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Exploring Psychotic Symptoms Among Substance-Naïve Individuals and Recent Abstainers Without a Psychosis Diagnosis: A Cross-Country Study Across Kenya, Uganda, Ethiopia, and South Africa.

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Abstract:	Psychotic symptoms are of increasing interest in mental health due to their predictive value for future psychotic disorders. While these symptoms are prevalent in the general population, their occurrence varies globally. This study aimed to explore the prevalence and factors associated with psychotic symptoms among individuals identified as substance-naïve and recent abstainers without a history of psychosis. A cross-sectional analysis was conducted on 11,687 participants who reported no lifetime substance use, no substance use in the previous three months, and did not have a diagnosis of psychosis. The study utilized the Psychosis Screening Questionnaire to estimate the one-year prevalence of psychotic symptoms and their associations with demographic and clinical attributes. Results revealed a 3.5% prevalence of psychotic symptoms within this sample. Factors associated with psychotic symptoms were older age, being female, having chronic medical conditions, encountering traumatic life events being divorced or separated and lower education levels which positively correlated with symptom scores. There is a need for future investigations and longitudinal studies to uncover the underlying mechanisms and impacts of psychotic symptoms.
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Dear Editor,

I am submitting my manuscript entitled "Exploring Psychotic Symptoms Among Substance-Naïve Individuals and Recent Abstainers Without a Psychosis Diagnosis: A Cross-Country Study Across Kenya, Uganda, Ethiopia, and South Africa" for consideration in Psychiatry Research journal. This study addresses a critical gap in psychiatric research by focusing on psychotic symptoms in substance-naïve individuals and recent abstainers across four African countries. Our findings reveal a relatively high prevalence of psychotic symptoms and identify significant determinants, including age, gender, chronic medical conditions, level of education, marital status and traumatic life events. This research contributes novel insights into the burden of psychotic symptoms beyond substance-induced psychosis, offering valuable perspectives for clinical practice and mental health strategies in the region. Given the journal's commitment to advancing psychiatric knowledge, I believe our study will be of great interest to your readership.

Sincerely,

Isaac Babu Kisiang'ani, MD

Highlights

- Investigated psychotic symptoms in substance-naïve individuals and recent abstainers in Africa.
- Utilized the PSQ for screening psychotic symptoms, demonstrating good psychometric properties.
- Found a 3.5% prevalence of psychotic symptoms among substance-naïve individuals and recent abstainers.
- Identified associations between psychotic symptoms and factors such as age, sex, chronic medical conditions, education level, marital status and traumatic life events.
- Implemented comprehensive data collection methods including structured interviews and multi-country recruitment.

Abstract

Psychotic symptoms are of increasing interest in mental health due to their predictive value for future psychotic disorders. While these symptoms are prevalent in the general population, their occurrence varies globally. This study aimed to explore the prevalence and factors associated with psychotic symptoms among individuals identified as substance-naïve and recent abstainers without a history of psychosis. A cross-sectional analysis was conducted on 11,687 participants who reported no lifetime substance use, no substance use in the previous three months, and did not have a diagnosis of psychosis. The study utilized the Psychosis Screening Questionnaire to estimate the one-year prevalence of psychotic symptoms and their associations with demographic and clinical attributes. Results revealed a 3.5% prevalence of psychotic symptoms within this sample. Factors associated with psychotic symptoms were older age, being female, having chronic medical conditions, encountering traumatic life events being divorced or separated and lower education levels which positively correlated with symptom scores. There is a need for future investigations and longitudinal studies to uncover the underlying mechanisms and impacts of psychotic symptoms.

Exploring Psychotic Symptoms Among Substance-Naïve Individuals and Recent Abstainers Without a Psychosis Diagnosis: A Cross-Country Study Across Kenya, Uganda, Ethiopia, and South Africa.

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**In memoriam

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Abstract

Psychotic symptoms are of increasing interest in mental health due to their predictive value for future psychotic disorders. While these symptoms are prevalent in the general population, their occurrence varies globally. This study aimed to explore the prevalence and factors associated with psychotic symptoms among individuals identified as substance-naïve and recent abstainers without a history of psychosis. A cross-sectional analysis was conducted on 11,687 participants who reported no lifetime substance use, no substance use in the previous three months, and did not have a diagnosis of psychosis. The study utilized the Psychosis Screening Questionnaire to estimate the one-year prevalence of psychotic symptoms and their associations with demographic and clinical attributes. Results revealed a 3.5% prevalence of psychotic symptoms within this sample. Factors associated with psychotic symptoms were older age, being female, having chronic medical conditions, encountering traumatic life events being divorced or separated and lower education levels which positively correlated with symptom scores. There is a need for future investigations and longitudinal studies to uncover the underlying mechanisms and impacts of psychotic symptoms.

