens, and nets. *Journal of the American Academy of Child & Adolescent Psychiatry*, *27*(6), 726–737. doi:10.1097/00004583-198811000-00011

Dell'osso, L., Carmassi, C., Stratta, P., Massimetti, G., Akiskal, K. K., Akiskal, H. S., … Rossi, A. (2012). Gender differences in the relationship between maladaptive behaviors and post-traumatic stress disorder. A study on 900 L' aquila 2009 earthquake survivors. *Frontiers in Psychiatry*, *3*, 111. doi:10.3389/fpsyt.2012.00111

Ehlers, A., & Clark, D. (2000). Ehlers A, Clark DM. A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, *38*(4), 319–345. doi:10.1016/S0005-7967(99)00123-0

Fan, M., Li, R., Hu, M., Xiao, L., Zhou, X., Ran, M.-S., & Fang, D. (2017). Association of Val66Met polymorphism at brain derived neurotrophic factor gene with depression among Chinese adolescents after Wenchuan earthquake: An 18 months longitudinal study. *Physiology & Behavior*, *179*, 16–22. doi:10.1016/j.physbeh.2017.05.018

Faulstich, M. E., Carey, M. P., Ruggiero, L., Enyart, P., & Gresham, F. (1986). Assessment of depression in childhood and adolescence: An evaluation of the Center for Epidemiological Studies Depression Scale for Children (CES-DC). *Am J Psychiatry*, *143*(8), 1024–1027. doi:10.1176/ajp.143.8.1024

Foa, E. B., Asnaani, A., Zang, Y., Capaldi, S., & Yeh, R. (2018). Psychometrics of the child PTSD symptom scale for DSM-5 for trauma-exposed children and adolescents. *Journal of Clinical Child & Adolescent Psychology*, *47*(1), 38–46. doi:10.1080/15374416.2017.1350962

Foa, E. B., & Tolin, D. F. (2000). Comparison of the PTSD symptom scale-interview version and the clinician-administered PTSD scale. *Journal of Traumatic Stress*, *13*(2), 181–191. doi:10.1023/a:1007781909213

Gana, C., Adekola Oladele, E., Anoje, C., Saleh, M., Irene, P., Khamofu, H., … Chabikuli, O. N. (2014). Targeting orphaned and vulnerable adolescents with services: Experience with adopting a multisectoral approach in Nigeria. *Vulnerable Children and Youth Studies*, *9*(1), 66–74. doi:10.1080/17450128.2013.802401

Gilbert, R., Widom, C. S., Browne, K., Fergusson, D., Webb, E., & Janson, S. (2009). Burden and consequences of child maltreatment in high-income countries. *Lancet*, *373*(9657), 68–81. doi:10.1016/s0140-6736(08)61706-7

Hammen, C. (2004). Stress and Depression. *Annual Review of Clinical Psychology*, *1*(1), 293–319. doi:10.1146/annurev.clinpsy.1.102803.143938

Hankin, B. L., Mermelstein, R., & Roesch, L. (2007). Sex differences in adolescent depression: Stress exposure and reactivity models. *Child Development*, *78*(1), 279–295. doi:10.1111/j.1467-8624.2007.00997.x

Hayashi, Y., Okamoto, Y., Takagaki, K., Okada, G., Toki, S., Inoue, T., … Yamawaki, S. (2015). Direct and indirect influences of childhood abuse on depression symptoms in patients with major depressive disorder. *BMC Psychiatry*, *15*(1), 244. doi:10.1186/s12888-015-0636-1

Hecker, T., Boettcher, V. S., Landolt, M. A., & Hermenau, K. (2019). Child neglect and its relation to emotional and behavioral problems: A cross-sectional study of primary school-aged children in Tanzania. *Development and Psychopathology*, *31*(1), 325–339. doi:10.1017/s0954579417001882

