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# Examining suicidality and associated risk factors among refugee children and adolescents in Uganda

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## Abstract

**Background** Suicide is a leading cause of death among young people globally. Although suicidality has been studied in various populations, limited research has focused on refugee youth in low and middle-income countries. This study aimed to assess the prevalence of suicidal ideation, suicide attempts, and methods of attempted suicide among refugee children and adolescents in southwestern Uganda. We also examined risk factors associated with suicidal ideation in this population.

**Methods** We conducted a cross-sectional study of 325 refugee children and adolescents selected through simple random sampling in Nakivale Refugee Settlement, southwestern Uganda. Suicidal behavior and post-traumatic stress disorder (PTSD) were assessed using the Mini International Neuropsychiatric Interview for Children and Adolescents, version 7.02 (MINI-KID). Additional variables—including war-related trauma and post-migration experiences were measured using structured checklists administered through KoboCollect. The data were then exported to STATA 17 for analysis. Descriptive statistics were used to calculate the prevalence of suicidal ideation, attempts, and means, while bivariate and multivariate logistic regression analyses were conducted to identify factors associated with suicidal ideation.

**Results** Of 325 participants, 129 (40%) reported suicidal ideation, and among these, 70 (54%) had formulated a suicide plan. Of those with a plan, 13 (19%; (4.3% of the total sample)) had attempted suicide. The most common method of attempted suicide was self-poisoning (4/13, 31%), followed by hanging or drowning (3/13, 23%), self-stabbing (2/13, 15%), and self-imposed accidents (1/13, 8%). In multivariate analyses, suicidal ideation was significantly associated with exposure to war-related trauma (OR = 2.30, 95% CI: 1.35–3.94,  $p = 0.002$ ), PTSD (OR = 5.47, 95% CI: 2.15–13.94,  $p < 0.001$ ), and being an unaccompanied minor (OR = 6.14, 95% CI: 2.13–17.68,  $p = 0.001$ ).

**Conclusion** Suicidal ideation is highly prevalent among refugee children and adolescents in Nakivale Refugee Settlement. Prevention efforts should prioritize trauma-related factors, PTSD, and the specific needs of unaccompanied minors.

**Clinical trial number** Not applicable.

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**Keywords** Suicidal ideation, Suicide attempts, Refugee children, Adolescents, Uganda, East africa

## Background

Globally, suicidality is recognized as a major public health concern and remains one of the leading causes of death among young people. Suicidality is commonly defined as an umbrella construct encompassing suicidal thoughts or ideation, self-injurious behaviors, suicide attempts, and completed suicide. It represents a continuum of thoughts and behaviors that range in severity, unified by an underlying intent to die [1, 2]. Importantly, suicidal behavior can fluctuate over time, influenced by biopsychosocial factors that either exacerbate or mitigate risk [3].

Global estimates indicate a suicide rate of 3.8 per 100,000 among adolescents [4] while among individuals aged 15–29 years, suicide ranks as the fourth leading cause of death, after road injuries, tuberculosis, and interpersonal violence [5, 6]. In 2019, an estimated 703,000 people died by suicide, with 77% of deaths occurring in low and middle-income countries (LMICs), underscoring the disproportionate burden in these settings [6]. High rates of suicide-related behavior are particularly evident in Sub-Saharan Africa, where about 10% of school-aged children report suicidal thoughts or behaviors [7–9]. In East Africa, suicide-related deaths have risen markedly in recent years [10–12]. In Uganda, reported prevalence rates of suicidal behavior among children and adolescents range from 0.4% to 30% [13, 14]. The most common methods reported in suicide cases include hanging or suffocation, jumping in front of moving objects, and falls from height [4]. Despite growing awareness of suicidal behavior in East Africa, most studies have concentrated on adolescents living with HIV/AIDS [14, 15] or those in urban low-income settings [16, 17], overlooking the unique adversities faced by refugees such as witnessing death, losing loved ones, sexual violence, or abduction – that heighten vulnerability to mental health disorders [18, 19].