Key words: Recent abstainers, Psychosis, psychotic symptoms

1.0 INTRODUCTION

Psychotic symptoms, characterized by hallucinations, delusions, and disorganized behavior, are a global mental health challenge. Globally, estimates suggest a lifetime prevalence of 7.8% for experiencing psychotic symptoms (McGrath et al. 2016). In sub-Saharan Africa, the prevalence of undiagnosed psychotic symptoms is particularly concerning due to issues like stigma, limited awareness, and inadequate access to mental healthcare services.

While psychotic symptoms are common in the general population, only a fraction progress to psychotic disorders such as schizophrenia (Baxter et al. 2013). Recognizing these symptoms is crucial, insofar as they extend beyond psychotic disorders, and may be a consequence of affective disorders and primary neurological conditions (McGrath et al. 2016).

There is a well-established relationship between substance abuse and onset of psychotic symptoms (Shaul et al. 2013). Studies conducted in Kenya and Ethiopia found a high lifetime prevalence of psychotic symptoms, with 72.0% and 43.0%, respectively(Mamah, Mutiso, and Ndetei 2021) (Alenko and Kerebih 2022).These studies did not exclude individuals who used substances such as alcohol, tobacco, or marijuana, among others, or who had substance use disorders, potentially contributing to the observed high lifetime prevalence of psychotic symptoms.

The complexity of factors associated with psychotic symptoms, including age, sex, education level, traumatic life experiences, substance use, and chronic health conditions, highlights the need for a comprehensive understanding in the African context (Daalman et al. 2012), (Oh, Smith, and Koyanagi 2021), (Shaul et al. 2013).

In a recent multi-country case-control genetics study from our group (Bitta et al. 2022) 9.7% of controls—individuals without a prior psychosis diagnosis—exhibited psychotic symptoms. Importantly, this study recognized the potential influence of substances on the development of psychotic symptoms, a factor often associated with psychosis (Alenko and Kerebih 2022).

In the current analysis, the focus was on individuals who were substance-naïve, had abstained from substance use in the past three months, and did not have a psychosis diagnosis. Disaggregation of individuals without a prior psychosis diagnosis into substance users and non-users, may help provide a clearer understanding of the prevalence and nature of psychotic symptoms. This study is among the first to examine psychotic symptoms and associated factors among substance-naïve individuals and recent abstainers without a psychosis diagnosis in Africa.

2 METHODS AND MATERIALS

2.1 Study participants.

Data for this cross-sectional study was collected as part of the NeuroGAP-Psychosis study, a multinational case-control investigation that focused on psychosis in African populations (Stevenson et al. 2019).The study sites were Uganda, South Africa, Kenya, and Ethiopia and aimed to enhance our comprehension of the underlying factors contributing to schizophrenia and bipolar disorder by amassing a substantial sample and conducting in-depth analyses in these less-studied African populations. The study's detailed methodology is available in the published protocol (Stevenson et al. 2019).

For this paper, we analyzed data from control participants who were either substance-naïve or recent abstainers, without a diagnosis of psychosis. Substance-naïve individuals were participants who answered "no" to lifetime use of all substances listed on the ASSIST tool. Recent abstainers were individuals who answered "none" to questions about substance use in the last three months on the ASSIST tool, even if they had used substances at some point in their lifetime. The inclusion and exclusion criteria were as follows:

2.1.1 Inclusion criteria

1) Adults aged18 years or older.
2) Scoring above 14.5 out of a possible 20 on the University of California, San Diego Brief Assessment of Capacity to Consent (UBACC) form.
3) Never had a diagnosis of psychosis which was defined as schizophrenia, bipolar mood disorder, schizoaffective disorder, mania not otherwise specified, psychotic disorder not otherwise specified.
4) Fluency in one of the languages used to administer the interview: Acholi-Luo, Afrikaans, Afan Oromo, Amharic, English, Kiswahili, Luganda, Lugbara, Runyankole and isiXhosa.