Hecker, T., Hermenau, K., Isele, D., & Elbert, T. (2014). Corporal punishment and children's externalizing problems: A cross-sectional study of Tanzanian primary school aged children. *Child Abuse & Neglect*, *38*(5), 884–892. doi:10.1016/j.chiabu.2013.11.007

Hecker, T., Hermenau, K., Maedl, A., Schauer, M., & Elbert, T. (2013). Aggression inoculates against PTSD symptom severity-insights from armed groups in the eastern DR Congo. *European Journal of Psychotraumatology*, *4*(1), 20070. doi:10.3402/ejpt.v4i0.20070

Hecker, T., Hermenau, K., Salmen, C., Teicher, M., & Elbert, T. (2016). Harsh discipline relates to internalizing problems and cognitive functioning: Findings from a cross-sectional study with school children in Tanzania. *BMC Psychiatry*, *16*(1), 118. doi:10.1186/s12888-016-0828-3

Hermenau, K., Hecker, T., Maedl, A., Schauer, M., & Elbert, T. (2013). Growing up in armed groups: Trauma and aggression among child soldiers in DR Congo. *European Journal of Psychotraumatology*, *4*(1), 21408. doi:10.3402/ejpt.v4i0.21408

Horesh, D., Lowe, S. R., Galea, S., Uddin, M., & Koenen, K. C. (2015). Gender differences in the long-term associations between posttraumatic stress disorder and depression symptoms: Findings from the Detroit neighborhood health study. *Depression and Anxiety*, *32*(1), 38–48. doi:10.1002/da.22267

Karsberg, S. H., & Elklit, A. (2012). Victimization and PTSD in A rural Kenyan youth sample. *Clinical Practice and Epidemiology in Mental Health: CP & EMH*, *8*(1), 91–101. doi:10.2174/1745017901208010091

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry*, *62*(6), 593–602. doi:10.1001/archpsyc.62.6.593

Klumparendt, A., Nelson, J., Barenbrügge, J., & Ehring, T. (2019). Associations between childhood maltreatment and adult depression: A mediation analysis. *BMC Psychiatry*, *19*(1), 36. doi:10.1186/s12888-019-2016-8

Kolaitis, G. (2017). Trauma and post-traumatic stress disorder in children and adolescents. *European Journal of Psychotraumatology*, *8*(sup4), 1351198. doi:10.1080/20008198.2017.1351198

Krieger, F. V., Leibenluft, E., Stringaris, A., & Polanczyk, G. V. (2013). Irritability in children and adolescents: Past concepts, current debates, and future opportunities. *Revista Brasileira de Psiquiatria (Sao Paulo, Brazil: 1999)*, *35* (Suppl 1), S32–39. doi:10.1590/1516-4446-2013-s107

Leeb, R. T., & Fluke, J. D. (2015). Child maltreatment surveillance: Enumeration, monitoring, evaluation and insight. *Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice*, *35*(8/9), 138–140. Retrieved May 15, 2021, from doi:10.1590/1516-4446-2013-s107https://pubmed.ncbi.nlm.nih.gov/26605561https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4911133/

Lesinskiene, S., Girdzijauskiene, S., Gintiliene, G., Butkiene, D., Puras, D., Goodman, R., & Heiervang, E. (2018). Epidemiological study of child and adolescent psychiatric disorders in Lithuania. *BMC Public Health*, *18*(1), 548. doi:10.1186/s12889-018-5436-3

Macdonald, A., Danielson, C., Resnick, H., Saunders, B., & Kilpatrick, D. (2010). PTSD and comorbid disorders in a representative sample of adolescents: The risk associated with multiple exposures to potentially traumatic events. *Child Abuse & Neglect*, *34*(10), 773–783. doi:10.1016/j.chiabu.2010.03.006

Margolin, G., & Vickerman, K. A. (2007). Post-traumatic stress in children and adolescents exposed to family violence: I. overview and issues. *Professional Psychology: Research and Practice*, *38*(6), 613–619. doi:10.1037/0735-7028.38.6.613

