Psychotic and Substance Use Disorders Among Relatives of Patients with Bipolar Disorder at a Hospital in Kenya

*Kimutai B. Katwa[1], Benson N. Gakinya[1], Irene Chesire[1], Maloosoy Katwa[2], Nicodemus Kuboi[2]

[1] Moi University, Kenya.

[2] Moi Teaching and Referral Hospital, Kenya

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Abstract

Background: Bipolar disorder is one of the most prevalent psychiatric conditions in Kenya. Studies conducted outside Kenya show that bipolar disorders and psychotic disorders are interlinked by family relations, while alcohol and substance use disorders are their important comorbidities. This study investigated the prevalence and associated factors of psychotic, alcohol and substance use disorders among first-degree relatives (FDR) of patients with bipolar disorders at a referral hospital in Western Kenya.

Methods: This was a cross-sectional quantitative study. Consecutive and Simple random sampling were used, with a sample size of 381. The Mini International Neuropsychiatric Interview (MINI) was used for data collection. The chi-square test measured associations utilizing a 95% confidence interval.

Results: The prevalences of psychotic, alcohol and substance use disorders were 23.6%, 13.6%, and 6%, respectively. Employment was significantly associated with psychotic disorder (P=0.038), and relation to the patient was significantly associated with alcohol use disorder (P=0.007) and substance use disorder (P=0.001).

Conclusion: Among the relatives of patients with bipolar disorders, there is a high prevalence of psychotic, alcohol and substance use disorders

Keywords: Bipolar, Psychosis, Substances, Cross-sectional, Kenya

Introduction

Mental illnesses impose social and economic challenges but remain low in priority despite recent improvements in their focus. Major mental disorders include bipolar disorder (BD), psychotic disorders (PD), alcohol use disorder (AUD), and substance use disorder (SUD). Biologically, bipolar disorders are caused by an imbalance in serotonin levels in the serotonergic pathway consisting of neuronal projections from the Median Raphe to various areas of the brain (Boland et al., 2021). Psychotic disorders are caused by increased dopamine activity in the dopaminergic pathways, specifically the mesolimbic and mesocortical pathways, consisting of neuronal projections from the Ventral Tegmental Area to the limbic system and cerebral cortex (Boland et al., 2021).

Studies outside Kenya have shown that bipolar disorder and psychotic disorder share familial predispositions. For example, a Swedish study of relatives of patients with schizophrenia, a psychotic disorder, found that their family members are at a high risk of presenting with affective symptoms found in bipolar disorder (Kendler et al., 2020). A Taiwanese study found that relatives of patients with bipolar disorder are at an increased risk of developing schizophrenia (Chen et al., 2019). A study in Nigeria found that alcohol and substance use disorders are important comorbidities of both bipolar disorder and psychotic disorder, and that comorbid presentations could also occur in close relatives (Onu et al., 2020).

These findings are important in the practice of psychiatry, especially considering that they are included in the fifth edition of the Diagnostic and Statistical Manual (DSM V). In DSM V, there was a change where, unlike in DSM IV, BD was no longer classified together with other mood disorders but instead separated and put in a class by itself. Bipolar disorder is now placed between depressive and psychotic disorders, and is recognized as a transitional disorder between the two classes of mental disorders (Association, 2022). This change was reported in recent studies conducted outside Kenya, which showed familial and genetic links between bipolar and psychotic disorders. Since Kenyan mental health practitioners use DSM V in practice, it would be important for a study to be conducted in Kenya to confirm whether such links are also applicable in the native population; hence, there is a need for this study.

Literature Review

Mental Health Burden from Mental Health Conditions.

Kenya has a significant mental health burden due to common mental disorders, including bipolar disorder and psychotic disorder (Jenkins et al., 2015). A study conducted in the Nyanza region of Kenya found that 56.3% of patients attending emergency departments had a psychiatric diagnosis, with 9% having BD (Aillon et al., 2014), . In comparison, a study conducted in Western Kenya found the prevalence of psychiatric illnesses in the population to be 34% (Kwobah et al., 2017), and another Kenyan study found that the prevalence of psychosis was 4.6% (Mamah et al., 2021).

Kenya also faces a significant burden of alcohol and substance use disorders (Muteti et al., 2019). Alcohol and substance use disorders are important comorbidities of bipolar disorder and psychotic disorder, which worsen the burden. A South African study found that substance use was significantly associated with bipolar disorder (BD) and linked to a worsening prognosis (Saban et al., 2014).

