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Factors associated with teenage pregnancy among refugees in Palabek refugee settlement, Northern Uganda

Emmanuel Okiror Okello^{1*}, Marvin Musinguzi¹, Marc Sam Opollo¹, Kigongo Eustes² and Anne Ruth Akello²

Abstract

Background Globally, teenage pregnancy is a public health problem. Low- and middle-income countries in the Sub-Saharan region are more affected with teenage pregnancy. It is worse with teenage girls who have other vulnerabilities like living in refugee camps. However, there is little information about teenage pregnancy in refugee camps especially in resource limited areas like Northern Uganda.

Objective To determine the prevalence and the factors associated with teenage pregnancy among refugees in Palabek refugee settlement, Northern Uganda.

Methods This was a cross-sectional study conducted among teenage girls in Palabek refugee settlement in Northern Uganda. The study estimated a total sample size of 316 teenage girls and they were sampled using systematic random sampling. Data was collected using researcher administered questionnaire. Conditional logistics regression was employed to identify the associated factors for teenage pregnancy.

Results A total of 306 teenagers participated in the study with a response rate of 98.6%. The study showed that the prevalence of teenage pregnancy among teenage girls in Palabek refugee settlement, Northern Uganda was 41.2%. The factors associated with teenage pregnancy among teenage girls in Palabek refugee settlement included: being in the 15–19 years age group (AOR=6.3, 95%CI: 1.8–22.8), not being in school (AOR=5, 95%CI: 2.3–10.9), not being married (AOR=0.2, 95%CI: 0.1–0.5), delayed sexual debut (AOR=2.4, 95%CI: 1.1–5.5), having multiple sexual partners (AOR=0.3, 95% CI: 0.1–0.7), alcohol use (AOR=6.7, 95%CI: 2.2–18.4), being aware of sexual reproductive health services (AOR=0.4, 95%CI: 0.2–0.9), and having divorced families (AOR=2.4, 95% CI: 1.2–4.9).

Conclusion Study results reveal that 4 in 10 teenage girls in Palabek, Northern Uganda, are pregnant, influenced by individual, community, and health system factors. This highlights vulnerabilities in refugee camps, urging prioritization of sexual and reproductive health for adolescent girls in refugee camps.

Keywords Teenage pregnancy, Refugee, Uganda, Risk factors

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Background

Teenage pregnancy is a public health challenge globally. According to the World Health Organization (WHO), the global adolescent birth rate for girls 10–14 years in 2022 was estimated at 1.5 per 1000 women with higher rates in the sub-Saharan region and low- and middle-income countries [1, 2]. For instance, as of 2019, adolescents aged 15–19 years in low- and middle-income countries (LMICs) had an estimated 21 million pregnancies each year of which Uganda is part of [1]. In Uganda, the teenage pregnancy prevalence is estimated to be at 24%. However, the rate is higher in resource limited areas and refugee camps [2]. As a result, teenage pregnancy is recorded to contribute to 20% of the infant deaths and 28% of the maternal deaths in Uganda.

According to WHO, teenage pregnancy is characterized by pregnancies in girls aged 19 years and younger [1]. The factors contributing to teenage pregnancy are multifaceted, with studies highlighting that teenage girls residing in resource-limited areas, particularly those lacking access to information and contraceptives, face an elevated risk of becoming pregnant [3]. Teenagers living in refugee settings face many Sexual Reproductive Health (SRH) challenges, linked to limited educational and information, unemployment, lack of protection, and limited sexual and reproductive health services [4]. Higher instances of rape, trafficking, early sexual engagement, sexual exploitation, child marriage, and maternal death were reported in many refugee settings [5, 6]. In addition, female refugees also have a higher risk of facing sexual violence due to power imbalance and unfavorable societal hierarchies [6]. This together with the politicization of SRH issues including service provision put teenagers within refugee camps at more risk of teenage pregnancy [4]. The constitution of Uganda clearly states that a man and a woman are entitled to marry only if they are each of the age of eighteen years and above. Therefore, marriages among those below the age of 18 years are unconstitutional and can attract penalties. Despite the protection of the law, teenage marriages and consequent pregnancies are still prevalent in the country.