Nakasujja, N., Skolasky, R. L., Musisi, S., Allebeck, P., Robertson, K., Ronald, A., … Sacktor, N. (2010). Depression symptoms and cognitive function among individuals with advanced HIV infection initiating HAART in Uganda. *BMC Psychiatry*, *10*(1), 44. doi:10.1186/1471-244X-10-44

Nalugya-Sserunjogi, J., Rukundo, G. Z., Ovuga, E., Kiwuwa, S. M., Musisi, S., & Nakimuli-Mpungu, E. (2016). Prevalence and factors associated with depression symptoms among school-going adolescents in Central Uganda. *Child and Adolescent Psychiatry and Mental Health*, *10*(1), 39. doi:10.1186/s13034-016-0133-4

Nampijja, M., Kizindo, R., Apule, B., Lule, S., Muhangi, L., Titman, A., … Lewis, C. (2018). The role of the home

environment in neurocognitive development of children living in extreme poverty and with frequent illnesses: A cross-sectional study. *Wellcome Open Research*, *3*, 152. doi:10.12688/wellcomeopenres.14702.1

Negele, A., Kaufhold, J., Kallenbach, L., & Leuzinger-Bohleber, M. (2015). Childhood Trauma and Its Relation to Chronic Depression in Adulthood. *Depression Research and Treatment*, *2015*, 650804. doi:10.1155/2015/650804

Nkuba, M., Hermenau, K., Goessmann, K., & Hecker, T. (2018). Mental health problems and their association to violence and maltreatment in a nationally representative sample of Tanzanian secondary school students. *Social Psychiatry and Psychiatric Epidemiology*, *53*(7), 699–707. doi:10.1007/s00127-018-1511-4

Nkuba, M., Hermenau, K., & Hecker, T. (2018). Violence and maltreatment in Tanzanian families-Findings from a nationally representative sample of secondary school students and their parents. *Child Abuse & Neglect*, *77*, 110–120. doi:10.1016/j.chiabu.2018.01.002

Norris, F. H., Murphy, A. D., Baker, C. K., & Perilla, J. L. (2004). Postdisaster PTSD over four waves of a panel study of Mexico's 1999 flood. *Journal of Traumatic Stress*, *17*(4), 283–292. doi:10.1023/B:JOTS.0000038476.87634.9b

O'Donnell, M. L., Creamer, M., & Pattison, P. (2004). Posttraumatic stress disorder and depression following trauma: Understanding comorbidity. *American Journal of Psychiatry*, *161*(8), 1390–1396. doi:10.1176/appi.ajp.161.8.1390

Olema, D. K., Catani, C., Ertl, V., Saile, R., & Neuner, F. (2014). The hidden effects of child maltreatment in a war region: Correlates of psychopathology in two generations living in Northern Uganda. *Journal of Traumatic Stress*, *27*(1), 35–41. doi:10.1002/jts.21892

Onyut, L. P., Neuner, F., Schauer, E., Ertl, V., Odenwald, M., Schauer, M., & Elbert, T. (2005). Narrative Exposure Therapy as a treatment for child war survivors with posttraumatic stress disorder: Two case reports and a pilot study in an African refugee settlement. *BMC Psychiatry*, *5*(1), 7. doi:10.1186/1471-244X-5-7

Ovuga, E., Oyok, T. O., & Moro, E. B. (2008). Post traumatic stress disorder among former child soldiers attending a rehabilitative service and primary school education in northern Uganda. *African Health sciences*, *8*(3), 136–141. doi:10.1590/1516-4446-2013-s107

Pine, D. S., Cohen, P., Gurley, D., Brook, J., & Ma, Y. (1998). The risk for early-adulthood anxiety and depressive disorders in adolescents with anxiety and depressive disorders. *Archives of General Psychiatry*, *55*(1), 56–64. doi:10.1001/archpsyc.55.1.56