Familial and Symptomatic Link Between Bipolar Disorder and Psychotic Disorder

Recently, evidence has emerged of a genetic and symptomatic link between bipolar disorder and psychotic disorder. There have been findings suggesting a

shared origin between bipolar disorder and psychotic disorder (Peralta et al., 2016). Relatives of patients with schizophrenia not only have a higher likelihood of developing psychotic symptoms but also experience affective symptoms (Kendler et al., 2020). A Taiwanese study in Asia found a familial link between bipolar and psychotic disorders (Chen et al., 2019). A Turkish study obtained similar findings (Özdemir et al., 2016). In Nigeria, one study found mood symptoms among relatives of patients with schizophrenia (Onu & Ohaeri, 2018). The above studies found an existing familial link between bipolar disorder and psychotic disorder, whereas no Kenyan studies could investigate such links in the native population.

Alcohol and Substance Use Disorders as Important Comorbidities of Bipolar Disorder and Psychotic Disorder

Both bipolar disorder and psychotic disorder are closely associated with alcohol- and substance-use disorders. A US study found a strong association between alcohol and nicotine use with a diagnosis of bipolar disorder and psychotic disorder (Castillo-Carniglia et al., 2019). Independent studies in Kenya and South Africa also found that patients with alcohol and substance use disorders have a higher likelihood of experiencing bipolar disorder and psychotic disorder, and vice versa (Saban et al., 2014; Sevale, 2015). An Indian study found that alcohol and substance use disorders complicated the treatment of schizophrenia (Chakraborty et al., 2014) and worsened the prognosis of bipolar disorder and psychotic disorder (Sevale, 2015).

Psychological, Social and Economic Burden

Psychological, social, and economic hardships cannot be separated from mental illness, as these factors contribute to mental illness, and vice versa (Mayo et al., 2017; Hillow et al., 2023; Witte et al., 2018). Bipolar disorder, psychotic disorder and alcohol use disorder and substance use disorders exert a significant psychological, social, and economic burden. A study found that BD is a major risk factor for suicide (da Silva Costa et al., 2015), and another study done in Italy found 25 to 50% of those with schizophrenia will attempt suicide (Berardelli et al., 2021). An Indian study found that divorce and separation are associated with bipolar disorder and psychotic disorder (Behere et al., 2020) and an Italian study found that social dysfunction is worsened by negative symptoms associated with psychotic disorder (Berardelli et al., 2021).

In addition, Kenyan studies have found social dysfunctions among patients suffering from financial burdens and social stigmas toward patients extending to caretakers(Kiarie, 2021; Nyamwaro, 2022). This burden affects women more, as they are more likely to take up caretaker roles (Mungai & Midigo, 2019). Early interventions were suggested to lessen the burden of mental illness in an Ethiopian study (Ayalew et al., 2019) and Kenyan study (Nyamwaro, 2022).

Justification for the Study

Few studies have examined psychotic symptoms in family members of people with bipolar disorder (BD). Although the limited studies available were conducted outside Kenya and Africa, there is a need for a Kenyan study to determine if these links exist in the local population. This is especially important to strengthen the justification for classifying BD as a transitional disorder between depressive and psychotic disorders in the DSM-V. Extending the continued use of DSM-V for diagnosis by mental health practitioners in Kenya and similar African countries is crucial. Additionally, alcohol use disorder (AUD) and substance use disorder (SUD) are important comorbidities of BD and psychotic disorders (PD) that negatively impact prognosis and should be explored as well.

The study site, a National Referral Hospital in Western Kenya, serves many patients with BD accompanied by relatives. This presented a good opportunity to carry out this study by examining the prevalence and associated factors of psychotic disorder and alcohol and substance use disorders among first-degree relatives of patients with bipolar disorder in Western Kenya.

Methods

The study was a quantitative, cross-sectional research conducted over the course of one year beginning in October 2022. This design was chosen due to the effectiveness of cross-sectional methods for such prevalence studies.

Research Setting

The study was conducted at the mental health department of a national referral hospital in western Kenya, primarily receiving referrals from counties in the former provincial regions of Western, Rift Valley, and Nyanza. It also accepts referrals from other areas within Kenya and neighboring countries.