Uganda is the third largest refugee hosting nation in the world with 13 refugee settlements [7]. This makes Uganda a country with the largest population of refugees in Africa with over 1.3 million refugees from South Sudan, the Democratic Republic of Congo, and Burundi [8]. Of these, over 61% are teenagers and hence their health and wellbeing need to be given attention in order to ensure a comprehensive and effective response to the unique challenges faced by this demographic. The wellbeing and health of these teenagers must be prioritized, encompassing the critical area of their sexual reproductive health. However, there is still a knowledge gap on the

drivers of the high teenage pregnancy prevalence with in the refugee camps.

Palabek Refugee Settlement is one of the 13 refugee settlements located in Northern Uganda which is also regarded as a resource limited area with in Uganda. In August 2021, Palabek Refugee Settlement hosted 57,438 refugees, among them 24% (13,693) were youth [8]. A study conducted in Palabek refugee settlement also shows that teenage girls in the refugee camp have limited access to modern contraceptives. Only 8.7% of the teenage girls in Palabek refugee settlement in Northern Uganda use modern contraceptives and over 70% have ever been pregnant [2]. There is still need to have a comprehensive understanding of teenage pregnancy with in refugee camps. This study plays a critical part in bridging this gap and contributing to the body of knowledge about teenage pregnancy in refugee camps. This can be used to make evidence-based decisions for improving teenage life with in refugee camps.

The rationale for conducting this study in Palabek Refugee Settlement is rooted in the critical need to understand the factors contributing to the high rates of teenage pregnancy in this specific context and the northern region particularly. Palabek, like many other refugee settlements, is characterized by socio-economic challenges, limited access to healthcare, and a lack of educational opportunities, which are likely to exacerbate the vulnerability of teenage girls to early pregnancies. This study aims to fill the knowledge gap by exploring the underlying causes of teenage pregnancy in Palabek, thereby contributing to the development of targeted interventions that can improve the reproductive health and overall well-being of teenage girls in refugee settings.

By focusing on Palabek, this study also responds to the broader need for evidence-based strategies to address teenage pregnancy in refugee camps, where the intersection of poverty, displacement, and limited resources creates a complex and urgent public health challenge. Understanding these dynamics in Palabek can serve as a critical foundation for broader applications in similar settings, ultimately helping to inform policy and programmatic decisions that enhance the lives of young refugees.

Methods

Study design and setting

This was a cross-sectional study that used quantitative methods to collect and analyze data. The study was conducted from 8th to 20th December 2021. The study was conducted in Palabek refugee settlement located in Lamwo District, in Northern Uganda. The study was conducted in health facility settings with in the camp including Paluda HCIII, Akworo HCII, and Awich HCII. Palabek refugee settlement camp opened in 2017 on a 50 square kilometer land with a population of 57,438

refugees by August 2017. This settlement is predominantly populated with refugees with South Sudan origin and a few from DRC.

Study population

The study population was teenage girls aged 13–19 years of age within Palabek refugee settlement camp. This age group was selected because 13 years is the average age for menarche, and according to WHO, a teenage pregnancy is that of a woman aged 19 years or younger.

Sample size and sampling technique

The sample size was determined using the Kish Leslie (1965) formula ($n = Z^2PQ/d^2$) [8]. Where $Z = 1.96$, $d = 0.05$, $p = 25\%$ which was the teenage pregnancy prevalence rate in Uganda. This resulted into sample size of 288. When adjusted for none response rate of 10%, an overall sample size of 316 participants was generated.

Systematic random sampling was employed to select the study participants. First, the sampling frame was provided by UNHCR, included a registry of all teenage refugees in the camp. This list was subsequently reviewed and refined by the research team in collaboration with local camp leaders to identify eligible teenagers and then selected using systematic random sampling. The eligible names were printed out and the participants were contacted. To conduct the interviews, three health facilities serving the camp were selected: Paluda HCIII, Akworo HCII, and Awich HCII. At each facility, the goal was to interview 100 teenage girls, with selection based on their proximity to the health centres and the availability of health workers for the interviews.

Data collection tool

A researcher administered questionnaire was used to collect the data. The questionnaire was developed from [3] with a reliability coefficient of 0.82 and then adjusted for data collection in a refugee setting. It is divided into three sections. Section A gathers socio-demographic data, including respondents' age, marital status, religion, education level, type of school (day or boarding). Section B focuses on current pregnancy status, asking if respondents have children or are pregnant, and seeks to verify this information with health records. Section C examines individual-level factors potentially associated with teenage pregnancy such as substance use (including alcohol, marijuana, and shisha), peer pressure to get involved in sexual activity, family details, contraceptive use, awareness and sexual behaviors such as sexual debut and number of sexual partners.