Qi, J., Yang, X., Tan, R., Wu, X., & Zhou, X. (2019). Prevalence and predictors of posttraumatic stress disorder and depression among adolescents over 1 Year after the Jiuzhaigou Earthquake. *Journal of Affective Disorders*, *261*, 1–8. doi:10.1016/j.jad.2019.09.071

Roberts, B., Ocaka, K. F., Browne, J., Oyok, T., & Sondorp, E. (2008). Factors associated with post-traumatic stress disorder and depression amongst internally displaced persons in northern Uganda. *BMC Psychiatry*, *8*(1), 38. doi:10.1186/1471-244X-8-38

Roelen, K., Delap, E., Jones, C., Chettri, H. K. J. C., & Review, Y. S. (2017). Improving child wellbeing and care in Sub-Saharan Africa: The role of social protection. *Children and Youth Services Review*, *73*, 309–318. doi:10.1016/j.childyouth.2016.12.020

Salazar, A. M., Keller, T. E., Gowen, L. K., & Courtney, M. E. (2013). Trauma exposure and PTSD among older adolescents in foster care. *Social Psychiatry and Psychiatric Epidemiology*, *48*(4), 545–551. doi:10.1007/s00127-012-0563-0

Satterthwaite, T. D., Cook, A., Bruce, S. E., Conway, C., Mikkelsen, E., Satchell, E., … Sheline, Y. I. (2016). Dimensional depression severity in women with major depression and post-traumatic stress disorder correlates with fronto-amygdalar hypoconnectivty. *Molecular Psychiatry*, *21*(7), 894–902. doi:10.1038/mp.2015.149

Satzinger, F., Kipp, W., & Rubaale, T. (2012). Ugandan HIV/AIDS orphans in charge of their households speak out: A study of their health-related worries. *Global Public Health*, *7*(4), 420–431. doi:10.1080/17441690903339652

Scheeringa, M. S., Peebles, C., Cook, C., & Zeanah, C. (2001). Toward establishing procedural, criterion, and discriminant validity for PTSD in early childhood. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*(1), 52–60. doi:10.1097/00004583-200101000-00016

Scheeringa, M. S., Wright, M. J., Hunt, J. P., & Zeanah, C. H. (2006). Factors affecting the diagnosis and prediction of PTSD symptomatology in children and adolescents. *American Journal of Psychiatry*, *163*(4), 644–651. doi:10.1176/ajp.2006.163.4.644

Scheeringa, M. S., Zeanah, C. H., Myers, L., & Putnam, F. W. (2003). New findings on alternative criteria for PTSD in preschool children. *Journal of the American Academy of Child and Adolescent Psychiatry*, *42*(5), 561–570. doi:10.1097/01.Chi.0000046822.95464.14

Scheeringa, M. S. (2011). PTSD in children younger than the age of 13: Toward developmentally sensitive assessment and management. *Journal of Child & Adolescent Trauma*, *4*(3), 181–197. doi:10.1080/19361521.2011.597079

Schember, C., Perkins, J., Nyakato, V., Kakuhikire, B., Kiconco, A., Namara, B., … Tsai, A. (2021). 71461 intimate partner violence and HIV testing among women in rural Southwestern Uganda. *Journal of Clinical and Translational Science*, *5*(s1), 131–132. doi:10.1017/cts.2021.736

Schlenger, W. E., Kulka, R. A., Fairbank, J. A., Hough, R. L., Kathleen Jordan, B., Marmar, C. R., & Weiss, D. S. (1992). The prevalence of post-traumatic stress disorder in the Vietnam generation: A multimethod, multisource assessment of psychiatric disorder. *Journal of Truamatic Stress*, *5*(3), 333–363. doi:10.1002/jts.2490050303

Shiferaw, G., Bacha, L., & Tsegaye, D. (2018). Prevalence of depression and its associated factors among orphan children in orphanages in Ilu Abba Bor Zone, South West Ethiopia. *Psychiatry Journal*, *2018*, 6865085. doi:10.1155/2018/6865085