2.1.2 Exclusion criteria

1) Individuals with a clinical diagnosis of psychosis.
2) Inpatient status for alcohol or substance use or under the present influence of alcohol or drugs.

2.2 Data collection

Participants were recruited from more than 50 medical facilities in rural and urban settings in the respective countries. Data collection for this study involved structured interviews conducted by a team of research professionals, including nurses, clinicians, and research assistants (RAs) with college-level qualifications or higher. Prior to commencing data collection, all research staff underwent comprehensive and structured training, which covered study-related assessments and procedures, including the administration of the various screening tools. This training included detailed explanations of the questionnaires and incorporated role-play exercises for practical experience. Both the RAs and their supervisors confirmed their training completion with their signatures.

Interviewers received on-site supervision and support to ensure the data was high quality. Periodic refresher training sessions were conducted to ensure adherence to study protocols, and continuous role-playing exercises were used to maintain consistency in ratings among the interviewers. Furthermore, all RAs completed training in research ethics concerning human subjects.

During the interviews, questionnaire items were read verbatim to participants to address potential issues related to literacy and unfamiliarity with the questionnaire's format. The study received ethics committee approval from all the sites involved. For the full list of institutions and ethics approvals, see the published protocol (Stevenson et al. 2019).

The final study population comprised 11,687 participants who reported no substance use in their lifetime, no substance use in the last three months, and no diagnosis of psychosis. The participants were represented as follows: Uganda at 35.9% (4,200), South Africa at 10.6% (1,236), Kenya at 24.5% (2,866), and Ethiopia at 29.0% (3,385).

2.3 Psychosis screening questionnaire (PSQ)

Psychotic symptoms were evaluated using the PSQ (Bebbington and Nayani 1995), which is a concise screening tool designed to detect psychotic disorders. The PSQ assesses five self-reported psychotic symptoms: mania, thought-interference, paranoia, strange experiences, and hallucinations. To ascertain the presence of these symptoms, a root question is initially posed, followed by one or two additional questions to validate these experiences as indicative of psychosis.

Consistent with previous research, we established binary measures (present or absent) for each of these five psychotic symptoms. To classify an item as positive, both the root question and the supplementary corroborating questions needed to receive affirmation for either the last 12 months or over one's lifetime. Beyond these individual symptom measures, a comprehensive screening measure was formulated by amalgamating responses across all five psychotic symptoms, categorizing them as either having occurred within the past year or over one's lifetime (Heuvelman, Nazroo, and Rai 2018). This study only focused on psychotic symptoms over the last 12 months in non-substance users.

The PSQ was translated into local languages in each country, following the World Health Organization's (WHO) guidelines for the translation of assessment instruments. This translation process involved forward translation, targeted back-translation, and review by a bilingual expert group.

The PSQ has good psychometric properties in the measurement psychotic symptoms in the sites where this study was conducted (Bitta 2022), (Thungana et al. 2023), (Kwagala et al. 2024).

2.4 The Life Events Checklist for DSM-5 (LEC-5)

The Life Events Checklist for DSM-5 (LEC-5) was utilized to obtain data on traumatic life events. It is a 17-item self-report tool that screens for potentially traumatic events in a patient's lifetime. It assesses exposure to 16 events that may result in distress and one additional item that assesses for any other extraordinarily stressful event. It was developed by the National Center for Posttraumatic Stress Disorder (PTSD) (Weathers et al. 2018) and has very good psychometric properties in the measurement of potentially traumatic events (Gray et al. 2004) and in the sites where this study was conducted (Kwobah et al. 2022) (Girma et al. 2022) (Stevenson et al. 2023) (Morawej et al. 2024). The current study assessed 15 items that can be directly experienced ("happened to me") and 17 items items that can be witnessed for a total maximum of 32. We categorized the variable for traumatic life events into two groups: "experienced 0" or "1+ traumatic life events," and then analyzed it accordingly.

2.5 The Composite International Diagnostic Interview (CIDI) for chronic medical conditions.

The CIDI screener for chronic medical conditions is an extension or component of the CIDI that specifically targets the assessment and diagnosis of chronic medical conditions such as diabetes, cardiovascular diseases, respiratory disorders, and other non-psychiatric health issues. This part of the interview is designed to collect detailed information about an individual's physical health, medical history, and the presence of chronic illnesses. (Wittchen and Nelson 1996). This study

evaluated 17 medical conditions, including hypertension, tuberculosis, and asthma, among others.