Before the actual data collection, the tool was also pretested in Barapwo subcounty, Lira district among 30 teenage girls and then translated to Acholi, a local

language spoken by the majority of residents in Palabek refugee settlement camp.

Data management and analysis

Data was entered, cleaned and analyzed in SPSS version 26. At univariate analysis, descriptive statistics were used to summarize the data and determine the prevalence of teenage pregnancy – these included frequencies and percentages. At bivariate analysis, a bivariate logistic regression was performed between the independent variables and dependent variable at a 95% confidence interval and Crude odds ratios (COR) were used as measures of association. Variables with $P \leq 0.05$ were considered as having significant associations with the dependent variable. At multivariate analysis, variables with $P \leq 0.05$ at bivariate level were included in the multivariate logistic regression at a 95% confidence interval and Adjusted Odds Ratios (AOR) were used as measures of association. Also, variables that had $P \leq 0.05$ were considered to be significantly associated with the dependent variable.

We defined early sexual debut as having had first sexual intercourse before age 18 years.

Ethical consideration and informed consent

This study was done in accordance with the Declaration of Helsinki. Throughout the study period, participant's autonomy was observed; beneficence, fairness and non-maleficence were equally observed. Measures were put in place to protect all participants from acquiring COVID-19 including social distancing, hand hygiene and wearing of face masks during data collection.

The teenage girls were interviewed in an enclosed room to provide privacy at the health facilities. Confidentiality was ensured throughout the study; identifiers like names and phone numbers were not collected in the data. Data was also coded and entered in computers with passwords. Hardcopies were stored in lock and key cupboards with restricted access.

Ethical approval to conduct the study was obtained from Gulu University Research Ethics Committee and approval was issued under rec number GUREC-2021-124: A. Permission to conduct the study was equally sought from all the relevant authorities from the prime minister's office and UNHCR to all the authorities at the camp settlement.

Informed consent was obtained from all the participants who were above 18 years (legal age in Uganda). For those below 18 years, consent was sought from their parents/guardians and assent was also obtained from them to participate in the study. All participants were at liberty to exit the study process at any point. The consent forms, both English and translated versions used in the study were reviewed and approved by the Gulu Univer-

sity Research Ethics Committee. The research assistants made sure all participants understood all aspects of consent before signing and proceeding with the data collection procedure.

Results

Out of the 316 teenagers approached to participate in the study, data was only collected from 306 teenage girls in Palabek refugee settlement, Northern Uganda. This resulted into a response rate of 96.8%.

Teenage pregnancy and Socio demographic variables of the respondents associated with teenage pregnancy among refugees in Palabek Refugee settlement, Northern Uganda

The prevalence of teenage pregnancy among girls in Palabek refugee settlement, Northern Uganda was 126 (41.2%). Majority of the teenage girls in the settlement were Acholi 161 (52.6%), Catholic 160 (52.3%), South Sudanese 196 (64.1%), aged 15–19 years of age 251 (82%), in school 157 (51.3%), Non-married 216 (70.6%). Teenage pregnancy was associated with socio demographic variables such as being a refugee from South Sudan,

being in age group of 15–19 years and not being in school (Table 1).

Factors associated with teenage pregnancy among refugees in Palabek Refugee settlement, Northern Uganda

The factors associated with teenage pregnancy at multivariate were: being in the 15–19 age group (AOR=6.3, 95%CI: 1.75–22.8), not being in school (AOR=5, 95%CI: 2.3–10.9), not being married (AOR=0.2, 95%CI: 0.1–0.5), delayed sexual debut (AOR=2.4, 95%CI: 1.1–5.5), having multiple sexual partners (AOR=0.3, 95%CI: 0.13–0.7), alcohol use (AOR=6.7, 95%CI: 2.2–18.2), Being aware of sexual reproductive health services (AOR=0.4, 95%CI: 0.2–0.9), and having divorced families(AOR=2.4, 95% CI:1.2–4.7) (Table 2).

