SYSTEMATIC REVIEW

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Relapse and associated factors among psychiatric patients in Africa: a systematic review and meta-analysis



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Abstract

Background Relapse refers to the deterioration or recurrence of a patient's previous illness after either partial or full recovery. It is commonly observed in various mental disorders, with relapse rates ranging from 50 to 92%. This phenomenon can adversely affect the prognosis of the disorder, the functionality of individuals, and may even increase the overall costs of treatment. To achieve the desired outcomes in psychiatric treatment, it is crucial to prevent relapse whenever possible. Evidence-based data is essential for this purpose. This systematic review and meta-analysis provide an estimated pooled effect size of relapse and its determinants within this population, thereby guiding the development of appropriate intervention plans.

Methods Observational studies on relapse and its contributing factors among African individuals living with mental illness were included based on predetermined criteria following independent evaluations by two authors. Multiple databases, including PubMed, African Journals Online, ScienceDirect, and EMBASE, were utilized to ensure comprehensive coverage of relevant studies. The data extracted using Microsoft Excel were imported into STATA version 14 for further analysis. Funnel plots and Egger regression tests were employed to assess the presence of publication bias. Additionally, subgroup analysis and sensitivity analysis were conducted.

Results This systematic review and meta-analysis included sixteen research articles involving 4,660 participants. The pooled prevalence of relapse among individuals with mental health disorders was found to be 60.66% (95% CI: 50.00–70.26). A regional subgroup analysis revealed that the southern region of Africa exhibited the highest relapse rate at 74.05%, while the eastern region recorded the lowest rate at 56.08%. Factors associated with relapse included medication non-adherence [AOR=3.09 (2.05, 4.66)] and comorbidity of mental illness [AOR=2.45 (1.41, 4.27)].

Conclusion and recommendation Overall, the results of our review indicated that six out of ten individuals with mental illnesses experienced a relapse. Factors associated with relapse included non-adherence to medication and the presence of comorbid mental health conditions. Therefore, it would be beneficial for mental health care providers to discuss the reasons for relapse with patients and their families in order to prevent these occurrences.

Keywords Relapse, Psychiatric patients, Systematic review, Africa

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Background

Relapse refers to the deterioration or recurrence of a patient's previous illness after either partial or full recovery. This phenomenon can lead to stigma, exorbitant treatment costs, and a decline in functionality for both patients and their families. It is frequently observed in various mental illnesses, with relapse rates varying significantly: 52–92% in schizophrenia, 50–90% in substance use disorders, and 65–73% in bipolar disorder [1, 2]. With a relatively low prevalence of 1–2%, severe mental disorders (SMDs) such as schizophrenia, bipolar disorder, schizoaffective disorder, and depressive psychosis are associated with an increased risk of hospitalization and relapse [3, 4].

Frequent relapses accompanied by psychotic episodes are a hallmark of the illness course in schizophrenia, often necessitating hospitalization. Patients with schizophrenia have an estimated 3.5% monthly risk of relapse, with approximately 40% experiencing a relapse within a year of being admitted to the hospital [3, 5]. Studies indicate that up to 90% of individuals with bipolar disorder will experience at least one relapse in their lifetime, with an average annual relapse rate of 0.6%. Nearly 50% are expected to relapse within two years after recovering from a mood episode [6]. Individuals with bipolar disorder who experience recurrent relapses or hospitalizations may experience a significant decline in social functioning, which increases their risk of further relapses [6]. Poor medication adherence, severe residual psychopathology, lack of insight, substance abuse, and strained interpersonal relationships were among the identified risk factors [3].

Psychiatric disorders impose a significant burden globally, profoundly affecting the health, social well-being, and human rights of individuals [7]. The gap between the need for treatment and its availability is alarmingly wide, as healthcare delivery systems have not sufficiently addressed this issue. As a result, in low- and middleincome countries, between 76% and 85% of individuals with mental disorders do not receive the necessary treatment [8].

It is predicted that by 2030, the cost of mental health problems to the global economy could reach \$16 trillion. The World Health Organization is currently emphasizing the importance of addressing this issue [9]. Relapse rates among individuals with mental health disorders are influenced by a variety of factors, including demographics (such as age and sex), education, employment, religious participation, the type of mental illness, age of onset, duration of illness, co-occurring substance use disorders, frequency of episodes, social support, stigma, medication adherence, duration of medication cessation, hospitalization history, symptom severity, and current functioning [10-16].

Frequent relapses have been associated with hospitalizations, cognitive impairments, gradual functional deterioration, and a poor clinical prognosis. These outcomes impose a significant burden on patients and can also elevate the risk of self-harm and social impairments [17– 19]. Furthermore, they can incapacitate patients, leading to lost productivity and income generation, adversely affecting treatment outcomes, and ultimately harming a nation's economy [20–22].