2.6 Statistical methods

In total 11,687 participants explicitly reported a lifetime absence of substance use, no substance consumption within the last three months, and had never been diagnosed with psychosis.

We first examined sociodemographic and behavioral characteristics of study participants.

We summarized sociodemographic and clinical characteristics of the respondents as frequencies and their corresponding percentages. Prevalence of psychotic symptoms as defined by the PSQ was determined from the whole sample and for each country. Binary logistic regression was used to determine risk factors predictive of psychosis symptoms in the sample. Backward logistic regression modeling procedures combined with the change-in-estimate approach were used to calculate odds ratios (OR) and 95 % confidence intervals (95 % CI) for the associations between psychotic symptoms and sociodemographic and behavioral factors (Rothman, Greenland, and Lash 2008). We also conducted multivariate analysis and adjusted for age, sex, traumatic life event and chronic medical conditions. Variables of *a priori* interest (e.g. age and sex) were included in the final models.

All p-values were two sided and a p-value of <0.05 was considered statistically significant. All analyses were performed using STATA 16.1 statistical software for windows (Statacorp, College Station, TX, USA).

3 RESULTS

3.1 Sociodemographic and Clinical Characteristics

The analysis is based on 11,687 participants across Kenya, Uganda, Ethiopia, and South Africa in the larger NeuroGAP-Psychosis study. The dataset comprised a diverse participant group aged between 18 to 84 years, with an average age of approximately 36 years, predominantly from Uganda, Ethiopia, Kenya, and South Africa, in descending order of representation. The majority of the participants were female, with over half being married or cohabitating. A significant portion had completed secondary and tertiary education, though a small fraction had no formal education. Living situations varied widely, with nearly half living with a spouse or partner, and others with family, alone, or with friends or relatives. Majority of the participants reported having a chronic medical condition. Additionally, a considerable majority had encountered or witnessed traumatic events.

3.2 Prevalence of Psychotic Symptoms

The overall one-year prevalence of psychotic symptoms in the sample was 3.5% and the distribution by country is shown below (Table 2). The one-year prevalence of psychotic symptoms varied across countries with Uganda having the highest PSQ score (5.5%) and Ethiopia having the least (1. 6%).Thought interference and paranoia symptoms exhibit higher prevalence, with Uganda having the highest frequency, followed by South Africa, with Ethiopia having the least. Strange experiences and hallucinations were reported at varying levels in all countries, again with Uganda showing relatively higher frequency followed by South Africa. The composite of any positive screen on a psychotic symptom (Composite PSQ) was highest in Uganda, followed by South Africa, Kenya, and Ethiopia. (Table 2)

3.3 Factors associated with psychotic symptoms.

The findings revealed several significant associations (Table 3). In the multivariate adjusted model older age was associated with a decreased likelihood of psychotic symptoms ($p < 0.001$, aOR = 0.98, 95% CI: 0.97, 0.99); female participants had higher odds of experiencing psychotic symptoms ($p = 0.001$, aOR = 1.25, 95% CI: 1.01, 1.55) compared to males. Chronic medical

conditions and traumatic life events also showed significant associations, with individuals with chronic medical conditions ($p < 0.001$, aOR = 2.52, 95% CI: 1.92, 3.32) and those who experienced or witnessed traumatic life events ($p < 0.001$, aOR = 2.62, 95% CI: 1.94, 3.54) having higher odds of psychotic symptoms. Participants with no formal education had greater odd of experiencing psychotic symptoms compared to those with tertiary education ($p<0.001$, aOR 2.63,95% CI:1.53-4.52) (Table 3).

4.0 DISCUSSION

This study is among the first in sub-Saharan Africa to investigate the prevalence of psychotic symptoms among substance-naïve individuals and recent abstainers without a psychosis diagnosis.

4.1 Prevalence of Psychotic Symptoms

Prior works within this area have shown a high prevalence of psychotic symptoms; though, one important gap in the literature remains, which is the failure to examine these symptoms among those not presently using substances and those who have never used substances. For instance a study (Kiima and Jenkins 2010) conducted in Tanzania reported the prevalence of psychotic symptoms at 3.9% using the Psychosis Screening Questionnaire (PSQ). This is very close to the estimate found in this study. Unexpected is the similarity in prevalence with our own study, despite this earlier study not excluding current substance users.