Discussion

The study revealed that the prevalence of teenage pregnancy among teenage girls in Palabek refugee settlement, Northern Uganda was higher than the national average prevalence. The factors associated with teenage pregnancy among teenage girls in Palabek refugee settlement include: being in the 15-19 age group , not being in school, not being married, delayed sexual debut, having

Table 1 Teenage pregnancy and Socio demographic variables of the respondents associated with teenage pregnancy among refugees in Palabek Refugee settlement, Northern Uganda

Variables	Frequency N (%)	Pregnancy		COR (CI)	P value
		Yes N (%)	No N (%)		
Pregnant status		126 (41.2)	180 (58.8)		
Tribe					
Acholi	161 (52.6)	96 (59.6)	65 (40.4)	Ref	
Lango	45 (14.7)	27 (60)	18 (40)	1.0 (0.5-2)	1.0
Lotoku	21 (6.9)	14 (66.7)	7 (33.3)	0.8 (0.3-2)	0.6
Lutugo	23 (7.5)	11 (41.8)	12 (58.2)	1.7 (0.7-4)	0.3
Nuer	42 (13.7)	21 (50)	21 (50)	1.5 (0.8-3)	0.2
Others	14 (4.6)	10 (71.4)	4 (28.6)	0.6 (0.2-2)	0.4
Religion					
Catholic	160 (52.3)	93 (58.1)	67 (41.9)	Ref	
Protestant	93 (30.4)	51 (54.8)	42 (45.2)	1.2 (0.7-2)	0.5
Born Again	46 (15)	30 (65.2)	16 (34.8)	0.8 (0.4–1.5)	0.4
None	7 (2.3)	5 (71.4)	2 (28.6)	0.6 (0.1-3)	0.5
Nationality					
Other nationality	110 (36)	73 (66.4)	37 (33.6)	Ref	
South Sudanese	196 (64.1)	106 (54.1)	90 (45.9)	1.6 (1.0- 2.7)	0.04
Age group					
13–14	55 (18)	50 (90.9)	5 (9.1)	Ref	
15–19	251 (82)	129 (51.2)	122 (48.6)	9.3 (3.6–24.1)	<0.001
Education					
In school	149 (48.7)	130 (87.3)	19 (12.8)	Ref	
Not in school	157 (51.3)	49 (31.2)	108 (68.8)	14.6 (8.1–26.3)	<0.001
Marital status					
Married	90 (29.41)	19 (21.1)	71 (78.9)	Ref	
Non-Married	216 (70.59)	160 (74.1)	56 (25.9)	0.1 (0.06–0.2)	<0.001

Table 2 Factors associated with teenage pregnancy among refugees in Palabek Refugee settlement, Northern Uganda

Variable	Teenage pregnancy		COR(CI)	AOR(CI)	P-value
	Yes N (%)	No N (%)			
Age group					
13–14	50 (90.9)	5 (9.1)	Ref	Ref	
15–19	129 (51.4)	122 (48.6)	9.3 (3.6–24.1)	6.3 (1.8–22.8)	0.005
Education					
In school	130 (87.3)	19 (12.8)	Ref	Ref	
Not in school	49 (31.2)	108 (68.8)	14.6 (8.1–26.3)	5.0 (2.3–10.9)	< 0.001
Marital status					
Married	19 (21.1)	71 (78.9)	Ref	Ref	
Non-Married	160 (74.1)	56 (25.9)	0.1 (0.1–0.2)	0.2 (0.1–0.5)	< 0.001
Sexual debut					
Early sexual debut	119 (82.6)	25 (17.4)	Ref	Ref	
Delayed sexual debut	60 (37)	102 (63)	8.1 (4.7–13.8)	2.4 (1.1–5.5)	0.04
Multiple sexual partners					
No	134 (56.1)	105 (43.9)	Ref	Ref	
Yes	45 (67.2)	22 (32.8)	0.6 (0.4–1.1)	0.3 (0.1–0.7)	0.01
Alcohol use					
No	156 (63.7)	89 (36.3)	Ref	Ref	
Yes	23 (38.3)	37 (61.7)	2.8 (1.6–5.1)	6.7 (2.4–8.4)	< 0.001
SRH services awareness					
No	35 (49.3)	36 (50.7)	Ref	Ref	
Yes	144 (61.5)	90 (38.5)	0.6 (0.4–1)	0.4 (0.2–0.9)	0.04
Divorced family					
No	128 (62.8)	76 (37.3)	Ref	Ref	
Yes	49 (49.5)	50 (50.5)	1.7 (1.1–2.8)	2.4 (1.2–4.9)	0.02
Contraceptive use					
Never	144 (59)	100 (41)	Ref	-	-
Rarely	24 (57.1)	18 (42.9)	1.1 (0.6–2.1)	-	-
Often	11 (55)	9 (45)	1.2 (0.5–2.9)	-	-
Media exposure					
No	74 (61.2)	47 (38.8)	Ref	-	-
Yes	105 (56.8)	80 (43.2)	1.2 (0.8–1.9)	-	-
Multiple sexual partners					
No	134 (56.1)	105 (43.9)	Ref	-	-
Yes	45 (67.2)	22 (32.8)	0.6 (0.4–1.1)	-	-
Parents alive					
No	14 (58.3)	10 (41.7)	Ref	-	-
Yes	165 (58.5)	117 (41.5)	1.0 (0.43–2.3)	-	-
SRH services awareness					
No	35 (49.3)	36 (50.7)	Ref	-	-
Yes	144 (61.5)	90 (38.5)	0.6 (0.4–1)	-	-
Peer pressure to engage in sexual activities					
No	89 (56.3)	69 (43.7)	Ref	-	-
Yes	87 (60)	58 (40)	0.9 (0.5–1.3)	-	-