Relapse among psychiatric patients poses a significant challenge in mental health care, adversely affecting individual recovery, increasing the burden on families, and straining healthcare systems. Understanding the prevalence and associated factors of relapse is crucial for developing effective prevention and management strategies. Relapse is often associated with worsened clinical outcomes, including increased symptom severity, reduced quality of life, and long-term functional impairment [23]. Moreover, recurrent episodes of relapse can lead to treatment resistance, complicating the course of psychiatric illnesses and making recovery more challenging. From a healthcare perspective, relapse contributes to increased hospital readmissions, emergency service utilization, and overall healthcare costs [24]. Families and caregivers also bear a substantial burden, experiencing emotional distress, financial strain, and diminished social wellbeing due to the recurrent nature of psychiatric illnesses. Addressing relapse is particularly important because many associated factors, such as medication non-adherence, substance abuse, and insufficient psychosocial support, are modifiable. Evidence-based interventions targeting these factors can significantly reduce relapse rates and improve patient outcomes [25]. Furthermore, addressing relapse aligns with global mental health priorities, as highlighted in the World Health Organization's Mental Health Action Plan 2013-2020, which emphasizes the importance of sustained recovery and improved access to care [26]. By focusing on the prevalence and associated factors of relapse, mental health professionals can identify at-risk populations, inform clinical practices, and guide policy development aimed at reducing the burden of relapse among psychiatric patients. Despite the growing recognition of relapse as a significant concern, there is a lack of comprehensive evidence regarding its prevalence and associated factors in Africa. This systematic review and meta-analysis aim to bridge this gap by synthesizing existing data to estimate the prevalence of relapse among psychiatric patients and identify key contributing factors. The findings will provide evidence-based insights to guide policy-making, inform clinical practices, and improve resource allocation, ultimately enhancing the well-being of affected individuals and communities.

Methods

Protocol and registration

This systematic review and meta-analysis protocol was registered in the International Prospective Register of Systemic Review (PROSPERO) (ID = CRD42024512135).

Search strategy

This study was conducted to estimate the pooled prevalence of relapse and its associated factors among people living with mental illnesses in Africa. To find the research articles, a thorough search of the databases of PubMed, Web of Science, Scopus, PsycINFO, Science Direct, E MBASE and African Journals Online (AJOL) was conducted. The searching terms by the prevalence of Relapse and associated factors OR other Medical Subject Heading (Mesh), keywords, and free text search terms were used. To identify the available pieces of literature, we include different terms for Relapse and combined terms by using Boolean operators searching terms. The querying terms used in these studies ("relapse" AND ("associated factors" OR "determinants") AND (psychiatric patients, OR "people with mental illness", OR "mentally ill") AND Africa. This study focused on the effect of the pooled prevalence of Relapse and its associated factors among psychiatric patient in Africa. We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria checklist for conducting the systematic review [27] (see Supplementary Material 1).

Inclusion criteria and exclusion criteria

We included all studies published in English in Africa that reported the prevalence of relapse and its associated variables in psychiatric patients, as of December 30, 2023. Additionally, we incorporated dissertations into our analysis to provide further insights and data. Studies that focused on specific demographic characteristics, case reports, case series, and letters to the editor, duplicate sources, those with insufficient data, unclear methodologies, and studies that did not report the prevalence of relapse were excluded.

Outcome variable measurement

In the primary investigations included in this systematic review and meta-analysis, relapse was assessed using the DSM-IV criteria. According to these criteria, a patient must meet specific conditions to be classified as experiencing a relapse. These conditions include having more than one hospital admission, an exacerbation of symptoms, or a recurrence of symptoms consistent with their previously diagnosed mental illness [28]. The definition of relapse varies significantly across studies, which can influence the understanding and treatment of mental health patients. For instance, in the context of schizophrenia, relapse is defined as a significant deterioration characterized by the re-emergence of symptoms that necessitate hospitalization [29]. In contrast, another study emphasizes the importance of clinical and functional impairments, indicating that relapse involves a return of symptoms severe enough to require readmission to a psychiatric unit [30]. Alternatively, one source does not provide a clear definition, underscoring the need for standardized criteria for relapse [31]. Furthermore, other studies identify various factors associated with relapse, further illustrating the diversity of interpretations [32, 33]. The second outcome of this study focused on the determinants of relapse among individuals living with mental illness. Data for this outcome were extracted in the form of two-by-two tables using Microsoft Excel, and the log odds ratio for each factor was calculated based on the findings of the original studies. The determinants included in this study were medication non-adherence and comorbid mental health issues.