Sampling

This study collected data from first-degree relatives (FDR) of patients undergoing treatment for bipolar disorder at the mental health department of a public national referral hospital in Kenya. First-degree relatives comprise parents, siblings, and offspring, sharing at least 50% of their genetic material (Lewis, 2016). The sample size was 381, calculated using Fisher's formula. Consecutive sampling was used to select patients whose relatives had participated in the study. Every patient with BD was considered, and one FDR was selected for each patient until the sample size was achieved.

In instances where more than one first-degree relative accompanied the patient, simple random sampling through balloting was employed to choose one FDR. This was achieved by shuffling folded ballot papers, one with the concealed word "YES" and the rest with the concealed words "NO." The relative who selected "YES" was taken through the consenting process to participate in the study.

Data Collection

Structured questionnaires were used to collect data, where the respondents were provided questionnaires to fill out. These included a researcher-designed demographic questionnaire, which gathered sociodemographic data, and the Mini International Neuropsychiatric Interview (MINI), a diagnostic tool utilized to explore alcohol use, substance use, and psychotic disorders. The MINI is a reliable and validated structured questionnaire tool developed in 1998 for collecting psychiatric diagnostic information (Sheehan et al., 1998). Many studies, including those conducted in Kenya, have employed this tool (Aillon et al., 2014; Kwobah et al., 2017). Also, a pre-consenting questionnaire was also used— the University of California, San Diego's Brief Assessment of Capacity to Consent (UBACC) served as the initial assessment instrument to assess a respondent's capacity to consent and is reliable for this use (Jeste et al., 2007; Kipkemoi et al., 2024).

Data Analysis

The gathered data were reviewed for any errors or omissions. Statistical analyses were performed using the Statistical Package for Social Sciences version 28. For categorical data, proportions were calculated and visualized using tables and figures. The mean, median, and range were calculated for age. A chi-square test was utilized to examine the relationship between different categorical variables at a 95% confidence level

Ethical Consideration

Approvals were sought from The Moi University and Moi Teaching and Referral Hospital Institutional Research and Ethics Committee (MU/MTRH IREC) serving the North Rift and neighboring regions of Kenya and the Kenyan National Commission for Science, Technology, and Innovation (NACOSTI). The approval numbers are as follows: IREC approval number FAN 0004278 and NACOSTI approval number NACOSTI/P/22/21774. The hospital CEO also approved the study.

Written informed consent was obtained from the participants, who received consent forms in either English or Kiswahili. For those who were unable to read, the forms were read and interpreted by the researcher or a research assistant. Information about the study's purpose, including its risks and benefits, was provided in the form for consideration before signing. Prior to signing the consent form, the participants were assessed for their capacity to consent using the UBACC score.

Afterward, the selected participants appended their signatures or thumbprints if they wished to participate. Participants could withdraw their consent at any time during or after the data collection session. Data were coded with serial numbers to protect the participants' identities and were stored on a secure server accessible only to research personnel. Hard copies were securely stored in locked cabinets, and electronic copies were protected by passwords. Participants received assurances both verbally and in writing.

Three years post-study completion, all data will be permanently destroyed: physical records will be shredded, while digital files will be deleted permanently.

Results

Table 1 presents the sociodemographic characteristics of the participants.