multiple sexual partners, alcohol use being aware of sexual reproductive health services, and having divorced families.

The prevalence of teenage pregnancy in Palabek refugee settlement is 41.2%. This is higher than the national prevalence of 25% according to the Uganda demographic health survey [9]. It is also higher than the 31% observed in a study conducted in Hoima district in western

during the COVID-19 pandemic and 19.3% in sub-Saharan Africa [3, 10]. This gap is likely attributed to the heightened vulnerability experienced by teenage girls in refugee camps, elevating their susceptibility to engaging in unprotected sexual activity and subsequent pregnancies [2]. For instance, a study conducted in Bidibidi refugee settlement in North Western Uganda revealed that over 25% of teenage girls in the camp were sexually active

[11]. The results of this study imply that teenage girls in refugee camps face challenges with access to sexual and reproductive health services.

The study reveals that older teenagers in the age group of 15–19 years were 6.3 times more likely to become pregnant compared to their younger counterparts in the age group of 13 and 14 years of age. This is in agreement with similar studies such as by Ivanova et al. in Nakivale refugee camp that also showed that older teenagers were more likely to become pregnant [12]. This could be due to the fact that older teenagers are also more likely to be involved in sexual relationships and risky sexual behaviors that lead to pregnancy. On the other hand, younger teenagers may still have the fear to get involved in risky sexual behaviors even when they are sexually active [13]. This implies that teenagers are unable to practice safer sex that protects them from becoming pregnant and there should be an initiative to increase the knowledge levels of safer sex practices among teenagers.

This study also shows that not being in school was a risk factor for teenage pregnancy among teenagers in Palabek refugee settlement, Northern Uganda. Teenagers who were not in school were 5 times more likely to get pregnant compared to those who were in school. This is similar to a number of studies that show that keeping girl children in school reduces the risk of teenage pregnancy [3, 14]. This is because education equips them with knowledge for informed decisions and serves as a protective shield, fostering personal growth and resilience against social challenges. School attendance also limits teenage girls' time for sexual relationships, reducing pregnancy risks. The results of this study emphasize the importance of educating teenage girls in refugee camps to prevent teenage pregnancy.

Findings in our study show that teenagers who were unmarried were 0.21 less likely to become pregnant. The finding is similar to a study conducted in a similar setting in Kule refugee settlement camp in Ethiopia [15]. This trend could be attributed to cultural expectations where married teenagers are expected to bear children. Furthermore, societal pressure coupled with altered mental health of the pregnant girls may compel them to marry the father of the child. Such dynamics highlight the complex interplay between cultural norms, social expectations, mental health and the risk of teenage pregnancy within refugee communities [16].

Our study also reveals that teenagers who had their first sexual intercourse after 18 years of age were 2.4 times likely to get pregnant compared to the younger teenagers below the age of 18 years. This finding doesn't agree with a number of studies conducted in various settings showing that delaying sexual debut reduces the risks of teenage pregnancy [12, 13, 17]. The difference between the studies could be due the study setting. However, this

trend may stem from the perception among some teenage girls in refugee camps that reaching 18 marks an appropriate age to engage in sexual activity. However, despite their age, they may lack the necessary experience and knowledge to protect themselves from unintended pregnancies [16].

Teenagers who had multiple sexual partners were 31% less likely to get pregnant compared to those who didn't have multiple sexual partners. This is not similar to studies that also found out that multiple sexual partners is a risk factor for teenage pregnancy [18, 19]. The reduced risk in this case can be attributed to the possibility that teenagers with multiple partners may be more likely to use contraception consistently or engage in safer sexual practices to avoid pregnancy. Additionally, it could reflect a higher level of sexual health awareness or access to reproductive health services among this group. However, Bakesiima et al. show that the camp has low access to contraceptives among adolescents at 44% only [20].