A review of studies on refugee populations indicates that refugees face a higher risk of suicidal behavior than host communities [20]. Existing research on suicidality among refugee adolescents in East Africa has yielded inconsistent prevalence estimates [21]. For example, a study in Bidibidi Refugee Settlement in northern Uganda found a 5.3% prevalence of suicidal ideation and 0.7% of suicide attempts among adolescent refugees [22], whereas Scharpf et al. [23] reported substantially higher rates of suicidal ideation (37.4%), plans (7.4%), and attempts (5.2%) among refugee children in a Tanzanian camp. These discrepancies underscore the need for localized context-specific research to clarify the factors contributing to suicidality among refugee children and adolescents across diverse settings [23].

Building on this context, the present study examines the prevalence and correlates of suicidal ideation among refugee children and adolescents in Nakivale. We also describe the frequency and methods of suicide attempts. Understanding patterns of suicide methods is critical for informing prevention and intervention strategies that account for contextual factors such as access to means and cultural norms [24].

## Methods

### Population and design

This study employed a cross-sectional study design to assess 325 refugee children and adolescents residing in the Nakivale refugee settlement in southwestern Uganda. The study was conducted in the Nakivale Refugee Settlement, located in Isingiro District, western Uganda. Established in 1958 and officially designated as a settlement in 1960, Nakivale is one of Uganda's oldest and second-largest refugee settlements. It lies approximately 60 km from Mbarara, Uganda's second-largest town [25]. The settlement spans 79 villages across three zones and covers an area of 42 square kilometers. The settlement hosts more than 180 000 refugees from Rwanda, Somalia, Burundi, and the Democratic Republic of Congo, with women and children constituting the majority of the population.

### Recruitment and sampling procedure

The target population for this study was refugee children and adolescents living in the Nakivale refugee settlement. Participants were selected using a simple-random-sampling approach. We obtained lists of eligible individuals from village chairpersons. Every third eligible individual on each village list, beginning with the first, was invited to participate. We approached primary caregivers of the selected adolescents to obtain parental consent, and adolescents provided informed assent. Adolescents from the same household were eligible if they met all inclusion criteria. If a selected participant declined, they were replaced by the next eligible individual on the list following the same sampling process until the desired sample size of 325 was achieved. Of 331 eligible individuals approached, 325 agreed to participate, yielding an enrollment rate of approximately 90%. Although our sample of 325 participants represents only a small fraction of the total settlement population (approximately 0.001%), it is comparable in size to samples used in previous studies with hard-to-reach populations and provides adequate statistical power to detect meaningful associations within our study parameters. However, we acknowledge this as a limitation when generalizing findings to the broader population. The majority of participants were adolescent

refugees from the Democratic Republic of Congo (269, 83%), followed by those from Burundi (33, 10%), and smaller groups from Somalia (11, 3%), Rwanda (2, 1%), and Sudan (11, 3%). This distribution is roughly similar to the overall population demographics of the Nakivale refugee settlement [25], although there may be slight variations. Inclusion criteria required that (1) adolescents were between 10 and 19 years of age, (2) were registered refugees living in Nakivale Settlement, and (3) had provided informed assent and parental consent. Individuals were excluded if they were not a refugee, did not live in the settlement, did not meet the age criteria, or if parental consent/informed assent could not be obtained.

### Measures

**Sociodemographic information** – including age, education level, sex, country of origin, and migration status (accompanied or unaccompanied) – was collected from participants. For clarity, unaccompanied minors are defined as “those children who have been separated from both parents and other relatives and are not being cared for by an adult who by law or custom, is responsible for doing so” [26]. Upon arrival in the settlement, such children are placed under the care of a responsible adult who provides consent on their behalf.

### Primary predictors and outcomes

**Exposure to war-related traumatic events** was assessed using a checklist of potentially traumatic events, as described by previous researchers [18, 27]. This checklist includes 15 items assessing exposure to various war-related traumas, such as witnessing rape by armed personnel, being tortured or abducted by armed personnel, seeing or being forced to carry dead bodies, and witnessing the death of a loved one by armed personnel. Participants were asked to respond with a “yes” or “no” to indicate whether they had personally experienced or witnessed each event. This checklist has demonstrated reliability and has been applied to similar refugee samples both within Uganda and in other contexts [18, 27]. This checklist possesses good psychometric measures [23] and the internal consistency in our sample was good (Cronbach’s  $\alpha = 0.74$ ).