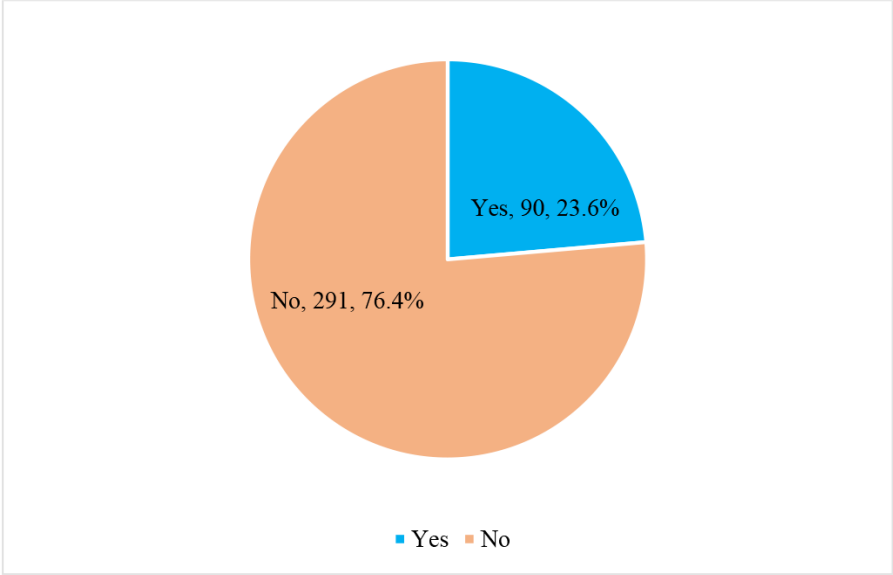
Table 1

Socio-demographic Characteristics

Variable	*f* (%)
Age	
Mean (SD)	40.2 (14.2)
Median (IQR)	38 (28, 50)
Range	18 – 80
Age group	
18 – 27	85 (22.3)
28 – 37	97 (25.5)
38 – 47	75 (19.7)
48 – 57	68 (17.8)
58 – 67	44 (11.5)
68 – 77	10 (2.6)
78 – 87	2 (0.5)
Gender	
Male	183 (48.0)
Female	198 (52.0)
Marital status	
Married	235 (61.7)
Never been married	109 (28.6)
Divorced/ separated	23 (6.0)
Widowed	14 (3.7)
Nationality	
Kenyan	380 (99.7)
Non-Kenyan	1 (0.3)
Religion	
Christian	377 (99.0)
Muslim	2 (0.5)
Other	2 (0.5)
Level of education	
None	33 (8.7)
Primary	60 (15.7)
Secondary	140 (36.7)
College	87 (22.8)
University	61 (16.0)
Employment status	
Self-employed	145 (38.1)
Unemployed	130 (34.1)
Employed	93 (24.4)
Student	13 (3.4)
Level of income	
0-10000	228 (59.8)
10001-30000	108 (28.3)
30001-50000	35 (9.2)
50001-100000	7 (1.8)
Relation to the patient	
Sister	90 (26.3)
Brother	88 (23.1)
Mother	71 (18.6)
Father	53 (13.9)
Daughter	41 (10.8)
Son	38 (10.0)

Figure 1

Prevalence of Psychotic Disorder



Note: Figure 1 shows that the prevalence of psychotic disorders, as analyzed from the data collected using the MINI tool, was 23.6% (95% *CI* 19.6 – 28.2).

Table 2 indicates that the prevalence of alcohol use disorder and substance use disorder was 13.6% and 6%, respectively. It also highlights the prevalence of non-alcohol substance use, showing that the majority of respondents with substance use disorder used tobacco (39.1%).

Table 2

Prevalence of Alcohol and Substance Use Disorders

Variable	***f* (%)**
Alcohol use disorder (AUD)	
No	329 (86.4)
Yes	52 (13.6)
Substance use disorder (SUD)	
No	358 (94.0)
Yes	23 (6.0)
Type of substance used	
Tobacco	9 (39.1)
Polysubstance	8 (34.8)
Cannabis	4 (17.4)
Amphetamines	2 (8.7)