Springer, K. W., Sheridan, J., Kuo, D., & Carnes, M. (2003). The long-term health outcomes of childhood abuse. An overview and a call to action. *Journal of General Internal Medicine*, *18*(10), 864–870. doi:10.1046/j.1525-1497.2003.20918.x

Ssenyonga, J., Magoba Muwonge, C., & Hecker, T. (2019). Prevalence of family violence and mental health and their relation to peer victimization: A representative study of adolescent students in Southwestern Uganda. *Child Abuse & Neglect*, *98*, 104194. doi:10.1016/j.chiabu.2019.104194

Stoltenborgh, M., Bakermans-kranenburg, M., Alink, L., & van Ijzendoorn, M. (2014). The prevalence of child maltreatment across the globe: Review of a series of meta-analyses. *Child Abuse Review*, *24*. doi:10.1002/car.2353

Stringaris, A., Maughan, B., Copeland, W. S., Costello, E. J., & Angold, A. (2013). Irritable mood as a symptom of depression in youth: Prevalence, developmental, and clinical correlates in the great smoky mountains study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *52*(8), 831–840. doi:10.1016/j.jaac.2013.05.017

Teicher, M. H., & Parigger, A. (2015). The 'Maltreatment and Abuse Chronology of Exposure' (MACE) scale for the retrospective assessment of abuse and neglect during development. *PLoS One*, *10*(2), e0117423. doi:10.1371/journal.pone.0117423

Telman, M. D., Overbeek, M. M., de Schipper, J. C., Lamers-Winkelman, F., Finkenauer, C., & Schuengel, C. (2016). Family functioning and children's post-traumatic stress symptoms in a referred sample exposed to interparental violence. *Journal of Family Violence*, *31*(1), 127–136. doi:10.1007/s10896-015-9769-8

Thabet, A. A., Abed, Y., & Vostanis, P. (2004). Comorbidity of PTSD and depression among refugee children during war conflict. *Journal of Child Psychology and Psychiatry*, *45*(3), 533–542. doi:10.1111/j.1469-7610.2004.00243.x

Thompson, E. A., Mazza, J. J., Herting, J. R., Randell, B. P., & Eggert, L. L. (2005). The mediating roles of anxiety, depression, and hopelessness on adolescent suicidal behaviors. *Suicide and Life-Threatening Behavior*, *35*(1), 14–34. doi:10.1521/suli.35.1.14.59266

Wang, F., Lu, J., Lin, L., & Zhou, X. (2019). Mental health and risk behaviors of children in rural China with different patterns of parental migration: A cross-sectional study. *Child and Adolescent Psychiatry and Mental Health*, *13*(1), 39. doi:10.1186/s13034-019-0298-8

Weierstall, R., Castellanos, C. B., Neuner, F., & Elbert, T. (2013). Relations among appetitive aggression, post-traumatic stress and motives for demobilization: A study in former Colombian combatants. *Conflict and Health*, *7*(1), 9. doi:10.1186/1752-1505-7-9

Widom, C. S. (1999). Posttraumatic stress disorder in abused and neglected children grown up. *The American Journal of Psychiatry*, *156*(8), 1223–1229. doi:10.1176/ajp.156.8.1223

Winkler, N., Ruf-Leuschner, M., Ertl, V., Pfeiffer, A., Schalinski, I., Ovuga, E., … Elbert, T. (2015). From war to classroom: PTSD and depression in formerly abducted youth in Uganda. *Frontiers in Psychiatry*, *6*, 2. doi:10.3389/fpsyt.2015.00002

Zelazny, K., & Simms, L. J. (2015). Confirmatory factor analyses of DSM-5 posttraumatic stress disorder symptoms in psychiatric samples differing in Criterion A status. *Journal of Anxiety Disorders*, *34*, 15–23. doi:10.1016/j.janxdis.2015.05.009