**Post-migration difficulties** were assessed using the Post-migration Living Difficulties Checklist [28]. This is a 17-item scale that examines the extent to which post-migration challenges posed concerns over the past 12 months. Items are rated on a 5-point scale ranging from 0 (not a problem) to 4 (very serious problem). This checklist has been used to predict psychiatric problems in both child and adult refugee samples [28–31]. In the current study, the checklist demonstrated acceptable internal consistency, with a Cronbach’s alpha of 0.66.

**Post-traumatic stress disorder (PTSD)** was measured using the MINI International Neuropsychiatric Interview for Children and Adolescents, version 7.02 (MINI-KID). The MINI-KID is a concise, structured diagnostic interview aligned with the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V), and is widely used in clinical practice, psychiatric research, and epidemiological studies [32]. The MINI-KID has demonstrated robust validity and reliability in assessing psychiatric disorders across diverse populations [33], with its effectiveness established in similar contexts within East African countries, including Uganda [34, 35] and Kenya [36]. The interview provides both a categorical diagnosis and a measure of PTSD symptom severity, consisting of 19 items, with 17 items based on DSM-IV symptoms that still align with DSM-V criteria. In this study, the tool demonstrated strong internal consistency, with a Cronbach’s alpha of 0.88, indicating a high level of agreement between the items.

**Suicidal ideation and attempts** were assessed using the Suicidality Scale from the MINI-KID. This scale includes three key questions from the Major Depressive Disorder assessment (item A3g), which examine the participant’s experience of extreme sadness, self-harm thoughts, and death-related ideation over the past two weeks [32]. This tool possesses good psychometric measures and has been used in similar settings. In this study, the Cronbach’s alpha was 0.77, indicating a high level of agreement between the items. Specifically, participants were asked whether they had felt ‘so sad that they wished they were dead,’ ‘thought about hurting themselves,’ or ‘considered death or suicide.’ Participants who reported suicidal ideation were also asked if they had formulated a suicide plan and, if so, to describe the method they contemplated. Suicide attempts were evaluated using corresponding questions from the suicide subscale of the MINI, which probed whether participants initiated an attempt but stopped or were interrupted before completion. A suicide attempt was defined as any action where the participant intended to die, rather than survive. Responses indicating an intent to die were aggregated for analysis.

### Data management

Data were collected and stored digitally using KoboToolbox, a secure cloud-based data-collection platform. At the end of each day, data entries were reviewed for completeness, and any missing fields were identified and corrected. Data were subsequently exported to Microsoft Excel for cleaning and analysis.

### Data analysis

The cleaned dataset was analyzed using Stata version 17.0 (StataCorp, College Station, Texas, USA). Descriptive

statistics summarized sample characteristics and the prevalence of suicidal ideation, plans, and attempts among refugee children and adolescents. Bivariate and multivariate logistic regression models were used to examine associations between predictor variables and suicidal ideation.

## Results

### Participant characteristics

The sample comprised 325 refugee children and adolescents (mean age = 15.03 years, SD = 3.25). Most participants were from the Democratic Republic of Congo (269, 83%), followed by Burundi (33, 10%), with smaller groups from Somalia (11, 3%), Rwanda (2, 1%), and Sudan (11, 3%). Most participants (298, 92%) were accompanied by family members during migration, whereas 23 (8%) were unaccompanied.

Further details are provided in Table 1.

**Table 1** Prevalence of suicidal ideation among adolescent refugees in Nakivale refugee settlement ( $n = 325$ )

Variable	Total ( $n = 325$ )	With suicidal ideation ( $n = 129$ )	Without suicidal ideation ( $n = 196$ )
Gender			
Male	143 (44%)	47 (36%)	96 (49%)
Female	182 (56%)	82 (64%)	100 (51%)
Nationality			
Others	23 (7%)	7 (5%)	16 (8%)
Congolese	269 (83%)	107 (83%)	162 (83%)
Burundians	33 (10%)	15 (12%)	18 (9%)
Age (years)			
≤ 15	187 (58%)	63 (49%)	124 (63%)
16–19	138 (42%)	66 (51%)	72 (37%)
Level of education			
None	46 (14%)	24 (19%)	22 (11%)
Primary	237 (73%)	86 (67%)	151 (77%)
Secondary	42 (13%)	19 (15%)	23 (12%)
Migration status			
Unaccompanied	27 (8%)	21 (16%)	6 (3%)
Accompanied	298 (92%)	108 (84%)	190 (97%)
War trauma			
< 10 scores	128 (39%)	34 (26%)	94 (48%)
≥ 10 scores	197 (61%)	95 (74%)	102 (52%)
Post-migration difficulties			
< 10 scores	88 (27%)	27 (21%)	61 (31%)
≥ 10 scores	237 (72%)	102 (79%)	135 (69%)
PTSD			
No	56 (17%)	6 (5%)	50 (26%)
Yes	269 (83%)	123 (95%)	146 (74%)