The 3.5% prevalence observed in our study is lower than that in a previous study (McGrath et al. 2016) conducted in 18 countries, and the lifetime prevalence of the psychotic symptoms was 7.8%. Such high prevalence was expected, as this study (McGrath et al. 2016) used the community survey approach, examined lifetime prevalence and did not exclude those participants using substance at the moment.

Further deviating from our results is a study carried out across seven tertiary academic institutions in Kenya that recorded the prevalence of such experiences among the youth at 72%(Mamah, Mutiso, and Ndetei 2021). The difference could be due to the fact that the study focused on young adult populations, which is reported to carry more risk for psychotic symptoms than the older population(Linscott and Os 2013). In addition, the Kenyan study did not exclude participants who had current substance use and related disorders, an aspect which could account for the high reported prevalence. There are methodological differences between the studies, especially regarding the instruments used; while the earlier Kenyan study used the Washington Early Recognition Centre Affectivity and Psychosis (WERCAP), our study used the Psychosis Screening Questionnaire.

A recent study from our group (Bitta et al. 2022) found the prevalence of psychotic symptoms to be 9.7%, which is higher than the 3.5% found in the current study. The earlier study did not exclude individuals who were currently using substances. In the current study, we excluded those using

substances, which allowed us to show the prevalence of psychotic symptoms in people with no substance use as well as recent abstainers. This strategy was useful in highlighting the burden of psychotic symptoms in the absence of substance use.

4.2 Factors associated with psychotic symptoms.

In this study the factors associated with psychosis were, age, sex, education level, chronic medical conditions and traumatic life events.

This study found old age to be associated with a decreased likelihood of one-year psychotic symptoms. This is similar to a systemic review and meta-analysis (Linscott and Os 2013) that demonstrated that a younger age was associated with development of psychotic symptoms. However, not all data are consistent ; in one cross-national study (McGrath et al. 2015) found age to be unrelated to psychotic experiences.

The presence of psychotic symptoms showed an association with the female sex. Unlike in the current study, a meta-analysis (Os et al. 2009) concluded that the male sex was associated with the development of psychotic symptoms. It is worth noting that subsequent reviews (Linscott and Os 2013) (McGrath et al. 2015) failed to demonstrate similar findings and there were no differences in psychotic symptoms between sexes. Another contrasting study (Mamah, Mutiso, and Ndetei 2021) showed similar frequency of psychotic symptoms between males and females. These findings overall were limited by the small number of studies for the meta-analyses and the small sample sizes of the studies. The current study had a larger sample size of 11687 compared to the earlier studies and, therefore, had greater power.

Having a chronic illness increased the odds of having psychotic symptoms by more than two-fold. The link between chronic medical conditions and psychotic symptoms may be bi-directional and stem from a combination of factors. For instance, individuals with psychotic symptoms often exhibit a lack of insight and inhibition, leading to a propensity for engaging in risky behaviors, such as unprotected sex, which can result in chronic medical conditions like HIV. Additionally, certain medications, including anti-seizure medication, cardiovascular medications, muscle relaxants, analgesics, and antiparkinsonism medications, have the potential to induce the development of psychotic symptoms. Similar to our study, a cross-sectional study (Oh, Smith, and Koyanagi 2021) with data from the American Life Panel demonstrated that numerous health conditions were associated with psychotic symptoms. In a separate investigation, it was demonstrated that three common medical conditions—frequent or severe headaches, other chronic pain, and asthma—exhibited a significant association with the subsequent onset of psychotic experiences. This association persisted even after adjusting for comorbid general medical conditions and mental disorders, with odds ratios falling within the range of 1.5 to 1.7 (Scott et al. 2018).

This study also demonstrated that being directly exposed or witnessing one or more traumatic life events was associated with 2.62 times greater odds of having psychotic symptoms. This is in line with previous studies that showed substantial evidence of a link between traumatic life events such as rape, road traffic accidents, physical and emotional abuse, and the development of psychotic symptoms (Daalman et al. 2012) (Fisher et al. 2013) (Hillow, Atwoli, and Kwobah 2023). In addition to this, other studies (Coughlan and Cannon 2017) have shown a dose-response rate of traumatic life experiences and psychotic symptoms. Exposure to trauma can impact several neural pathways implicated in the development of mental disorders.