***N* = 381**

Figure 2

Severity of Alcohol and Substance Use Disorders

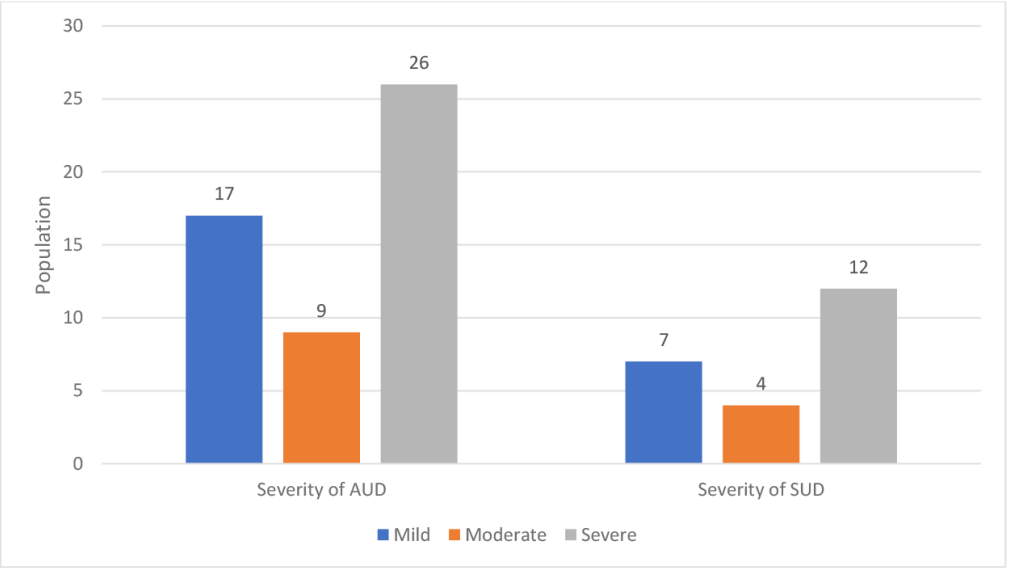


Figure 2 shows the various levels of alcohol and substance use disorders severity. Severe alcohol and substance use disorder comprised the majority of cases, compared to mild and moderate levels of severity. There were 52 participants with alcohol use disorder. Of these, 26 had severe level of severity (50 %), and out of the 23 participants with substance use disorder, 12 had severe level of severity (52.2 %).

Table 3 shows the associations between socio-demographic characteristics, which are the independent variables, and psychotic disorder, which is an independent variable. Significant associations were indicated by *p*-values of less than 0.05 (95% *CI*). Age was significantly associated with psychotic disorder with a *p*-value of 0.036. Psychotic disorder was the most prevalent among 78 – 87-year-olds (50 %). Psychotic disorder was more prevalent among the unemployed (31.5 %) and was significantly associated with employment status ($p = 0.038$).

Table 3

Socio-demographic Characteristics by Psychotic Disorder

	No	**Yes**	***p-values***
	n=291	***n=90***	
Variables	***f (%)***	***f (%)***	
Age			
Mean (SD)	40.6 (14.2)	39.3 (14.0)	
Range	18 – 79	19 – 80	
18 – 27	65 (76.5)	20 (23.5)	0.036
28 – 37	72 (74.2)	25 (25.8)	
38 – 47	53 (70.7)	22 (29.3)	
48 – 57	53 (77.9)	15 (22.1)	
58 – 67	41 (93.2)	3 (6.8)	
68 - 77	6 (60.0)	4 (40.0)	
78 - 87	1 (50.0)	1 (50.0)	
Gender			
Male	142 (77.6)	41 (22.4)	0.59
Female	149 (75.3)	49 (24.7)	
Marital status			
Married	180 (76.6)	55 (23.4)	0.99
Never been married	83 (76.1)	26 (23.9)	
Divorced/separated/Widowed	28 (75.7)	9 (24.3)	
Employment status			
Self-employed	118 (81.4)	27 (18.6)	0.038
Unemployed	89 (68.5)	41 (31.5)	
Employed	72 (77.4)	21 (22.6)	
Student	12 (92.3)	1 (7.7)	
Relation to the patient			
Siblings	130(73)	48(27)	0.38
Parents	103(83.1)	21(16.9)	
Offspring	58(73.4)	21(26.6)	

Table 4 shows associations between socio-demographic characteristics which are the independent variables and alcohol use disorder which is an independent variable. Significant associations were indicated by *p*-values of less than 0.05 (95% *CI*). Alcohol use disorder was most prevalent among males at 16.9% and married respondents at 13.5%, it was also more prevalent among siblings at 18% compared to parents and offspring. Alcohol use disorder was significantly associated with family relation to a patient with bipolar disorder, with a *p*-value of 0.007.

Table 4

Socio-demographic Characteristics by Alcohol Use Disorder

	No ***n*=329**	**Yes** ***n*=52**	***p*-value**
Variables	***f (%)***	***f (%)***	
Age			
Mean (SD)	40.5 (14.3)	38.4 (13.2)	
Range	18 – 80	20 – 66	
18 – 27	74 (87.1)	11 (12.9)	
28 – 37	80 (82.5)	17 (17.5)	0.30
38 – 47	65 (86.7)	10 (13.3)	
48 – 57	60 (88.2)	8 (11.8)	
58 – 67	38 (86.4)	6 (13.6)	
68 – 77	10 (100.0)	0 (0.0)	
78 - 87	2 (100.0)	0 (0.0)	
Gender			
Male	152 (83.1)	31 (16.9)	0.072
Female	177 (89.4)	21 (10.6)	
Marital status			
Married	201 (85.5)	34 (14.5)	0.82
Never been married	96 (88.1)	13 (11.9)	
Divorced/separated/Widowed	32 (86.5)	5 (13.5)	
Employment status			
Self-employed	131 (90.3)	14 (9.7)	
Unemployed	110 (84.6)	20 (15.4)	0.22
Employed	76 (81.7)	17 (18.3)	
Student	12 (92.3)	1 (7.7)	
Level of income			
0-10000	201 (88.2)	27 (11.8)	0.22
10001-30000	88 (81.5)	20 (18.5)	
>30000	40 (88.9)	5 (11.1)	
Relation to the patient			
Siblings	146(82)	32(18)	0.007
Parents	117(94.4)	7(5.6)	
Offspring	66(83.5)	13(16.5)	