Note: Values represent the number and percentage of participants within each category. Suicidal ideation refers to self-reported thoughts of wanting to die or harm oneself within the two weeks prior to assessment. Comparisons illustrate distributions across demographic and contextual variables for participants with and without suicidal ideation

### Prevalence of suicidal ideation

Of the 325 participants, 129 (40%) reported suicidal ideation; among these, females accounted for 82 (64%) and males for 47 (36%). Table 1 presents the prevalence of suicidal ideation across demographic and contextual variables.

### Methods of suicide and attempts

Among the 129 participants with suicidal ideation, 70 (54%) reported having a suicide plan. Of those with a suicide plan, 13 (19%; 13/70) reported a suicide attempt. The most frequently reported method of attempted suicide was self-poisoning (4/13, 31%), followed by hanging or drowning (3/13, 23%), self-stabbing (2/13, 15%), and self-imposed accidents (1/13, 8%). See Fig. 1 for details.

### Risk factors for suicidal ideation

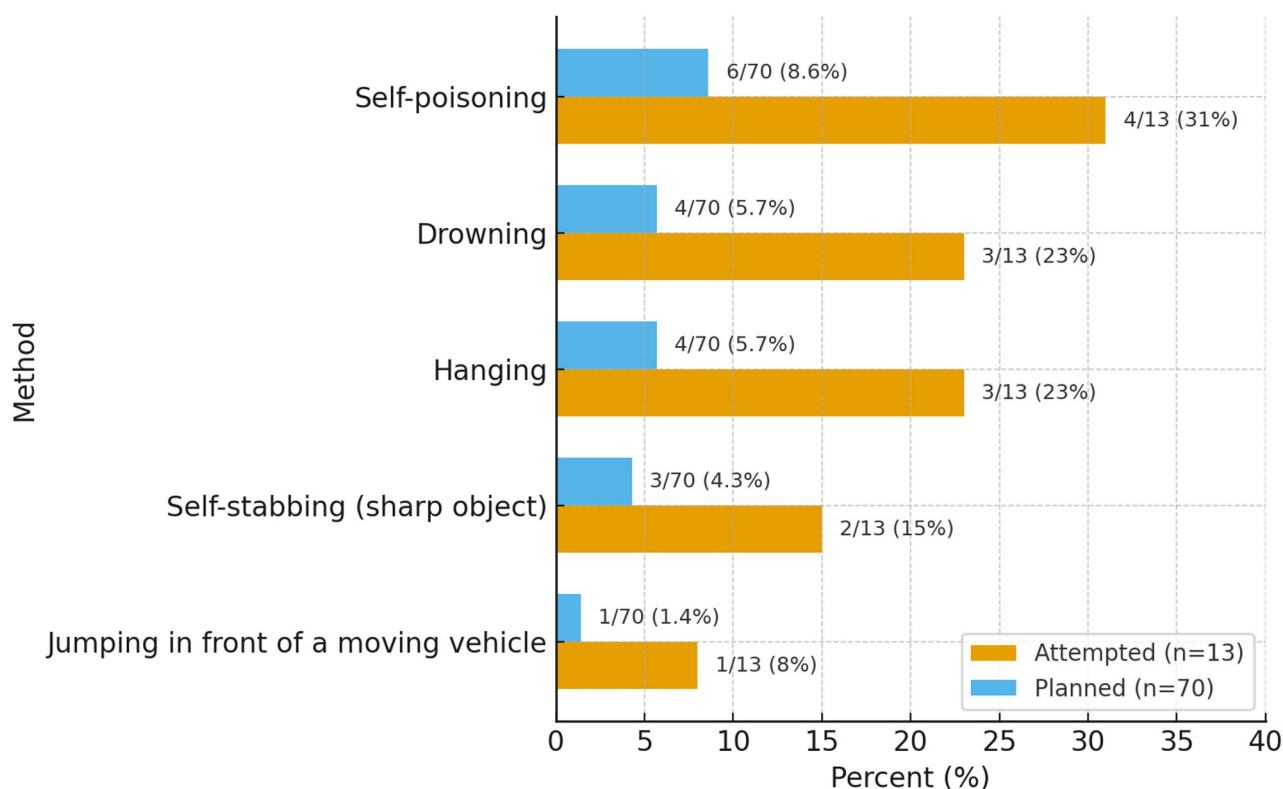
Bivariate and multivariate logistic regression analyses were conducted to examine associations between suicidal ideation and potential risk factors. Given the similarity in patterns across models, we report multivariate results for interpretive clarity. In the multivariate model, suicidal ideation was significantly associated with war-related trauma (OR = 2.30, 95% CI: 1.35–3.94,  $p = 0.002$ ), PTSD (OR = 5.47, 95% CI: 2.15–13.94,  $p < 0.001$ ), and unaccompanied-minor status (OR = 6.14, 95% CI: 2.13–17.68,  $p = 0.001$ ).