In the general population, having a partner is shown to have a positive effect on mental health. Specifically for psychosis, a review of 95 studies found that unmarried people are more likely to have psychotic experiences than married people (Linscott and Os 2013).Similar to these earlier

findings, this study found that marital status was significantly associated with psychotic symptoms with those who were divorced having 1.42 times greater odds of having psychotic symptoms compared to those who were married or cohabiting. Similarly, (DeVylder, Lehmann, and Chen 2015), and (Pignon et al. 2018) found that people who were never married ,separated or divorced were more likely to experience psychotic symptoms in the past year. It is however not clear whether being without a partner increases the risk of developing psychosis, or if those who experience psychosis are just more likely to be single (DeVylder, Lehmann, and Chen 2015), (White et al. 2021). People who experience psychotic symptoms maybe be more likely to be single or divorced because of disruption to, and loss of, social contacts, including romantic relationships (Baker and Procter 2015).

This study demonstrated that education level was associated with development of psychotic symptoms in this sample, with those with lower education levels being at greater odds of developing psychotic symptoms. This could be explained by previous studies (Steenkamp et al. 2021) which demonstrated that having psychotic symptoms in childhood could result in lower education attainment. Moreover, there is a crucial role of social support and psychological distress. Individuals with lower levels of education often have limited social support networks and higher levels of psychological distress, both of which are significant risk factors for the development of psychotic symptoms (Kassew et al. 2023).

4.3 Strengths and limitations

This study had a large sample size and multiple study sites that improved its power. Additionally, the psychometric evaluation of the PSQ was done and it was found to be reliable in screening

psychosis especially in individuals with higher degrees of psychotic experiences (Bitta et al. 2022), (Thungana et al. 2023), (Kwagala et al. 2024). One limitation was the possibility of social desirability bias where some participants may have feared disclosing some information such as substance use and chronic medical conditions such as HIV.

5.0 Conclusion

This study sheds light on the prevalence and determinants of psychotic symptoms among substance-naïve individuals and recent abstainers without a history of psychosis, emphasizing the influence of substances on symptom development. The relatively high prevalence of psychotic symptoms despite the exclusion of recent substance users highlights the need for further research into underlying mechanisms and long-term impacts. The significant correlates identified, including age, sex, chronic medical conditions, exposure to traumatic events, marital status and education level suggest avenues for future investigations beyond substance-related contexts. Moving forward, longitudinal studies are warranted to explore the enduring effects of psychotic symptoms and inform targeted interventions for at-risk populations.

Conflict of Interest

The authors declare no conflicts of interest.

Author Contributions

Isaac Babu Kisiang'ani: Conceptualization, methodology, Writing-Original Draft. **Anne Stevenson:** Project administration, Writing - Review & Editing. **Bizu Gelaye:** Writing - Review & Editing. **Charles RJC Newton:** Resources. **Dan J Stein:** Resources. **Dickens Akena:** Writing - Review & Editing. **Edith Kwobah:** Writing - Review & Editing. **Henry R. Mwangi:** Software, Formal Analysis. **Mohammed Aden:** Methodology, Writing - Review & Editing. **Melkam Alemayehu**: Writing - Review & Editing**. Julius Barasa:** Writing - Review & Editing. **Stella Gichuru:** Writing - Review & Editing**. Rehema M. Mwema:** Writing - Review & Editing. **Linet Ongeri:** Writing - Review & Editing. **Adele Pretorious:** Writing - Review & Editing. **Rocky E. Stroud II**: Project administration, Writing - Review & Editing. **Solomon Teferra:** Resources. **Symon Kariuki:** Resources, Writing - Review & Editing. **Zukiswa Zingela:** Writing - Review & Editing**. Lukoye Atwoli**: Resources, Supervision, Writing - Review & Editing, Funding acquisition.