Table 5 shows the associations between socio-demographic characteristics, which are the independent variables, and substance use disorder, which is an independent variable. Significant associations were indicated by *p*-values of less than 0.05 (95% *CI*). Substance Use Disorder was most prevalent among 18-to 27-year-olds at 11.8%; under gender and marital status, substance use disorder was most prevalent among males (9.8 %) and married respondents (10.1 %), and it was significantly associated with gender with a *p*-value of 0.003.

Table 5

Social-demographic Characteristics by Substance Use Disorder

	No ***n*=358**	**Yes** ***n*=23**	***p*-value**
Variables	***f (%)***	***f (%)***	
Age			
Mean (SD)	40.4 (13.9)	37.5 (17.3)	
Range	18 – 80	19 – 76	
18 – 27	75 (88.2)	10 (11.8)	
28 - 37	90 (92.8)	7 (7.2)	0.33
38 - 47	74 (98.7)	1 (1.3)	
48 - 57	67 (98.5)	1 (1.5)	
58 - 67	41 (93.2)	3 (6.8)	
68 - 77	9 (90.0)	1 (10.0)	
78 - 87	2 (100.0)	0 (0.0)	
Gender			
Male	165 (90.2)	18 (9.8)	0.003
Female	193 (97.5)	5 (2.5)	
Marital status			
Married	224 (95.3)	11 (4.7)	0.098
Never been married	98 (89.9)	11 (10.1)	
Divorced/separated/Widowed	36 (97.3)	1 (2.7)	
Level of education			
None	27 (81.8)	6 (18.2)	
Primary	58 (96.7)	2 (3.3)	0.021
Secondary	130 (92.9)	10 (7.1)	
College	84 (96.6)	3 (3.4)	
University	59 (96.7)	2 (3.3)	
Employment status			
Self-employed	142 (97.9)	3 (2.1)	
Unemployed	116 (89.2)	14 (10.8)	0.026
Employed	88 (94.6)	5 (5.4)	
Student	12 (92.3)	1 (7.7)	
Level of income			
0-10000	211 (92.5)	17 (7.5)	0.31
10001-30000	103 (95.4)	5 (4.6)	
>30000	44 (97.8)	1 (2.2)	
Relation to the patient			
Siblings	168(94.4)	10(5.6)	<0.001
Parents	121(97.6)	3(2.4)	
Offspring	69(87.3)	10(12.7)	

According to the level of education and employment status, substance use disorder was most prevalent among the uneducated (18.2 %) and unemployed (10.8 %). It was significantly associated with *p*-values of 0.021 and 0.026, respectively. In terms of income and family relations, substance use disorder was most prevalent in the lowest income level (7.5 %) and offspring (12.7 %). It was significantly associated with both income and family relationships, with *p*-values of 0.031 and 0.001, respectively.

Discussion

The mean age of relatives of patients with bipolar disorder in this study was 40.2 years, which is consistent with a Nigerian study examining caregivers of patients with bipolar disorder, which had a mean age of 43.6 years (Nuhu et al., 2010). This means that the age falls within the middle age group. This implies that relatives in this age group are most capable of accompanying those who are mentally ill. Younger relatives are more likely to be at school, whereas older relatives are often available.

Most respondents were female (52%), compared to males (48%). This is likely because, traditionally, in Kenyan society females are tasked with patient care, thus occupying the caretaker role more often than males (Mungai & Midigo, 2019). The majority of the respondents were married at 61.7%, which is congruent with a study in Kenya, which found that a majority of respondents were married (Nyamwaro, 2022). This could be because this study sampled 18 – 80-year-olds, majority in this category are expected to be married.

The majority of respondents had secondary education (22.8%), while a few had no education (8.7%). This finding is consistent with a Kenyan study (Nyamwaro, 2022). Usually, hospitals request mentally ill patients to visit the clinic with relatives who can understand psychiatric and psychotherapy sessions, and these patients are more likely to be educated.