Gender, age, nationality, level of education, and post-migration difficulties were not significantly associated with suicidal ideation in the multivariate model. Full results are presented in Table 2.

## Discussion

This study examined the prevalence of suicidal ideation, suicide attempts, and the methods used among refugee children and adolescents living in Nakivale Refugee Settlement in southwestern Uganda. It also identified factors associated with suicidal ideation in this population. We found that 40% (129/325) of participants reported suicidal ideation. Among those reporting ideation, 54% (70/129) had formulated a suicide plan, and 19% (13/70) had made a suicide attempt within the two weeks preceding assessment. The most frequently reported methods of attempted suicide were self-poisoning, jumping in front of a moving vehicle, hanging, drowning, and self-stabbing.

Our findings are consistent with prior research showing elevated rates of suicidal behavior among migrant populations [37–39]. In high-income settings, reported suicide attempt rates among migrant youth range from 7.6% to 9.0% [40, 41]. However, the prevalence of suicidal behaviors in our sample was substantially higher than in comparable studies conducted in East African refugee contexts. For example, a study in a Tanzanian refugee



**Fig. 1** Methods of suicide planned and attempted among refugee children and adolescents in Nakivale Refugee Settlement. Bars show the percentage within planners ( $n=70$ ) and attempters ( $n=13$ ); labels display count/denominator (%)

camp reported 11.3% suicidal ideation and 0.9% suicide attempts [42], while a study in northern Uganda found 5.3% suicidal ideation and 0.7% suicide attempts [22].

Similarly, our estimates exceed the pooled prevalence reported in a recent meta-analysis of refugee populations, which found 20.5% suicidal ideation and 0.57% suicide attempts [21]. These discrepancies likely reflect contextual differences across refugee settings, including variation in war exposure, duration of displacement, access to psychosocial support, and cultural attitudes toward suicide. Consistent with this interpretation, a recent UNHCR report in Uganda documented high rates of suicide across refugee settlements and identified trauma exposure as a key contributing factor [43]. It is therefore plausible that the elevated burden observed in our study partly reflects the cumulative psychological effects of war-related trauma and prolonged displacement among refugee children and adolescents. Future research should explore how differences in trauma exposure, time since displacement, and settlement conditions interact to shape suicide risk in these populations.

The suicide methods identified in this study – hanging, self-poisoning, and jumping in front of moving vehicles – are consistent with those reported in previous research [44, 45]. For example, a review of 539 suicide cases among individuals aged 13–90 years found that hanging (36.9%),

poisoning (34.7%), and drowning were the most common methods [24]. Similarly, hanging was one of the most frequent methods among unaccompanied minors seeking asylum in Sweden [46]. Our findings also align with the 2024 UNHCR report on Ugandan refugee settlements, which listed hanging, drug overdose, self-poisoning, and fire setting as the predominant methods [43]. In contrast, we did not observe methods such as self-shooting or jumping from high structures, which are commonly reported in urban or high-income contexts [47, 48]. These discrepancies likely reflect contextual constraints in refugee settlements, where access to firearms is highly restricted and tall buildings are scarce. Previous research suggests that the availability and lethality of methods vary substantially by environment and social context [45, 49–51]. Our findings underscore the importance of situational accessibility in shaping suicide method selection. Future studies should examine how environmental and social factors influence method choice and lethality given evidence that more lethal methods are often associated with more severe psychiatric distress.