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Table 1: Social demographic and clinical characteristics

Characteristic	Value n (%)
Age	
18 – 28	3519 (30.1)
29 – 39	3807 (32.6)
40 – 50	2707 (23.2)
51 – 61	1277 (10.9)
≥62	377 (3.2)
Country	
South Africa	1,236 (10.6)
Kenya	2,866 (24.5)
Uganda	4,200 (35.9)
Ethiopia	3,385 (29.0)
Sex at birth	
Female	6,387 (54.7)
Male	5,300 (45.3)
Marital status	
Married or cohabitating	5,934 (50.8)
Never been married	4,101 (35.1)
Divorced or Separated	1,110 (9.5)
Widowed	538 (4.6)
Other	4 (0.0)
Highest level of education.	
No formal	350 (3.0)
Primary school	2,897 (24.8)
Secondary school	4,427 (37.9)
Tertiary	4,006 (34.3)
Living arrangement	
Alone	1,659 (14.2)
Parental family	2,689 (23.0)
Spouse or partner	5,547 (47.5)
Friends or other relatives	1,759 (15.1)
Other	27 (0.2)
Chronic medical condition	
Absent	4,150 (35.5)
Present	7,537 (64.5)
Exposure to any traumatic life event (directly experienced or witnessed)	
None	3,251 (27.8)
≥ 1 event	8,436 (72.2)

Table 2: Prevalence of psychotic symptoms.

Psychotic symptoms in the past year	Value n (%)
No	11,273 (96.5%)
Yes	408 (3.5%)
Missing	5 (0.0%)

Table 3: Distribution of psychotic symptoms by country.

	Total	South Africa	Kenya	Uganda	Ethiopia
N	**11,682**	**1,232**	**2,866**	**4,199**	**3,385**
Item	n (%)	n (%)	n (%)	n (%)	n (%)
Hypomania	29 (0.25)	3 (0.24)	0	25 (0.60)	1 (0.03)
Thought Insertion(interference)	103 (0.88)	12 (0.97)	22 (0.77)	59 (1.40)	10 (0.30)
Paranoia	137 (1.17)	19 (1.54)	20 (0.70)	72 (1.71)	26 (0.77)
Strange experience	150 (1.28)	29 (2.35)	26 (0.91)	78 (1.86)	17 (0.50)
Hallucination	160 (1.37)	18 (1.46)	10 (0.35)	107 (2.55)	25 (0.74)
Composite PSQ[a]	**408 (3.49)**	**61 (4.94)**	**62 (2.16)**	**231 (5.50)**	**54 (1.60)**

[a] Positive screen on any Psychosis Screening Questionnaire symptom

Table 4: Factors associated with psychotic symptoms in the past year

Characteristic	Psychotic symptoms Present (psychosis)	uOR	95% CI	p-value	aOR	95% CI	p-value
Living arrangement							
Parental family	88(3.3)	Ref					
Alone	57 (3.4)	1.05	0.75-1.48	0.773			
Spouse or partner	192 (3.5)	1.06	0.82-1.37	0.657			
Friends or other relatives	70 (4.0)	1.23	0.89-1.69	0.212			
Age(Mean, SD)	35.7 (11.2)	0.99	0.98-1.00	0.236	0.98	0.97 - 0.99	<0.001
Sex at birth							
Male	144 (2.7)	Ref			Ref		
Female	264 (4.1)	1.54	1.26-1.90	<0.001	1.25	1.01-1.55	0.043
Exposure to any traumatic life event							
None	51 (1.6)	Ref			Ref		
>1 event	357 (4.2)	2.77	2.06-3.73	<0.001	2.62	1.94 - 3.54	<0.001
Marital status							
Married or cohabitating	202 (3.4)	Ref			Ref		
Never been married	124 (3.0)	0.88	0.71-1.11	0.292			
Divorced or Separated	63 (5.7)	1.71	1.28-2.28	<0.001	1.42	1.06 – 1.89	0.017
Widowed	19 (3.5)	1.04	0.64-1.68	0.877			
Chronic medical condition							
Absent	68 (1.6)	Ref			Ref		
Present	340 (4.5)	2.84	2.18-3.69	<0.001	2.52	1.92 - 3.32	<0.001
Education level							
Tertiary	90 (2.2)	Ref			Ref		
Secondary	163 (3.7)	1.66	1.28-2.16	<0.001	1.54	1.18 – 2.00	0.001
Primary	137 (4.7)	2.16	1.65-2.83	<0.001	2.05	1.54 – 2.72	<0.001
No formal	18 (5.1)	2.36	1.40-3.96	0.001	2.63	1.53 – 4.52	<0.001

aOR = Adjusted Odd Ratio; uOR= Crude odd ratio; Ref = reference group

Title Page (with Author Details)

Exploring Psychotic Symptoms Among Substance-Naïve Individuals and Recent Abstainers Without a Psychosis Diagnosis: A Cross-Country Study Across Kenya, Uganda, Ethiopia, and South Africa.

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