The study found that teenagers who used alcohol were 6.7 times more likely to get pregnant, consistent with previous research linking alcohol use to increased pregnancy risk. This is in agreement with two studies conducted in Uganda that showed that drug use and alcohol use are risk factors for teenage pregnancy [21, 22]. This is largely due to impaired judgment and risky sexual behaviour under the influence of alcohol [23]. However, it's also important to consider that these teenagers might see themselves as adults capable of making independent decisions, such as drinking, marrying, and becoming sexually active. This perspective suggests that alcohol use might be part of a broader social and cultural context where these young women exercise their sexual self-determination. To address this, policy interventions should not only focus on providing sexual and reproductive health services but also on understanding the social and cultural factors influencing these behaviours. Such policies should empower young women with the knowledge and resources to make informed decisions while respecting their autonomy and addressing the broader social dynamics that contribute to these choices.

We found that awareness of sexual and reproductive health services was 58% protective against teenage pregnancy among refugee girls. This result supports existing research indicating that knowledge of sexual and reproductive health services serves as a protective factor against teenage pregnancy [23]. Awareness enhances access to contraception, allowing adolescents to make informed decisions about their sexual health. Additionally, it facilitates early detection and management of reproductive health issues, which helps reduce the likelihood of unintended pregnancies. In the context of refugee camps, improving awareness of these services is crucial for empowering girls to manage their

sexual health effectively and mitigate the risk of teenage pregnancy.

Our study also found that teenagers with divorced parents were 2.4 times more likely to become pregnant, aligning with existing literature that highlights how unstable or separated family environments can negatively impact adolescents, including increasing the risk of teenage pregnancy [24, 25]. This effect is particularly pronounced in refugee camps, where the breakdown of family cohesion and support systems can leave teenagers feeling emotionally vulnerable. In such settings, the lack of stable family structures and consistent parental guidance can lead to reduced supervision and monitoring of adolescents' activities. This increased exposure to risky behaviors, such as early sexual activity, is compounded by the need for validation and support from external sources. Consequently, this finding underscores the importance of strengthening support systems for adolescents with separated or divorced parents in refugee camps to mitigate their increased risk of teenage pregnancy and early marriage.

Conclusion

This study results reveal that 4 in 10 teenage girls in Palabek, Northern Uganda, are pregnant, influenced by individual and community factors. This highlights vulnerabilities in refugee camps, urging prioritization of sexual and reproductive health for adolescent girls in refugee camps.

Abbreviations

WHO	World Health Organization
SRHR	Sexual Reproductive Health and Rights
OPD	Outpatients Department
ANC	Antenatal Care
SPSS	Statistical Package for Social Scientists
IRC	International Rescue Committee
UN	United Nations
UBOS	Uganda Bureau of Statistics
ICF	International Classification of Functioning, Disability and Health
NGO	Non-governmental Organization
UNICEF	United Nations International Children's Emergency Fund
UDHS	Uganda Demographic Health Survey
UNFPA	United Nations Population Fund
UPE	Universal Primary Education

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Author contributions

O.E.O conceptualized the study, prepared the protocol, collected data, analyzed and wrote the main manuscript. M.M and K.E analyzed data, prepared tables and also wrote part of the main manuscript. M.S.O, A.R.A guided and reviewed the manuscript. All authors reviewed the manuscript.

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Data availability

The datasets generated and/or analyzed during the current study are not publicly available as they are property of Lira University but are available from the corresponding author on reasonable request.

Declarations

Human ethics and consent to participate

This study was done in accordance with the Declaration of Helsinki. Ethical approval to conduct the study was obtained from Gulu University Research Ethics Committee and approval was issued under rec number GUREC-2021-124: A. Permission to conduct the study was equally sought from all the relevant authorities from the prime minister's office to all the authorities at the camp settlement.

Consent for publication

Not applicable.

Informed consent

was obtained from all the participants who were above 18 years (legal age in Uganda). For those below 18 years, consent was sought from their parents/guardians and assent was also obtained from them to participate in the study. All participants were at liberty to exit the study process at any point. The consent forms, both English and translated versions used in the study were reviewed and approved by the Gulu University Research Ethics Committee. The research assistants made sure all participants understood all aspects of consent before signing and proceeding with the data collection procedure.

Competing interests

The authors declare no competing interests.

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