Our study identified three key factors significantly associated with suicidal ideation: a diagnosis of PTSD, exposure to war-related trauma, and unaccompanied minor status. The observed association between PTSD and suicidal ideation aligns with prior evidence linking

**Table 2** Factors associated with suicidal ideation among refugee children and adolescents

Variable	aOR	S.E.	p-value	95% CI (LCI – UCI)
Sex				
<i>Male (ref)</i>				
Female	1.49	0.38	0.121	0.90–2.45
Nationality				
<i>Congolese (ref)</i>				
Burundi	1.14	0.46	0.746	0.51–2.53
Other	0.95	0.53	0.932	0.32–2.84
Age category				
<i>≤ 15 years (ref)</i>				
16–19 years	1.43	0.41	0.212	0.81–2.52
Level of education				
<i>None (ref)</i>				
Primary	0.63	0.24	0.227	0.29–1.34
Secondary	0.65	0.31	0.367	0.25–1.67
Unaccompanied minor				
<i>No (ref)</i>				
Yes	6.14	3.31	0.001	2.13–17.68
War trauma				
<i>&lt; 10 scores (ref)</i>				
≥ 10 scores	2.30	0.63	0.002	1.35–3.94
Post-migration difficulties				
<i>&lt; 10 scores (ref)</i>				
≥ 10 scores	1.11	0.34	0.741	0.61–2.02
PTSD				
<i>No (ref)</i>				
Yes	5.47	2.61	<0.001	2.15–13.94

Note: aOR=adjusted odds ratio; CI=confidence interval. Reference categories are indicated as (ref). Odds ratios are derived from multivariate logistic regression models adjusted for age, sex, nationality, and education level. An aOR>1 indicates higher odds of suicidal ideation relative to the reference group. Estimates for categories with small sample sizes (e.g., unaccompanied minors) should be interpreted with caution due to wide confidence intervals

trauma-related psychopathology to suicidal behavior [52, 53]. Extensive research among both child and adult refugee populations has shown that individuals with elevated PTSD symptoms are at increased risk of suicidal thoughts and behaviors [54]. For instance, a large cohort study in Sweden involving 3.1 million individuals diagnosed with PTSD reported that 0.2% (6,319 people) died by suicide [55]. Similarly, a meta-analysis by Gebremeskel and colleagues [37] found that adolescents with PTSD—particularly those with comorbid depression, alcohol use disorder, or impulsivity, exhibit substantially higher rates of suicide attempts. Mechanistically, PTSD may elevate suicide risk through emotional dysregulation, hyperarousal, intrusive recollections, and pervasive hopelessness [56, 57]. These processes may be especially pronounced among adolescents who lack effective coping strategies and social support [58].

These findings underscore the importance of prioritizing PTSD treatment in efforts to prevent suicidal behavior among refugees. Although psychological factors such

as hopelessness and impulsivity are well-established correlates of suicidality, broader contextual influences – including environmental stressors, social support, and cultural norms also play a critical role [59]. The relationship between negative emotional states and suicidal behavior is therefore best understood as the product of interacting psychological and sociocultural processes rather than a linear pathway [59]. Given that our sample primarily comprised children and adolescents, limited emotional regulation and underdeveloped coping capacities may heighten vulnerability to PTSD-related distress. Future studies on suicidality in conflict-affected settings should explicitly examine age-related differences in risk and resilience to clarify how developmental stage moderates the psychological impact of trauma exposure.

Likewise, the observed association between war-related trauma and suicidal ideation is consistent with the broader literature on suicidality in trauma-exposed populations [60]. A study conducted in northern Uganda similarly identified war trauma as a significant predictor of suicidal behavior [61], while research among adult refugees has linked pre-migration trauma to elevated suicidal ideation [62]. Such pre-migration traumas often involve profound interpersonal and environmental stressors – including the loss of loved ones, witnessing death, abduction, rape, or the destruction of homes and communities [18] – all of which may erode psychological resilience and contribute to later suicidality.

Being an unaccompanied minor was also strongly associated with suicidal ideation, echoing findings from Sweden, where 60 per 100,000 unaccompanied minors seeking asylum reported suicidal thoughts [46]. The heightened vulnerability of unaccompanied minors likely reflects the absence of protective family structures, which amplifies feelings of loneliness, abandonment, and insecurity [46, 63]. Without consistent emotional and social support, unaccompanied minors face compounded stress from displacement, exposure to maltreatment, and experiences of neglect or isolation all of which can undermine coping capacity and increase suicide risk.