Data extraction

A Microsoft Excel spreadsheet was utilized to extract pertinent data after a review of the papers' titles, abstracts, and complete texts. The extracted data included the sample size, the study area (setting), prevalence, the years of publication, and the name of the principal investigator of the identified articles. The 95% confidence intervals for the combined estimated effect of relapse and associated factors were recorded.

Quality appraisal of the selected studies

To independently assess the quality of the research articles identified in this meta-analysis and systematic review, two authors (BB and KA) used the standard instrument. The Joanna Briggs Institute (JBI) was used to assess the quality of the studies [34]. The quality measurement instrument was developed for articles that reported prevalence data and for observational studies. The assessment of the quality of the articles was the same because the study design was the same for all (crosssectional). Articles with a final rating scale of five and above out of nine points were included in this meta-analysis and systematic review. Differences in quality ratings between reviewers were resolved in a discussion with another third author (GR) to reach a standard agreement (Supplementary Material 2).

Publication bias, heterogeneity, and statistical analysis

The data was extracted using Microsoft Excel and analyzed using STATA version 14 statistical software. Funnel plot, Begg, and Egger's regression tests were used to check publication bias. Significant between-study heterogeneity was assessed using Cochrane Q and I^2 statistics. A forest plot illustrated the presence of heterogeneity.

We utilized a random-effects model for analysis to estimate the pooled effect because we found a high level of heterogeneity. The subgroups were analyzed by type of disorder and region of country. A sensitivity analysis was conducted to determine the effect of one study's findings on the overall estimate.

Result

Selection of included studies

Database search resulted in 560 research articles. For these studies, 312 duplicate articles were removed, and 136 studies were excluded after reviewing their titles and abstracts. At the eligibility evaluation phase, out of the remaining 115 articles, 99 were removed after examining their full text and similarly by considering the inclusion and exclusion criteria. Finally, 16 studies with 4,660 participants were included in the analysis (Fig. 1).

Characteristics of studies included

Sixteen studies on relapse and associated factors among psychiatric patients in African countries were included in this meta-analysis and systematic review. Out of these, eleven of them were conducted in East Africa [29, 31–33, 35–41], three in the southern region of Africa [1, 30, 42], and two in West Africa [43, 44] (Table 1).

Meta-analysis

Prevalence of relapse among psychiatric patients in Africa

According to the studies reviewed, the frequency of relapse among psychiatric patients ranged between 22% and 81.9%. The pooled prevalence of relapse among these patients was 60.63% (95% CI 50.00, 70.26). To analyze this combined prevalence, a random effects model was used. However, it is essential to note that there was a substantial and statistically significant level of heterogeneity between the included studies ($I^2 = 98.5\%$; P value ≤ 0.001), as shown in Fig. 2.

Subgroup analysis

After confirming the heterogeneity across included studies, a subgroup was conducted considering study region, and disorder type to identify the source of this heterogeneity. Despite these efforts, heterogeneity between studies remained. In subgroup analysis, the highest pooled



Fig. 1 PRISMA flow diagram showing studies used for systematic review and meta-analysis of Relapse and associated factors among psychiatric patient in Africa

Table 1	Characteristics of studies selected in this systematic review and meta-analysis on relapse and associated factors among
people	ving with mental illnesses in Africa

Author year	Year of publication	Study design	Country	Sample size	Mean age with ±SD	Diagnosis	Preva- lence of relapse (%)
Liyew A et al/2020 [35]	2020	cross-sectional	Ethiopia	178	36.00±12.00	All mental disorder	70.2
Habte B et al/2020 [36]	2020	cross-sectional	Ethiopia	400	NR	Bipolar disorder	71
Mahlet F et al/2016 [37]	2016	cross-sectional	Ethiopia	386	31.49 ± 9.36	Psychotic disorder	24.6
Solomon M et al/2021 [32]	2021	cross-sectional	Ethiopia	415	NR	Schizophrenia	57.4
Zewdu S et al./2014 [38]	2014	cross-sectional	Ethiopia	422	NR	Schizophrenia	43.3
N J B Kazadi et al/2008 [1]	2008	cross-sectional	South Africa	217	42.50 ± 10.5	Schizophrenia	61.8
Balarabe F et al/2022 [39]	2022	cross-sectional	Nigeria	464	NR	Schizophrenia	64.6
Gatheiya et al/2021 [29]	2021	cross-sectional	Kenya	209	36.93 ± 11.24	Schizophrenia	77.5
Katangalo et al/2023 [40]	2023	cross-sectional	Namibia	396	NR	All mental disorder	85
Kelapile k et al/2022 [<mark>30</mark>]	2022	cross-sectional	Botswana	68	37.9±10.5	All mental disorder	75
Mariam N et.al/2023 [31]	2023	cross-sectional	Uganda	196	NR	All mental disorder	61.3
Robel et al/2021 [41]	2021	cross-sectional	Ethiopia	100	NR	Drug Addiction	48
Eric K et al/2021 [42]	2021	cross-sectional	Rwanda	391	33 ± 11.9	Substance use	59.9
Olufemi O et al/2019 [43]	2019	cross-sectional	Nigeria	158	39.04 ± 13.39	All mental disorder	67.9
Getnet A et al./2017 33	2017	cross-sectional	Ethiopia	260	31.21 ±6.36	Schizophrenia	81.9
Fkireselam et al/2021 [44]	2021	cross-sectional	Ethiopia	400	35.9±10	All mental disorder	22