According to the nature of the relationship, the majority of the respondents were siblings (46.7% of the total respondents), followed by parents (32.5%), and offspring (20.7%). This could be because the age of onset of bipolar disorder is around 21 years (Boland et al., 2021). Most patients are hospitalized during their first episode and are likely to be around the age of 21. Therefore, they usually do not have offspring old enough to accompany or visit them; as a result, there is a higher proportion of siblings and parents among relatives who visit or accompany the patient.

The prevalence of psychotic disorder among relatives of patients with bipolar disorder in this study was 23.6%. Siblings had the highest prevalence (27 %) and parents had the lowest prevalence (16.9 %). These findings congruent with a Turkish study which found the prevalence of psychotic disorder among relatives of patients with bipolar disorder ranged from 14.2% among parents to 49.2% among siblings (Özdemir et al., 2016). No studies at the local or regional level in Kenya have been identified regarding the prevalence of psychotic disorders among relatives of patients with bipolar disorder. However, the prevalence of psychotic disorder in a Kenyan study sampling the general population was 4.6% (Mamah et al., 2021), which was lower than that found in this study among relatives of patients with bipolar disorder.

The prevalence of alcohol use disorder in the study population was 13.6 %. In a Kenyan study, the prevalence of alcohol use disorder was 6.4% (Jenkins et al., 2015). A Nigerian study found that the prevalence of alcohol use disorder was

8.9% among relatives of patients with bipolar disorder compared with 4.7% among controls that sampled the general population (Onu et al., 2020). The general trend is that the prevalence of alcohol use disorder is higher among relatives of patients with bipolar disorder than among the general population.

The prevalence of substance use disorder in this study, which sampled relatives of patients with bipolar disorder, was 6%, higher than that in a Kenyan study of the general population, which found a prevalence of substance use disorder of 5.3% (Muteti et al., 2019). The same trend of higher prevalence of substance use disorder among relatives of patients with bipolar disorder compared to the general population was found in a Nigerian study (Onu et al., 2020).

In the cases of both alcohol and substance use disorders, despite the studies following the same trend of higher prevalence among relatives than non-relatives, there were slight differences in the exact prevalence figures, which could be attributed to socio-demographic and geographic differences and a difference in the study designs of the various studies cited.

This study also collected and analyzed data on levels of severity of alcohol and substance use disorders. As for the proportion of those with alcohol use disorder, a majority of respondents had severe alcohol use disorder (50%), followed by mild alcohol use disorder (32.7%), and a minority had moderate alcohol use disorder (17.3%). In addition, as a proportion of those with substance use disorder, a majority of respondents had severe substance use disorder (52.2%), followed by mild substance use disorder (30.4%), and a minority had moderate substance use disorder (17.4%). This means that more respondents had severe alcohol and substance use disorders than mild or moderate levels. This is congruent with the results of a study in the US, which found that the majority of respondents with alcohol use disorder had a severe level of the disorder (40 %) (Mannes et al., 2020)information is lacking on whether clinical characteristics differentiate between the three levels of severity (mild, moderate, severe. Similarly, another study using DSM V examined the severity of substance use disorder and found that the majority of those with substance use disorder had severe level of the disorder at 21.8%, while mild and moderate substance use disorder comprised 14.2% (Wu et al., 2017). The reason why the majority of people with alcohol and substance use disorders have severe levels compared to mild or moderate levels could be due to the phenomenon of alcohol and substance use called tolerance, where as a user continues to modify their reward system, they continue to need more and more substances to achieve the same effect. This leads to slow but sustained progression to severe levels of use (Boland et al., 2021).

This study also collected and analyzed data on the prevalence of nonalcoholic substances. Among those with substance use disorder, the most prevalent substances used were tobacco (37.9 %), poly-substances (37.5 %), cannabis (16.7

%), and amphetamines (Miraa) 8.7 %). This was similar to other Kenyan studies that also found tobacco, cannabis and miraa to be prominent among the non-alcoholic substances used (Kiarie, 2021; Kimani, 2017). The reason why tobacco is the most commonly used substance could be due to accessibility, low cost, and legal status in the Kenyan market. This is consistent with the National Authority for the Campaign Against Alcohol and Drug Abuse (NACADA) survey, which found that hard narcotics such as cocaine or heroin use was very low in Kenya at 1% or less, while the use of tobacco, bhang, miraa, and alcohol was high (Kamenderi & Muteti, 2019).