Given the high burden of suicidal behavior documented in both our study and the 2024 UNHCR report on Uganda, further research is urgently needed to identify specific risk factors for suicide and suicide completion within refugee populations. Future studies should investigate whether parental trauma and broader environmental stressors contribute to the intergenerational transmission of suicide risk, as parental mental health has been shown to significantly shape children's wellbeing in post-conflict contexts [43, 64]. Equally important is the examination of resilience factors that may buffer the effects of trauma and displacement on suicidal behavior—an area that remains underexplored among refugee youth.

Additional contextual variables warrant investigation, including financial hardship, unmet basic needs, substance use, family conflict, accusations of witchcraft, spousal abandonment, domestic violence, stigma and prior psychiatric illness [43, 65]. Post-migration stressors such as acculturation challenges, experiences of discrimination, and bureaucratic barriers to services can further exacerbate vulnerability. These cumulative adversities may erode resilience and amplify hopelessness and despair, heightening the risk of suicidal ideation among refugee children and adolescents.

### Limitations

This study has several limitations. First, its cross-sectional design precludes inferences of causality between predictors and suicidal outcomes. Second, there is potential for recall bias and social desirability effects, especially regarding sensitive items such as self-harm and trauma histories. Third, the sample is limited to Nakivale settlement and may not be generalizable to other refugee settings. Finally, core PTSD symptoms (such as avoidance or inability to recall traumatic events) could have led to underreporting of trauma exposure, which may have biased associations.

### Conclusions

This study revealed a high prevalence of suicidal ideation among refugee children and adolescents in Nakivale settlement, with PTSD, exposure to war trauma, and unaccompanied status emerging as key risk factors. These findings highlight the urgent need for targeted, evidence-based responses to suicidality among displaced youth in low- and middle-income settings. Interventions should prioritize trauma-focused treatment approaches that directly address the psychological consequences of war exposure and displacement. In particular, structured therapies that target trauma processing and emotion regulation such as trauma-focused cognitive-behavioral methods may be especially beneficial for young refugees experiencing PTSD-related symptoms. Addressing these challenges will require coordinated action among mental health professionals, humanitarian organizations, and policymakers to strengthen prevention, early detection, and care pathways for this vulnerable population.

### Abbreviations

PTSD	Post-traumatic stress disorder
LMICs	Low- and middle-income countries
OPM	Office of the Prime Minister

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### Author contributions

HEA participated in the conception and design of the study, data collection, analysis, interpretation, and drafting of the manuscript. AM contributed to study conception, supported data collection, and provided substantial revisions. MM contributed to study design and critical manuscript revision. LK participated in writing, review, and editing of the manuscript. GZR supported data collection and provided substantive revisions. JH supported data collection and provided critical revisions to the manuscript. All authors read and approved the final version of the manuscript.

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### Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

### Declarations

#### Human ethics and consent to participate

In accordance with the Declaration of Helsinki, the study received ethical approval from the Kenyatta National Hospital–University of Nairobi Research and Ethics Committee (KNH-UON-P879/12/2023) and the Mbarara University of Science and Technology Research Ethics Committee (MUST-REC-MUST-2023-739) and was registered with the Uganda National Council for Science and Technology (UNCST). Administrative clearance was additionally obtained from the Office of the Prime Minister (OPM), the government agency responsible for refugee affairs in Uganda. All research instruments were translated into Kinyabwisha and Kiswahili; the primary languages spoken by participants, to ensure inclusivity and understanding. Informed assent was obtained from all minor participants, and informed consent was obtained from their caregivers. The consent and assent forms detailed the study's purpose and emphasized the voluntary nature of participation. Participants were assured of the confidentiality of their responses and their right to withdraw at any time without consequences. To address potential psychological distress, participants identified by the research team as severely affected using the Suicidality Scale of the MINI-KID were provided immediate psychological support and were referred to local health centers for specialized care. Severe cases were referred to ALIGHT (an organization that provides psycho-social factors in the refugee settlement) and Medical Teams International (MTI). Children or caregivers with severe cognitive impairments were excluded from the study.

#### Competing interests

The authors declare no competing interests.

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