SD, Standard Deviation NR, Not Reported



Fig. 2 A Forest plot that shows the pooled prevalence of relapse among people living with mental illnesses in Africa

Table 2 A subgroup analysis of relapse among people living with mental illnesses in Africa based on region of study and type of disorder

Region	Random effects(95%CI)	Test of het- eroge- neity l ²
East Africa	56.083(42.879, 69.287)	98.6%
West Africa	65.252(61.511, 68.993)	
Southern Africa	74.055(58.009,90.101)	94.9%
Overall	60.630 (50.004,71.255)	100.00
Type of disorder studied		
All mental disorder	66.033(45.374,86.691)	99.0%
Bipolar disorder	71.000(66.553,75.447)	
Psychotic disorder	40.983(8.840,73.127)	99.0%
Schizophrenia	61.755(47.590,75.921)	96.6%
Drug addiction	48.000 (38.208,57.792)	
Substance use disorder	59.900(55.042,64.758)	
Overall	60.630(50.004,71.255)	98.5%

prevalence of relapse among psychiatric patients was observed in the Southern region of Africa (74.055%). In comparison, the lowest prevalence was found in the Eastern region of Africa (56.083%) (Table 2).

Sensitivity analysis

A sensitivity analysis was conducted to assess the impact of individual studies on the combined prevalence of relapse among psychiatric patients in Africa. The

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Table 3 Meta-regression analysis based on year of publication	วท
and region of study	

The possible source of	Coefficient	Standard error	Р
heterogeneity			value
Publication year	1.032249	0.1915743	0.867
Region of study	1.256146	1.185573	0.813

sensitivity analysis showed that all values were almost within the estimated 95% CI, showing that the prevalence of this meta-analysis was not significantly affected by the exclusion of a single study (Fig. 3).

Meta-regression

Meta-regression was used to examine the potential sources of heterogeneity based on publication year and study region. Results revealed no significant evidence that either publication year (p = 0.867) or study region (p = 0.813) was responsible for the observed heterogeneity (Table 3).

Publication bias

Various statistical methods were used to assess publication bias in the studies, including a funnel plot, an Eggers regression test, and a Begg test. The results of the Eggers regression test and the Begg test with p values of 0.576 and 0.785, respectively, showed no publication bias. Furthermore, the funnel plot results supported the



Fig. 3 Sensitivity analysis of relapse among people living with mental illnesses in Africa



Fig. 4 Funnel plots for publication bias of prevalence of relapse among people living with mental illnesses in Africa



Fig. 5 The Forest plots showing the association between relapse and drug non-adherence among psychiatric patients in Africa

conclusion that no publication bias was observed in all studies (Fig. 4).

Factors associated with relapse among psychiatric patients This systematic review and meta-analysis aimed to identify the variables that contribute to relapse among psychiatric patients in Africa. Results indicated that medication non adherence was a significant factor associated with relapse, with individuals who were non-adherent to medication being more than three times more likely to relapse than their counterparts [AOR = 3.09; 95% CI (2.05, 4.66)] (Fig. 5). Additionally, comorbid mental illness is another factor in relapse. Participants with more than one mental illness were approximately twice as likely to relapse as



Fig. 6 The Forest plots showing the association between relapse and comorbid mental disorder among people living with mental illnesses in Africa

participants with a single mental illness [AOR = 2.45; 95% CI (1.41, 4.27)] (Fig. 6).