The average age of respondents with psychotic disorder was 39.3 years, and the prevalence of psychotic disorder was high in older age groups (78 – 87 years) with a 50% prevalence. Age was significantly associated with psychotic disorder ($p = 0.036$), which is congruent with a Kenyan study in Nyanza, which also found an association between psychotic disorder and advanced age (over 60 years) (Jenkins et al., 2015). This could be because psychosis occurs frequently in older populations, especially as a comorbidity of neurodegenerative diseases, such as Alzheimer's disease (Boland et al., 2021).

The majority of respondents with psychotic disorder were divorced/ separated/widowed (24.3 %). This could be because the divorce, separation, and death of a spouse are stressors that may contribute to psychotic disorder (Mayo et al., 2017; Hillow et al., 2023). The respondents with no education had a higher prevalence of psychotic disorder (27.3 %). This could be because psychosis directly interferes with an individual's schooling (Behere et al., 2020). In addition, psychosis can share etiology with childhood developmental disorders, which affects the ability of a person to attend school (Boland et al., 2021).

A higher level of psychotic disorder was noted in the unemployed group (31.5%). This finding is congruent with a study that found high levels of socio-occupational dysfunction in people with psychosis (Samuel et al., 2018). This could be because psychosis causes occupational dysfunction and negatively affects the ability of sufferers to be employed or engage in self-employment (Kiarie, 2021). According to how respondents were related to patients with BD, the highest prevalence of psychotic disorder was among siblings at 27%, followed by offspring at 26.6%, and the lowest prevalence was among parents at 16.9%. This could be because siblings and offspring of a patient with bipolar disorder share more genetic material with the patient than with the patient's parent (Lewis, 2016). In addition, siblings have similar social and psychological exposures during childhood and upbringing (Witte et al., 2018).

The mean age of the respondents with alcohol use disorder was 38.4 years and that of the respondents with substance use disorder was 37.5 years. There was a higher prevalence of both alcohol and substance use disorders among males at 16.9% and 9.8%, respectively. This is congruent with epidemiological data,

which show that dependence affects males more than females (Boland et al., 2021). Females take more roles and responsibilities in the domestic setup from a young age, acting as a preventive factor against alcohol and substance use disorders (McHugh et al., 2018).

The prevalence of alcohol and substance use disorders among married respondents was higher than that of other marital statuses, at 14.5% and 10.1%, respectively. This could be because difficulty associated with marriage and family can act as a stressor contributing to the aetiology of alcohol use disorder (Mayo et al., 2017; Hillow et al., 2023). There was a higher prevalence of alcohol and substance use disorders among lower-income groups. The highest prevalence of alcohol use disorder was in the 10001 – 30000 Kenya Shillings income earners at 18.5% and the prevalence of substance use disorder was highest in the 0 – 10000 Kenya Shillings income earners at 7.5%. This finding is congruent with those of two studies that found higher alcohol use in lower-income groups (Glantz et al., 2020; Kiarie, 2021). The reason for the higher prevalence of alcohol and substance use disorders in the lower-income group could be because substance and alcohol use disorders lower occupational functioning, lowering the ability to gain or retain employment (Kiarie, 2021).

Conclusion

There is a high prevalence of psychotic disorders, alcohol use disorders, and substance use disorders among relatives of patients with bipolar disorder compared to the general population. Severe forms of alcohol use disorder and substance use disorder are more prevalent than mild or moderate conditions. Psychotic disorders are more prevalent among females, divorced, uneducated, low-income earners, unemployed, and siblings. Alcohol and substance use disorders are more prevalent among younger people, males, and low-income earners. The siblings of patients with bipolar disorder are more likely to have psychotic disorder, alcohol use disorder and substance use disorder than parents or offspring.

Recommendations

At the policy level, there is a need to advise relatives of patients with bipolar disorder to be screened for Psychotic disorder, alcohol use disorder and substance use disorder. It is also recommended to create awareness programs targeting relatives of patients with bipolar disorder to sensitize them to their increased vulnerability to psychotic disorder, alcohol use disorder and substance use disorder and to establish alcohol and substance rehabilitative services available to relatives of patients with bipolar disorder.

At the academic level, there is a need to initiate further studies on this subject in Kenya and other similar African countries. This will enhance our understanding of familial patterns related to mental illness, as the study utilized a cross-sectional design. However, this design has inherent limitations and hasn't completely addressed the existing knowledge gap in the subject.

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