Discussion

The present study conducted a systematic review and meta-analysis to examine relapse rates among psychiatric patients in Africa. This analysis included 16 primary studies involving a total of 4,660 participants. This study is the first of its kind in Africa and aims to estimate the pooled prevalence of relapse and identify associated factors among individuals with mental illness. The results of this systematic review and meta-analysis indicated that the pooled prevalence of relapse among psychiatric patients in Africa was estimated at 60.63% (95% CI: 50.00, 70.26). This finding highlights a significant burden of recidivism within this population. By synthesizing the results of multiple studies, this analysis offers a comprehensive understanding of recidivism rates and the associated factors in Africa. It contributes to the existing body of knowledge in the field of mental health. This finding aligns with various studies conducted in Northern Ireland, which reported a recidivism rate of 56.3% [45], Great Britain(53%) [6], and India (70%) [46].

The pooled prevalence of relapse among psychiatric patients in Africa was higher than that reported in studies from Canada, which was 35.7% [47], and Hong Kong, which reported 48.1% [48]. The inconsistency may be attributed to differences in assessment methods. For instance, the study conducted in Ethiopia utilized both clinical interviews and a review of patients' medical records, whereas the study in Hong Kong relied solely on document reviews. This observed disparity can be explained by the fact that most studies conducted in various countries produced a single result, while this particular study derived a combined prevalence from multiple studies. Additionally, differences in sample size and sociocultural factors among the participants may also contribute to this variation.

Furthermore, in addition to analyzing pooled prevalence, this review also investigated the factors that contribute to relapse in individuals with psychiatric disorders. The combined influence of these associated factors indicated a significant relationship between medication non-adherence and the presence of comorbidity involving two or more mental illnesses, which is linked to relapse in the mentally ill population.

Consequently, poor medication adherence has been identified as a significant predictor of relapse among psychiatric patients. This finding has been corroborated by various studies conducted in the USA [49], London [50], India [51], Jordan [52], and other systematic review articles [53]. The consistent outcomes of these studies highlight the critical importance of medication adherence in enabling patients to effectively manage their symptoms and prevent relapse.

The study conducted in Pakistan further supports the findings of this systematic review and meta-analysis, suggesting that additional factors contribute to relapse in mentally ill patients with comorbidities of two or more mental illnesses, compared to those without such comorbidities [54]. A possible explanation is that comorbid mental illnesses can complicate treatment and management, increasing the risk of relapse. Overlapping symptoms, drug interactions, and the necessity for specialized care may further contribute to this heightened risk.

Implications of the study

The findings on relapse and associated factors among people live with mental illness have significant implications for clinical practice, police and research. Clinically, it supports early identification, personalized interventions and holistic care to prevent relapse. Policymakers can use these insights to allocate resources effectively, establish support programs, and develop provider training.

The findings may also serve as baseline information for future researchers; the results highlight gaps for future studies, including the development of targeted interventions. Addressing relapse can reduce the societal and economic burden of mental health problems, improve patients' quality of life, and contribute to reduce stigma surrounding mental health.

Strengths and limitations of the study

This review used comprehensive searches to avoid missing available articles. The current study was conducted using the updated PRISMA 2020 guideline. Although this systematic review and meta-analysis have great advantages in estimating the pooled effect of relapse and its determinants among people living with mental illness, it has its limitations. Within this meta-analysis and systematic review, certain subgroup analyses were conducted, but the inclusion of a limited number of articles may have compromised the accuracy of the estimated outcome. The variability in durations for tracking relapse events across the studies included in our review may affect the consistency and comparability of our findings regarding the timing of relapses. Furthermore, it is vital to note that all primary studies incorporated in this review were based on a cross-sectional study design, which solely demonstrates a temporal relationship and does not establish a definitive cause-and-effect association.

Conclusion

This systematic review and meta-analyses revealed that the pooled prevalence of relapse among psychiatric patients in African countries was high. Moreover, the prevalence of relapse differed by region. Drug non-adherence and comorbid mental illness were factors statically associated with relapse among psychiatric patients. Therefore, it would be good for mental health care providers to discuss reasons for relapse with patients and families and halt them before their occurrences.

Supplementary Information

The online version contains supplementary material available at https://doi.or g/10.1186/s12888-025-06759-7.

Supplementary Material 1 Supplementary Material 2 Supplementary Material 3

Supplementary Material 4

Author contributions

BB and GR initiated the research; conceptualized, searched the articles, screened based on the eligibility criteria, and did the statistical analysis of this manuscript. KA and BB participated in data extraction and screening. KA, GR and BB contributed to the statistical analysis and writing-up of the manuscript draft. BB finalized the manuscript and communicated with the journal. All authors read and approved the final draft of the manuscript.

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Data availability

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

Declarations

Ethical approval and consent to participate Not Applicable.

Not Applicable.

Consent for publication Not applicable.

Competing interests

The authors declare no competing interests.

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